

**SPARC 2007**

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## **Preface**

**Jocelyn AJ Evans**

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As part of the first Salford Postgraduate Annual Research Conference (SPARC) to welcome participants from universities in the North-West, it gives me particular pleasure to introduce these 2007 proceedings. In previous years, SPARC has offered a stimulating and congenial setting for its postgraduate researchers to experience conference paper and poster presentation, and receive feedback from their peers and from Salford academics. Whilst it clearly succeeded in these respects, we felt that there was an opportunity to include a broader cohort of students from institutions in the region, to bring together researchers working in related areas, thereby enhancing both the academic but also the social experience of the event.

The 2007 conference has been a great success in this regard. With as many external participants as Salford postgraduates presenting papers and posters, and the panels providing an intellectually coherent but institutionally diverse mix, the conference enjoyed an unprecedented level of attendance and, as is clear from the papers in this collection, a similarly outstanding level of academic achievement in the doctoral research presented. We fully expect that, whatever innovations we introduce in future years, the open nature of the conference will be retained, and hope that the balance of Salford / North-West remains.

Whither SPARC, then? Next year's conference will pose its own individual challenge. Effective as it has been to turn SPARC into a regional rather than an institutional event, there is still greater openness to be achieved in making the conference more accessible to those researchers who, for a variety of reasons, are unable to attend in person. To that end, 2008 will pilot – on an initially modest scale – virtual paper presentation via the web, to allow researchers unable to attend their panel to give an interactive presentation nonetheless. Inevitably, the success of this venture will depend not so much on the technology itself, but the appropriate use of the technology. Those papers originally presented online will in all likelihood not be identifiable as such in next year's proceedings – and we will strive to ensure that the virtual nature of their presentation in the conference itself will also be as unnoticeable as possible.

As always, I would like to thank the organising team who make SPARC the success that it is every year – Sachin Anand and Linda Kelly have once again risen to the task magnificently. Thanks are also due to Ed Granter for his impeccable editing of the papers in this collection.

# **User Experience: Summary Judgments and Momentary Emotions**

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## **Abstract**

Website design can have marked effects on the users' experience. Consequently, empirical evaluation of websites is an important part of the design process. Increasingly such evaluations consider subjective aspects of user experience such as satisfaction. Standard evaluation methodology would allow users to interact with the website (perhaps using a fixed set of tasks) and subsequently report their satisfaction, or other responses. However, recent work in experimental psychology has shown that retrospective summary evaluations are biased in interesting ways, compared with moment-by-moment-experiences.

In particular, retrospective evaluations are influenced by the order of moment-by-moment experiences as well as their total or average intensity. Thus, when exposed to a sequence of aversive sounds, people will prefer a sequence that gets progressively less unpleasant rather than the reverse, even if the total unpleasantness they experience is the same in both cases. This study investigated whether such order effects retrospective judgments of satisfaction with a website. If so, then evaluators would need to pay careful attention to the order of tasks used in evaluation studies.

Twenty participants each performed seven search tasks using the University of Manchester, School of Informatics website. The order of the tasks was varied. For half the participants it went from hardest to easiest; for the other half it was the reverse. Before participants began each task, they had to register the time they expected it to take. Immediately after completing each task the participants rated how satisfied they were with the task. At least two days after the experiment, a second questionnaire about the overall satisfaction of the experience was e-mailed to the participants.

The main hypothesis was that the hard to easy (H-E) group would report greater overall summary satisfaction than E-H group. However, and to our surprise the results showed the opposite effect. We will discuss possible reasons for the difference between these findings and the results in the literature. The second hypothesis was that the difference between the predicted time and the actual time of all users would predict the users' task-by-task satisfaction. The average correlation of time difference found for each task (expected time-actual time) and all users' task-by-task satisfaction scores was 0.73 which strongly supports the second hypothesis.

## **Introduction**

Usability tests are conducted by monitoring users while they are performing multiple tasks with a trial product or a completed one. The test results provide information on the problems users come across while performing a task, the mistakes they make based on their confusion or frustration, in addition to the time taken to complete the task, the extent of the successful completion of the tasks and the level of satisfaction experienced in completing the task (Hartson et al. 1996). Usability tests were performed in order to test the main hypothesis of this study, with participants being monitored whilst they were performing seven specific

tasks on the University of Manchester, School of Informatics website. The usability test conducted provides the problems faced by the participants besides their overall summary judgments as shown in the Results section. In this case, controlled testing of usability is the most suitable method to measure the participants overall Satisfaction\Frustration level.

Many researchers have looked into the summary evaluation of the computer user's experiences. Summary evaluations of experiences can be described as how people remember a certain event they have previously experienced, (Kampf 2003). It is important to understand participants' ways of remembering events. For example, in the pilot experiment it was noticed, that several participants were referring to each individual task judgment before making their overall summary judgment of all the tasks. Therefore, in order to collect participants' overall summary judgments, a second questionnaire was developed, which participants were asked to fill in after a few days to prevent individual task judgments affecting the overall summary judgment, in order to summarize the various parts of the experiment as a whole. Therefore, it is important to understand participants' way of thinking before the designing or testing phase.

According to Ariely and Carmon (2003) 'when people form summary assessments of experiences they *do not* combine the individual components of the experience profiles. Instead, a large number of studies has repeatedly demonstrated that neither the sum (integral) nor to the average of experience profiles, corresponds closely to overall evaluations of their components' (Ariely and Carmon 2003). As previously mentioned, it had been noticed that during the pilot study, participants linked between the individual components of the experience and the overall summary judgment. Thus, in this experiment there is a relationship between the experience individual components and the overall summary judgment.

Ariely and Carmon (2003) also show that the 'Increasing pain intensity was perceived as very painful, and decreasing intensity was perceived as not painful, even when the sum of momentary intensities were the same' (Ariely and Carmon 2003). This proves that increasing pain intensity is more painful than decreasing pain intensity, yet it is still not proved in users' website experience.

When a user's satisfaction increases towards the end of the evaluation, the satisfaction of the overall summary increases, however if a user's satisfaction decreases towards the end of the evaluation period, even if the total individual task satisfaction is equivalent in both cases. This theory outlines the main hypothesis of current study. In addition, the best way to anticipate the user satisfaction is by measuring the difference between the predicted and actual time of the task completion; in effect, the higher the difference between actual and predicted time, the less the task satisfaction and vice versa.

Kampf's (2003) working paper offered by Professor Payne was the starting point for this research. The questionnaire and the experiments methodology were further modified and used in this piece of work. Kampf shows that there is no significant difference between the two different groups E-H (Easy-Hard task flow) and H-E (Hard-Easy task flow) overall summary judgment, nor the overall design satisfaction. The aim of this study is to replicate the experiment and try to put it in perspective to get positive results.

The experiment conducted in this study was designed to evaluate a website through testing participants' satisfaction levels during the experiment. In order to create a successful experiment and obtain meaningful results, it is critical to understand what satisfaction and

frustration mean and how people react to them (Kampf 2003). Additional frustration and satisfaction theories will be provided in the literature review section to support the main hypothesis and provide enough background related the main topic of this study.

Furthermore, it is vital to understand the summary evaluations of experiences, why the overall evaluation of the pain and pleasure through different experiences should be considered for making the future decision, and influencing people for further participation or making potential users. This study was performed to evaluate website experiences to gauge how positively or negatively people remember the experience as well as any further user engagement in the same activity (Ariely and Carmon 2003).

### **Literature Review**

A literature review is considered as the ‘building blocks of any theory or model’ (Ghauri and Gronhaug 2005). In this section, five main topics will be presented in relation to summary judgments.

#### ***User Experience Evaluation***

Since this paper is investigating the user experience of summary judgments and momentary emotions, user experience evaluation was considered as the first building block of the background section. It is important to look at the user experience term to understand different users’ behaviour in a certain experience, further, to realize the effect of positive and negative user experience and how can user experience help to improve website design.

#### ***What is a User Experience?***

According to Haynes (2002) user experience is defined as ‘the sum of all your users’ interactions with your company, its services, and its products’. The website or application is not the only method for clients to interact with organizations; however, it is an important element to maintain customer relationship management (Haynes 2002). Comparing the previous definition of user experience to the present study, user experience can be defined as the sum of all of participants’ interaction with the University of Manchester, School of Informatics website. As mentioned by Haynes (2002) The University of Manchester website is not the only communication channel between the student or visitors and the institute but it is one of the main communication means between both parties. User experience is also defined by Isomursu et al. (2004) as ‘the total subjective experience of using a device or tool in a situation’ given that the tool used in this experiment is the website of the school of informatics, the user experience in this case is the dynamic relationship between the school of informatics website and the participants (Isomursu et al. 2004).

Laboratory experiments have been used by HCI psychologists to test the user computer interface, evaluate computer usability and improve the level of usability understanding. Laboratory experiment is one of the methods of gathering usability behavioural data. Other ways and techniques used in the HCI field can be summarized as follows (Landauer et al. 1989):

- Observational task analyses
- Involvement of users in redesign
- Prototype and ‘beta’ testing – including participant observer style studies
- Field trials
- User surveys

Like any other method laboratory experiments have advantages and disadvantages. Because of the high level complexity of the HCI experiment studies, in real environments they are difficult and in some cases impossible to implement. Therefore the main advantage of this method is the high degree of convenience and control. At the same time lab studies are not able to capture all the factors that will influence the usability test in the real world (Landauer et al. 1989). Usually when there is a positive user experience, it is expected that users come back to the web site based on which the revenue will increase and an exposure to the business will be given. In contrast, negative user experience will raise the overheads, reduce customer loyalty, lose the word of mouth in advertising and destroy the brand identity (Haynes 2002).

### ***Website Design***

After studying the user experience evaluation, several website design issues were identified such as website's value for organizations, website users' satisfaction and the factors that makes websites more attractive. Websites, as a new means for organizations to communicate with their customer, provide new marketing methods with completely different structures and moves organizations one-step closer to the customers. Thus, there are a number of scenarios that must be considered while designing a web site such as user profile, the interaction of the website, the information accuracy and entertainment level (Palmer and Griffith 1998). It is important to realize customers' expectations and how they feel about the website interaction. Ping et al. (2001) come across how the users think about the objects of the website as satisfiers or dissatisfies according to how they appeal to the user (Ping et al. 2001). On the other hand, in this study the users' overall summary satisfaction or frustration level will be measured not by the objects of the website but by completing a set of tasks.

The first impressions of a website have been measured by many researchers and most of the studies suggest that users first impact will be taken in twenty to ten seconds while according to a recent research conducted in Carleton University in Ottawa, Canada, website users were able to summarize their judgment about the home page in 500 milliseconds (Hodge 2006). This result limits designers first impression time therefore it is necessary to carefully design the first page of the website to gain users' satisfaction otherwise users will seek their information somewhere else (Hodge 2006).

### ***Usability Evaluation***

Website usability plays an important role of the business image and can influence customer shopping behaviour. Usability is considered as an important issue, especially when the organization uses the internet in their service in general usability it is important to achieve customer satisfaction (Flavián et al. 2006).

Usability testing involves studying the website or interface under real world or specific settings while evaluators are gathering data on problems that arise during the test, this is how the experiment of this study was designed, users will be asked to perform certain tasks and they will be monitored by the experimenter. According to Jeffries (1991) this methodology offers excellent opportunity for observing how well the interface supports the user requirements (Jeffries 1991).

Usability evaluation of web application is a hard task and can be categorized as usability testing or usability inspection (Danuta and Franklin 1999). The two types of usability evaluation can be implemented in this study to observe participant during the experiment.

Usability testing involves discovering the problem based on operation of the application while usability inspection does not operate the application and does not need a special



environment (Danuta and Franklin 1999). To deliver efficient product and increase the productivity designers must consider the user requirement during the usability test (De-Marsico and Leviald, 2005). According to De-Marsico and Leviald, usability evaluation methodologies are as follows ‘The first generally consider task-oriented (high-level) characteristics, the second exploit results from behavioural research, the last are mostly based on style and context-free features’ (De-Marsico and Leviald 2005).

### ***Satisfaction/Frustration***

The main motive of adding up this section is the development of the experiment of this research. Users overall satisfaction or frustration level is related to the main hypothesis therefore it is vital to state the reasons that frustrate or satisfy users. As mentioned by Lazar et al. (2006) ‘Frustration occurs when there is an inhibiting condition, which interferes with or stops the realization of a goal’. The level of frustration varies depending on the conditions that affect on the frustrating experience and persons involved (Lazar et al. 2006).

### ***What is User Frustration?***

User frustration is aroused when computer operates in unexpected way that annoys the user and stops him from completing a specific task. There are several reasons that frustrate users for example the crash of software application, unclear error message, appearance of pop-up advertisements or a confusing interface, in general frustration with technology occurs when users cannot achieve their task or goal (Lazar et al. 2006). Indisputably, frustration is the most reported complaint by users who experienced a negative computer experience. Almost every computer user has at least experienced one situation that is frustrating such as ordeal of a program crash wasting the last hour of work or maybe finding it difficult to download an email attachment. Human-computer interaction can predict that frustration will continue to be a major reaction for users when a computer or programme fails to accomplish a specific task (Bessière et al. 2006). At this point of research, it is vital to look into different computer frustration models to understand participants’ way of thinking as well as the main factors that affect on the frustration experience. In the following section two computer frustration models by (Bessière et al. 2006) are presented.

Bessière et al. (2006) proposed a computer frustration model based on situational factors such as the level of importance of a task, frequency of occurrence and severity of interruption. The second main factor proposed in the computer frustration model is the dispositional factors that affect on the strength of the frustration experience such as, the level of computer experience, self efficiency, user mood, and psychological factors related to user’s environment and way of thinking.

Another previous computing frustration model by Bessière et al. (2003) which describes the frustration factors divides the frustration factors into individual and incident factors. The individual factors that are hard to influence in an experiment can be categorized as follows: anxiety, attitudes, experience, self efficacy, mood, psychological factors and cultural, societal influence, learning (Bessière et al. 2003). Whereby the incident factors include level of goal commitment, self efficacy, importance, severity of interruption, time loss, strength of desire and anticipation expectations (Bessière et al. 2003)

### ***What is User Satisfaction?***

Satisfaction is defined in the dictionary as fulfilment or gratification (Danuta and Franklin 1999). According to O’Reilly (2004) the chances to be satisfied with the result of the next web site visit are two in three which is good in comparison to seven years ago when it was

two to five, but most of the website still contains a lot of unnecessary information which causes information overload (O'Reilly 2004). Nowadays experienced web users are increasing and they are expected to use the websites search tools instead of the navigation options to find what they are looking for, therefore web designers must try to decrease the tasks search time in order to keep their users satisfied (O'Reilly 2004).

According to Muylle et al. (2004) website user satisfaction is 'defined as the attitude toward the web site by a hands-on user of the organization's web site'. The definition emphasizes the interaction between the user and the website besides the user's attitude toward an organization website.

Muylle et al. (2004) proposed 11 dimensions which are related to the website user satisfaction. The first five dimensions are related to the user in term of the website information whereby the other six dimensions are more related to the users' website interaction. Each of the 11 dimensions will be shortly explained in the following section (Muylle et al. 2004).

- *Information relevancy*: The degree to which the user perceives the website information contents as being related to his needs.
- *Information accuracy*: The degree to which users perceive the website information content to exactly match their needs.
- *Information comprehensibility*: The degree to which users can realize and interpret the website contents.
- *Information comprehensiveness*: The perceived totality of the website information.
- *Ease of use*: The degree to which the user considers the website to be user-friendly.
- *Entry guidance*: The user's opinion about the website home page in term of guiding him or her to the desirable information in the website.
- *Hyperlink connotation*: The extent to which user can easily navigate through the website hyperlinks.
- *Website structure*: The perceived structural integrity of the website.
- *Website speed*: The degree to which the user perceived the website to be fast or slow.
- *Layout*: The degree to which users perceive the general contents and look of the website such as colour, scheme, backgrounds, fonts, and images.
- *Language customization*: The degree to which the national language is clear to the user.

### ***Features of the profile experiences***

Like any other experience emotion experience can take any form; which form it takes depends on the person mode, the level of attention and if there is any direction to attention (Frijda 2005). According to the previous statement website emotion experience is affected by the user mode and the level of attention and attention direction. According to Ariely and Carmon (2003) when people summarize experiences they do not integrate or average the passing situations they experienced as the event unfolded. Two types define features of the profile of experiences that control the overall evaluations and they are as follows:

#### ***Static (state)***

Static reflects the intensity of the momentary experiences at a specific point in time. It is assumed in static that people maintain a small amount of information of their experience which will be stored in their memory for later use more willingly than using the complete experience (Ariely and Carmon 2003).

### ***Dynamic (configurable)***

Dynamic reflects the change in the intensity of the transient states as the experience progresses. The logic of dynamic is almost similar to the static one. The idea is that people consider basic statistics of the experience and these static in stead of the complete experience will be stored and used later on. In the dynamic case the captured statistics represent relationships between different states of the experience (Ariely and Carmon 2003). Static and dynamic profile features can be applied on website users' experience to have better sympathetic about users overall evaluation.

### **Design**

The experiment was designed as a set of seven questions as easy-to-hard or hard-to-easy, which have been given to two different groups. According to the study main hypothesis, it is assumed that the hard to easy group will provide higher satisfaction judgments than easy to hard group. The second hypothesis predicts the relationship between the time difference (Expected time-Actual time) and the satisfaction score of all tasks and it is presumed that if the time difference is higher, participants will report higher satisfaction. This was a brief explanation of the study hypothesis and at the end of this section there is a detailed hypothesis section which explains the study hypothesis in more detail.

University of Manchester, School of Informatics website was used to develop the seven tasks used in this experiment. While designing the questions the hard task was how to define the level of questions' easiness and hardness; therefore task difficulty standard was created and the questions' answers were classified as following:

- If the answer requires one or two links starting from school of informatics home page it is an easy question.
- If the answer requires three or four links starting from school of informatics home page it is a medium question.
- If the answer requires five links or more starting from school of informatics home page it is a hard question.

According to the above standards the question list was created and 20 participants were asked to fill in the questionnaires in two groups (E-H and H-E). In the following section the seven modified easy to hard tasks according to the pilot study will be presented and further explained. The same reversed tasks were used for the (H-E) group.

**Task1:** Find the enquiries email address for undergraduate students.

The answer for this task requires one link only; therefore this question is classified as the easiest question of all.

Task 1 answer: [http://www-0.co.umist.ac.uk/programmes/ug\\_programme\\_list.php](http://www-0.co.umist.ac.uk/programmes/ug_programme_list.php)

**Task 2:** Find Dr. Antonella De Angeli's fax number.

The second task answer requires two links and has been classified as the second easiest question.

Task 2 answer: [http://www-0.co.umist.ac.uk/school/staff\\_details\\_ac.php?staff\\_id=ADA](http://www-0.co.umist.ac.uk/school/staff_details_ac.php?staff_id=ADA)

**Task 3:** Find business information system research interest list.

The answer for this task requires three links and classified as medium level question.

Task 3 answer: [http://www-0.co.umist.ac.uk/pgr/pgr\\_res\\_interests.php](http://www-0.co.umist.ac.uk/pgr/pgr_res_interests.php)

**Task 4:** Find Msc Informatics first semester timetable.

The answer for this task requires four links and classified as medium level question.

Task 4 answer: [http://www0.co.umist.ac.uk/intranet/timetable\\_details.php?programme\\_id=PG-INFandcur\\_list\\_id=PGandsemester\\_id=1](http://www0.co.umist.ac.uk/intranet/timetable_details.php?programme_id=PG-INFandcur_list_id=PGandsemester_id=1)

**Task 5:** Find the examination rules according to the University of Manchester regulations.

The answer for this task requires three links and is located under the course unit link; therefore this question is classified as a medium level question.

Task 5 answer: [http://www-0.co.umist.ac.uk/intranet/course\\_unit\\_exam\\_rules.php](http://www-0.co.umist.ac.uk/intranet/course_unit_exam_rules.php)

**Task 6:** Find the Application form for PhD studentships.

This task requires three links but during the pilot study several participants faced difficulty in finding the answer; therefore this task has been classified as difficult.

Task 6 answer: [http://www-0.co.umist.ac.uk/pgr/pgr\\_apply.php](http://www-0.co.umist.ac.uk/pgr/pgr_apply.php)

**Task 7:** Who is responsible for recruiting lecturers, in the interactive design system section according to the school of informatics operational plan?

The seventh task answer for requires four links and because the participants have to hunt the school of informatics PDF file to find the answer, this task is considered as the most difficult.

Tasks 6 answer: [http://www-0.co.umist.ac.uk/intranet/school\\_board\\_docs/SoI\\_op\\_plan\\_05\\_06.pdf](http://www-0.co.umist.ac.uk/intranet/school_board_docs/SoI_op_plan_05_06.pdf)

Before starting each task participants were asked to record their expected time to find the task answer as follows:

Expected search time for the answer to question 1:

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
< 1 minutes	< 2 minutes	< 5 minutes	< 10 minutes	> 10 minutes

*Figure 1. Expected individual task time scale to complete a single task*

After finding the right answer or if the participants gave up the search task they were asked to fill in the following scale to record their individual task satisfaction level.

The individual task satisfaction/frustration experienced with the website while searching for answer1:

O	O	O	O	O	O	O	O	O	O	O
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
Very frustrating					Neutral					Very satisfying

Figure 2. Individual task satisfaction Level scale

The following section will explain the methodology of the experiment by discussing the participants' involved in the experiment, equipment used, procedure of the experiment, the analysis tools used to analyze the gathered data and the hypothesis of the study.

## Method

### Participants

20 students of University of Manchester from different schools participated in this experiment. Participants were allocated to the two experimental groups alternately on arrival at the experimental laboratory. Participants' age group is between 22 and 29. In terms of gender there was 13 males and 7 female participants. Since this study is not investigating the difference of gender or age group there should be no problem in gender or age difference. Participants were assigned randomly and they are considered as volunteers in this experiment.

### Apparatus

A set of computers equipped with Internet in the Mathematical and Social Science building at the University of Manchester were used to perform this experiment. After contacting the participants to volunteer and perform the experiment each participant was assigned a separate appointment to perform the test.

The second questionnaire results show that all participants are expert web users with a minimum of 12 hours per week and maximum 100 hours per week. So it was assumed that participant computer knowledge was sufficient to carry out this study smoothly.

### Procedures

Upon arrival to the lab participants were assigned randomly to one of the two groups (E-H and H-E) a brief explanation was given before starting the actual test. Participants were asked to look up the answers to the tasks on School of Informatics website as an evaluation of their overall summary judgment experience. The maximum time limit for each question is 10 minutes; participants were timed and asked to leave the question if they feel that they can not find the answer after 5 minutes (Kampf 2003). In the easy to hard situation the questions will be ordered in increasing difficulty and in the hard to easy the same questions will be reversed. Participants were asked to mark the estimated time for each task before starting the actual task search. Each task search started from the home page of the school of informatics website. Participants were monitored by the experimenter and they were asked to continue the search if they believe they found the answer incorrectly.

At least two days later and after completing all the tasks, participants received the second questionnaire by e-mail, they were asked to fill in second questionnaire which contains general information about themselves and about the quality of the website design and their

overall satisfaction with the website. All Participants sent back the second questionnaire as requested (Kampf 2003).

### ***Analysis***

Microsoft Excel statistical tools were used in order to analyze the data and test the experiment hypothesis. Two main tests were performed, two sample with equal variance T-test to prove the significant difference between the two groups means (E-H and H-E) and the correlation test to measure the relationship between each participant individual task time difference (expected time-actual time) and the individual task satisfaction score of all participants.

### ***Hypothesis***

It is proved by Ariely and Carmon (2003) that increasing pain intensity was considered as very painful while the decreasing pain intensity was considered as not painful even when the sum of the intensities are equivalent in both cases. However it is still not proved in website user experience. This was the first thought of the main hypothesis of the study.

The main hypothesis of the study is ‘if user satisfaction increases toward the end of evaluation period the overall summary satisfaction will be higher than if satisfaction decreases toward the end of the evaluation period, even if the total individual task satisfaction is equivalent in both cases’. This hypothesis is trying to replicate what has been done by Ariely and Carmon (2003) in the pain intensity.

In order to test the hypothesis an experiment was designed as shown in the beginning of this section. Briefly, the experiment consists of seven search tasks involving twenty participants in two different groups, E-H and H-E. In comparison to Ariely and Carmon (2003) the E-H group can be compared to the increasing pain intensity participants and the H-E group replicate the decreasing pain intensity.

The experiment was designed to test the difference between the two groups overall summary judgment and overall website design, simply put to report which of the two groups will report higher overall satisfaction.

Another focus was the effect of the relationship between the expected time to complete a task and actual time taken to complete it. For example, a task will be less satisfying the higher the difference between expected time and the actual time taken to perform that task and vice versa (Kampf 2003).

The second hypothesis states that the difference between the predicted time and actual time taken to do the task can be used to predict the level of satisfaction experienced, (Kampf 2003). In order to test this hypothesis the correlation between each tasks time comparison (expected time-actual time) and each individual task’s satisfaction score was measured.

### **Results**

Figure 3 (E-H and H-E users’ individual task actual time taken average) and Figure 4 (E-H and H-E users individual task satisfaction average), present the data graphically as carried out by the two different groups. The figures below show, that the tasks are getting harder for the E-H group and easier for the H-E group as planned.

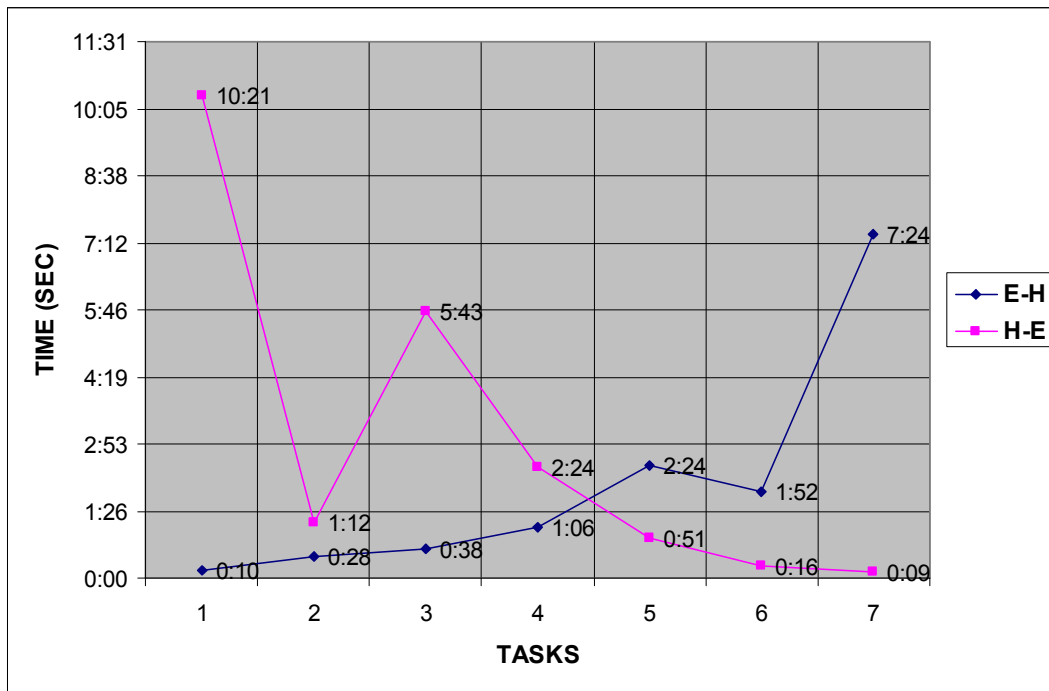


Figure 3. E-H and H-E users' individual task actual time taken average

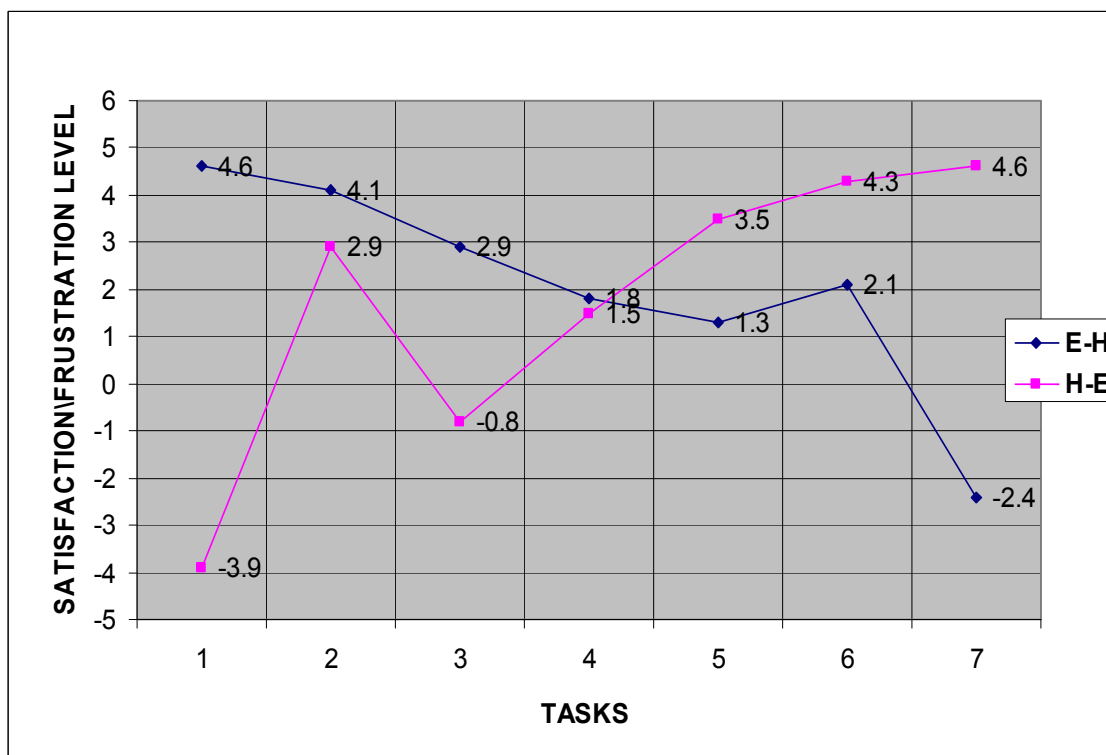


Figure 4. E-H and H-E users' individual task satisfaction average

Figure 5 presents the E-H users' individual task satisfaction level. E-H users individual task satisfaction mean is 2.06, while as shown in figure 6 which demonstrates the H-E individual task satisfaction, the mean is 1.73. There is not much difference between the two groups means and T test proved that there is no significant difference between the two groups ( $t_{18} =$

0,  $p > 0.05$ ), however it is obvious from both figures, that the H-E group participants failed to complete more tasks than the easy to hard group at the same time it is clear that figure 6 illustrates more negative individual task users' satisfaction than figure 5.

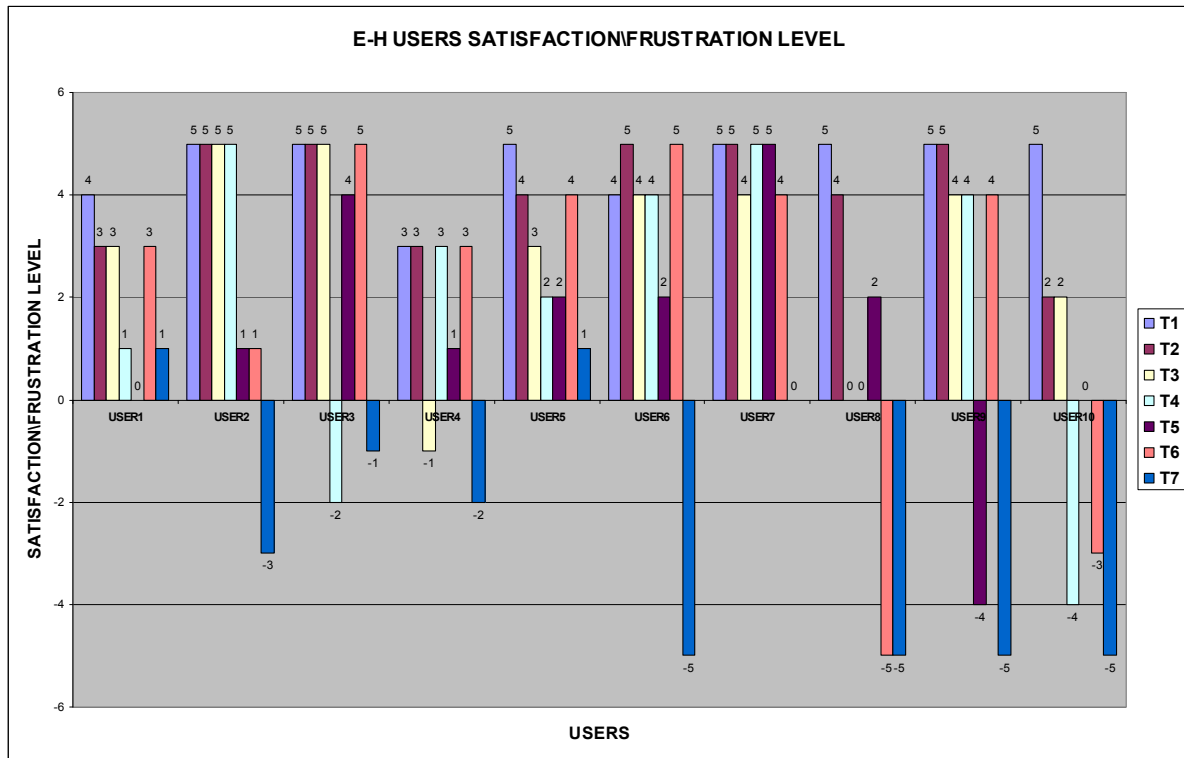


Figure 5. E-H users' individual task satisfaction

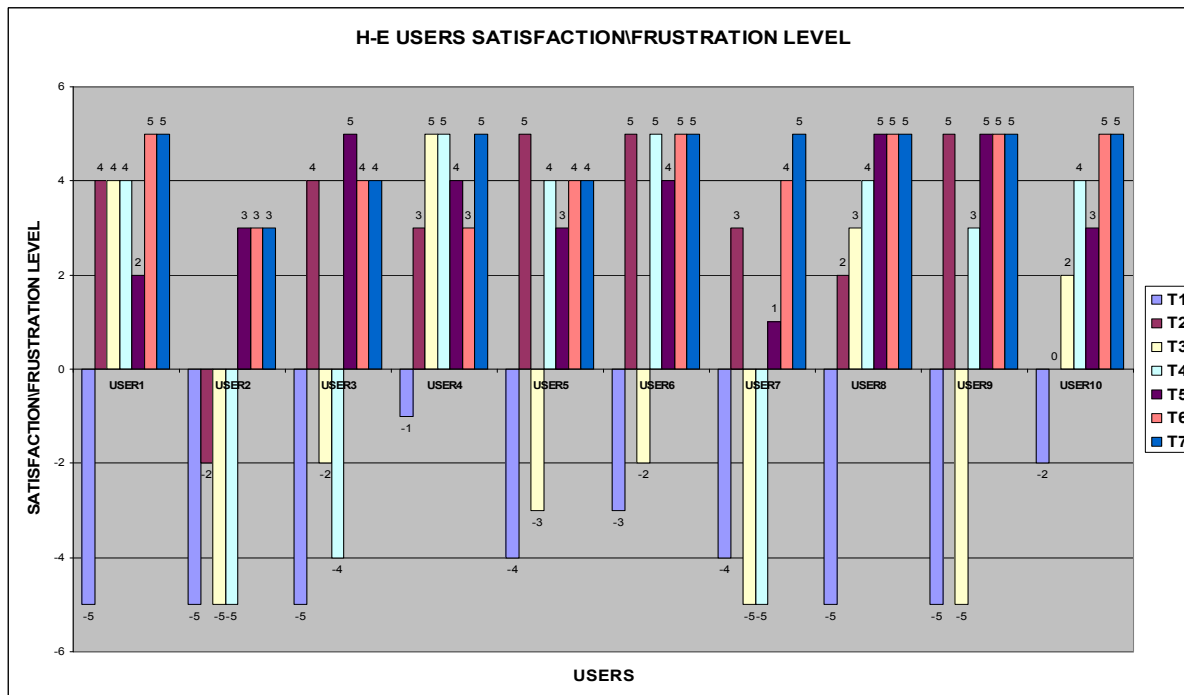


Figure 6. H-E users' individual task satisfaction



Table 1 illustrates the overall summary judgment mean and standard deviation of both groups. The overall summary judgment mean of the E-H groups is 1.7, whereby for the H-E group it is -0.1. The difference between the two groups is significant,  $t_{18} = 2.26$ ,  $p < 0.05$ . Although these results do not support the study's main hypothesis, it still proves the opposite which can be simplified as follows; the E-H group will report higher satisfaction level than the H-E group toward the end of the experience period while the total individual task satisfaction is equivalent for both groups.

Table 2 shows the website design judgment summary and standard deviation of both groups. The E-H participants' website satisfaction mean is 1.6 while the H-E participants reported 0.5. The T test shows that the difference between the two groups is not significant,  $t_{18} = 1.16$ ,  $p > 0.05$ .

Group	Overall summary judgment mean	Standard deviation
E-H	1.7	1.70
H-E	-0.1	1.85

Table 1. E-H and H-E Overall summary judgement mean plus standard deviation.

Group	Overall website summary judgment mean	Standard deviation
E-H	1.6	1.71
H-E	0.5	2.46

Table 2. E-H and H-E Website design judgement summary mean plus standard deviation.

The second hypothesis of this experiment was the relationship between each task time difference (expected time-actual time) and the individual task satisfaction score, it is assumed that participants will report higher task satisfaction if the time difference is less and vice versa for example if a participant estimates two minutes to find the task answer but the actual time to seek the same task is ten minutes, the participant are more likely to report lower satisfaction and if a participant expected time is ten minutes but the actual time to seek the answer is two minutes it is more likely to report high satisfaction. In order to test the prediction, the correlation between discrepancy (expected time-actual time) and the satisfaction score of each of the seven questions was measured. The average correlation of all participants' satisfaction scores and their time difference was 0.73 which signifies a strong correlation and supports the study hypothesis.

## Discussion

The results found were exactly the opposite of the main hypothesis. The experiment results indicate that when users' satisfaction increase toward the end of the experience period, users

will report greater overall summary satisfaction level than decreasing toward the end of the experience period.

Ariely and Carmon (2003) proved that ‘Increasing pain intensity was perceived as very painful, and decreasing intensity was perceived as not painful, even when the sum of momentary intensities was the same’. The results of this study do not exactly match what has been found by Ariely and Carmon (2003); this might be referred to the fact that they were measuring the overall summary judgment of a pain experience while this study is measuring website experience thus; there is a difference between the two experiments in terms of their type. Another reason for the opposite results may be that it is easier to control the increasing and decreasing pain intensity flow in the pain experience than the website users’ experience. For example dentists could control the treatment session by starting with the hard actions and finishing with easy actions or vice versa while in the website experience the only option to control the difficulty flow is by reversing the set of task from E-H to H-E.

The third reason could be that in the pain experience users did not link between the individual parts of the experience and the overall summary judgment but, it is more likely for users in the website user experience to link between the individual parts and the overall experience and this might be because the participant were involved in performing the task not like the pain experience receiving treatment by another person. The three reasons behind the opposite results can be summarised as follows:

1. Type variation of experiences.
2. The flow of individual parts of the experiment (E-H and H-E).
3. Level of participants’ involvement.

These are the main three estimated reasons that led to achieve the opposite results between the pain and website users’ experiences.

In term of website design judgment summary, T test confirmed that there is no significant difference between the two groups’ judgments. This means that the participants overall website design judgment was not affected by the two different group’s experiences. The suggested reason is both group’s participants’ judgments were focusing on a single factor which is the website design and at the same time participants’ website judgments were based on a general overview of the website unlike the E-H and the H-E judgment which was based on the end peak rule (the difficulty flow of the tasks).

Collecting participants overall satisfaction judgment after a few days as explained in the design section helped to overcome the problem faced by Kampf (2003) which is the tendency of remembering various judgments when they are all tied together rather than sampling from a continuous experience, asking participants to fill in the second questionnaire after at least three days helped to summarize the seven tasks as one whole experience.

The second hypothesis is related to the relationship between each task time difference (expected time-actual time) and the individual task satisfaction score. The correlation test (0.73) proves that there is a relationship between task satisfaction score and the time difference. However it has been noticed during the experiment that participants expected time could be derived by several factors such as the level of understanding the task as a question to illustrate, some participants asked several questions before performing a task therefore to some extent this might affect their estimated time. The second factor was the degree of

awareness of the website. For example users which are familiar with a certain task will estimate the exact search time. The third noticed factor was participants' personality or the (level of self-esteem) to illustrate participants with high self esteem will report higher satisfaction score despite the time difference between the actual and expected time, as almost two or three participants were noticed to report -3 out of -5 even if they fail to achieve the task whereby if they estimates two minutes and achieve the task in one minute they will report +5 which is the highest positive score.

The three main factors noticed during the lab experiment which affected testing the second hypothesis can be summarized as follow:

1. The level of understanding a task as a question.
2. The degree of awareness of the website
3. Participants' personality (level of self-esteem)

### **Summary**

The results of the experiment showed the opposite of the main hypothesis that this study was trying to prove, reporting that the H-E group satisfaction was greater than the E-H group toward the end of the experience period. The experiment showed a significant difference between the two groups overall satisfaction judgments and the T-test proved that the difference between the two groups is significant,  $t_{18} = 2.26$ ,  $p < 0.05$  while there is no significant effect on the website design judgment.

The reason behind the difference between this study's results and Ariely and Carmon, can be broken down into three parts. The first part is the difference between the two experiences in terms of their type; the pain experience is related to human physical reaction, while the website experience is a cognitive reaction, measuring human perceptions. The second part concerns the flow of the individual tasks of the experiment. For example, it is easier to control the pain intensity experienced by the user, than website experience flow, in terms of difficulty, E-H or H-E. The third part is the level of participants' involvement. For example, in website experiences, users carry out actions whilst experiencing pain. Participants receive treatment and it is usual for the degree of involvement to vary from one type of experience to another.

In terms of the second hypothesis, relating to the relationship between a task's satisfaction score and the time difference between expected time and actual time taken for each task. It has been found that there is a strong correlation (0.73) between both tested variables, the time difference and individual task satisfaction score.

Whilst performing the experiment, several participants' behaviour was noticed. The behaviours were analysed and further related to three main factors that could affect the relationship between the time difference (expected time-actual time) and the satisfaction score. The first factor is the level of understanding of a task as a question. The second factor is the degree of awareness when using the website. Finally, the third factor is the participants' personality or the level of self-esteem.

According to (Kahneman 2000), in a medical operation experience, pain is the main factor to be evaluated even in the case of operation failure participants will still consider pain as the main evaluation factor. Whereby in the website user experiences, there are several factors which affect participants' satisfaction, such as a participants attitude and attractiveness,

functional and technical aspects in addition other factors which worth to be studied in the future. The identification of all the factors that affect the website's overall judgment along with the peak end-rule will assist designers, physiologists and Human Computer Interaction specialists to better understand website users' needs and lead to a better understanding of users' mentalities.

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# **Public-Private Partnership (PPP) Projects in Malaysian Tolled Highways – An Insight Using a Political Economy Approach**

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## **Abstract**

Tolled highways in Malaysia are built under the public-private approach in which the government provides the opportunities for the involvement of the private sectors in the construction of these infrastructures. Using a political economy approach, this paper seeks to ascertain the main concession holders of the Malaysian tolled highways as well as in what way the tolled highways influence the political and economic arena. The paper finds that the tolled highways in Malaysia play a significant role in achieving the country's economic objectives.

## **Introduction**

In many countries world wide, the provision of public infrastructure and related services are carried out using a Public-Private Partnership (PPP) approach (Olson et al. 1998 English and Guthrie 2003, Newberry and Pallot 2003). Previous studies on PPP focus on issues like ex ante decision making (Edwards and Shaoul 1999, Gaffney et al. 1999), the value for money in adopting this approach (Heald 2003), risk transfer (Broadbent et al. 2003), varying interests that developed into tension between the government and standard setting body (Broadbent and Laughlin 2005a) and how PPP serves as the means to achieve government's political agenda (Broadbent and Laughlin 2005b). Broadbent and Laughlin (2003) raise concern that PPP is a growing issue not geographically confined to UK but also to many countries internationally. In addition, they highlight the importance of conducting researches to ascertain the implementation of PPP across the globe since *PPPs are likely to be the major vehicle for developments in the provision of public services for many years to come* (p. 340). Following this, the paper aims to look at how a PPP approach is undertaken in a country-specific context; namely Malaysia whose economic objectives are steered towards achieving socio-economic balances amongst various ethnic groups.

## **Literature Review**

### ***PPP in Malaysia***

The existence of PPP projects in Malaysia can be traced from the 1980s, in particular when the Privatization and Malaysia Incorporated policies were formally promulgated in 1983. These two policies were introduced by the government in an effort to reduce financial and administrative burden of managing the governmental sectors as well as encouraging the involvement of the private sectors in the country's development. The Privatisation programme in Malaysia is a broad-based term that encompass a wide range of activities in the economy such as the construction of tolled highways, hospitals, vocational training institutes, supply of electricity, gas and water, telecommunications, postal, airline and airports (Hassan 1999). Just as vast as the spectrum of activities in Malaysian privatisation programme, the mechanisms of privatisation also take various forms. Apart from the sale of government assets mode, privatisation in Malaysia also includes other approaches like leasing, management buy out, build-operate-transfer (BOT) and build-operate (BO) (Economic Planning Unit (EPU) 1991); of which the latter two are more commonly utilised for new projects (Hassan 1999) that were traditionally being provided by the public sector-for example the provision of infrastructure, utilities and energy projects (Ibid). Of these projects,

transport and communication sector plays a significant role in the country's privatisation programme. Throughout the privatisation period i.e. from 1983 until 2005, the transport, storage and communication sector accounts for 12% of privatised projects in comparison to the electricity, gas and water sector at 8.4% (obtained from EPU web-site: <http://www.epu.jpm.my/>).

As mentioned earlier, construction of tolled highways constitutes that part of the privatisation plan which utilised the BOT approach (Economic Planning Unit (EPU) 2005). Under this approach, the private sector is responsible for the construction, operation and maintenance of the facility in question using its own funds and in return, owns the right to collect toll from road users during the concession period. The facility will then be transferred at no cost to the government at the end of the concession period (Ibid) which is normally long enough for the private sector to recoup its investment as well as paying back the project's debt (Naidu and Lee 1997). Although there are different approaches to PPPs adopted by various countries and therefore a number of varying PPP concepts and forms has been discussed (Broadbent and Laughlin 2002, Baker 2003); in essence, PPP constitutes a contractual relationship between private entities and public sector in providing services that are of public interest; carried out within the scope of a programme or policy designed by public entities (Diogo et al. 2005). The Malaysian highway projects, following the terminology of PPP offered by Diogo, can thus be recognized as PPP; particularly as both the public and private sectors in this instance are bound by the terms in concession agreements.

The introduction section highlights the aim of the paper, which is directed towards conducting a study of PPP within a country's socio-economic and political context. In this respect, it is important to note here the Malaysian privatisation programme (of which PPP is one of the mechanisms) is implemented with the objective of enhancing the *Bumiputera* (indigenous people) participation in the economic sector which is in line with the New Economic Policy (NEP)<sup>1</sup> (Economic Planning Unit [EPU] 1991). This objective is clearly expressed by the government in its published privatisation guidelines, *Privatisation Masterplan* which also states that in order to meet this objective; privatised projects must meet the requirement that calls for at least 30 per cent equity participation of *Bumiputera* entrepreneurs (Ibid). In this way, the government tries to seek a more balanced economic achievement amongst the three major racial groups. In the Ninth Malaysia Plan<sup>2</sup>, the government aims to reduce the income gap between the *Bumiputera* and the Chinese from 1:1.64 in 2004 to 1:1.50 in 2010 and between *Bumiputera* and Indians from 1:1.27 in 2004 to 1:1.15 in 2010 (Economic Planning Unit (EPU) 2005).

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<sup>1</sup> After Malaysia (known as Malaya at that time) achieved her independence in 1957, the country undertook a *laissez-faire* approach in its economic activities. However, at the onset of independence, economic disparities were clearly evident amongst the three major racial groups – the indigenous Malays (*Bumiputera*-‘sons of the soil’), Chinese and Indians. The social and economic imbalances between the three major racial groups – the Malays, Chinese and Indians have created much tension, which later erupted into a racial riot involving the Malays and the Chinese on 13<sup>th</sup> of May 1969. After this tragedy, the Malaysian government has introduced New Economic Policy (NEP) that seeks to eradicate poverty and restructure the society. The basic philosophy underlying in this policy is to ‘grow with equity and national unity’. Such emphasis is important in the context of a multi-races country so as to ensure and hence put the economically dominant race; the Chinese to the comfort of knowing that they would not be deprived of any rights and opportunities existing in the country (Economic Planning Unit web site: <http://www.epu.jpm.my/>).

<sup>2</sup> Ninth Malaysia Plan is a five-year plan devised by the Malaysian government that covers a five-year period i.e. from 2006-2010.

The government's role is not limited to ensuring that the country's wealth is enjoyed equally amongst the multi racial group. It also extends to other areas, particularly in relation to the privatised projects itself. For example, the government continues to play a substantial role in the implementation of privatisation programmes. This takes place in the form of providing financial support through various measures such as giving soft loans, offering directed lending through banks and provident funds (Baietti 2001) as well as acting as the guarantor to loans contracted by private sectors (Naidu and Lee 1997). In addition, the extent of government involvement is also apparent in the instance of pricing decisions. Apparently, price revisions in some sectors like telecommunications, power and toll roads require ministerial and at times cabinet approval (Naidu and Lee 1997).

Having provided an overview of the PPP approach in Malaysia, this paper will turn its discussion on the theoretical framework. As PPP is one of the vehicles used to achieve the economic objective of encouraging the participation of *Bumiputera* entrepreneurs in the economic sector, a political economy approach (PEA) will be adopted in conducting the study. A review of the political economy literature is reviewed in the following section.

### ***Political Economy Framework***

Political economy approach (PEA) in accounting studies seeks to study accounting practices in a wider context, taking into account socio-economic and political factors in the studies. This approach is undertaken as a growing number of accounting researchers express their concern that accounting studies need to take into consideration various factors including organization context, socio-political and economic factors that could have an influence on the accounting practice (Burchell et al. 1980, Hopwood 1983, Hopper and Powell 1985). Employing this approach, Tinker (1980), uses financial data of Delco, a company that was involved in iron-ore extraction business in Sierra Leone, to demonstrate how socio-economic and political attributes are reflected in accounting information. Taking this view, Cooper and Sherer (1984) in their conceptual paper put forth suggestions of how the PEA should be adopted in accounting studies. According to them, accounting researches that employ PEA should focus on conflicts in society, which is translated into the accounting field as how the accounting report serves the interests of specific groups in the community, for example, the elites. Next, PEA in accounting studies needs to take into consideration the historical and institutional context of the society in which it operates; noting how big corporations function in oligopolistic and monopolistic markets and in particular, how the state manages the economy. Lastly, the view in PEA is that people have the potential to change society apart from reflecting difference in interests and concerns. The last attribute of PEA as suggested by Cooper and Sherer indicates that their view is somewhat radical. Laughlin (1995) who proposes a 'middle-range' thinking in accounting studies suggests that instead of making an absolute stand of whether a change should be initiated or not at the *beginning* of their studies, these options should instead be more open to the accounting researchers *after* the empirics have been reviewed.

Nevertheless, the suggestions on conducting accounting studies using a PEA by Cooper and Sherer (1984) provides a useful guideline to other researchers. Selvaraj (1999) uses the first attribute of PEA suggested by Cooper and Sherer which is the focus on conflict in society as a basis to conduct a study of interests and accounting standard setting in Malaysia using the political economy framework to view the struggle within the accounting profession in an attempt to dominate the standard setting process; presenting her arguments through an analysis of the case of Goodwill Accounting Standard. Selvaraj (1999) concludes the paper by noting that although power struggles for domination of accounting standard seems to exist



both within and outside the Malaysian accounting profession, the same interests do not come into play perpetually. In a similar manner, Ali et al. (2006) use this approach to examine the development of the auditing profession in Malaysia. They find that auditing in Malaysia is intertwined with the influence of political and socio-economic factors, in support of the contention put forth by Hopper et al. (1987) that political struggles in society do play a role in shaping accounting development.

The above papers effectively demonstrate how political and socio-economic determinants play an important role in accounting and auditing studies. This study uses the political economy approach as the theoretical framework in an attempt to establish a clear link between the research objectives, the empirics and the theoretical grounding. The research objectives are explained below.

### **Research Objectives**

The research objective of this paper is twofold; firstly it aims to ascertain the companies that act as concession holders of tolled highways in Malaysia. Secondly, it seeks to explore the ways in which the highways influence (or are influenced by) the socio-political and socio-economic factors.

### **Research Methodology**

The data for this paper is gathered from the information contained in the web sites of the Malaysian Highway Authority, Ministry of Work and Economic Planning Unit. In addition, further data is gathered from annual reports of the immediate concession companies in question (in cases where the concession companies are private limited companies), the accounts filed by the companies at Companies Commission of Malaysia. Since the aim is to determine the concession companies of Malaysian tolled highways, the annual reports and the accounts for the year 2005 (or 2004 if the annual reports for the year 2005 are not available)<sup>3</sup> are examined to determine the details of the immediate and ultimate holding companies.

### **Findings**

In this section, the findings of the study will be discussed. This section will discuss in general, the participants in Malaysian Tolled Highway, in particular the concession companies drawing evidence from the accounts and annual reports published by the companies. Further discussion on the findings that attempts to relate the empirics to the political economy framework will be provided in the Discussion section.

### ***Concession Companies of Malaysian Tolled Highways***

From 1983, i.e. the year the Privatisation Programme and Malaysia Incorporated Policy is implemented, until 2005, a total of 19 tolled highways are constructed. The highways, their respective year of completion, total length and the concession holders are displayed in Table 1 below:

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<sup>3</sup> This study was undertaken in the year 2006, therefore the latest annual reports available at the time of the study would be for the year 2005.

Project	Year Completed	Concession Company	Length
(1) Penang Bridge	1985	Penang Bridge Sdn Bhd (PBSB)	13.5 km
(2) North-South Expressway	1994	Projek Lebuhraya Utara-Selatan Sdn Bhd (PLUS)	848.0 km
(3) Seremban-Port Dickson Expressway	1997	PLUS Expressway Bhd	23.0 km
(4) Shah Alam Expressway	1997	Konsortium Expressway Shah Alam Selangor Sdn Bhd (KESAS)	35.0 km
(5) North-South Expressway Central Link	1997	Expressway Lingkaran Tengah (ELITE) Sdn Bhd	56.8 km
(6) KL-Karak Expressway	1998	MTD Construction Sdn Bhd	60.0 km
(7) Malaysia – Singapore Second Link	1998	Linkedua Sdn Bhd	45.7 km
(8) Butterworth-Kulim Expressway	1998	Konsortium Kulim Butterworth Expressway Sdn Bhd (KLBK)	16.8 km
(9) Damansara-Puchong Expressway	1999	Lingkaran Trans Kota (Litrak) Sdn Bhd	40.0 km
(10) Sungai Besi Expressway	1999	Besraya Sdn Bhd	16.0 km
(11) Cheras – Kajang Expressway	2000	Grand Saga Sdn Bhd	11.7 km
(12) Western KL Traffic Dispersal Scheme	2001	Sistem Penyuraian Trafik KL Barat (Sprint) Sdn Bhd	26.0 km
(13) Ampang-Kuala Lumpur Elevated Highway	2001	Projek Lintasan Kota Sdn Bhd (PROLINTAS)	7.4 km
(14) Northern Klang Straits Bypass	Exact year is not known	SHAPADU PROP	15.3 km
((15) Kajang Dispersal Link Expressway (SILK)	2004	Sistem Lingkaran Lebuhraya Kajang (SILK) Sdn Bhd	37.0 km
(16) New Pantai Expressway	2004	New Pantai Expressway Sdn Bhd	19.6 km
(17) Guthrie Corridor Expressway	2005	Guthrie Corridor Expressway	25.0 km
(18) Butterworth Outer Ring Road	2005	LLB	Not known
(19) Western Kuala Lumpur Traffic Dispersal Scheme (SPRINT) Package C	Exact year is not known	Not known	Not known

Table 1. Tolloed Highways in Malaysia (source: compiled from Ministry of Works and Malaysian Highway Authority web-sites).

Table 1 above shows that 14 out of 19 concession holders of these tolled highways are private limited companies as revealed by their companies names ‘Sdn Bhd’. ‘Sdn Bhd’ is the short form for the Malay term ‘Sendirian Berhad’ which indicates that the companies are private limited companies. A study is then conducted to determine the immediate holding companies of these concession holders by examining the final accounts filed at Companies Commission of Malaysia. The names of the immediate holding companies are then noted. Next, the annual reports of the immediate holding companies are crosschecked to ensure that the details of concerning their respective subsidiaries (who are the concession holders) are accurate and therefore reliable. Table 2 below shows the details of the immediate holding companies and the highways they operate.

Immediate Holding company for the Concession holders	Highways/Bridge
Plus Expressway Berhad	1. North-South Expressway 2. Seremban-Port Dickson Highway
United Engineers (Malaysia) Berhad (UEM)	1. Penang Bridge 2. North-South Expressway Central Link 3. Malaysia-Singapore Second Link
Road Builder (Malaysia) Holdings Berhad	1. Besraya-Sungai Besi Expressway 2. NPE-New Pantai Expressway
MTD Equity Sdn Bhd	KL-Karak Expressway
Konsortium Expressway Shah Alam Selangor (KESAS) Holdings Berhad	KESAS-Shah Alam Expressway
Malaysia Mining Corporation Berhad	Butterworth-Kulim Expressway
Lingkar Trans Kota Holdings Bhd	Damansara-Puchong Expressway
Sistem Penyuraian Trafik KL Barat Holdings Sdn Bhd	Western KL Traffic Dispersal Scheme
Grand Saga Sdn Bhd	Cheras – Kajang Expressway
Projek Lintasan Kota Holdings Sdn Bhd	Ampang-Kuala Lumpur Elevated Highway
Shapadu Corporation Sdn Bhd	Northern Klang Straits Expressway
Sunway Infrastructure Bhd	Kajang Dispersal Link Expressway (SILK)
Guthrie Bhd	Guthrie Corridor Expressway
LLB <i>*Details of the immediate holding company could not be found, as the full name for LLB, the concession holder could not be ascertained from Companies Commission of Malaysia. Thus the final accounts could not be found, which limits the ability to find the immediate holding company</i>	Butterworth Outer Ring Road
<i>No details are available</i>	Western Kuala Lumpur Traffic Dispersal Scheme (SPRINT) Package C

Table 2. The Immediate Holding Companies for the Concession Holders.

Table 2 above shows that 8 out of 13 concession holders are public limited companies, indicated by the term ‘Bhd’ after the company names. Further examination of the annual reports of the immediate holding companies is then undertaken to determine the ultimate holding companies for the concession holders. This information, as well as percentage shareholdings of these companies is shown in Figures 1-7 respectively.

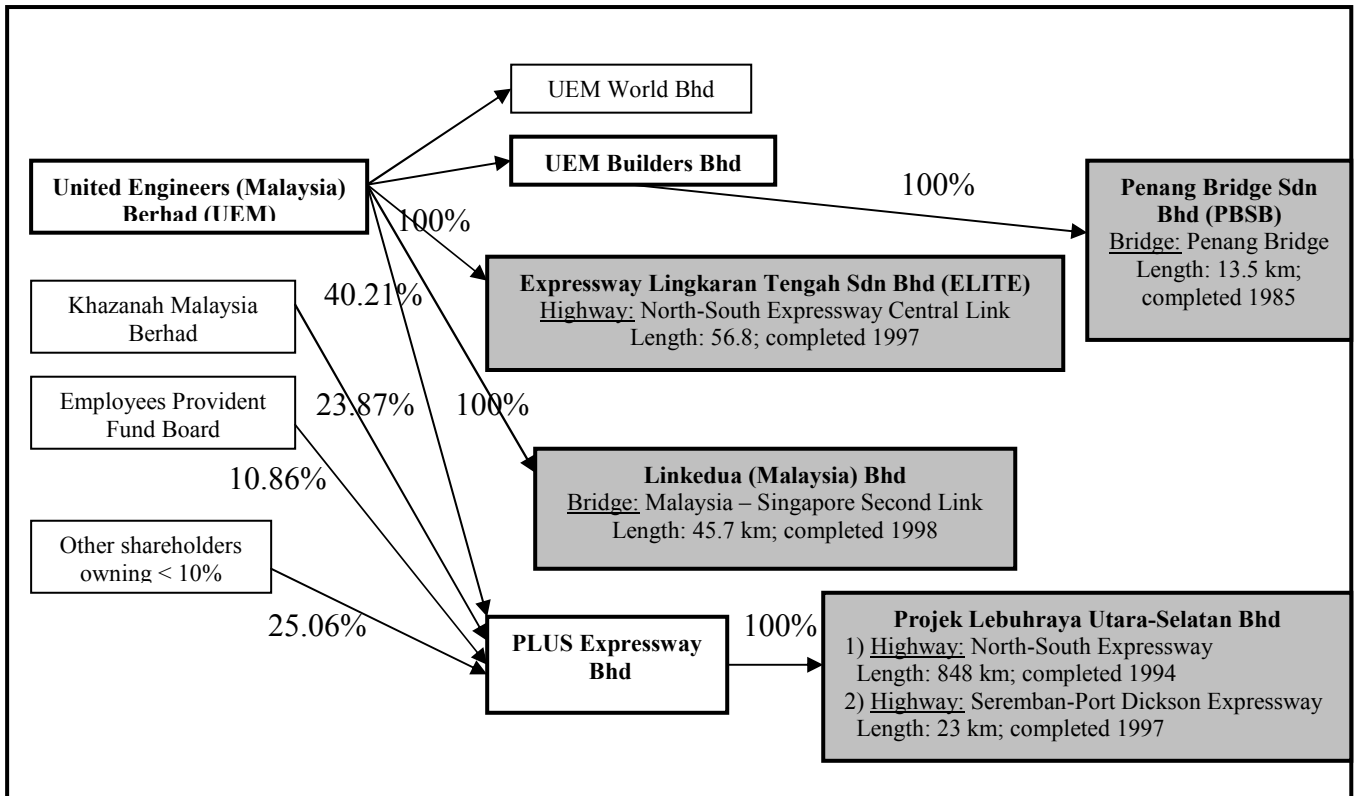


Figure 1. The UEM Group and the highways that the group operate

Figure 1 above shows that the PLUS Expressway Berhad is an associate company to the UEM group. The group appears to operate and maintain the first five highways built after the implementation of the Privatisation programme and Malaysia Incorporated policy. It also appears that the government's main investment arm; Khazanah Malaysia Berhad has a shareholding of 23.87% of PLUS Expressway Berhad, which operate the North-South Expressway and the Seremban-Port Dickson Expressway.

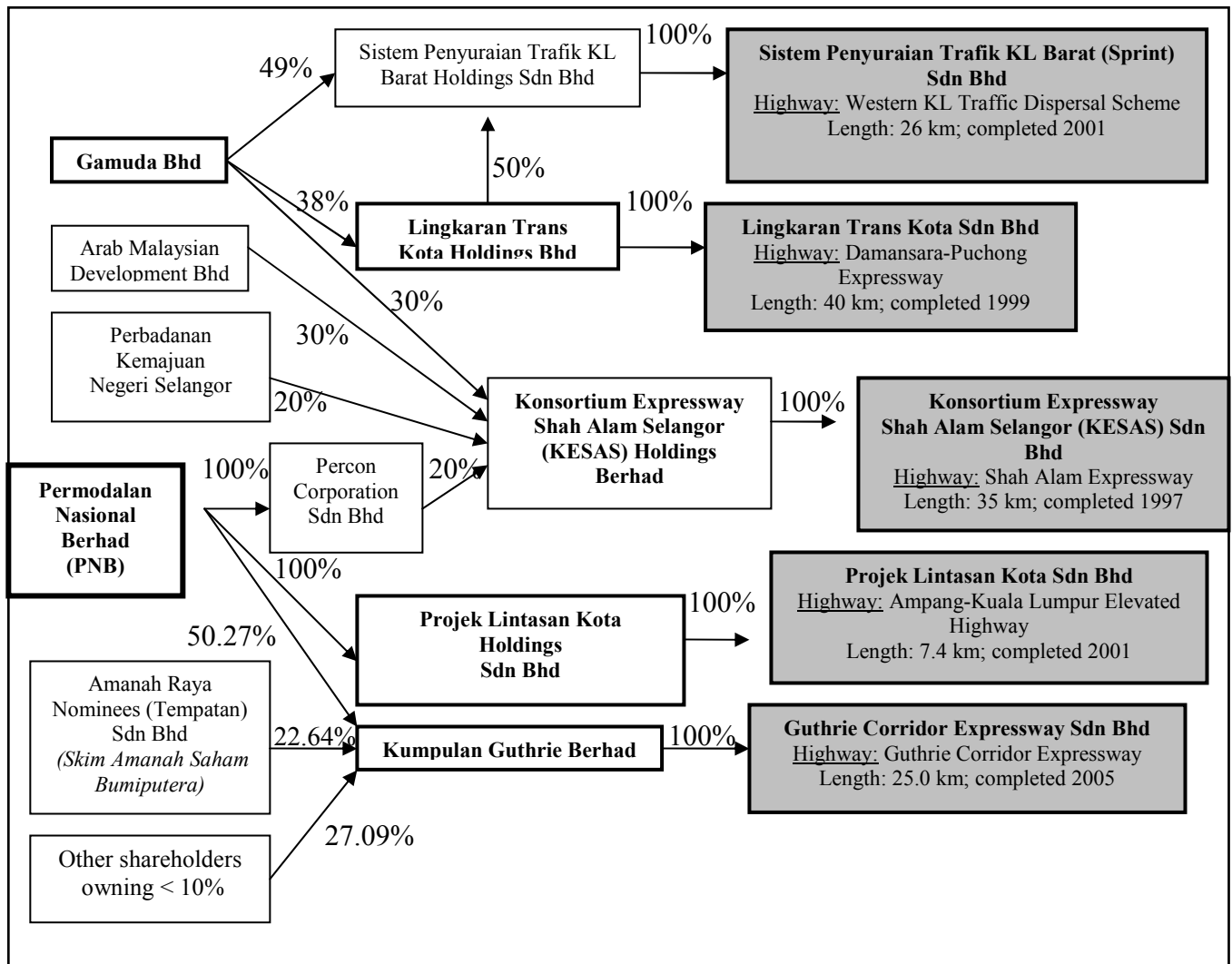


Figure 2. Gamuda Berhad Group; including Permodalan Nasional Berhad

Figure 2 above depicts a rather complex form of ownership of tolled highways. Although each of the five immediate holding companies namely, Sistem Penyuraian Trafik KL Barat Holdings Sdn Bhd, Lingkar Trans Kota Holdings Bhd, (KESAS) Holdings Berhad, Projek Lintasan Kota Holdings Sdn Bhd and Kumpulan Guthrie Berhad has a 100% ownership of the concession companies that operate the respective highways, the ownership of the immediate holding companies themselves appears to be somewhat dispersed with various shareholdings of other companies. Quite notable here is the 100% ownership of Projek Lintasan Kota Holdings Sdn Berhad by Permodalan Nasional Berhad (PNB). PNB is the main investment instrument of the Malaysian Government. Incorporated in Malaysia on 17<sup>th</sup> March 1978, the company was established to meet the objective of New Economy Policy, which seeks to enhance the *Bumiputera's* participation in the economy. This objective is effectively carried out by PNB through acquisition of shares in major Malaysian corporations from funds provided by *Bumiputera* Investment Foundation. The acquired shares are then transferred into trust funds and sold to the *Bumiputer*as in smaller units.

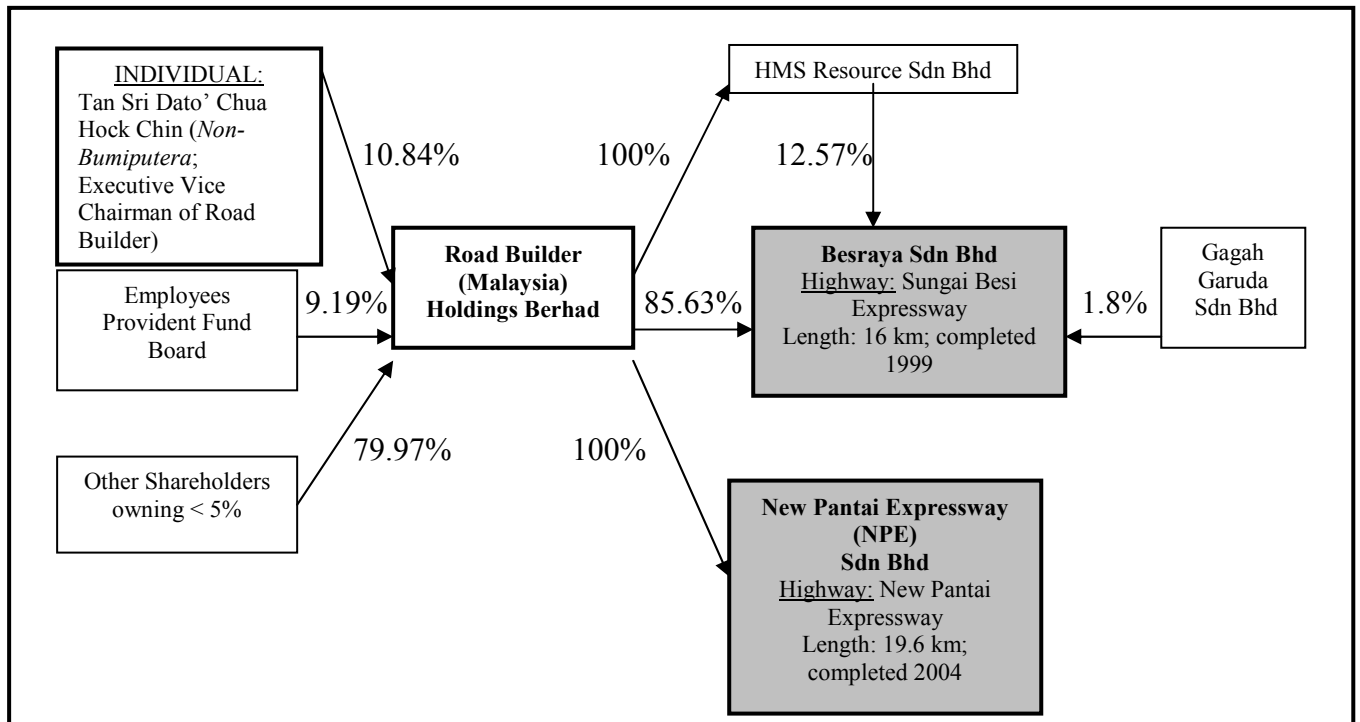


Figure 3. Road Builder Group

As opposed to the two previous group structures, the ownership of tolled highways by the Road Builder group is rather simple and straightforward. It appears that Road Builder owns 85.63% of Besraya Sdn Bhd directly and another 12.5% through its wholly owned subsidiary, HMS Resource Sdn Bhd.

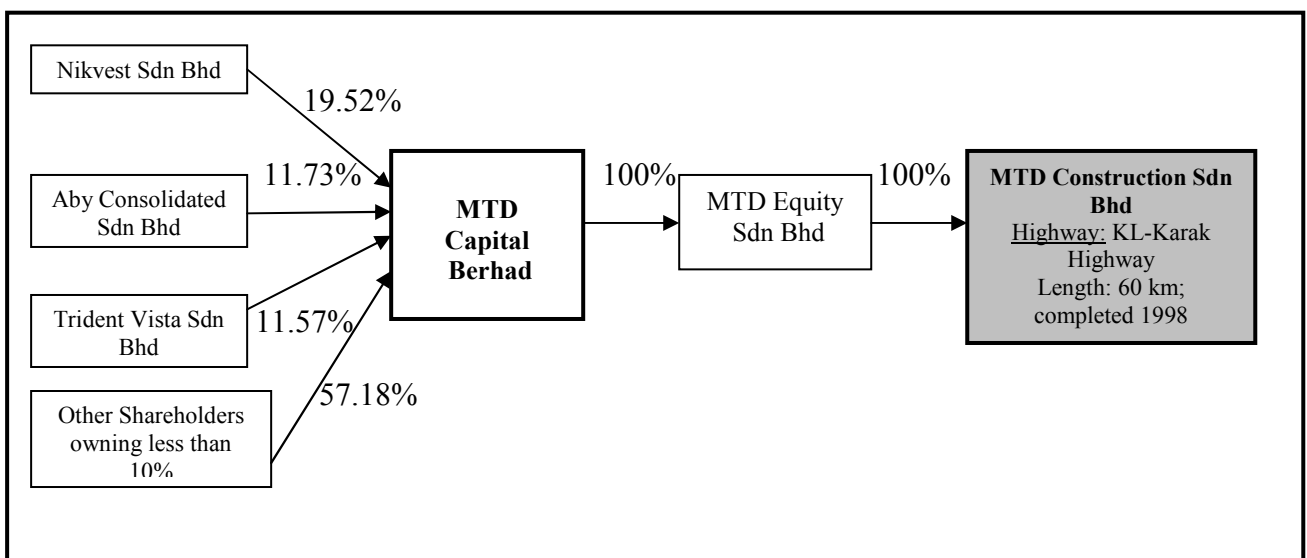


Figure 4. MTD Capital Berhad Group

The ownership structure for KL-Karak Highway as shown in Figure 4 above is also simple and straightforward. MTD Capital Berhad has a 100% holding of MTD Construction Sdn Bhd through its wholly owned subsidiary, MTD Equity Sdn Bhd.

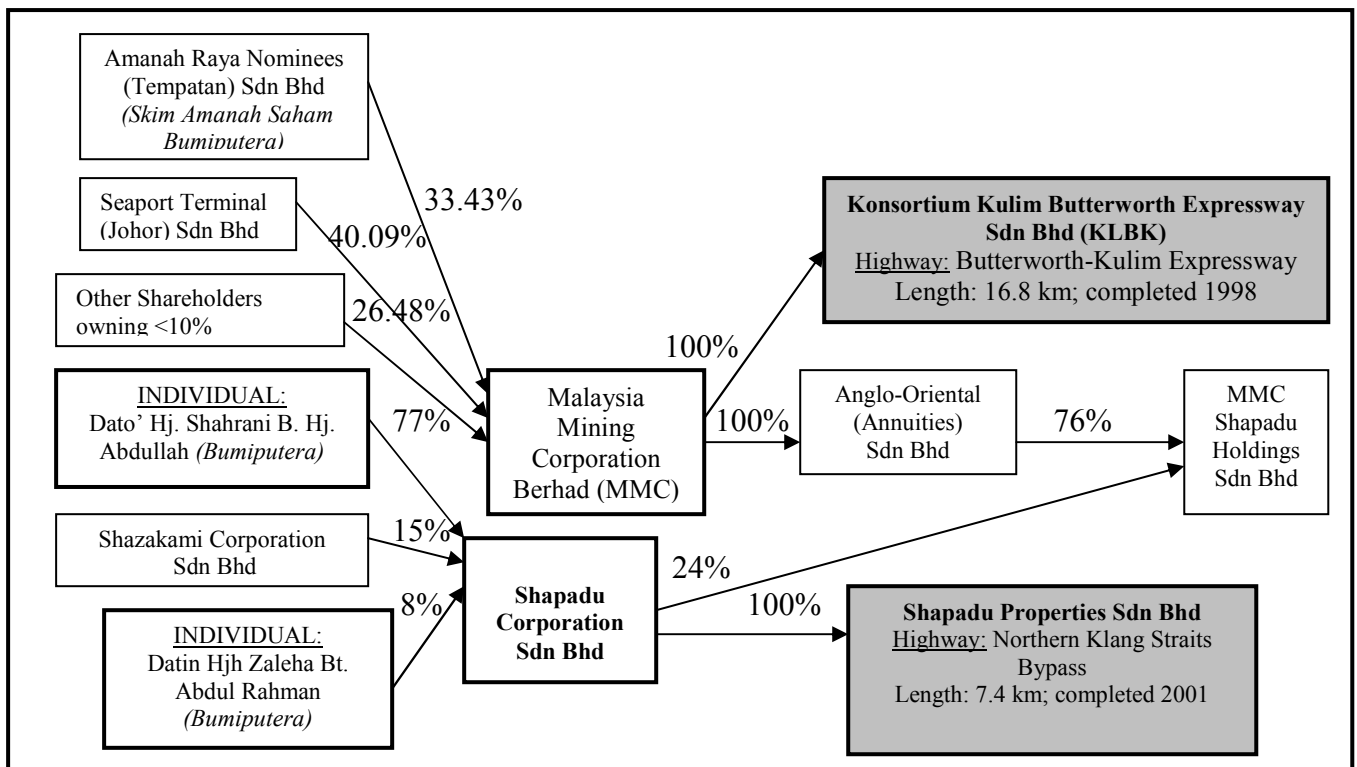


Figure 5. Shapadu and MMC

Figure 5 shows that the ownership for the Butterworth-Kulim Expressway and Northern Klang Straits Bypass can be clearly divided into two groups. From this diagram, it can be seen that the ownership of Butterworth-Kulim Expressway lays with MMC, which has a 100% control of the concession holder, KLBK. Similarly, Shapadu Corporation Sdn Bhd effectively owns Northern Klang Straits Bypass through a 100% ownership of the operator, Shapadu Properties Sdn Bhd. However, MMC differs from Shapadu Corporation in the way that more than 30% of its shares are owned by the *Bumiputera* Investment Trust Fund, whilst Shapadu Corporation Sdn Bhd is owned substantially by a *Bumiputera* individual who has 77% shareholding of the company.

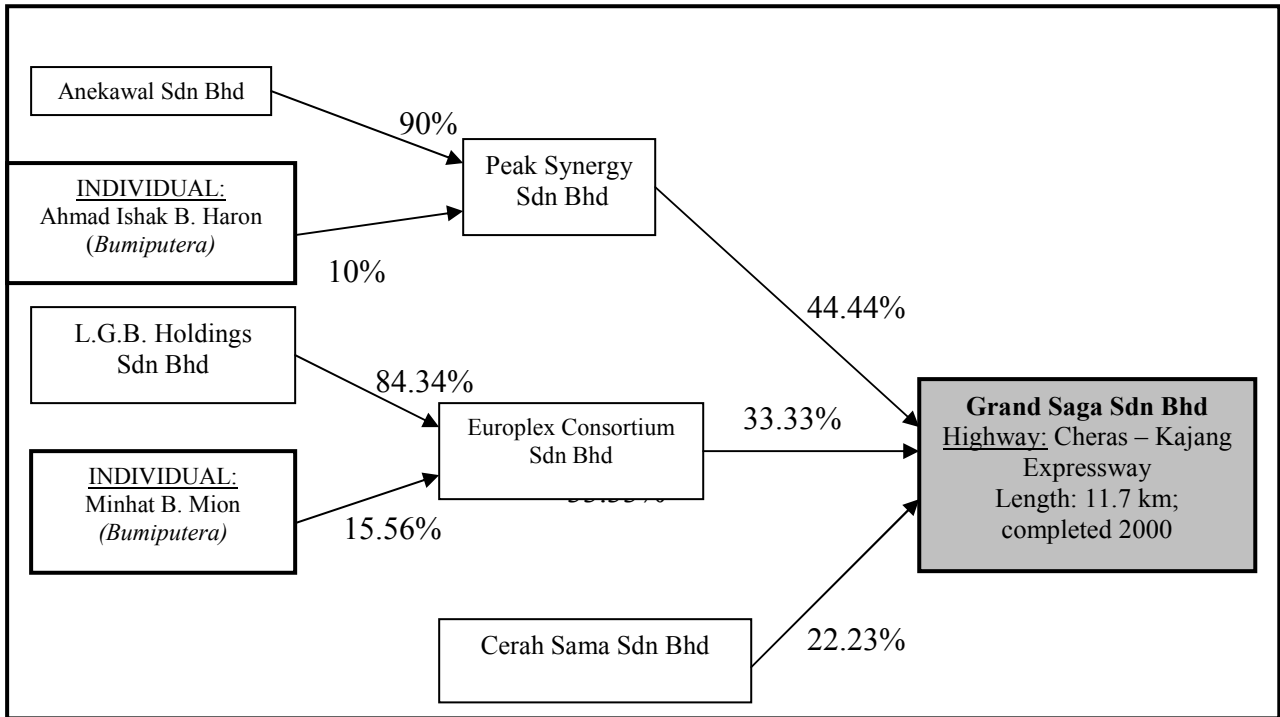


Figure 6. Grand Saga Sdn Bhd

The ownership structure for Cheras-Kajang Expressway is in marked contrast in comparison to other group structure. This is due to the fact that the operator of the highway, Grand Saga Sdn Bhd is owned by other three private limited companies; namely Peak Synergy Sdn Bhd, Europlex Consortium Sdn Bhd and Cerah Sama Sdn Bhd as shown in Figure 6 above. The first two companies is in turn being substantially owned by other private limited companies – 90% by Anekawal Sdn Bhd and 84.34% by L.G.B. Holdings Sdn Bhd respectively, with slightly more than 15% shareholding owned by *Bumiputeras*.

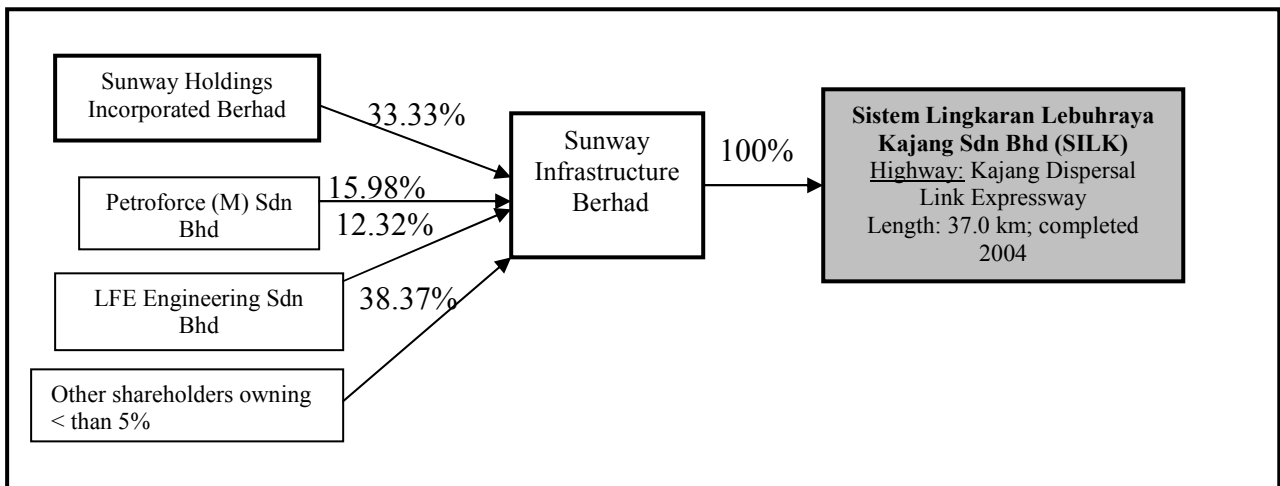


Figure 7. Sunway Infrastructure

The Sunway Infrastructure Company as shown in Figure 7 above has a 100% interest in SILK, the concession company that operates Kajang Dispersal Link Expressway. Sunway Holdings Incorporated Berhad owns a third of the shareholding in Sunway Infrastructure Berhad, whilst Petroforce owns 16% of the shares, LFE Engineering owns 12% and the other



shareholders own the remaining 38.37%. Hence, it can be observed here that the ownership structure for this highway is not as complex as other highways, in particular the UEM and Gamuda groups.

## **Discussion**

The findings above reveal some interesting facts about Malaysian tolled highways. As mentioned in the early part of the paper, the privatisation programme is implemented with the objective of encouraging the *Bumiputera* entrepreneurs to participate in the economic sectors. Before the privatisation programme and Malaysia Incorporated Policies were introduced in 1983, the Malaysian government provided public infrastructure. The Malaysian government introduced these two policies in an attempt to reduce the burden on public sector as well as to reduce the government's presence in the country's economic activities. The Penang Bridge was the first tolled highway project undertaken soon after the two policies were introduced. This was later on being followed by a large number of highway projects, which continues until today.

In relation to how the tolled highway projects are interrelated with the economic arena, evidence from the empirics suggests that the government is trying to achieve the NEP's objective of enhancing the *Bumiputera*'s participation in the economic sector by awarding a number of contracts to *Bumiputera* entrepreneurs. The first project, Penang Bridge was awarded to UEM Builders (a member of UEM Berhad – Please refer to Figure 1). The UEM group is known as the company which has direct political connections with political figures of the United Malay National Organization (UMNO) ruling party (Gul 2006). As well as Penang Bridge, subsequent projects – i.e. the North-South Expressway, Seremban-Port Dickson Expressway, North-South Expressway Central Link and Malaysia-Singapore Second Link were all awarded to the UEM Group. Although the awarding of contracts to the Malay businessmen and entrepreneurs was contended by some as practicing '*cronyism*' (Adam et al. 1992, Tsuruoka 1993, Jomo 1995), the argument of incompetencies of the Malay corporations is rather questionable on two grounds. Firstly, the UEM group managed to secure a number of big projects of constructing highways in other countries namely India and Qatar. It was reported that the group was involved in five highway packages in India covering 352.2km and valued at RM1.05 billion (Utusan Malaysia 21 February 2003) as well as in Qatar, where the group won RM903.7 million deal to build a 81-km highway in Qatar (Utusan Malaysia 24 October 2003). Secondly, the highways built by the UEM group are safe (at least at the time of writing) to be used by the highway users, which serve as an evidence of the group's competency in highway construction. However, coming back to the competency issue, it is not clear from the newspaper report as to how the deals to construct the highways were secured by the UEM Group; particularly as the awarding of the contracts can also be seen as 'government to government' deal. If the projects were secured through open, competitive bidding, it can to a certain extent be used as a benchmark of the group's competitiveness internationally.

Although the Malaysian government has intended to '*reduce its presence in the economy*' (Economic Planning Unit (EPU) 1991), the presence of the government in the country's economic sector still persists through participation of its main investment instrument, PNB in three highway projects (Ampang-Kuala Lumpur elevated highway through its wholly-owned subsidiary; Projek Lintasan Kota Holdings Sdn Bhd, Guthrie Corridor Expressway through its subsidiary; Kumpulan Guthrie Berhad, and Shah Alam Expressway through its wholly-owned subsidiary; Percon Corporation Sdn Bhd who invests 20% in its associate company,

KESAS Holdings Berhad. However, the 'government's dominance'<sup>4</sup> over tolled highways and bridges projects do not extend to the stage of 'monopolizing' the infrastructure provision sector. This can be observed from the list of highways and their year of completion (Please refer to Table 1 and 2 as well as Figures 1 to 7). After the Malaysia-Singapore Second Link project, subsequent projects were awarded to companies outside the UEM group. However, this observation is based on the limited information obtained from the company's annual reports, documents filed at the Companies Commission of Malaysia and the information available on the Malaysian Highway Authority web site.

As the UEM group is now expanding their operations overseas, it can be inferred that the Malaysian Government is trying to encourage the *Bumiputera* participation in the country's economic activities through provision of infrastructure by awarding major projects in the early phases of Privatization Policy implementation to companies that have close ties with the government. The desire to increase the indigenous people in the economic sector has most probably caused the awarding of contracts to be 'less transparent,' (Yaacob and Naidu 1997). Coming back to the issue above, it could be that only after feeling confident of the capabilities of the *Bumiputera* Corporation to compete internationally that the Malaysian government began to award the contracts to other companies outside the UEM group. It can also be seen from the information gathered that the government's policy to encourage the *Bumiputera*'s participation in the economy is not coupled with strategies to suppress business opportunities to the *Non-Bumiputeras*. The *Non-Bumiputeras* are still being offered the opportunities, with more opportunities, however, are being opened to the *Bumiputera*. (As can be seen from the Sungai Besi and New Pantai Expressway that are being granted to Road Builder (M) Berhad of whom a *non-bumiputera* has substantial shareholding in the company). The participation of *Bumiputera* in the tolled highway in this instance is not only seen as individual participation but also collectively. The existence of the *Bumiputera* Investment Trust Fund helps to enhance active participation of the *Bumiputeras* in the economy. This is reflected in Figure 5 and 3 respectively where Amanah Raya Nominees (Tempatan) Sdn Bhd (*Bumiputera* Investment Trust Fund) has 34.43% shareholding in MMC and 22.64% in Kumpulan Guthrie Berhad respectively.

## Conclusion

The Malaysian tolled highways appear to play a significant role in the country's socio-economic and socio-political arena. The *Bumiputera*'s participation in the economy is enhanced and encouraged by two means – namely through awarding of contracts to *Bumiputera* entrepreneurs and placing investments from the *Bumiputera* Investment Trust Fund in concession companies. Although these measures appear to be successful in narrowing the income gap between the *Bumiputeras* and the Chinese, it is questionable whether the approaches will continue to be effective in the long run particularly because the tolled highways constitute a demand which can be perceived as 'government induced' instead of being publicly led and created. Nevertheless, the tolled highways have turned into a platform for the *Bumiputera* controlled companies to extend their operations overseas. In this sense, it can be seen that the government has indeed taken the right approach in building the capabilities and competencies of the *Bumiputera* companies in order for them to be able to compete globally. What is apparent from this study is the fact that although the government seeks to reduce its financial and administrative burden through privatisation exercise, the

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<sup>4</sup> This term is used in this case since there were in total five projects that were awarded to UEM group of which the Malay ruling party; UMNO has interests and the awarding of three other projects that were directly or indirectly linked to Permodalan Nasional Berhad; which is one of the Malaysian Government investment instrument whereby the Malaysia Prime Minister is one of the members of the corporation's Board of Trustees.

government's involvement and presence continues to play a significant role in Malaysian tolled highway projects.

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# **A study about the Role of the Internet Digital Arts' works in Formulating a New Communication Models in the Internet**

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## **Motivation and Theoretical Context**

### **1.0 Motivation:**

My motivation for this research stemmed originally from my first degree; Mass communication and Public relation and my second degree; MA Interactive Multimedia.

When I studied the common 'Communication Theory and Models' in my first degree I was concerned about how the models as a construction of symbols and laws could represent analogies of the communication process flow. My concerns have increased when I studied the master degree; wherein I identified the new digital Media arts, with all its new fundamentals. Moreover, I identified the new concepts for the interactivity, originality and creativity. I tried to understand the entire world of new media from the communication and interaction prospective, I was keen to analyse the interaction process between the user and the new media arts, by applying the communication models with its traditional elements (sender, receiver, channel, message and feedback).

I was particularly enthusiastic about the internet digital arts as a part of the new media world; I found the situation for this kind of new media arts more complicated in relation to the communication process, due to the internet's unique characteristics as a communication medium.

In this prospective, I am specifically interested in investigating the appreciated communication models (analogies) for the interaction process with the internet digital arts. In the direction of exploring how the Internet digital arts' works formulate new communication patterns, which result in a new communication models. Which I believe could eventually reshape the communication patterns within the internet.

### **1.1 Historical and Theoretical Context**

#### ***The Internet Digital Arts: The History***

The Author noticed through her reading that, there are very little sources talking about the internet Art's history. It might be because this kind of art is very new comparing to the other kinds of arts. As Green (2000) pointed out that the term 'Net Art'<sup>1</sup> is stems from December 1995, when 'Vuk Cosic'<sup>2</sup>, received anonymous e-mail mangled in transmission. And among a morass of alphanumeric gibberish, Cosic could make out just one legible term 'Net Art' which he began using to talk about on line art, afterwards, the term spreading quickly among Internet communities.

According to Green (2004) the history of internet art is rooted even before this period, she has summarised the history of internet art in a time line that started from 1991.

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<sup>1</sup> Net art refers to internet art or on line art, however it is not preferable because 'this term has become associated with a small group of early practitioners and a particular style, and can not be applied to online art as a whole' (Stallabrass 2003: 11).

<sup>2</sup> Vuk Cosic: one of the Internet arts' pioneers (Stallabrass 2003).

<b>Time</b>	<b>The Emergence and Development of internet art</b>
<b>1991</b>	<b>THE THING</b> begins as a BBS; VNS Matrix is formed and publishes the cyberfeminist Manifesto
<b>1993</b>	<b>First Next 5 Minutes</b> conference is held in Amsterdam.
<b>1994</b>	<b>First Web Sites by Net Artist</b> (including Antonio Muntadas, Alexei shulgin and Heath Bunting) start to emerge ; ada' web is founded.
<b>1995</b>	<b>DIA Centre</b> in New York commissions web projects by Artists.
<b>1996</b>	<b>Net Art Per Se'</b> meeting in Trieste marks the use of the term ' <b>net art</b> ' coined by Vuk Cosic. -Rihizon.org launched ;'can you digit?' exhibition at postmasters Gallery -New York; Exposing Now here, Louisiana Museum of Modern Art.
<b>1997</b>	<b>Marko Peljhan</b> debuts his research station Makrolab at 'Document X' in Kassel, which also holds the first cyber feminist international meeting . - ZKM opens in Karlsruhe, Germany. - 'Beauty and the East' conference held in Ljubljana, Slovenia. - Microsoft's Internet Explorer is launched - 'ABC of Tactical Media' published by Greet Lovink and David Garcia
<b>1998</b>	<b>'Relational Aesthetics'</b> is published by Nicholas Bourriaud -The first International browser take place.
<b>1999</b>	- <b>'Net condition'</b> exhibition at ZKM. -The Volume of email exceeds that of standard mail for the first time.
<b>2000</b>	- <b>Tate</b> (Britain) commissions two internet artworks for its website -Over thirty millions registered websites.
<b>2001</b>	- <b>' The language of New media'</b> by Lev Manovich - 'Vuc Cosic' represents Slovenia at the Venice Biennale - Wolfgang Staehle's installation at postmasters gallery, doubles as inadvertent journalism when it documents the terrorist attacks on Manhattan.
<b>2002-2003</b>	- <b>'Runme.org'</b> Software Art repository founded. - 'Kingdom of Piracy' exhibition.

### **Internet Art: Definition and concept**

Internet Art has been defining in many ways with varying emphasis on different aspects of internet as a singular unique medium. Some Focused on the Internet Art as a special environment. As Colman (2004) defined the internet art as a 'form of art that is created particularly with and for the online environment. Some focused on the Internet not as a medium, but as (Transmission system) for data that simulates reproductive media' (Stallabrass 2003: 12).

Moreover, Green (2000) described the internet art with emphasis the internet as a medium and beyond the Art's visual elements, 'Net Art meant online Detournements, discourse instead of singular texts or image, define more by links, e-mail, and exchange than by any optical aesthetic' (Green 2000: 162).

The Author's point of view is that the internet art as a concept should be always consider the internet unique characteristics, However, the consideration here should not be for the internet as a medium that represent the art in a new form only, but rather a medium that re-shape the art in the first place. As Wilson (2002) asserted that, the internet art does not mean taking the gallery's walls, and converting it in to something the computer, can digits, and afterwards, making it accessible via the net.

Also, Wilson (2002) considers the 'Connectivity' as the most remarkable characteristic for the internet; the net connects computers, people, sensors, telephone..., and just about anything together in the global network. In addition, Wilson (2002) added that any art, which is stable, finished, not growing and unchanging, is not considering as internet art. Instead of this, he defined the internet as a form of art that: 'Reflect, stimulate and improve the connectivity that represent from it and thrive on it and that need the net in order to be able to exist' (Wilson 2002).

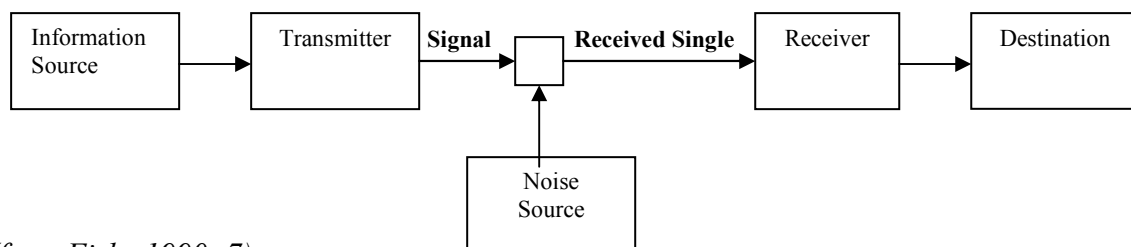
### **Communication Models: History**

The history of communication science research began with the development in the domain of psychology and sociology, after the Second world war-1945, particularly; it was possibly first discuses in the united state (McQuail and Windahl 1993).

The first communication model was in 1949, The Shanon and Weaver's model; this model was developed by mathematicians. They worked in the Bell Telephone laboratories in the USA. They produce this model in order to solve a problem of how to send a maximum amount of information along a given channel and how to measure the capacity of any one channel to carry information.

They contracted the model in a linear simple process, and it has attracted many critics. But they claim that their model is widely applicable over the whole question of human communication Fiske (1990).

### **Shanon and weaver's model of communication-1949:**



*(from Fiske 1990: 7)*

In the 1950s, the communication model activity was productive, which can be considering as enlargement and unity in the study of communication McQuail and Windahl (1993).

During 1960s and 1970s, the focus of communication research in interest tended to shift away from question of straight effect of mass media on opinion, attitudes and behavior.

Instead, the major attention was paid to longer term and indirect Social effect, which depend on the relative degree of attention to aspects McQuail and Windahl (1993).

In between 1970s and 1980s, in this period a strong growth of critical theory kept alive the insight that mass media are not simply a channel of social influence and it is more likely to increase the benefit of those with most economic and political power (McQuail and Windahl 1993).

In future development, McQuail and Windahl (1993) asserted that it's hard to forecast the future of model's building, because of the rapidly changing, however they predict the following changes in the coming decade:

- Changing balance of communication flows.
- Increasing of the inter-relation, between different kinds of communication, which will increase the attraction of any single comprehensive communication model.

### **The Communication Models: Definition and Concept**

In the first place, the author will represent the definition of communication, as it is the basic contents of the communication models. Then she will represent the definition of the models.

The word 'Communication' could be defined as: 'the transmission of information, ideas, attitudes, or emotion from one person or group to another (or others) primarily through symbols' (Theodorson and Theodorson 1969 in McQuail and Windahl 1993). However, the author thinks that the word 'Communication' not only stands for human activities as the previous definition, but it also includes the human activities with the machine or the technology's tools, like the human interaction with computers and the internet world.

Another definition could represent the word 'Communication' in more comprehensive manner as; wherever one system, a source, influences another, the destination, by manipulation or alternative symbols, which can be transmitted over the channel connecting them (Osgood et al. 1957 in McQuail and Windahl 1993). We could notice here that Osgood (1957) said 'wherever one system, a source' which means that his definition includes anything that could be represent as a system or a source, wither it is machine, human or any thing else. However, this definition lacks the 'feedback' concept in the communication process.

However, in the general terms, the author's point of view tend to consider McQuail's definition (2000) as the most comprehensive one, as he considered the term 'communication' as a term which could refers to different meanings but the central idea is the process of increased commonality or sharing participants, on the basis of sending and receiving messages.

He also clarified, that there is theoretical disagreement exists about whether we should count as communication the transmission or expression of some message, on its own with out evidence of reception or effect or completion of a series, therefore he assured that the most important prospective of communication concern are two points:

1. The degree of response or feedback.
2. The degree in which a communication relationship is also a social relationship



There are two main Schools in the study of communication; the author will represent them in summarised pattern using the (Fiske 1990: 2-4) as the following:

<b>Semiotic School</b>	<b>Process School</b>
Communication: is the exchange of meaning.	Communication: is the Transmission of messages.
Concerned about: <ul style="list-style-type: none"> <li>▪ How messages or text interact with people in order to produce meaning.</li> <li>▪ The roles of texts in our culture.</li> </ul>	Concerned about: <ul style="list-style-type: none"> <li>▪ How sender and receiver encode and decode.</li> <li>▪ How transmitters use the channel and Media of communication.</li> <li>▪ Matter like efficiency and accuracy.</li> </ul>
Consider communication is a study of text and culture, and the main method of study is semiotics (Science of signs and meaning).	Consider communication as a process by which one person affects the behaviour or state of mind of another
Does not consider misunderstanding to be necessarily evidence of communication failure, they may result from cultural differences between the (sender and receiver).	If the effect is different from or smaller than that which was intended, this School tends to talk in terms of communication frailer and to look at the stages in the process to find where the failure accrued.
<ul style="list-style-type: none"> <li>▪ Tends to draw upon linguistics and arts subjects.</li> <li>▪ Tends to address itself to work of communication.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Tends to draw upon the Social science, Psychology and Sociology.</li> <li>▪ Tends to address itself to work of communication.</li> </ul>
Defines social interaction that which constitute the individual as a member of particular culture or society.	Defines social interaction as the process by which one person relates to other, involves the behaviour, state of mind or emotional response of another.
Messages is a construction of signs, which through interacting with the receiver , produce meaning	Messages as that which transmitted by the communication process. Or what the sender puts in to by whatever means.

<p>The sender defines as transmitter of the message, declines in importance. The emphasis shifts to the text and how it is read.</p>	<p>The sender intention may be stated or instated, conscious or unconscious but must be retrievable by analyse.</p>
<p>Semiotics School classical Models:</p> <ul style="list-style-type: none"> <li>• Peirce’s Model (1931)</li> <li>• Ogden and Richards Model (1923)</li> <li>• Saussure’s Model.</li> </ul>	<p>Process School classical Models:</p> <ul style="list-style-type: none"> <li>• Shanon and weaver’s (1949)</li> <li>• Gerbner’s Model (1956)</li> <li>• Lasswell’s Model (1948)</li> <li>• Newcomb’s Model (1953)</li> <li>• WestlyandMaclean’s Model (1957)</li> <li>• Jakobson’s Model (1960)</li> </ul>

In relation of, the word ‘models’ this word could be defined as; ‘Simplified description in graphic form of a piece of reality’ (McQuail and Windahl 1993: 2). This definition is considering the simplicity and the strength of the models, as the model could be a graphic form, which anybody could have drawn. However, it should be drawn with a very hard condition; ‘the model should represent the reality’.

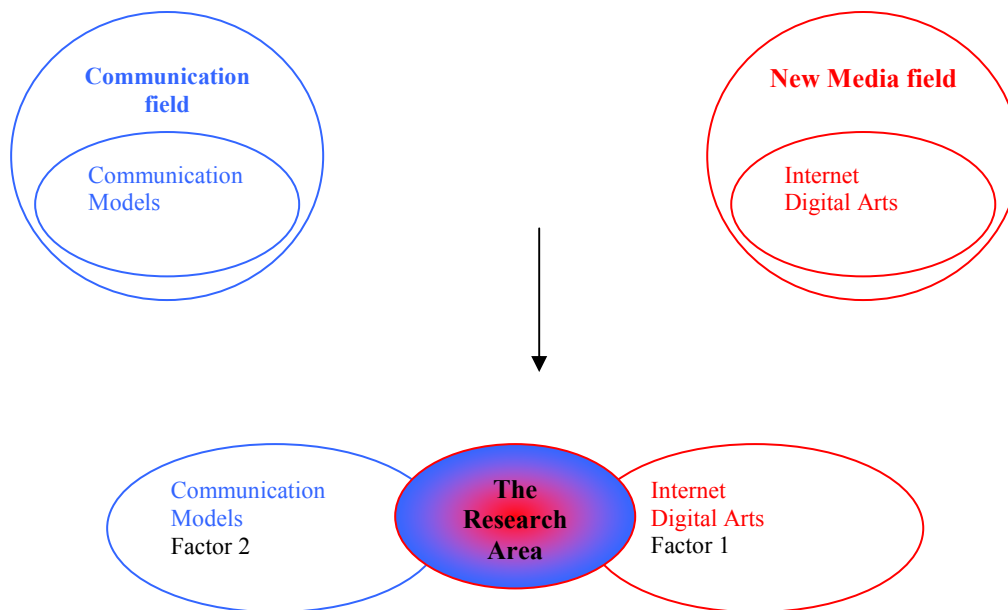
In addition, from that perspective, The Author would like to present the importance for constructing a model for any piece of reality as McQuail and Windahl’s (1993) summarised the models uses according to Deutsh (1966): Firstly, the models have an organizing function by ordering and relating every element to each other and providing us with images of wholes that we might not otherwise perceive. Secondly, it helps in explaining the information, by presenting it in simple manner, which would otherwise be complicated. In this sense particularly, McQuail and Windahl’s (1993) pointed out that it gives the model a heuristic function, since it guide the researcher to key points of a process or system. Thirdly, the models enable forecasting outcomes or the course of events, or at least be a foundation for assigning probability to a various alternative outcomes as McQuail and Windahl’s (1993) commented.

The Author thinks building models is crucial to understand the communication process, as McQuail and Windahl’s (1993) considered the communication as a compulsory power in social relationships without at the same time being visible or having tangible or permanent forms, therefore models is especially appropriate in the study of communication.

### Research Hypothesis

The author is concerned with investigating the communication models that could represent analogies for the interaction process with the internet digital arts. In this sense, the author’s research encompassed two major factors: The communication models and the internet digital arts, which means that the research area situated in two different fields:

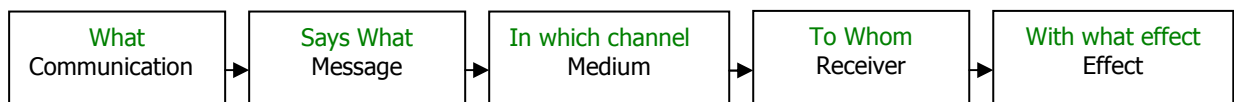
- The Communication field > communication models(factor 1)
- The New Media field > The Internet digital arts(factor 2)



The Research main factors definitions as following:

**Communication Model:** refers to an analogy or a diagram that could explain the communication process in a particular situation.

Example: A linear model of communication.



*Laswell's Formula quoted from McQuail and Windahl 1993: 14.*

**Internet digital Arts:** refers to a digital art's form, which uses the internet as its primary medium (channel) to present the work, taking advantage of the internet special characteristics.

Examples: artistic internet software, internet based or net work installation, on line video and performance offline.

The aim of this research is to investigate the characteristics of communication process for interaction with the internet digital arts in terms of communication process. The author would like to explore through her research, the of the participant's experiences when they interact with the internet digital art works, from the prospective of communication process. In other words, how would the elements of communication process (sender, receiver, message, channel, feedback) arranged and related within the interaction process with the internet digital art works.

The Research central question is the following: 'The emulation and experimentation of communication in the internet by internet digital artists' works, that results in new and unexpected communication paradigms; What are the communication models that describe this new dynamic communication process for Internet digital arts works?'

More decisively, what are the appropriate analogies that define unexpected creative hybrid models of communication?

This PhD inquiry is broken down into the following analytical sub questions:

The Research minor questions:

1. How the artist (sender) thinks of the Audience's (receiver) responses (feedback) toward the internet art's work?
2. How the artist (sender) thinks of the medium, potentials 'the internet' (channel) in represent his work?
3. How the artist (sender) thinks of his work? What is his intention's (message)?
4. How the audience (Receiver) thinks of the internet art's work (the message)?
5. How the audience (receiver) thinks of the artist (The sender)?
6. How the audience (receiver) understand of the effectiveness of the 'internet' (The channel) in their interaction with the work?

In view of these inquiries the research main objectives as follows:

1. Evaluate the relationship between the artist (sender) and the
  - The audience (receiver) and their (feedback)
  - The internet (channel)
  - The internet digital art's work (message)
2. Evaluate the relationship between the Audience (receiver) and the
  - The artist (sender)
  - The internet (channel)
  - The internet digital art's work (message)
3. Evaluate the characteristics of the communication process interaction with the internet digital art's work. In order to construct the communication models diagrams.

The original contribution of this study is based on the key role that the internet, performs as an efficient and stable network for thousands of effective workers around the world and the role of the internet digital arts, particularly, in reshaping the way that the user communicate with the internet. This study drives its importance from its role in establishing a new and deep understanding for the dynamic of communication process for the internet digital arts' work; which will effectively contribute to achieve the following:

- Draw several appreciated models that explain the dynamic of communication process for the internet digital arts, which will contribute to the development of the internet digital arts field as well as communication research field. In his argument regarding communication and technology. McQuail (2003), Stressed that there is a need to an interactive, ritual or user determined model, and he added that at present, there are not vary sufficient paradigms of theory or research for investigating probable changes in the way new media are practised.
- Assist organisations, through these models, to enhance their communication strategies and develop their websites, their internet software and the internet art installation. Also, any kind of art production that involved the internet

As Morris and Ogan (1996) pointed out that, in searching for theories to apply in a group Software system, researchers in (Management Information System) MIS, have recognised that communication studies needed new theoretical models: 'the emergence of new technologies such as GSS (Group Support System Software) that allows group decision making, which combine aspects of both interpersonal interaction and mass media, presents something of a challenge to communication theory. With new technologies, the line between

various contexts begins to blur, and it is unclear that models based on mass media or face to face contact are adequate’ (Pool and Jackson 1993: 282 in Morris and Ogan 1996).

- Due to the lack of the internet studies in mass communication field; that have disregarded focusing on the internet as a mass medium and have ignored its flows of communication. The author hoped that these models would assist filling that theoretical gap. As Morris and Ogan (1996) asserted, ‘If mass communications researchers continue to largely disregard the research potential of the Internet, their theories about communication will become less useful. Not only will the discipline be left behind, it will also miss an opportunity to explore and rethink answers to some of the central questions of mass communications research, questions that go to the heart of the model of source-message-receiver with which the field has struggled’ (Morris and Ogan 1996: 1).

In addition, McQuail (2003) pointed out that too little research has been done to achieve any firm conclusion regarding the fundamental characteristics of the internet as a medium.

### **The Rationale for the Proposed Methodology**

The research methodology based on the Case study methodology. The author has chosen this methodology after comparing between different kinds of methodologies. Every kind of these strategies has its own logic. In addition, each one has its own advantages and disadvantages (limitations). Therefore, the author will represent the following differences between the main methodologies in arts and humanities sector, in order to understand the author’s reasons to select the case study methodology particularly for her research.

<b>Case Study</b>	<b>Grounded Theory</b>	<b>Ethnography</b>	<b>Phenomenology</b>
‘A Research strategy focusing in the study of single cases .The case can be individual, person, an institution’ (Robson 2002: 545).	‘An inductive methodology developed by Glaser and Strauss used to generate theory through the systematic and simultaneous process of data collection and analysis’ (Goulding 2002: 170).	‘An approach to the description and understanding of the life and customs of people living in various cultures’ (Robson 2002: 546).  ‘The study of social life that focuses on the discovery of implicit, usually unspoken assumptions and agreements...’ (Babbie 2004: 290).	‘A theoretical perspective advocating the study of direct experience taken at face value .It sees behaviour as determined by the phenomena of experience, rather than by external, objective and physically described reality’ (Robson 2002: 550).

It is clear from the table that the Grounded theory strategy is about developing or discovering a theory based on systematic data and the author’s research main aim is not discover or develop a theory.

In the Ethnography strategy, the focus is about life and customs of people living in diverse cultures, however, the author's intentions for this research is to investigate the characteristics of communication process for interaction with the internet digital arts. Despite of the user's culture and focusing in to the common characteristics of the communication type for the user without taking the prospective of culture (which might be a topic for the author's future studies).

In the Phenomenology, it sees behaviour as determined by phenomena of experience, therefore the behaviour resolved by a phenomenon in this strategy is the central point, and however, the Author's research does not based on a specific phenomenon. In view of these results, the author chose the case study methodology as it is the most applicable research methodology for the research question. As the case study methodology enable the author with the flexibility to choose her research case studies based in the research context and the case study affords an enormous amount of description and details. In addition, this amount of details suggests many future research questions to follow up in future studies

The author conducted a pilot study in her research. In order to refine the data collection plan (Yin 2003). The pilot case study was the 'Story Room' Exhibition, which take place in October 2005 in Manchester. The Exhibition encompassed interactive network, Media arts, and Internet art's installation included the offline and online works.

The research will consist of seven case studies; every one of them will reflect a different angle of Internet digital arts, which will enable the author to compare between them to have rich, clear and more comprehensive results. 'Using multi cases can be considered advantages in that the evidence can be more compelling' (Burns 2000: 464).

The criteria of choosing these internet digital art's works as case studies is based on the purposive or criterion –based sampling; 'case is selected because it serves the real purpose and objectives of the researcher of discovering, gaining insight and understanding into a particularly chosen phenomena' (Burns 2000: 465).

The research case studies are:

- **TerraVision** (1994) >>> the prototype of googel earth; communication with the places
- **The pleasure of Text**-1983 >> text based chatting, communication through text.
- **Van Gogh TV**-Piazza Virtual, 1993, (Karel Dudesek) >> interactive TV on line
- **The Living Web** (2002) >> the interaction physically with the 3D internet location
- **Vectorial Elevation**(1999)>> participate through distance and share a live global events
- **Telematic Dreaming**-1992 >> intimate personal communication through distance
- **Avatars**-1996 >> **digital society in the Cyberspace**

As for the research methods, the author will apply the main techniques in the case study methodology: The observation, the In-depth interview and the questionnaire, all of the same techniques for all the four case studies.

<b>The Research Techniques</b>	<b>The purpose</b>
<b>In-depth interviews</b>	<p>Carry out an in-depth interview with the artists (each artist for each case study's work) (the senders), in order to investigate their work's intentions (the messages), also how are they as (senders) think of their Audience (receivers). And how the artist employ the characteristics and the potentials of the medium' the internet' (channel) to serve his or her Art's work performance.</p> <p>These result will shed the light over the first part of the communication process:</p> <p><b>Sender</b> _____ → <b>Message</b>  (the sender's understanding of the receiver) (sender's intentions)</p> <p><b>Sender</b> _____ → <b>Message</b>  (the sender's understanding of the channel potentials) <b>channel (the internet)</b></p>
<b>Observation</b>	<p>The author will observe the audience responses and behaviours towards the internet art's work by using the video recording technique, either by observe the audience (the receivers) in the internet art exhibition(off line installation) or by observe the audience navigation in their participation with the internet art's works (on line works).</p> <p>In order to observe their responses (feedback) and their communication pattern to interact with digital art's work, inside the internet medium (channel).</p> <p><b>Receiver</b> _____ → <b>Message</b>  (Receiver's responses noticed by the Author of their interaction with the art work) their (feedback)</p> <p><b>Receiver</b> _____ → <b>Message</b>  (Receiver's responses noticed by the Author for their interaction with the work through the medium (internet)) <b>channel (the internet)</b> their (feedback)</p>

<b>Questionnaire</b>	<p>The author will make online questionnaire for each case study, in order to draw insights about the audience understanding of the art's work (the message) in their point of view, their (feedback)</p> <p><b>Receiver</b> —————→ <b>Message</b>  (Receiver's opinions noticed by themselves)      <b>channel (the internet)</b>  (feedback)</p>
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The author will be able to compare between the actual audience's (the receiver) responses towards the art's work (the message) taking into account the effect of the internet (the channel), and the artist (sender) understanding of the audience (receiver) in terms of their response towards the digital art's work, and their communication pattern with the internet (the channel).

Moreover, the author will be eligible to compare between the author's notes of the audience (receivers) behaviours or response towards the art's work and the audience actual opinions .In the other words, the author will be able to compare between what she has noticed about the audience (receiver) responses and what the audience (receiver) think of their response (feedback).

**Receiver** —————→ **Message**  
(Receiver's responses noticed by the author)  
(Feedback)

**Receiver** —————→ **Message**  
(Receiver's opinions noticed by themselves)  
(Feedback)

Then, it is envisaged that the author will be able to construct a complete communication model, which encompass the side of the artist (sender) and the side of the audience (receiver) and the message

At the end, the author will compare between the four case studies results in terms of the communication elements (Sender, Receiver, Channel, feedback and any new element that could be discover from the research outcomes).

Furthermore, how do these elements arrange and participated within the communication process for the user's interaction with the internet digital art works, which will enable the author to draw the communication models that describe the previous mentioned process. In addition, by achieving these issues the author will reach her research main aim.

**The Forword plan:**

**Research Cases: Stage 1** (1. 12. 2006 >> 1. 02. 2007)

The Author conducted a briefed focused questionnaire; consist of two questions, and then she correspond it using the e-mail to a large group of the digital media arts pioneers'; about forty Artists. The aim of this questionnaire is to get insights about how the artists evaluate their



works and the other artist works', in order to get their perception of the arts works' that they consider as precursor of today's network culture as well as the arts works that they think it had a major influence or recurrence as a mass media model on the current Internet, which will help the author afterwards by enlighten her of the art works that hold a high and rich potential to be a suitable case study for her research. The questionnaire's questions were like the following:

1. As one of the pioneers of digital media arts in what ways do you consider you work as a precursor of today's network culture?
2. Are there any particular works by yourself or any other artists that have had a major influence or recurrence as a mass media model on the current Internet?

The researcher starts that questionnaire from 1.12.2006, and she waited for two months 'till 1.2.2007, at the end she received (17) valid responses.

### **Research Cases: Stage 2 (14. 02. 2007 >> 31 .05. 2007)**

#### ***Observation and Questionnaire:***

And based on these results the researcher decided that her research will consist of a web site which represents a multi case studies; every one of them will reflect a different angle of Internet digital arts, 'Using multi cases can be considered advantages in that the evidence can be more compelling' (Burns 2000: 464).

The user will explore the different Art works by navigating to their websites by the hyper links, then the researcher will observe them via video recording, while they are navigating the different art works, afterwards the participants should complete the online questionnaire about each art work. This method will help the researcher to answer the following Questions:

- How the audience thinks of the internet art's work?
- How the audience thinks of the artist?
- How the audiences understand the effectiveness of the 'internet' in their interaction with the work?

### **Research Cases: Stage 3 (1. 5. 2007 >> 1. 06. 2007)**

#### **In-depth interviews:**

The researcher will collect the results of the Observation and the Questionnaire for every case and arrange an interview with the artist to discuss the result with them. This method will help the researcher to answer the following Questions:

- How the artist thinks of the internet' potentials in represent his work?
- How the artist thinks of his work? What are his intentions?
- How the artist thinks of the Audience's responses toward the internet art's work?

#### **Things that need to be sorted out:**

- On line Interview
- view or face to face Interview
- Structured Interview or semi Structured Interview

### **Research Cases: Stage 4 (1. 06. 2007 >> 1. 08. 2007)**

Compare the questionnaire's results with the observation and the interview's results. And according to these results, the author will make the necessary modification for the initial models. This afterwards will be considered as the research's final finding. And the researcher will be able to answer the research main Question, which is like the following:

*What are the communication models that describe this new dynamic communication process for Internet digital arts works?*

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# **Women Leaders in Bahraini Organisations**

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### **1. The Research Framework**

#### **1.0 Motivation**

My motivation for undertaking this research came originally from my first degree; Communication and Public Relations and my second degree; MA in Public Relations.

When I studied the different aspects of communication and public relations theories and practice in my first degree, I was concerned about the relationships between employees in different levels of an organisation. My interest increased when I studied my master degree; where I learnt about the concept of leadership and the role of women as leaders within organisations. I tried to understand the roll of public relations and communication from the perspective of women as leaders, and their relationships with employees. I was particularly keen to analyse the different styles of women leadership in the kingdom of Bahrain and became enthusiastic about the aspects of women leadership styles as part of the current scholars' concerns in the leadership field.

In light of this, I am specifically interested in investigating the leadership styles that are practiced by Bahraini women. Which I believe will enhance perspectives in the field of leadership.

#### **1.1 Introduction**

The competition between organisations, the rapid technological changes and the increasing demands for quality, and changes in culture and society make it essential that today's organisations struggle to be better than their competitors. An effective leadership is thus important to succeed in such environment. This means that leaders are responsible of the organisation vision and make crucial decisions. Leaders also have a major role in influencing the mind of their employees. Most importantly, leaders articulate goals and join them in pursuit of objectives. However, employees and the culture of which organisations are taking place within are factors that need to be taken into consideration. In other words, the increase of the globalisations highlights an increasing need to change the way of management functions, makes the leader's task more demanding.

There is a lack of women leadership studies in Bahrain. The present study addresses this gap. This study investigates women leadership styles adopted by women top-managers in a Middle Eastern country such as the kingdom of Bahrain, which has different cultures and values compared to Western countries. Two organisations that are directed by women mangers, situated in Bahrain, were approached and asked to participate in the qualitative surveys.

Qualitative research method was used in gathering the data. Questionnaires were distributes to participating organisations, and the interviews were conducted with women top-managers. The Multifactor Leadership Questionnaire (MLQ) that had been used by a considerable number of researchers from Western countries was used as an instrument to gather feedback from the participating respondents.

Considering many factors like the various level of employees' education and any ambiguities that might arise from the respondents, I chose the Arabic version of the questionnaire. The semi-structured interviews' questions were formulated based on the literature findings and in accordance to the research objectives. A pilot study was carried out among practicing managers and their employees in Bahrain. Ambiguities on the questionnaire and interview based on the pilot study were sorted out.

The goals behind the employed methods is to determine what leadership styles are practiced by women top-managers in Bahraini organisations and to identify the cultural influences that might influence Bahraini top-managers adopt a specific leadership style. The employed methods were also sought to determine leader-followers relationship.

The returned questionnaires and obtained answers from the interviews have been initially analysed and formulated to give meaning to its interpretation. The hypothesis will then be tested and conclusions will be drawn from the derived data.

Literature research was conducted in order to assess the importance of the topic and to establish the relevancy of the topic to the kingdom of Bahrain.

It is hoped that the answers derived from the analysis will be important to the Bahraini organisations enabling them to determine appropriate leadership styles, and determine the necessary conditions to establish an efficient leadership style. This could help to boost employees' performance and thus contribute significantly to the overall organisation's productivity.

This report summaries my research hypothesis, main question and the used methodology to attain my research's objectives and their initial results, which can enrich an understanding of the role of women top-managers in the study of leadership in the context of Bahrain. I briefly reviewed some of the earlier studies with reference to the different approaches towards women leadership, and how each reveals a different facet in understanding the different approaches towards women leadership; demonstrate the frequent used research methods in leadership field in general and in women leadership in particular. Then, I identify the methodology and methods I used to answer the research main and minor questions and the justification behind my selection. Finally, I point to the initial results of my study and illustrate its validation and reliability.

## **1.2 Historical and Theoretical Context (A Brief Literature Review)**

The core idea of my research emerged from the urgent need to explore women leadership styles in eastern context and precisely in the Bahraini context as no research have been done on this specific topic, which make my research originally contribute to fill a research gap in the literature of women leadership. I believe it is important, therefore, to briefly present but hopefully a comprehensive overview of the historical and theoretical foundation of women leadership literature and the role that cultural context, in which leadership take place might influence women leaders. It is hoped that the historical and theoretical context discussed in this report contribute to shad light on the critical calls for exploring women experience in leadership positions and the vital role of culture in shaping their leadership styles. Clarifying the history of women leadership studies, the concept of women leadership styles, and the role of the cultural context on women leadership would introduce the theoretical basics of my research.

### ***1.2.1 The history of women leadership studies***

Leadership has been studied over the years and received much attention by numerous researchers. The focus of such studies have included many aspects of leadership, such as, leadership style as one of the determinant factors in organisational effectiveness, and factors that influence the leadership process and enhance the effectiveness of leadership.

Although the movement of women into leadership roles has been evident through different decades occurring most significantly during World War One and World War Two and continuing throughout the twenty-first century, to a point where women have been competing, like men, for leadership roles and managerial positions (Smith 2000), early studies on leadership were conducted on male leaders, whereas the role of women leaders was neglected. This means that the results of early studies in leadership cannot be generalised to women leaders because these studies were conducted on male leaders neglecting to address the experience of women as leaders (Klenke 1996).

Chapman and Luthans (1975) attributed the lack of attention given to women leadership to the fact that women have traditionally been demoted to relatively nonleadership areas like nursing and teaching.

A recent view of point presented by Jogulu and Wood (2006) argue that the lack of women or feminine characteristics being included in the leadership theories between 1940s and 1980s is attributed to the implicit and explicit revision of leadership theories as a male prerogative, and the small numbers of women in management positions which confirms that the role of leadership was largely perceived as a male domain.

In the 1990s and subsequent years, studies on leadership have started to focus on the gender differences (e.g. Rosener 1990; Alvesson and Billing 2000; Yoder 2001; Eagly and Carli 2003; Ruderman and Ohlott 2004).

Fagenson (1990) argues that there have been three theoretical perspectives in researching the explanations behind the women's limited progression into the top-management; firstly the gender-centred perspective where methodology are commonly used to test the gender-centered notion that includes independent and dependent variables like sex and attitudinal measures. Secondly, organisation structure perspective where methodology are used to test organisation structure variables that might shape the women's progression within organisations. Finally, the gender-organisation-system (GOS) perspective where few studies have identify the characteristics of the individual, characteristics of the organisation context, and the characteristics of the social system in which they function. Fagenson (1990) encourages using the last perspective when studying women in management as it limits the biases that might yield from the outcomes.

Yet, much of the available studies on women managers came from research conducted either in the UK or the USA (Omer and Davidson, 2001); some studies have examined women leadership styles (e.g. Rosener 1990; Yoder 2001; Eagly and Carli 2003; Ruderman and Ohlott 2004), women leadership behaviours and effectiveness (e.g. Rosener 1990), the impact of women leadership style on followers' performance. In contrast, there are a limited numbers of research studies that have been done on women managers in Asia (Omer and Davidson 2001) and precisely in the Arab countries (Neal, Finlay and Tansey 2005) and the Gulf states (Al-Lamky 2007). However, so far, no studies about Bahraini women leadership styles within organisations have been undertaken.

Therefore, my research will be an original contribution to establish the foundation of future studies in women leadership in the kingdom of Bahrain.

### ***1.2.2 The concept of women leadership styles***

The concept of women leadership styles has been discussed in a number of studies (e.g. Rosener 1990; Alvesson and Billing 2000). These studies present a contrast in the ways that women lead and manage. The implication of these studies was that women exhibit a different style of leadership, to men, in order to contribute to organisational performance.

I noticed that there is no certain definition of women leadership styles. For this reason, the researchers have attempted to find a specific definition by conducting comparative studies between women and men leadership styles (e.g. Alvesson and Billing 2000). In other words, the results of such studies have defined women's leadership styles in relationship and contrast to that of men. For example;

Women, more than men, manifested relatively interpersonally oriented and democratic styles...the only difference obtained between female and male managers was that women adopted a somewhat more democratic (or participative style) and less autocratic (or directive) style than men did (Antonakis et al. 2004: 284).

Some researches have addressed female in contrast to male leadership styles principally across the three main dimensions of contemporary leadership (transformational, transactional, and laissez-faire). For example;

The behaviour of female leaders, compared with that of male leaders, may be more interpersonally oriented, democratic, and transformational. In contrast, the behaviour of male leaders, compared with that of female leaders, may be more task-oriented and autocratic (Eagly and Schmidt 2001: 787-788).

There have been attempts to explore women leadership styles as a concept that can be defined. However, these studies focus on the gender differences to men in order to make commentary about women leadership. For example, Rosener (1990) studied women leadership styles based on gender differences in leadership and found that women leadership style can be described as 'interactive leadership'. Rosener (1990) chose this term because women leaders tend to have positive interactions with their subordinates; they encourage participation, share power and information, enhance other people's self-worth, and energise others.

In contrast, a growing body of research has stressed the importance of profound studies of women leaders' experiences and situations, arguing that women leaders have specific experiences that essentially differ from the majority of male leaders (e.g. Bass and Stogdill 1990; Klenke 1996; Kark 2004). Some earlier scholars predicated that women leadership is gradually improving its significance to the work environment starting from the 1990s and beyond (Blumen 1992). Therefore, understanding of how women leaders' behaviours, experiences and styles contribution to organisational outcomes should be sought.

Accordingly, the intention of my study is not to address the differences between men and women in leadership styles, but rather to draw insights into women leaders in Bahraini

organisations. This study will contribute to new perceptions and dimensions of women leadership focused on the experience of women leaders in Bahrain.

### ***1.2.3 The role of the cultural context on women leadership***

The aim of considering the cultural context role on women leadership within the context of my study has emerged from considering the contribution of the broad areas of my study; culture and leadership to the specific areas; women leadership and Bahraini organisations. Moreover, to show some of the previous findings that emphasised the influence of cultural context on women leadership.

It is important to point out the role that context plays upon leadership. Although the influence of culture on women leadership is a minor point in my research, it represents an integral part of my research's theoretical context and plays a crucial in analysing the results my study as it might contribute to reveal the reasons behind adopting particular leadership styles. 'Context, in the most general sense of the word, refers to the setting on which leadership emerges and is exercised' (Klenke 1996: 18).

Empirical and conceptual studies on leadership have indicated that context is one of the main influences on leadership styles and organisational practice (e.g. Dorfman and Howell 1988; Hartog and Dickson 2004). 'Through greater attention to contexts, it may be possible to bring the field of leadership theory and research much closer to the needs and experiences of leaders' (Bryman et al. 1988: 25). 'Context influences what leaders must do and what they can do' (Klenke 1996: 18). The fundamental organisational concepts like control and participation of leadership do not necessarily have the same meanings in every cultural context (Smith and Peterson 1988; Hartog and Dickson 2004).

In western countries, it has always been found that women are faced with the conflict between the stereotypic expectations of them as women and the stereotypic expectations of them as leaders. For example, Blumen (1992) found that women leaders in USA are forced, due to cultural attitudes towards women, to resort to more typically masculine leadership strategies. The influence of the cultural context over women leadership has been discussed in several studies (e.g. Oman and Davidson 2001; Bass and Avolio 1994b; Klenke 1996).

In contrast, there are few studies, in Islamic countries, that have attempted to address the relationship between leadership and culture, and how leaders' behaviours might be regarded as legitimate and appropriate within their society (e.g. Shahin and Wright 2004). In the Gulf States, as Arabic and Muslim context, Arab scholars have paid little attention to the study of leadership and organisational practices in the Arabian Gulf cultural context, Bahrain is no exception. This was attributed to the difficulty of studying the linkages between cultural values and organisational behaviours (Abdalla and Al-Homoud 2001).

On the other hand, there are also few studies that have identified the role of women in Arab countries and the cultural barriers they might encounter them. These studies have mainly focus on the role of traditions in classifying women's roles within the society (e.g. Mostafa 2006), where it is widely believed that women's place is primarily at home, whereas leadership positions are typically reserved for men (e.g. Al-Lamky 2007).

Al-A'Ali (1990) studied what goes on in Bahraini organisations to result in the phenomenon of a few women reaching the top managerial positions. She interviewed male and female managers in different levels of managerial positions in a number of Bahraini organisations.

She found that the traditional sex role stereotypes within the Bahraini culture embedded women from reaching top managerial positions.

These studies have also concerned with the misconception about women's rights in attaining administrative positions. This misconception emerged from the misinterpretation of the Islamic rules towards women (e.g. Al-Lail 1996).

Al-Lamky (2007) argues that the inequity that women face in Muslim world should not be attributed to Islam, but rather to the traditions that existed. She also found that women leaders are challenged by the incongruence of their roles as female leaders relative to the prevailing social values and expectations towards women and their traditional role in society.

Al-Lail (2006) stresses that unlike the prevalent misconception of Islam toward women status, Islamic laws and regulations emphasise the importance of women in the society and provide a framework of values to ensure the objective role of women to maintain their contributions to society. For instance, women can do anything she likes in the line with Islamic ethical and moral obligation; such as educating and learning skills to acquire knowledge, attaining leadership positions and earning money.

The various western and eastern studies in women leadership, including the few studies on the Arabian Gulf States, have found that the cultural context, precisely the sex role stereotypes, has an influence on women leadership; they have commonly found that there is mismatch between the characteristics traditionally associated with being women and characteristics associated with being leaders (Kellerman and Rhode 2006). Klenke (1996) stresses the importance of cultural specificity and context in shaping women's leadership, both domestically and internationally.

It is really ironic that there was a believe that the changing cultural values concerning the role of women in society have contributed to enhance the important role that women play in leadership positions in different sectors (Chapman and Luthans 1975), regardless of the interactive leadership of women was found to be effective leadership (Rosener 1990) and the ability of connective leadership to boost the productivity of organisations (Blumen 1992), women are still suffering cultural barriers that effect their leadership styles (Bass and Stogdill 1990; Al-Lamky 2007). This means that cultural context has always affect women leadership either in away that make women leaders adopt masculine leadership to prove that they are qualified to be in leadership position, or in a way that make them reflect their feminine nature to result in interactive and connective leadership.

### **1.3 Research Area and Research Main Question**

This study will investigate women's leadership in Bahraini organisations. The main terms are defined according to my research's objectives as following;

Women Leadership: refers to leadership styles practiced by women within organisations they direct. Bahraini organisations: refers to organisations directed by Bahraini women and based in the kingdom of Bahrain.



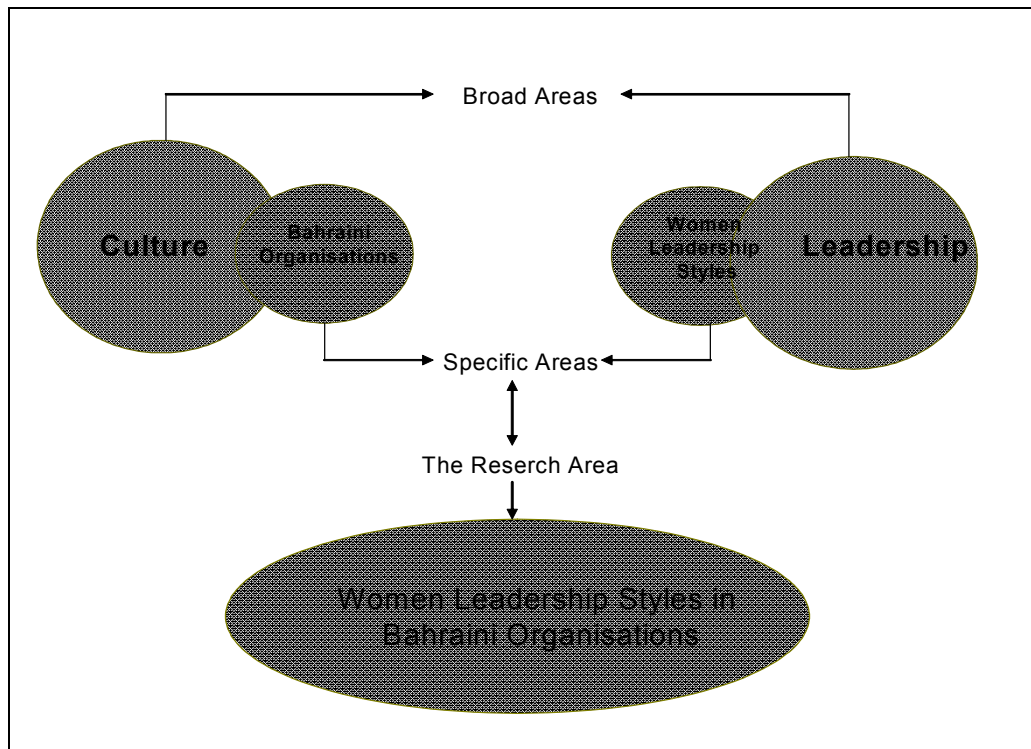


Figure 1.1. The Research Area

Based on Figure 1.1 the specific areas of my research; women leadership styles and Bahraini organisations are basically derived from two broad areas; culture and leadership.

It is envisaged that culture and leadership as broad areas would contributed to provide the theoretical guidance to women leadership styles and Bahraini organisations. In other words, incorporating broad areas with the specific areas would result in the research area that is women leadership styles in Bahraini organisations; allowed me to provide the theoretical and historical context of my research. It will also enable me to analyse the results of the in-depth interview and the Multifactor Leadership Questionnaire (MLQ) and hence explore leadership styles of Bahraini top-managers (main aim). Considering the broad areas contributed to shad light into the different relevant findings in women leadership with regard to the three dimensions of contemporary leadership (transformational, transactional, and laissez-faire leadership), and to address the significant of culture as a context of leadership, which may also identify the impact of Bahraini culture as a context of women leadership in establishing the practised leadership styles of Bahraini women top-managers.

Figure 1.1 makes it clear that the intention of my study is not to address the differences between men and women in leadership styles, but rather to draw insights into women leaders in Bahraini organisations. This study will contribute to new perceptions and dimensions of women leadership focused on the experience of women leaders in Bahrain.

Demonstrating the previous outcomes of researches in women leadership is considered vital in order to track the historical aspect of the researches and to provide the theoretical aspects necessary to introduce my research. Therefore, the aim of this research is to mainly study women leadership within Bahrain context and not to present a comparative study between Western and Eastern countries.

The main aspects of the work will involve addressing women's leadership styles and the Bahraini context. To do this, the research will adopt the leader-follower framework in order to address relationship between Bahraini women leaders, their followers and the situation of these relationships within the Bahraini context.

The main aim of the research is sub-divided into the following analytical questions;

1. What are the leadership styles practiced by women top-managers in Bahraini organisations?
2. How do women top-managers in Bahraini organisations define their leadership styles?
3. What are the followers' perceptions of their women top-managers leadership styles?
4. What are the pliable cultural influences behind adopting these styles?

#### **1.4 Research Objectives**

The research aims to provide an overall view of the theoretical concepts of women leadership and its importance. However, the main focus will be women leadership within Bahraini organisations, as little research has been done to provide knowledge on The Middle East countries. The availability of this data will enable the Bahraini organisations to have some knowledge about the appropriate conditions for women leadership as well as effective leader-follower relationship. The outcomes of the research will also contribute to highlight the cultural influences that make Bahraini women managers adopt a particular leadership style. Being a Bahraini woman makes me wish to make some academic contribution to Bahraini organisations that wish to develop their managerial strategies in order to achieve the desired goals, and also to organisations that want to make their environment more appropriate for women managers.

The new history of women leadership in the kingdom of Bahrain justifies an in-depth study on how organisations could be directed more effectively. Only one research has been found on Bahraini women; the aim of this study to address the causes that led to the absences of Bahraini women in top-management positions (Al-A'Ali 1990). However, no research has been conducted to investigate women leadership in Bahraini organisation and the interactions between culture and practiced leadership styles.

This research then will focus on the styles of leadership currently being practiced by women in Bahraini organisations. A literature review covering the various notions of women leadership is therefore needed to determine whether they can be applied to any country. It is believed that considering other cultures' experiences in leadership would make it possible to increase the understanding of management practices. This consideration could also enhance employees' performance and add value to organisations' production.

This study is an attempt to accomplish the following objectives:

1. Establish an understanding of the current thinking about women leadership styles. This understanding will help me to use it to provide the theoretical and historical context of the research.

2. Having considered the current approaches to women leadership styles in global terms, I attempted through the proposed methodology to answer the question; what are the leadership styles practiced by women managers in Bahraini organisations with regard to the three main dimensions of leadership; transformational, transactional, and Laissez-faire?
3. Examine the literature on cultural influences on leadership in order to explore the implications that culture might have on women styles of leadership within Bahraini society, therefore the second research question is what are the pliable cultural influences behind adopting the practiced styles of leadership of women managers?

The first and second questions were examined by conducting survey and in-depth interview with participating managers and employees in Bahrain. This enabled me to examine what actually is happening at the workplaces. With the results gained from the conducted methods the main and minor objectives are achieved that are exploring the practiced leadership styles by women, leader-followers relationship, and the cultural influences that are perceived by 'people in the organisation'.

Despite the differences between The Arabian Gulf States, the foundations of Arab culture, Islam (broadly defined), Arabic (as the civil language), family and tribe are common; as are region, and political system will thus assume for the sake of hypothesising that Bahrain is an integral part of the 'Gulf Arab cluster' of leadership and authority values (Abdalla and Al-Homoud 2001: 515): 'The minimal effects of the demographic characteristics and the negligible influence of culture (Qatar and Kuwait) on the desired leadership profiles suggest the generalising of the results to different geographical and demographic groups in the Arabian Gulf Region'.

This assumption of commonality among Gulf States encourages me to look for similarities in leadership styles between previous findings of women managers in Oman (Al-Lamky 2007) and leadership styles of Bahraini women managers.

In summary, my study is exploratory and descriptive in nature and designed to present data about an area that had relatively no previous analysis that is leadership styles of women top-managers in the context of Bahrain.

### **1.5 Significance of the Research and its Contribution to Knowledge in the Field**

Despite of the considerable research on the topic of women in management, there is still a need to discover women's leadership styles in other cultures and precisely in Arab cultures. A review of the relevant literature indicates that there has been very little research conducted on, and little attention devoted to, women leadership styles in Arab world and Bahrain is no exception. 'In-depth studies of leadership in particular cultures are also required, because they may identify specific aspects of leadership in a particular culture, which would be missed in broad-based global studies' (Shahin and Wright 2004: 502). 'There is a growing need for research into Arab women's implicit leadership theories' (Neal Finlay and Tansey 2005: 478).

Considerable research in women leadership that has been undertaken in western countries have stressed that leadership experiences of women holding managerial positions have contributed to play an essential role in the success of their organizations. Much of the available studies on women managers came from research conducted either in the UK or the

USA (Omer and Davidson 2001); (e.g. Rosener 1990; Eagly and Carli 2003). Whereas, there are urgent calls for research in women leadership in Arabic countries (Neal Finlay and Tansey 2005) in general in and in the Gulf States in particular (Al-Lamky 2007).

Most of publications and studies of women leadership experiences, their traits and leadership styles are conducted in western societies which are not certainly generalisable to other cultures despite their apparent value (Al-Lamky 2007).

Therefore, my research will be an original contribution to establish the foundation of future studies in women leadership in the kingdom of Bahrain.

It is hoped that this empirical research of the kingdom of Bahrain will help to clarify and contribute to a new and deep understanding on the styles of leadership that will be valuable to all organisations in the Gulf countries and especially in the kingdom of Bahrain. The study is also designed as a contribution to the existing studies on leadership, particularly women leadership that will be useful to different organisation within Bahrain.

In summary, this study derives its contribution from establishing a new and deep understanding of women leadership in Bahraini organisations. The kingdom of Bahrain has witnessed significant political and social changes in recent years and as a result the numbers of women appearing in leading roles in government and private sectors has grown significantly.

The outcomes of my research will effectively contribute in achieving the following:

1. Filling the theoretical gap in women leadership literature of the kingdom of Bahrain.
2. Drawing insights into the reasons behind adopting the existing women leadership styles within Bahraini organisations.
3. Aiding Bahraini organisations in enhancing and developing their managerial strategies.
4. Assisting Bahraini organisations in providing the necessary conditions to establish an efficient leadership style as well as effective outcomes.

## **A Methodology Proposition to Study Women Leadership in Bahrain**

### **2. The Research Methodology**

#### **2.1 The Research Philosophical Stance**

As mentioned in earlier sections of this paper, the key aim of my research is to explore leadership styles practised by top-managers women in the context of Bahrain. This aim determines its philosophical assumptions and methodology. In other words, since I seek draw some insights to the practised women leadership styles in the context of Bahrain from both leaders and followers' participations with regard to the cultural norms that might influence shaping Bahraini women leadership styles, with this in mind, my research is informed by the constructivism philosophy which will help me to interpret the outcomes; the interpretive strategy has particularly been well suited for studies that are concerned with leadership in organisation (Bryman 2004). This means that the goal of my research is;

To rely as much as possible on the participants' views of the situation being studied. The questions become broad and general so that the participants can construct the meaning of a situation, a meaning typically forged in discussions or interactions with other persons...they are not simply imprinted on individuals but are formed through

interactions with others (hence social constructivism) and through historical and cultural norms that operate in individuals' lives (Creswell 2003: 8).

Social constructivism is often incorporated with interpretivism in which the researcher interprets the process of individuals' interactions with a focus on the specific context in which those individuals live and work in order to understand the historical and cultural settings of the participants. This also means that the researcher, by considering the social constructivism, recognises that his/her own background shapes his/her interpretations of the different meanings that participants have about the topic being studied (Creswell 2003).

Applying the meaning of the constructivism philosophy to my research would justify the methodology and methods that were employed to attain my research objectives. The methodology and methods used to gather the necessary data to answer my research questions and the rationale behind them are discussed in the forthcoming sections.

### **2.1.1 The Qualitative Approach of the Research**

Although thousands of studies in leadership were conducted by using the quantitative approach, the results of those studies were contradictory and inconclusive (Alvesson 1996). This encourages a number of scholars in leadership to call for essential reorientation of studies and measurements in leadership studies based on qualitative research (e.g. Bryman et al. 1988; Bryman and Stephens 1996; Alvesson 1996; Bryman 2004).

In the light of the philosophy assumption of my research, a qualitative approach is expected to be applied not only to achieve my research objectives but also because it has been recommended by number of scholars in leadership field; Alvesson (1996) argues for a qualitative approach that takes the social constructive nature of 'leadership'.

Qualitative research in leadership studies has been the growing interest in the second half of the 1980s, in which studies have started to incorporate leadership and organisational aspects (Bryman 2004). The upward trend in qualitative research in leadership contributed to present credibility on the approach and to create confidence in researchers (Bryman et al. 1988; Bryman 2004). Bryman et al. (1988) argue that the introduction of qualitative approach into the study of leadership may develop this area of research by facilitating the introduction of a wider range of contextual variables into leadership studies as these variables have the advantage of being based on peoples' experience. They also argue that qualitative research in leadership led to greater attention to the role of the contexts in the leaders' experiences than much quantitative research on leadership has been able to accomplish.

The distinctiveness of applying qualitative approach in leadership research is attributed to the greater attention that this approach draws to how leadership styles tend to be under different circumstances, and the implications of those circumstances for leaders and their styles of leadership, and in drawing attention to contextual factors and their importance to leadership (Bryman and Stephens 1996; Bryman 2004).

Qualitative research design employs different kind of methods for collecting data that can be distinguished in the various studies. For example, case study of a single organisation and leader. This type of investigation usually employs participant observation, some semi structured interviewing, and the examination of documents, such as minutes of meetings and mission statements. Second, there is the multiple-case-study design in which there are detailed examinations of leaders in a small number of organizations (e.g. Bryman et al. 1988).

This design usually based largely on semi-structured interviews with the focal leaders and other key actors, along with the examination of relevant documents and a limited amount of non participant observation.

The various designs of qualitative research provide a range of frameworks within which this approach on leadership can be productively explored. They make a distinctive contribution to the clarification of context, which can mean either of two things. First, in multiple case study designs, contextual differences between similar organisations can illuminate variations in leadership processes and their impact (Bryman and Stephens 1996).

In women leadership research, a number of examples of studies can be cited as illustrations of a qualitative research approach. Popular scholars have relied on qualitative analyses or on surveys or interview with select groups of women leaders (e.g. Rosener 1990; Klenke 1996).

## **2.2 Research Methodology: Case Study**

According to Yin (1994), case study methodology is defined as follows;

A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident...relies on multiple sources of evidence...and benefits from the prior development of theoretical propositions to guide the data collection and analysis (Yin 1994: 13).

This definition clearly clarifies the main aim behind adopting case study, and justifies the selection of this strategy to guide my research.

As research questions determine the methodology that should be used to collect the necessary data for the study (Yin 2003; Blaxter 2004), case study was chosen to attain my research main aim, which is exploring Bahraini women top-managers' leadership styles. This main goal is sub-divided into some analytical questions (refer to 1.3 of this paper).

Yin (1994) stressed that case study is used in organisational and management studies, and exploratory case study is conducted and considered as a justifiable rational if the research questions focus mainly on 'what' questions. Case study is also used when the researcher wants to cover contextual conditions with a belief that they might be highly pertinent to the phenomenon under study (Yin 1994).

In view of that, choosing case study as my research strategy emerged from my research main objective; exploring women top-managers' leadership styles in Bahraini organisations. This means that the case study methodology is vital to my research not only for exploring the practised leadership styles by Bahraini women top-managers but also because it would contribute to cover the context aspects (Bahrain culture) that might affect the concept understudy (women top-managers' leadership styles).

## **2.3 Research Methods; Using Multi-Evidence Sources**

A research methodology shapes which methods are used and how each method is used (Silverman 2000).

A case study research is an intensive research, using multiple sources of evidences which may be qualitative, quantitative or both. This case may be an organisation or a set of people.

Questions like ‘how’, ‘why’, or ‘what is going on’ reflect the primary concern of the researchers who select this research approach (Daymon and Holloway 2002).

The case study approach has emerged as a comprehensive research strategy, has been used for many purposes including exploring and drawing insights into a specific phenomenon, and has the ability to deal with a wide range of evidence like questionnaires, interviews, and observations (Yin 1981; Yin 1994; Burns 2000; Yin 2003; Blaxter 2004). In addition, one of case study’s strengths is its ability of deal with a variety of evidence.

In view of that, my study is employing the case study approach in order to answer the question ‘what is going on’ (refer to section 1.3 of this paper) by conducting semi-structured interview and questionnaire as techniques for collecting the necessary data (see Table 2.1). The intention of adopting these techniques is to establish as detailed a picture as possible of women leadership in Bahraini organisations.

<b>The Research Techniques</b>	<b>The Purpose</b>
<b>1.In-depth interview</b>	<p>Carry out an in-depth interview with key participants (women leaders), in order to investigate their views towards their leadership styles, and to address the reasons beyond adopting these styles.</p> <p>I believe that the results of the in-depth interview will shed the light over the practiced leadership styles and the different reasons that contribute to practice a specific style. This will also enable me to identify women leaders-followers relationship (from the leaders’ perceptions). Many researchers have relied on interviews as a qualitative method to study women leadership styles with select group of women (e.g. Stanford et al. 1995). This allows me to illustrate many of the concerns and experiences of Bahraini women leaders.</p>
<b>2. Questionnaire</b>  <b>The Multifactor Leadership Questionnaire (MLQ)</b>	<p>I will use The Multifactor Leadership Questionnaire (MLQ) in order to identify the practiced women leadership styles from the followers’ perceptions (employee of Bahraini organisations under study). This will allow me to identify women leaders-followers relationship (from the followers’ perceptions).</p> <p>The reason for using this specific questionnaire is the exploratory and empirically nature of my study, which is concerned with identifying Bahraini women leadership styles with regards to the contemporary theories. The Multifactor Leadership Questionnaire (MLQ) is used to assess leaders’ styles with regards to transformational, transactional, and laissez-faire leadership (Antonakis et al. 2004; Hughes et al. 1999). The Multifactor Leadership Questionnaire (MLQ) has been used to study leadership styles in a number of articles, dissertation, conference papers and reports in a variety of organisational settings and at various levels in the organisation including senior and middle managers (Loweand Galen 1996).</p>

*Table 2.1. The Proposed Research Techniques and its Purposes.*

### **2.3.1 Semi-Structured Interview**

Interviews are essential sources of case study information. It can take several forms but the most common one is the open-ended interview, in which the researcher can ask key respondents for their opinions regarding events and the facts of a matter, open-ended interviews of case study is also used for asking the respondent to draw some insights into certain issues related to the topic of the research (Yin 1994).

Qualitative researchers generally employ the unstructured or semi-structured interview because structured interviews tend to stifle the flexibility that is so valued in qualitative research' (Daymon and Holloway 2002: 169). 'In leadership studies, semi structured interview is one of the methods that is usually employed to gather data about organisation and its leader (Bryman and Stephens 1996).

Interviews are an essential source of case study evidence because most case studies are about human affairs (Yin 1994: 85).

Semi-structured interview could be used to study leadership either separately (e.g. Bryman et al. 1988; Al-Lamky 2007) or combined with other method (e.g. Abdul Wahab 2000).

### **2.3.2 The Multifactor Leadership Questionnaire (MLQ)**

Although interview can provide important insights into a situation, 'it is a reasonable approach to corroborate interview data with information from other sources' (Yin 1994: 85) in order to prevent bias.

The main objective of using the Multifactor Leadership Questionnaire (MLQ) is to gain followers' perceptions toward the practised leadership style by Bahraini women top-managers. Therefore, followers perceptions will contribute to attain one of the minor objectives of this study (refer to 1.1 of this paper). This means that the use of the questionnaire in my research is not only considered as a qualitative method rather a quantitative method as well; the qualitative data derived from the followers' perceptions will be interpreted as quantitative evidence as well; 'Case studies can include, and even be limited to, quantitative evidence' (Yin 1994 p14).

In view of that, the quantitative findings that will be emerged from the Multifactor Leadership Questionnaire (MLQ) will contribute to generate and support the qualitative findings. For example, if we presume that the number of followers who believe that 'sharing information' is an attribute of their manager's leadership style, are more than those who believe that 'sharing information' is not an attribute of their manager's leadership style. Then it is obvious that this quantitative data would generate and support the evidence that the manager of that organisation is adopting 'transformational leadership' as most of followers believe that; 'Sharing information' is one of the 'transformational leadership' (Bass 1994a). 'A strength of case study is that it is able to produce multiple sources of evidence. One reason for this is that different theoretical and methodological frameworks can be incorporated into it' (Daymon and Holloway 2002: 108).

### **2.4 Multi Case Studies**

The study is consisted of two case studies. Each study will represent a Bahraini organisation that is directed by women; 'Using multi-cases can be considered advantageous in that the evidence can be more compelling' (Burns 2000: 464). In addition, conducting a number of case studies contributes to providing support and evidence that are the basis for



generalisation (Burns 2000; Silverman 2000; Daymon and Holloway 2002; Robson 2002; Yin 2003).

Bryman and Stephens (1996) stressed the role of various designs of qualitative research in providing a range of frameworks within which this approach on leadership can be productively explored. They make a distinctive contribution to the clarification of context, which can mean either of two things. First, in multiple case study designs, contextual differences between similar organisations can illuminate variations in leadership processes and their impact.

### 3. Conclusion

It is hoped that the topic under investigation will originally contribute to the field of women leadership. The proposed methodology has been used in several studies in leadership studies in general and in women leadership studies in particular. It is envisaged that the results of the proposed methodology will contribute to draw some insights to leadership styles of Bahraini women top-managers and fill a research gap in women leadership literature in the Gulf.

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# **The Cultural Objecthood of Digital Games: The Translation of Commercial Games into Educational Contexts**

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This paper will draw on the concept of Cultural Objecthood (Bennett 2005) to trace the translation of digital games into educational contexts. It will introduce research focusing on the new game forms that may emerge through dialogue between games developers and educators and specifically with this paper, the role of policy reports.

This paper will open with a brief introduction to the varied uses of gaming and the grouping of these uses within the emerging field of serious gaming. After detailing this field broadly, the educational uses of digital games will be addressed specifically in relation to the 2006 Entertainment and Leisure Software Publishers Association (ELSPA) report *Unlimited Learning*. Addressing the potential uses of games in education through a report is to recognize the multiple stakeholders involved in shaping and developing this potential. This paper will suggest how regimes of objecthood may shape the emergence of new forms of games. In this sense, this research is seeking to address the emergence and associated implications of the meeting of diverse game development and educational agendas.

## ***The multiplicities of digital games***

It is well beyond the scope of this paper to offer a survey of historical or even contemporary instances of game development, artifacts and practices. Rather, the most cursory examination of our homes, the things in our hands and our time online reveals the proliferation of game platforms. This statement itself requires clarification given the varied definitions offered for a 'game'. As a brief example of the complex dynamics through which digital gaming technologies arise, the following comments from Ralph Baer, lead developer on the first home video console the 1972 Magnavox *Odyssey*, are revealing:

the question of how to make use of home TV sets, other than watching over-the-air programmes, had been bothering me since the early sixties. There are well over 100 million TV sets in the US alone in 1965. The idea of attaching some device to even a small fraction of that many TV sets was a pretty powerful incentive for coming up with something, anything, on which people might actually want to spend their money (Baer, cited in Haddon 1988: 65).

The emergence of the home video console was not as a revolutionary new technology but in relation to existing, embedded entertainment devices. This crossing over of games onto multiple platforms can be seen through games on mobiles and televisions. The interconnections of gaming and everyday life are generative and manifest in multiple and diverse objects and practices. To trace some of the specific relations I am focusing on in my research, I will now introduce serious gaming.

## ***Serious gaming***

The term serious gaming came into usage in around 2004 and signalled the use of games for 'purposes beyond education'. Serious games organisations have been established, notably in the USA, Japan and the UK. The Serious Games Initiative was founded at the Woodrow

Wilson Center for International Scholars in Washington, D.C. As their website details the initiative begun

helping the area of ‘serious games’ emerge into an organized industry of developers and development studios skilled at using cutting-edge entertainment technologies to solve problems in areas as diverse as education, health-care, national defense, homeland security, analytics, corporate management and more (Serious Games Initiative: online).

Serious gaming as outlined by the Serious Games Initiative brings together entertainment technologies and a broad range of concerns. With regard to education the *Unlimited Learning* outlines the meeting of the two in stating the Serious Games development community ‘creates and promotes interactive products for commercial distribution that adapt the entertainment paradigm from the entertainment games industry with training and learning from educational paradigms’ (2006: 39).

The *Teaching with Games* project through drawing on ‘empirical evidence and examining the real-world use of selected commercial titles in schools’ (Sandford et al. 2006: 6) sought to explore commercial games in formal educational settings. Futurelab are a ‘not-for-profit organisation [...] pioneering ways of using new technologies to enrich and transform the learning experience’. The partners for this report alongside Futurelab were: the Interactive Software Federation of Europe who ‘represent the interests of the interactive software’; Take Two Interactive Software, ‘a global publisher and developer of entertainment software and accessories’; Microsoft, and Electronic Arts, ‘the world’s leading interactive entertainment software company’<sup>1</sup>. The project selected three case study games *The Sims 2*, *Knights of Honor* and *RollerCoaster Tycoon 3*.

The focus in *Teaching with Games* is on the adaptability and affordances for these games in learning contexts. Further to this, these learning contexts may iteratively shape game design and development. This is to recognise that whilst potential lies with games to ‘offer a powerful learning tool’ that motivates in order to “‘make learning fun” (ELSPA 2006: 14), these contexts may equally inform existing commercial games development practices and lead to hybrid games that are inscribed with the agenda and approaches of various diverse stakeholders. My own research adopts Bennett’s concept of cultural objecthood to explore this relationship. Bennett’s focus is ‘on the operations of cultural institutions in producing distinctive kinds of objecthood understood as a product of the arrangements of objects that they effect’, and he asks, ‘what kinds of complex inner organisations do objects acquire from their insertion in different regimes of objecthood?’ (2005: 8). This can be re-stated to say, cultural institutions arrange objects that can be understood as distinctive kinds of objecthoods. In this sense, the cultural institutions are regimes of objecthood. This framework helps bring to the fore and frame my research focus on the particular games that may be shaped by different contexts or institutions, or what we can now identify as regimes of objecthood.

The regime of objecthood that has been introduced in this paper is the meeting of education contexts and game developers. What is also vital in exploring the emergence of new game

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<sup>1</sup> These descriptions are taken from <http://www.futurelab.org.uk/research/teachingwithgames.htm> (accessed April 2007).

forms are the means by which these games are inserted in this framework. In this instance policy reports and documentation. Two primary research issues may be identified, the first asks how particular reports play a part in forming regimes of object, and the second asks, how the arrangements of games these regimes effect shape particular games and game design practices and suggest potential games.

### ***The research approaches: first question***

John Kirriemuir, reflecting on the spate of recent reports, including the two mentioned in this paper, suggests:

the end result is usually a glossy report, containing lots of pictures of school kids studiously gathered around on a PC. It looks good, though perhaps not as realistic as pictures of 11 year olds sneakily enjoying Grand Theft Auto which their game-illiterate parents purchased for them, or indulging in ‘happy slapping’ which their mates film on their mobiles, then upload onto YouTube (2007: online).

He further suggests, ‘these reports do not help move the research agenda on [...] only research and research funding can do that’ (2007). These comments take on a further dimension when recognising that Kirriemuir is one of the authors of the ELPSA report. In response to these comments it may seem a questionable move to explore how these reports play a significant role in forming regimes of objecthood. The aim of fostering such regimes is stated explicitly by Lord Puttnam in the foreword to *Unlimited learning* where he identified the report as ‘an important step in beginning the challenging and exciting process of developing potentially powerful new partnerships between the games industry and education’ (2006: a). In following Kirriemuir and informal conversations with those in education, the reach of these reports may be limited beyond the hopes expressed by Lord Puttnam. In turn I focus on these reports as part of my research rather, to draw out the stakeholders seeking to shape this field and as a means to ask what is at stake and how may games within education develop subsequently?

As Bennett states, ‘social collectives of various kinds are organized through the positions that such collectives take up in relation to each other’, and further to this, distinctive kinds of work are made possible (2005: 8). To analyze these reports is to see that particular regimes are advocated, particular solutions and trajectories and collaborations put forth. Beyond the steps these reports take in moving the research agenda in relation to games being used in classroom, they represent the wider affiliations that may have implications for the use of games in education. Given the involvement of organisations such as the Department for Skills and Education, Microsoft and Electronic Arts in past reports and the continued ‘Police Academy sequels’ (Kirriemuir, 2007: online) and release of further reports, these reports serve to identify existing and potential interests and collaborations, or ‘regimes of objecthood’.

### ***The research approaches: second question***

The second broad research question takes as its focus the games that emerge from particular regimes. This question seeks to speak back to the reports. Whilst the reports advocate dialogue and collaboration between educators and game developers, this research asks ‘how do such collaborations operate and work?’ and with the pivotal point between these different parties being the games themselves, ‘how can existing games be usefully employed in classrooms?’. So far this has lead to a number of suggestions, including ‘lite’ versions of games. Kirriemuir and McFarlane’s suggestion of using ‘lite’ versions of mainstream games

where there is potential for the games industry ‘to develop an attractive, low cost, solution’ (2004: 27) is illustrative of the new game forms around which commercial games and education sectors may meet. ‘Lite’ versions would ‘have all unnecessary content removed [thus providing ‘immediacy of learning’]’ and also, for example ‘allow users to save at regular intervals’ (2004: 26-27). The emergence of lite games would signal the coming together of commercial games and education sectors through objects.

Further to the example of ‘lite’ versions of games, my research focuses on the practices and exchanges that take place and point towards new forms of games. The focus is both on the adaptation of existing commercial games and the design of bespoke games. This research has involved contacting a games development studio involved in adapting dance mats for teaching in primary schools and conducting interviews detailing the testing and refinement process they went through in schools. Further research has involved contacting a design studio creating online content for BBC Jam and tracing the educational and design influences informing these games.

Egenfeldt-Nielsen in his ‘Overview of research in the educational use of video games’ suggests, ‘to see the educational use of computer games as a homogenous field is not beneficial – for a start, there are different teaching forms and edutainment genres that will benefit different educational goals’ (2006: 206). Acknowledging this requires that case studies are contextualised clearly and situated within broader developments in relation to education and serious gaming. The need for careful contextualisation highlights how these two research questions come together in significant ways. Bennett draws on Serres (1982) to note ‘the role that the stabilisation of objects plays in the constitution of social relations’ (2005: 8, following Serres 1982: 224-34). In relation to games then, this suggests and emphasizes that games arising out of cross sector collaborations can become the means through which ongoing collaborations can form. From this perspective the complex and interweaving relationships between educators, game developers and policy makers (amongst others) that form the changing regimes of objecthood arranging games into diverse settings and contexts, are instrumental in the potential of the digital games medium.

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# **Work Narratives and Boundaries Management of Family and Work Life**

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This paper explores the connections between working parents' occupational position and their family narratives to arrive at a better understanding of the ways dual earner parents manage home and work life. Through an analysis of their narratives, I contrast their work identities with their family identities to see what kind of occupational and symbolic structures constitute the home-work interface. So (through qualitative interviewing) work meanings are analysed in connection with participants' structure of seniority and occupational status to show how the latter is intermeshed in the management of family and work domains.

The position being argued in this paper is that the 'sense of self', the identity which participants derive from their work, is tightly intertwined with their level of seniority in the workplace (and so, to an extent, with their occupational class) and that this combination shapes the work-family interface, or 'boundary'.

The research carried out in the field indicates that if work is often considered by the majority of the participants as an external constraint on their private domain, for others work is also a source of self-esteem and identity. Following this type of findings, it is possible to reformulate a distinction between parents' 'integrating' or 'separating' approach to work and family life (see Nippert-Eng, 1996 for the original proposition of this typology). 'Separating' working parents are those who refer to family and work as two different spheres of daily experience. These are the ones who usually feel emotionally close to the family, but not to the work domain. 'Integrating' working parents are those who largely feel defined by work, yet emotionally close to the family domain. Therefore, they do not perceive family and work as two distinct spheres in stark contrast with each other and their perceptions of work/family tension will tend to diminish.

In the following table participants are divided according to their 'boundaries management', that is the way working parents mediate work and home in their daily life. The integration/separation strategies are considered to be a matter of degree, rather than a rigid dichotomy. However, for analytical purposes I indicate four areas: in the table we go from a 'strong integrating approach' to a 'strong separating approach', passing through 'mild' versions of each.



Table 1. Participants' boundaries management: separation and integration of family and work spheres.

<b>Strong integrating approach</b>	<b>Mild integrating approach</b>	<b>Mild separating approach</b>	<b>Strong separating approach</b>
Derek and Ann Jeffrey and Denise Molly and Gabriel Monica and Konrad  Sam=	Heather and John Roger and Delia Melanie (and)  Clarice+ Sid^ Horace%	Mary and Alex, Dave and Tracy Ross and Kristin Norman and Aileen Sandra (and)  Arian% Austin+ Caroline= Tom* George_	Claudia and Josh Ronald and Kate Diane and Edward Mark and Josephine Lindsey and Mike Morgan and Chloe Richard and Jane Catherine (and) Sophie (and)  Joanne^ Laura* Michelle_
Sub Tot: 9	8	14	19
<b>Total integrating</b>	<b>17</b>	<b>Total separating</b>	<b>33</b>

*The sign (and) means that the women's partners did not take part in the interview  
The signs =, +, ^, \*, \_ and % link partners with different approaches to work/family boundaries*

So, how much does employment position influences participants' management of work and family life? To what extent is the professional occupation linked to a 'strong' work identity and so to different practices of integration or separation? And how closely can the 'work meanings' as expressed by participants be related to their employment status and to their practices of integration/separation?

There are a number of studies related to how work conditions and class influence the way people (but not always dual-earner families) manage their work-life balance (Crompton 2006; Warren 2003; Secret 2006; Hyman et al. 2005; Demerouti and Geurts 2004; Witz and Savage 1992); however, these studies focus especially on the differences between managerial and non-managerial women and families. An exception is represented by Crompton (2001), who addresses differences in work-life balance between managerial (bankers) and professional (doctors) occupations, but there is little research on different approaches to meanings of work and family and how these relate to occupational groups. As the focus of this paper is on the daily orders and conflicts of working parents, as distinct from Crompton's study (2001), which focuses on gender and class relations, the aim of this study is rather to understand how work-related factors come to inform participants' meanings in the areas of work and family, and their connection or disconnection. For instance, Crompton individuates work autonomy as a crucial factor which differentiate professionals from managers (2001: 179), while the present research explores how autonomy is intermeshed with participants' work identity and how it is then used to construct a meaningful daily order (whether integrating work and family life or separating them).

Participants in this research can be broadly seen as part of the middle class, but there are differences among them based on occupational status and on the level of task autonomy, and it is these differences that this paper aims to explore. I also argue that examining these differences whilst connecting them to participants' 'work identity' adds an important dimension to the under-researched aspect of work-family boundaries and occupational class position. So, in the table 2 I divide participants by employment status.

*Table 2. Participants by employment status.*

	Female	Male	<b>Total</b>
A-Reported medium-high degree of autonomy and seniority. Reported 'intellectual and/or strategic skills' and similar	7	10	<b>17</b>
B-Reported low-medium degree of autonomy and seniority. Reported 'technical and/or social/people skills' and similar	19	13	<b>32</b>
C-Out of paid employment or in occasional occupation	1	2 *	<b>3</b>
Total	27	25	52

(\*) These two did not take part in the interviews; their wives reported them as being out of paid employment.

How is this distinction fruitful in terms of understanding different patterns of approaches to home and work life?

Participants located in the 'integrating' approach to work and family (table 1) are mainly those who hold a professional job: out of the 17 participants that have been analysed as having an 'integrating' approach, 13 are located in row A in table 2. Such a configuration suggests that there is a relation between employment position and the type of boundaries management that is practiced by participants, which is worth analysing further with the qualitative data.

In this research participants with better professional jobs seem able to arrange their family life around a stimulating and rewarding work life, playing down in some cases the ritualised aspects of the former (such as the evening meal together). The emotional focus they need to arrange throughout their daily lives is filtered by work narratives that are already capable of offering the basic structure for emotional enrichment and the outcome of their practices is the practical and symbolic integration of the work experience with their home life in an area which is beyond the usual boundaries of work and marketplace. In that way conditions are created for a different social set up (linked to aspects of the middle class) where the mediation between work and family life is not needed and the work sphere comes to assume an equal importance in the symbolic order of participants' daily universe. In other words, work seems to be a very important symbolic as well as material source for participants, a source capable of configuring particular identities and particular emotional relations for the management of work and personal life.

But how exactly does occupational status bear on participants' integrating or separating practices? To answer to this question it is important to have a closer look to participants with an integrating approach and with a higher employment status.

*Table 3. Participants with 'integrating approach' and occupational status in cell A, table 2 (in no particular order).*

<b>Name</b>	<b>Occupation</b>
Horace	Dean of a university department
Delia and Roger	GP (part time) Clinical vascular scientist
Monica and Konrad	Genetic Counsellor and Research Fellow Publications manager of a large charity
Gabriel	Professional engineer
John	Accountant manager
Denise and Jeffrey	Welfare rights service manager Professor
Clarice	University lecturer
Sam	Senior lecturer at a theological seminary
Melanie	Professor and head of a university department
Sid	Director of a small charity
Total 13	

Participants in table 3 have an integrating approach and an employment status with a medium-high degree of autonomy and seniority. An analysis of their jobs should ascertain connections between what they do at work and how they approach family life, as an integrating practice is based on a managed 'overlap' of emotionally structured work narratives with aspects of family relations.

1. *The skills.* As for skills required, the quote from Sam is very revealing. Although he research and teaches in a particular subject, theology, the quote highlights important aspects of the job content as experienced by participants in similar professions and who, on their turn, have integrating practices.

Interviewer: What kind of skills do you need, would it be intellectual skills...?

Sam: Yes, **intellectual** and communication **skills** and probably interpersonal skills, these are the three main areas. So... to do it well, you need to be able to think, you need to be **able to communicate**, ideally you need to **be able to relate to other people** quite well [My emphasis].

These abilities to 'think', to 'communicate' and to 'relate to other people' seem to be a set of skills common to the other participants involved in academic jobs, and insofar as these skills also imply the creation/transformation of knowledge, they can be thought to be partially common to the group analysed in this section. The skills reported by participants already suggest an expressive orientation to work, which allows their personhood to be involved in what they are doing.

2. *Working long hours.* Participants often have to arrange their everyday life vis-à-vis the pressure from very demanding work time schedule: in many cases work hours just do not leave much space for personal or family time. This contingency can be experienced as a

‘mechanical’ overlap, whereby the work hours are considered as an *external* intrusion in the home sphere, upon which the participant does not have much control, or the overlap can be considered by participants as hours they spend for work, but a type of work that can be mixed in a narrative of integration of family and work. So the ‘extra’ working hours they spend at home or in the workplace have an *internal* meaning in their everyday life.

Horace’s job, as it is based almost purely on management, it is also about holding meetings and making decisions through meetings. Thus it becomes not uncommon for Horace to meet with people and ‘mixing’ his work with his personal life:

Interviewer: Do you manage to find time for yourself individually during the week?

Horace: Ehmm, I go out with people from work, but normally it’s to do with work, but **it’s a sort of mixture** of work and social... [My emphasis]

This and other instances, like for example using his secretary to communicate and arrange family things with his wife, are the signs of a work narrative that allows a ‘mixture’ of both, transforming a busy work schedule overlapping with his private time in a factor that means an integration of personal and work time.

3. *Flexibility and autonomy*. Most of participants reported a good degree of flexibility in their work condition. I analysed this type of flexibility as ‘structured flexibility’ (Fagan, 2004), oriented to give to the employees a degree of predictability and control over their schedules of work and family life. The majority of participants use this type of flexibility to mark different areas of daily life into ‘work’ and ‘family’ as different structures of meanings. Those with higher employment status reported not very flexible work conditions, but their position allows them to make their position nonetheless ‘flexible’ (in the sense of ‘autonomous flexibility’ as in Fagan, 2004). The following accounts put in relation flexibility, autonomy and work meanings in the sense that a parent hierarchical position in the organisation becomes an essential factors for her/his work identity and therefore for developing integrating practices in daily life.

Interviewer: **And about job gratification... what can you tell me?**

Konrad: **Well part of it is the autonomy... I have a lot of control over what I do... the fact that I can be flexible if the need be, and it can be very interesting and there are often new areas that you need to become knowledgeable about, that’s interesting... yes those type of things are good about it...**

Monica: Many of the same sort of things, I like the work that I do, I like working autonomously... I like the **intellectual challenge** of what I do in both jobs... in my clinical job you know I enjoy the fact that I am helping people, I hope I am **helping people**, and in my research job I suppose I get a lot of satisfaction out of getting work published... I enjoy having a high profile in my profession, I enjoy ehmm what’s the word... I **enjoy the status of my work** [My emphasis]

Participants in higher employment status tend to have integrating practices and this relation can be connected with job contents, allowing them more direct management of their work tasks and direct experience of thinking, communicating and relating to others, but also, as it is possible to see from the quote, it can be linked to autonomous flexibility which grant them the scope for managing their domains of meaning.

4. *Autonomy and work meanings*. In couples with higher employment status I found that the material resources are linked up with ‘work meanings’ making up rewarding work narratives: the skills required by their jobs match the valued aspects of sense of self. So aspects of the job which entail getting knowledgeable about ‘interesting things’, or being able to ‘relate to people’, are also aspects that participants value in themselves as people, as well as workers: the personal interest in developing these skills is not determined by work organisation’s goals, but rather it is matched by their work life. In that sense a professional’s work narrative represents the symbolic resource used to integrate family and work sphere. The high degree of autonomy participants in table 3 enjoy at work is surely part of that, however the same participants also reported another element that complement the links in the constellation of autonomy, work meanings and narratives of integration of home and work, which again point out to the issue of differences within the middle class.

Interviewer: Can you tell me aspects of your job that you like and aspects that you don’t like?

Horace: I don’t like it when I am dealing with difficult people that don’t want to do **what I want them to do** and I do like it occasionally things going well... [My emphasis]

Arian: I think you quite like the adrenaline, don’t you? (*Pause*) The fact that you always keep...

Horace: I quite like the stress (...) I quite like... I mean, I should not say this but I quite like the power of it, that’s quite nice, when you feel that you want something to happen, you can say you want that to happen and quite often it does, that’s nice... I quite like going on trains on the first class compartment (*laughs*) but what else... that’s about it, really... is it important to me? I don’t identify myself with my job, I find it surprising... when I have to think what it is that I do, sometime I sit down thinking that they’ll find me out. [Not my emphasis]

There are few elements in Horace’s account: the crude power over other people and the rhetoric of working hard being the most prominent. The latter is a well publicised part of the managerial discourse about thriving on stress (in another part of the interview Horace gives accounts about his working day and about the intensive nature of his tasks). Such an account seems to present the other side of job involvement: if on one hand we have participants thriving to become ‘knowledgeable about’ the area of their job, on the other hand there is a type of involvement based on an almost ‘content-less’ business. Participants with integrating practices need a meaningful job to develop narratives of integration, but their work meanings seems to be immediately linked to their occupational status.

## Conclusions

Participants with integrating practices enjoy more autonomy at work than those with separating practices; moreover they reported having a job content which is highly meaningful to them, while those with separating practices tend to have a weaker work identity. As for those with integrating practices, we have also seen that the meaning of their work narratives is linked in general to an occupational status that often grants them power dynamics. In that sense, this professional’s work narrative represents the symbolic resource used to integrate the family and work spheres: it represents a strong work identity capable of connecting symbolic and emotional areas of daily life. This is where this research fills a gap in the literature: to my knowledge there is no research addressing how the structure of seniority is intimately linked with identity and how these come to shape the management of work and family life.

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# The Effect of Visual Images on Patients through Films or Multi-Media

**Eunice Chan**

## **Aims**

- 1) Identify what kind of visual images through film-clips or multi-media have the potential of relaxing and healing effects in terms of colour, light, texture, shape, form, space, object, pace, rhythm and movement (sound and music will be added as complementary work).
- 2) Explore and assess the role of visual images on a patient's well-being.
- 3) Identify the extent of the impact the same image has on a patient with different conditions of illness, individual interests and gender.
- 4) Determine what type of qualities in visual imagery can bring relaxation and positive effects to what kind of Patients.
- 5) Develop this work to PhD level through the refinement of different images for a wider set of patient groups and the development of a new explanatory model linking images, well-being and a patient's experience.

## **Context**

Visual images have played an important role in the formation of human visual perceptions, learning, communication and in particular, in holistic and well-being through the creative area of art since cave paintings to religious illustrations, communication art, films and multi-media. For example, E. H. Gombrich's book *The uses of images: studies in the social function of art and visual communication* (1999) gives some insight about the 'ecology' of images.

The movements of arts for health in the hospitals in the UK have been developing rapidly for over twenty five years. There are plenty of references including books, journals, articles and films related to arts and health, such as the archive of Arts for Health department at MMU, P. Scher and P. Senior's book *The Exeter evaluation* (1999) and J. Sixsmith and C. Kagan's *Pathways project evaluation final report* (1995) illustrate the impact of arts on healing and well-being of patients in hospitals. My studies in relevant literature for this research may be broad but my focus is on what kind of images (especially moving images), films or multi-media may bring potentially calming, relaxing and positive effects on patients in a hospital environment.

Relaxation seems a common beneficial method/therapy that can improve the healing process and its application covers a wide range of mental and physical illnesses including stress, liver disease and cancer patients. The book, *Relaxation and imagery: tools for therapeutic communication and intervention* (1988), which is edited by R. P. Zahoruek, compiles various theoretical and practical studies on the effects of relaxation for health through case studies and scientific measures. E. Jacobson's book *Progressive relaxation: A physiological and clinical investigation of muscular states and their significance in psychology and medical practice* (1929) and B. Herbert's book *The relaxation response* (1975) are pioneers in this area.

One of the techniques for achieving relaxation is the application of visualization or experiencing visual images. Visualizing imagery has been adapted, implemented and researched through hospitals in the West for over two decades. However, according to my

experience in meditation for many years, visualization is not easy for some beginners and it may not be convenient to find an ideal space in some hospitals for group practice. D. Goleman's book, *Destructive emotions and how we can overcome them* (2003), reports the results of many research experiments in depth through scientific and medical measures. However, there is very little mentioned about what kinds of images are defined as positive images that may bring calming and relaxing effects on human emotion and health.

Alongside the Western mainstream medicine, alternative medicines have been developing rapidly for over twenty years. Among them, colour and light therapy, art and music therapy, visualization and relaxation for health are relatively close to the field of my research. I wish to develop and create a range of visual images from films or multi-media during the same time. References related to colour therapy can be easily sourced. T. Gimbel's book *The colour therapy* (1993) and F. Birren's book *Colour psychology and colour therapy* (1961) give detailed accounts of the effects of colour on the human mind and emotions, but they were written over thirteen years ago. This indicates such methods may be insufficient to attract much attention. The basic theory of traditional Chinese medicine mentions the five colours that correspond to the five organs. However, the book *The foundations of Chinese Medicine* by G. Maciocia (1989) and other relevant books in Chinese, never explain this theory and application. It will be my intention to address this missing theory of colour to form part of my inquiry.

I became interested in this subject some years ago but failed to find a relevant research course (due to the restriction of my personal circumstances) after I graduated in Traditional Chinese medicine in China in 2002. Nevertheless, my studies in making animated films and sound design in 2004 strengthened my confidence that moving images have a strong impact on our emotion and well-being. Furthermore, my recent contact with the Art and Design faculty at MMU and the work of Arts for Health in hospitals in Europe has inspired me further. I wish to explore this area in order to establish an alternative way for healing patients in hospitals in terms of improving their well-being. Regardless as to how effectively 'visual therapy' would be developed from this research, I believe that the scope of images for influencing healing effects would be more defined and the chain of actions and reactions between the links of image, imagery, mind, body and health would be further clarified. Finally, I hope that a new page in the knowledge of vision and health would be contributed to the literature, as well as its functional application for the benefit of people who are suffering in the future.

### **Methodology**

My research requires broad references, such as relevant literature, journals and reports on vision, imagery and therapeutic healing. In particular, I will look at examples of symbols, pictures, paintings, photographs, animated images and films that may generate calming, relaxing, inspiring or therapeutic effects.

Because patients in hospital already have television technology, and are used to watching images on screen, I intend to develop DVD compositions of moving images with sound and test these to evaluate their usefulness in aiding relaxation, which in turn is believed to aid the healing process (Reference can be found in R. P. Zahourek's book and the *Journal of Clinical Psychology* by D. T. Johnson and C. D. Spielberg (1968)). Initially, I will compose a few sample film-clips that may generate calming or relaxing effects on patients in hospitals in China. I will construct a questionnaire to collect information from patients on their perceptions of the effects of the viewing session, and triangulate the information from these with information from physical tests (such as blood pressure, pulse, etc) to discover if there



are differences before and after viewing the film-clip for 20 minutes each day, using sample patients. The whole process will be guided and monitored by the doctor, in charge of the ward of the hospital. Ethical approval will be sought.

I will collaborate with Dr. Kai Xu, Director of the tumour ward at the Guangdong Provincial Hospital of TCM; Dr. Junxing Yang, Deputy Director of the division of the hip joint centre, department of Orthopaedics in First Affiliated Hospital, Guangzhou University of TCM; and finally Dr. Yun Ma and Dr. Xiaojun Wang who specialize in liver diseases including liver cancer in YouAn Hospital in Beijing. As the feedback from sample patients is collected, the doctor in charge will examine the correlated effects on individual patients. I will refine the images and sound according to further understanding gained through the data collected. My ultimate intention is to help patients to become familiar with the images that work best for them.

After this collaboration has begun in China, I will contact hospitals in the UK and apply for ethical permission, so that I can test the effect of those visual images on UK patients. I believe this opportunity would give me much valuable data by comparing the effects of the same images on patients in the East and West.

The more thoroughly I analyse the responses and data from patients and doctors in consideration of their individual health conditions, age, gender, cultural background and hospital environment, the more I can discover certain norms and criteria that would meet the individual or group patients' conditions, so that a maximum effect for their well-being can be achieved. My final research product will be the results of the tests and a theory developed from these of the beneficial effects of images and sound with people who are ill. This will be accompanied by my practical outcome of a range of example film clips on DVD or visual images through multi-media if the location is suitable.

### **The plan for the application of 'Visual Therapy' on patients in hospitals in China**

Theory: Based on The Traditional Chinese Medicine, Psychophysiologic Self-Regulation and the Relaxation Response.

Methods: Using images from film clips (20-25 minutes each session per day) which have been designed to generate calming and relaxing effects for patients in a hospital environment in China

The doctor-in-charge will clearly explain in detail about the purpose and the whole process of this 'Visual Therapy'(VT) treatment and a letter of consent is required to be signed by all sample patients before starting the treatment, but all participating patients are given the choice to withdraw from the research anytime if they wish. (English will be translated into Chinese that the patients/participants can communicate with the relevant doctor/nurses.)

Each sample patient will have a physical check up based on the daily normal procedure of each hospital in China (preferably including heart rate, pulse reading, blood pressure or feedback from a thermograph, and observation of the mental state of the patient). Data will be recorded by the doctor-in-charge or nurses before each VT session.

A questionnaire will be provided for each patient before and after each VT session.

All data will be analysed on each patient once per week to determine and identify if any changes have been made based on the effect of selected visual images from film clips on the same patient groups after 2 weeks of treatment.

Refine the film clips, any artefact, e.g. moving images on walls through projectors, and any method that have been used for the VT treatment on patients based on the analysis of the data after each week. It may take 2 to 3 weeks (depending on the time required for sending the mail from UK to China) for the very first time on new sample patients

After the VT treatment has been implemented for a week and the data has been analysed for the adjustment of this treatment, the whole process would become an ongoing system to form a working circle but keep readjusting, harmonizing and improving all aspects as much as it necessary throughout the process.

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# Multiple Uses of Digital Video in Action Research in Physiotherapy: An Objective Record of Movement, an Interview Tool and Part of Therapy

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## Abstract

Chronic dysfunctions of the low back and Achilles tendinopathy are frequently associated with poor quality movement, localised pain, stiffness and possibly impairment of balance. Following physiotherapy interventions, especially exercise, the ease of movement on activities such as stepping down improves. Studying this change rigorously is problematic: changes occur over a long time period and each individual has a unique level of activity and dysfunction; the population is not homogenous. Individual case studies using action research methodology do, however, allow investigation of the complex process of rehabilitation. Interventions and attendant responses are investigated in successive cycles of planning, action and observation, with evaluation informing future interventions. Demonstrated to provide an objective record of movement, Digital video (DV) also emerged to become a part of the physiotherapy intervention. In addition to enhancing the researcher's physiotherapy practice, participant's subjective comments provided insights into the nature of muscle tightness. The recording and analysis of participant reports of muscle tightness during poor quality movement using DV supports a novel means of investigating physiotherapy interventions.

## Introduction

Digital video (DV) technology is economical and extends the scope of older analogue systems. Key advantages are that editing is readily performed on desktop computers with no degradation of data quality. Output formats include digital video disc (DVD), a medium that permits authoring of menus to provide rapid access a specific part of a record (Ozer 2006). This paper discusses the use of digital video in an ongoing Action Research project. The context of the study is a physiotherapy sports injury practice with participants drawn from a, predominantly, middle aged population. The research thesis is that changes in 'quality of movement' in the whole body, or 'global' level, are related to the localised symptoms of chronic low back or tendon dysfunction. Put simply, aberrant ways of moving on a 'global' level militate against resolution of the local condition. A convenience sample of attendees has been recruited, with each participant constituting a single case. Written informed consent was obtained from each volunteer and ethical approval for the project was granted through St Martin's College research procedures. All physiotherapy interventions were within the Chartered Society of Physiotherapy guidelines for scope of practice and professional standards (Chartered Society of Physiotherapy 2005).

## Methodology

Paterson and Dieppe (2005) make a cogent case that complex interventions including physiotherapy may not be suited to traditional quantitative research methods. One research approach to situations with multiple variables is the case study. Careful documentation and observation of factors can yield questions inviting further investigation (Yin 1994, Robson 2002). Action research (AR) provides an approach by which the process of change required to respond to the complexity of clinical 'real world' settings can be made systematic and

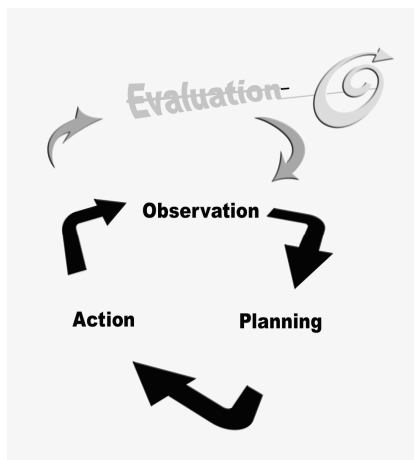
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rigorous. It is ‘a collaborative intervention in a real-world health care situation to define a problem and explore a possible solution’ (Morton-Cooper 2000) where research is done *with* rather than *on* participants (McNiff 1992). Robson (2002) describes the purpose of AR includes the *improvement* of practice, the *understanding* of practice by practitioners and the *situation* in which practice occurs.

Although precise details vary, AR is performed in a series of cycles or iterations. See Figure 1: The starting point is often an aspect of practice or a situation that is intuitively ‘known’ to be a problem. Consequentially an intervention to change an element of the situation is planned, then enacted with the ensuing outcome evaluated through critical reflective practice

**Figure 1: The action research cycle (After Edwards 1999, Robson 2002).**



Action research may be utilised to influence or change an aspect of practice. The research process may cease after the initial cycle, or continue with another aspect of practice subjected to the cycle of planning, action, observation and evaluation.

The process is iterative; there may be no clear end point. Evaluation of the effects or effectiveness of the intervention may resolve the original question to the researcher’s satisfaction or a new cycle begun.

(Edwards and Talbot 1999, Morton-Cooper 2000, Robson 2002, McNiff and Whitehead 2002, McNiff 1992). The research process may cease after the initial cycle, or continue with another aspect of practice subjected to a further cycle of planning, action, observation and reflection. By this means a progressive focussing of the research area can occur and the difference between real and imaginary constraints to change may be investigated. AR may have no clear end point yet there is value to the process itself. For practitioners charged with applying research derived evidence to our practice, there is a tacit expectation that development and modification of research findings is made to apply them to situations that differ from the original research context. The flexibility of research design allows accommodation of change and responses to unanticipated developments that characterise clinical practice. The rigour of AR rests upon data triangulation, the corroborating evidence from participants and peer reviewers that support the validity of a researchers observations (Robson 2002).

Individual clients presenting at the clinic were recruited as research participants. Their symptoms, subsequent treatment and rehabilitation form a case or ‘unit of analysis’ (Yin 1994) with symptoms of stiffness and pain during activity being monitored along with assessment of whole body movement during a range of activities that challenge balance. Through description and analysis of a series of critical incidents this paper demonstrates how a rigorous approach to researching an aspect of physiotherapy practice is evolving. Following presentation of a brief outline of the context of the research, the attributes, qualities and benefits of DV usage are illustrated through accounts of three case histories.

### **Chronic musculoskeletal dysfunction and quality of motion**

Chronic low back and tendon dysfunctions are causes of significant disruption to activity in many individuals (Khan and Cook 2004). Symptoms of localised pain and stiffness are common yet there is a poor correlation between the observed pathological changes in the tissues and the prevailing level of symptoms (Khan et al. 2000, Khan and Cook 2004, Kader et al. 2002, Waddell 2004). Remarkably, tissues frequently show little sign of an inflammatory healing response (*tendinitis*) or a degenerative process (*tendinosis*). The term tendinopathy has therefore been proposed as a descriptive diagnosis for symptomatic tendons without defining an underlying pathology (Khan and Cook 2000, Kader et al. 2002, Scott et al. 2004, Khan et al. 2000). Exercise, particularly heavy load eccentric or muscle lengthening exercise has been shown to be effective in resolving many chronic Achilles and patella tendinopathies yet the mechanism by which this effect is mediated is unknown. Documented improvements following eccentric loading regimes have been asserted to be a response to altered tissue loading. (Alfredson and Lorentzon 2000, Khan 2002, Purdam et al. 2004, Young et al. 2005, Alfredson et al. 1998). Waddell (2004) reported that in the lower back objective findings frequently do not correlate well with symptoms of chronic dysfunction and that graded exercise programs and remedial exercise have been shown to improve function in those with chronic low back dysfunction. No single cause of the localised pain and sensation of stiffness has been identified, although abnormal tissue loading has been described as a contributory factor (Khan 2002, Kader et al. 2002, Khan et al. 2000, Hamilton and Purdam 2004).

Poor quality movement, characterised by ill controlled, imprecise actions has long been asserted to be a factor in chronic musculoskeletal dysfunctions (Kendall et al. 1983, Janda and Jull 1987, Janda 1987, Sahrman 2002). Empirical data on the biomechanics of lifting show that abnormally high spinal loads occur when loads are held away from the body (Adams et al. 2002). Clinically, a reduced range of motion in the ankle and hip joints appears to produce a 'poor' position for lifting. In the Achilles tendon, tight calf muscles are asserted to be both a cause of altered biomechanics in running and a contributory factor in the development and persistence of Achilles tendinopathy (Reid 1992, Brukner and Khan 2001). Rehabilitation of patella tendinopathy has been shown to be effective when exercises are performed on a declined board (Purdam et al. 2004, Young et al. 2005). Although this position alters the mechanics of quadriceps loading, changing the relative motion of hip, knee and spinal joints, the authors did not consider that the overall movement strategy might be related to the aetiology or resolution of the dysfunction.

A key belief I hold as a physiotherapist, based on experience of providing exercise based rehabilitation, is that poor global quality of movement is frequently related to the presenting chronic musculoskeletal dysfunction. Effective physiotherapy intervention includes restoring efficient movement strategies. It can be said, however, that good quality evidence is not presently available to support this assertion. The starting point for this research was a desire to utilise AR to enhance the effectiveness of the researcher's physiotherapy practice and provide evidence on the efficacy of physiotherapy interventions.

## Case 1. The recording of participants' subjective comments with digital video.

Case 1. The recording of participants' subjective comments with digital video.

### **Context**

EQ presented with chronic Achilles' tendinopathy in both legs. His symptoms settled with long term rest from running but recurred on resuming running.

### **Planning**

Recording of a series of prescribed functional activities on digital video to provide an objective record of movement.

### **Action**

A series of movements was filmed from the front and the side.

### **Observation**

Physiotherapy-researcher noted a difference in the way a hop was initiated between the painful side and normal side. Discussion with the participant revealed that a 'more tentative' strategy was employed to initiate the hop on the symptomatic side.

### **Evaluation**

Critical reflection of this event by the researcher revealed how in addition to producing a objective record of movement, subjective comments by the participant can inform understanding of the observed movement strategy.

### **Comment**

**Digital Video (DV) is a flexible tool with which to record subjective comments relating to specific movements. DV facilitates an objective record of movement and a rich contemporaneous record of comments about movement in specific situations. Both of these types of information have potential to inform diagnosis, rehabilitation strategies and evaluation of recovery of functional capacity.**

Use of digital video was initially envisaged as a means to record and objectively quantify each participant's quality of motion during functional activities such as squatting and stepping down a step. Evaluation of a recorded critical incident revealed, however, that by focussing only on a set sequence of movements, potentially valuable insights contributed by the participant were being lost. Consequently the procedure was altered and recording of each participant's subjective responses begun. The video then evolved to become a collaborative record with subsequent communication between the participant and physiotherapist-researcher discussing specific events. Precise articulation of how the participant's experience of tightness was felt to vary during rehabilitation was recorded. This more flexible approach, that encouraged participant contributions in subsequent sessions, yielded valuable comments on the sense of muscle tightness and how this related to poor quality of movement during specific activities. The physiotherapist-researcher assessment of changes in the quality of movement and changes in the sensation of stiffness described by the participant have been subjected to physiotherapy peer review; a means of checking of the reliability and validity of observations. The evolution of physiotherapist-researcher communication and data collection

approaches illustrates how DV recording can enhance the quality of data collected providing evidence of a rigorous action research methodology.

As a result of these early insights the use of participants subjective comments has become a central element of data collection, and questioning about what a participant ‘feels’ to be happening during specific movements a focus of the research. The DV record of specific incidents facilitates data checking by participants and physiotherapy and research peers. Physiotherapist-researcher observations can be triangulated with participant, physiotherapist and research peer review. This ‘chain of validity’ is fundamental to claims to knowledge made by the researcher (McNiff and Whitehead 2002).

## **Clip 2: Digital video as part of the physiotherapy intervention.**

### **Clip 2: Digital video as part of the physiotherapy intervention.**

#### **Context**

XB2 presented with lower back dysfunction, knee and chronic symphysis pubis pain. After initial symptomatic relief, rehabilitation over several months mainly consisted of remedial exercise with follow up at approximately monthly intervals.

#### **Planning**

Production of a ‘before and after’ video of how a squat is performed to allow comparison of changes in the participant’s quality of movement.

#### **Action**

DVD sent to the participant with instruction to observe the performance and comment on what has been felt to change. A means of checking validity.

#### **Observation**

The participant identified that change is ‘obvious’ and noted that they had ‘forgotten what they used to be like’. They also reported that viewing the video also served as a motivating factor to continue with exercise.

#### **Evaluation**

In addition to a clear record of changes in the quality of movement, the physiotherapy-researcher noted on critical reflection ‘Digital video becomes part of the therapy providing visual feedback on movement and a source of motivation’.

#### **Comment**

**Digital video has become part of the physiotherapy intervention.**

In addition to providing feedback about how participants move, the video record emerged as having a role in motivating further change providing incentive to continue with exercise. As rehabilitation took place over several months one participant identified ‘it is hard to

remember how I used to be'. Viewing a 'before and after' record provided a clear picture of what change had occurred and provided motivation for the participant to continue with rehabilitation exercises. During subsequent follow-up when asked if the video was a factor in continuing motivation, the participant answered with an enthusiastic 'definitely, yes!' Digital video has become, therefore, a part of the physiotherapy intervention.

### **Clip 3: Digital video provides an objective record of movement.**

#### **Clip 3: Digital video provides an objective record of movement.**

##### **Context**

LT reported inability to pursue circuit training due to a feeling that muscles 'were going to tear'. Although chronic lower back dysfunction had forced an end to competitive badminton several years previously they felt that this was something they 'lived with' and was 'not a problem'. Objectively the range of motion in the lower back was good but a marked 'quivering' was noted at the extremes of movement. The physiotherapy-researcher and participant agreed that this uncoordinated movement related to the feeling of impending muscle damage during activity.

##### **Planning**

Utilise DV to record participant responses to changes in the 'sense of tightness' during movement.

##### **Action**

Recording the participant performing a series of exercises that progressively challenge balance on less stable surfaces.

##### **Observation**

The participant clearly reported changes in the sensation of tightness during the balance exercises. The specific movements that caused the changes in tightness were recorded simultaneously on DV.

##### **Evaluation**

The Participant's reports of a different 'feel' to performance when balance was challenged indicate an anticipatory or active element to the sense of movement. A protocol to test balance in a systematic manner is evolving.

##### **Comment**

Digital video can be utilised to provide an objective record of a participant's movement in activities where a high degree of variability during repeat trials is observed. Participant's subjective comments on how they 'feel' they move in specific circumstances provide evidence of changes in the sense of movement and of how this may relate localised tissue dysfunction to their quality of movement.

Finally, the video record provides data with which to challenge established theory. The sensory mechanisms underlying the sense of movement, or proprioception, relate to joint position, muscle length and tension. Although proprioception is described as a passive sense



(Lephart et al. 2000, Davies et al. 2001) the role of muscle sensory receptors is known to have an active basis. Essentially the sense is guided by anticipation (Berthoz 2000).

Analysis of data collected in this research suggests participants are able to discriminate changes in muscle stiffness with different movement strategies and that there appears to be a link between the quality of motion and aberrant movement. The participant's sense of movement appears to be key in both quality of motion and localised tissue dysfunction.

### **Conclusion**

Digital video is a medium that can provide the physiotherapist-researcher and participants with insight into the presence of aberrant movement strategies. It permits the creation of an objective record of movement in specific circumstances becoming a tool to research the mechanism by which resolution of chronic tendon dysfunction may occur. DVDs of edited excerpts and the unedited video facilitate data checking by the physiotherapist-researcher during critical reflection and allow data checking by participants, physiotherapist and research peers. It has become a key tool in establishing validity to claims of knowledge, enhancing the quality of methodological rigour in this action research project.

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# **Low Income Consumers' Reactions to Sales Promotion Stimuli of Low Involvement Products: An Exploratory Perspective**

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## **Abstract**

The study sets out to explore how low-income consumers react to sales promotion stimuli of low involvement products. The data for the study was gathered in Salford (Northwest of England) through a focus group discussion and thirty in-depth interviews conducted with low income women consumers. Findings suggest that low-income consumers are sensitive to sales promotions and even use them as cues to resolve their in-store decision dilemmas about the choice of brands of low-involvement products as they believe that the brands of these products are similar in most respects. However, findings indicate further that the degree of these consumers' responsiveness to the sales promotion tools varies with the relative attractiveness of the tools. In terms of how each of the tools could influence them to buy brands of low-involvement products, respondents ranked buy-one-get-one-free (BOGOF) first which is followed by free sample, while discount was ranked third. Coupons and gifts were ranked fourth and fifth respectively and competition last in the ranking of the six tools. The study shows further that point-of-purchase displays also have impact on their buying behaviour of these products but their exposures to these displays are sometimes inadvertent. Implications of the study are also discussed.

## **Introduction**

Understanding buyers' behaviour with respect to marketing stimuli is a prerequisite for the success of business organisations in the marketplace. It is of particular interest to those who, for various reasons, have the desire to influence or change that behaviour (Engel et al. 1993). It is therefore not surprising that Solomon et al. (2006) contend that 'consumer response may often be the ultimate test of whether or not a marketing strategy will succeed'(8). But, unlike the affluent consumers whose purchasing powers are considered as strong and unwavering, low-income consumers enjoy relatively little attention from marketers (Hamilton and Catterall, 2005). They are often considered as a group with different aspirations; who are unprofitable and risky, and not good for market-related research (Anderson 2002; Hamilton and Catterall 2005). Consequently, this area of marketing in the literature remains under-researched. Nonetheless, these views have been robustly dismissed as myths and not the reality (Anderson 2002; Hamilton and Catterall 2005). Given the little attention devoted to this segment of the consumer market, this study therefore sets to explore how these consumers at the lower spectrum of the income scale react to one of the major tools of marketing communications – sales promotions for low involvement products, thereby contribute to the extant literature in this area of consumer behaviour characterised by a dearth of empirical studies.

To achieve this highlighted objective, the paper has been divided into four sections. The first section is the theoretical background in which extant literature on low-income consumers, consumer involvement, and sales promotions are examined; this is followed by the second, which contains the methodological stance adopted for the study. The third section features the summary of major findings, upon which the conclusions and implications (section four) of the study are based.

## **Theoretical Background**

### ***Low Income Consumers***

Low income consumers can be defined as individuals whose financial resources or income results in them being unable to obtain the goods and services needed for an 'adequate' and 'socially acceptable' standard of living (Darley and Johnson 1985 in Hamilton and Catterall 2005). In their paper on global poverty and the United Nations, Hill and Adrangi (1999) contend that the poor are individuals and families whose income are below the poverty line, by this amount, they mean the proceeds required to meet minimal material needs and create opportunities for social participation. There seems to be an agreement between these views that low-income consumers lack adequate resources needed for ensuring their well-being in their social settings.

Several conceptual studies in the field of marketing, consumer behaviour, and sociology have provided various clues on how to characterise the low income consumers. Indeed, the efforts result in a quite engrossing pattern, as some of them corroborate each other while others are found to be conflicting. Andreasen (1993) highlights a list of significant conclusions from the literature ranging between 1960 and 1970. The following characteristics of low income consumers emerge from the effort. They are often poor, uneducated, and unemployed, which makes it difficult for them to afford lower-priced, large-sized products; they are different from the middle class both quantitatively and qualitatively. Hence, being poor is not just a matter of having less money, but one is also much likely to be young, uneducated, a member of a minority group, in a single parent household, and living in isolated pools of urban poverty. Closely related to this standpoint is the explanation of Fyfe (1994) that 'low income consumers' means not only those who are in employment with low wages but also people who have to live on very little income from whatever source. Hence in the context of this definition the author includes the elderly, people with disability, single parents, students, the unemployed, and the homeless. In this sense, we can conceptualize low income people into two categories – those who find living in low income as a lifetime experience and those whose circumstances change into it such as ill health, family break-up, loss of job, and retirement (Fyfe 1994). Researchers often use different terms to describe these people at the lower end of the income spectrum. Among these are the disadvantaged (Andreasen 1993: 270), the under-privileged (Coleman 1960 cited in Williams 2002: 253), and the underclass (Moore 2001: 319).

Given the significance of income to consumption, low income consumers appear to be constrained by their condition in terms of their consumption of goods and services. No wonder it is claimed that people in the high and low income components of social classes would behave differently from each other (Coleman, 1960 in William 2002), and by implication, purchasing power of poor communities is less than that of nonpoor because they have on average less money to spend (Alwitt and Donley 1997). For instance, a study has associated a decrease in income to a change in the variety and the quantity of food eaten, such that there is a reduction in consumption of recommended healthy diet among women (Anderson and Morris 2000). This lays considerable credence to the claim that low income consumers generally bought a smaller proportion of the total supplies of food than higher income groups, and that their food purchases were inadequate by all known standards of nutritional sufficiency (Leon and Maxine 1943). More studies such as Matza and Miller (1976); Killen (1994); and Walker, et al. (1995) show further that low income consumers are at disadvantage as far as food and nutrition are concerned. Killen (1994) notes that '...in order to stop feeling hungry and to have something 'tasty' to eat, low income households will purchase higher proportions of foods which are high in fats, such as sausages, or in sugars,

such as cheap biscuits and sweets...this is not because [they] are ignorant of 'healthy eating' considerations but because they cannot afford to meet all their needs in a 'healthy' way within their budget (57)'. This view supports the findings of Hill (1991) and Walkers et al. (1995). Hill's (1991) study of homeless women reveals that the poverty experienced by the homeless reduced their attachment to typical consumer products; and they rather show affinity for sacred items like memories, relationships, and religious beliefs, in which physical ownership was irrelevant. Also, Walkers et al. (1995) in another study found that rather than radically changing their diets, the low-income families resort to cheaper imitations of the conventional diets. By and large, these findings suggests that low-income consumers sometimes have to rely on making incursions into other budgetary allocations and postpone other essentials, such that they decide on which item of necessity is less necessary (Matza and Miller 1976). The foregoing thus indicates further the incidence of constraints on buying behaviour of low income consumers.

Moreover, in the same vein, another related finding shows that low-income consumers are more price-sensitive, and even tend to engage in search for the lowest priced products among others, but they engage in *irrational choices* when there is no significant price differences (Jones et al. 2003). But this contention sharply contradicts the Johansson and Goldman's (1979) which holds that since low-income consumers often buy smaller quantities, their potential benefit for search is reduced. In view of these seemingly conflicting results, Johansson and Goldman (1979) then suggest that income may influence search and buying behaviour in opposing directions (i.e. strengthening and weakening it). Indeed, as it is evident that there is no agreement among authors on some of the issues associated with consumption pattern of low income consumers, and as there is dearth of studies that look closely at these consumption patterns in respect of low involvement products, this present study sets to venture into this challenge to enrich the relevant literature. Besides, one question has not been explicitly explored to date which is how do these consumers react to sales promotion stimuli especially in the context of low-involvement products? Exploring this question will significantly add to extant knowledge not only in consumer behaviour but also in marketing field of study in general.

### **Consumer Involvement**

Going by the view of Beharrell and Denison (1995), the concept involvement originated in the field of social psychology with the works of Sherrif and Cantril (1947) and Sherrif et al. (1965). In the former it was conceptualized as the relation between ego and an object, and in the latter (social judgement theory), it was described as the centrality of beliefs involved with an individual. But there seems to be an agreement in the extant literature (for example, Kassarian 1981; Greenwald and Leavitt 1984; Engel et al. 1993; McWilliam 1997) that the concept of involvement was first popularized in marketing circles by Krugman (1965) whose focus was on advertising. According to Krugman (1965: 355) 'by [involvement] we do not mean attention, interest, or excitement but the number of conscious 'bridging experiences' connections, or personal references per minute that the viewer makes between his own life and the stimulus'. Given that the hub of Krugman's thesis was on advertising, it is not surprising that this definition is tuned in that direction. However, many more definitions of involvement have been proposed.

Involvement has been defined as the perceived level of personal importance of interest evoked by a stimulus within a specific situation (Arnould et al. 2004); a goal-directed arousal capacity (Park and Mittal 1985), and the level of identification and personal relevance the purchase decision holds for the consumer (Robertson et al. 1984). Brennan and Mavondo

(2000) refer to it as ‘motivation to search for information’. But in specific terms, *consumer involvement* has been defined as perceived personal importance and/or the interest consumers attach to the acquisition, consumption, and disposition of a good, a service, or an idea (Celsi and Olson 1988; Mowen and Minor 1998). This is closely related to the perspectives which view involvement as ‘caring’ the opposite of nonchalance (Mittal 1989), and long term interest in a product (Lin and Chen 2006). In view of lack of firm agreement about the nature of involvement among researchers, Rothschild (1984: 216) takes a critical look at the problem associated with involvement literature and argues that the problem could be summarised into the following: ‘(1) there is too much theorizing; (2) there is too little data collection; (3) there is too much complaining about lack of structure; (4) there is too much repetitive reviewing of past review papers’. Since there is apparent need to move forward and contribute more meaningfully to what already exist on ground in respect of the field of study, it appears logical to be mindful of these highlighted problems in a study of this nature. However, despite the seeming controversy about the concept, Foxall and Pallister (1998: 180) observe that ‘there is some agreement in the literature that, at the bare minimum, involvement is to do with personal relevance, a perceived value in the goal object, an arousing motivation reflecting interest in the goal object, and that this arousal or motivation can be stimulated by communication, by the product itself or by the purchase decision context’. Indeed, a thorough scrutiny of this definition suggests that it appear to be all encompassing and provides a platform for further and meaningful studies on involvement-related issues.

### ***Consequences of involvement***

Indeed, consumers can be involved with various goal objects, which could be product categories, brand, advertisements, media, decisions, or activities (Arnould et al. 2004, Peter and Olson 2005). Moreover, William et al. (1978) argue that customers could be involved with pricing or customer service practices, while Kassarian (1981) suggests that consumers could be more involved in the consumer decision process. Consequently, studies have shown that consumers’ involvement with these diverse objects leads to different reactions. While consumers’ involvement with products leads to a greater perception of attribute differences, perceptions of greater product importance, and a stronger commitment to brand choice (Sadarangani and Gaur 2002), being involved in purchases results in consumers searching for more information, spending more money, and spending more time searching for the right selection, (Clarke and Belk 1978; Sadarangani and Gaur 2002); and consumers’ involvement in advertisements tends to make them engage in more counter-arguments to the advertising (Wright 1974 in Zaichkowsky 1985). In their classifications of customers on the basis of either low or high involvement along price and customer service, William et al. (1978) indicate that price-oriented shoppers would tend to select stores with a reputation for low prices while convenience oriented shoppers would tend to seek stores near their homes or offices, or having ample parking spaces. Above all, based on the postulation that people could be more involved in the consumer decision process, it is noted by Kassarian (1981: 32) that ‘such individuals may be addicted reader of *Consumer Reports*, who pays attention to advertising and personal influence, and to the business and consumer sections of newspaper. Some individuals may well be more price conscious, more alert to brand differences, generally more capable of discriminating quality differences, the more alert, the more conscious, the more interested and involved consumer’. This synthesis of ideas on consequences of involvement makes it clear why Zaichkowsky (1985) notes that each area of involvement might have its own idiosyncratic result of the state of being involved with the stimulus.

Apparently, the foregoing suggests there are various goal objects with which consumers could be involved and the results of such involvement. However, the review suggests a gap in the literature on the relevance of these issues to low income consumers. For example, in the realm of product involvement which is the hub of the present study, one could ask how much do we know about how these consumers react to low involvement products and sales promotions associated with them. This is one of the challenges and the major issues which drive this present study.

### ***Defining Low Involvement products***

Even though it has been highlighted earlier that consumer involvement can be multi-faceted, the focus of this study is on low involvement products among others. Meanwhile, a pertinent question in the context of this study is which products can be described as low involvement in nature?

As a foundation for coining an operational definition for low involvement products in the present study, it is deemed helpful to first examine the existing perspectives on the conceptualisation of low involvement products. In a simple term, Hart and Stapleton (1992) argue that low involvement products are impulse goods which are purchased on the spur of the moment without any previous considerations. This standpoint approximately matches another which suggests that for most consumers, most fast-moving consumer products are 'trivial' and uninvolved both in terms of the decision making required in their purchase and the personal relevance to the buyer (McWilliam 1997). Taking a somehow different approach, Stanton et al. (1994) systematically highlight conditions for which involvement is greater as follows: (1) the consumer lacks information about alternatives for satisfying the need (2) a large amount of money is involved (3) the product has considerable social importance (4) the product is seen as having a potential for providing significant benefits. The authors then hypothesize that since they rarely meet any of these conditions, most buying decisions for relatively low-priced products that have close substitutes would be low-involvement.

Given some variations in these definitions of low involvement products, it is considered helpful and logical to highlight the keywords in the contributions reviewed so far towards forming a working definition of low involvement products for the present study. Hence, adopting this stance, low involvement products may be defined as products which are bought with little or no planning as the acquisition costs, the risks of making a wrong choice, and the benefits (both intrinsic and extrinsic) are low to the consumer. Examples of products that could be in this category as cited in the literature are tea (Le Claire 1987); household cleaning products (Ratchford 1987), table salt (Assael 1998), paper towels (Arnould et al. 2004), bread, and coffee (Ahmed et al. 2004). These examples appear consistent with the results of the survey of Taylor (1981) in which the sample of the study rated nondurable as low-involvement purchase decisions and durables as high involvement purchase decisions.

### **Consumers' Response to Sales Promotion**

Sales promotion has been defined as marketing activities usually specific to a time period, place or customer group, which encourage a direct response from consumers to marketing intermediaries, through the offer of additional benefits (Peattie and Peattie 2003). While there are various categories of sales promotion tools, those ones germane to the focus of the present study are consumers' sales promotion tools which include reduced price, rebates, coupons, extra product, sample, gifts, contests/sweepstakes, and point of purchase promotion (Brassington and Pettitt 2006). However, coupons and discounts have been noted to be the

most widely used sales promotional tools in grocery product industry (Gilbert and Jackaria 2002; Shi et al. 2005).

In general, Raghuram et al. (2004) postulate that sales promotion positively or negatively influences consumers through three different routes of the information route, the economic route, and the affective route. While with its information route it influences consumers' beliefs about the brand or industry concerned; the economic route of sales promotion is about changing the economic utility associated with the purchase of the product, and the affective route centres on the feelings and emotions aroused in the consumer (Raghuram et al. 2004). As stated by the authors, these three routes have both the primary and the interactive effects on consumers' purchase intention and sales. But while this postulation about the impact of sales promotions on consumers appears broad, little is known about the effects of these tools on low-income consumers specifically.

Researchers have used consumers' associated costs to explain how consumers respond to deal<sup>1</sup> (Blattberg et al. 1978; Blattberg et al. 1981; Blattberg and Neslin 1990). It is reported that while consumers purchase to minimize their total costs such as purchase costs and holding costs, retailers set the price in the deal to maximize their profits (Blattberg et al. 1981). In the model of household purchasing behaviour proposed by Blattberg et al. (1978), the costs that affect household costs are identified to be transaction costs, storage costs, stockout costs, and the actual price of the item. Based on these costs, they found that homeowners are more deal prone as they face lower storage costs, car owners are more deal prone due to their lower transaction cost in the form of transportation, and households without working women are more deal prone as these women have lower transaction costs in terms of time and could spend more time searching for deals (Blattberg et al. 1978; Blattberg and Neslin 1990).

Although consumer sales promotion tools work towards eliciting positive behaviour from consumers, consumers react differently to these tools as shown in various relevant literatures (Blattberg and Neslin 1990; Gilbert and Jackaria 2002; d'Astous and Landreville 2003; Ndubisi and Moi 2006). In a study on behavioural response to sales promotion tools, Shi et al. (2005) considered five tools – price discounts, in-store demonstrations, coupons, sweepstakes and games, and buy-one-get-one-free. They found that consumers respond more positively to price discounts, buy-one-get-one-free, and coupons than to other sales promotion tools. They suggest that this may be because these tools are easy to understand and can provide consumers with transaction utility. Their findings also show that consumers prefer buy-one-get-one-free to coupons, and they suggest further that this may be due to the fact that buy-one-get-one free is a more flexible tool, while coupons may be considered troublesome and inconvenient as consumers may have to remember to bring the coupon with them, and have to spend a certain amount of money to benefit from the deal. These findings partly corroborate that of Ndubisi and Moi (2006) who found that price discounts, free samples, bonus packs, and in-store-displays are associated with product trial but coupon does not have any significant impact on product trial.

Gilbert and Jackaria (2002) investigated consumer responses to four different promotional deals most commonly used in UK supermarkets, namely coupons, price discounts, samples and buy-one-get-one-free. Their findings indicate that only price discount promotions proved to be statistically significant on the reported buying behaviour, and leads consumers to engage in purchase acceleration and product trial, while buy one get one free is associated

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<sup>1</sup> A deal is defined here by Blattberg and Neslin (1990: 71) as when consumers buy a product on special price.



with brand switching and product acceleration. However, free sample and coupons do not have a significant influence on reported purchase behaviour. Based on their study, Gilbert and Jackaria (2002) claim that buy-one-get-one-free is the most popular of these tools to consumers, this is followed by discount, while coupon is the last following free sample which is in the third place. While these findings appear significant and have implications for marketing decisions, however, it is yet unclear how low-income consumers in particular perceive and react to these tools.

In general, findings of several studies indicate that consumers' perception and attitudes to sales promotion tools can be very arbitrary. For instance, despite the popularity of coupons in the retail industry, studies indicate that it does not have significant impact on product trial (Gilbert and Jackaria 2002; Shi et al. 2005; Ndubisi and Moi 2006). Gardner and Trivedi (1998: 68) explain the reasons why coupon does not have a broader appeal to consumers. One of the reasons is that consumers incur a cost in relation to time associated with clipping of the coupons. The second reason is that the declining face value and shorter duration of coupons further decrease the value of the promotions. And, the third reason is effort required on the side of consumers in keeping track of the coupons and producing them at the place of purchase. Meanwhile, while price discount as a form of deal is thought to be popular and attractive to consumers (Madan and Suri 2001) and consumer could even make extra trip to get higher discounts (Kahneman and Tversky 1984 cited in Madan and Suri 2001), these standpoints seem to be at variance with the findings of Drozdenko and Jensen (2005) in which consumers prefer smaller discounts to deepest discounts as there were concerns about the products' quality problem, and whether they are damaged goods, or stolen goods.

Moreover, bonus packs which include buy one get one free (Guerreiro et al. 2004), could be perceived differently by the consumer. It is argued that consumers may be sceptical of the claim such as think that giving the extra quantity (100% MORE FREE) as claimed by the manufacturer is not based on true typical/previous quantity but an artificial/bogus lower amount, or they may suspect that manufacturers increase prices when offering bonus packs (Ong 1999), or the consumers may even think that manufacturer has been ripping them off in the past (Ong et al. 1997). In fact, Ong et al. (1997) found that light user would prefer 20 per cent discount to an offer of extra product which is an equivalence of 100 per cent. In support of these findings of capricious buying behaviour is the finding of Smith and Sinha (2000) which shows that the subjects of their study preferred buy-one-get-one-free to equivalent offer of buy two get 50 per cent off. Furthermore, Lammers (1991) reports that the use of free sample led to an immediate increase in sale of the product, but emphasises that the positive effect in the study was limited to small purchases and to the purchase of varieties of the product variety other than the one used for the study. And Peattie (1998) notes that consumers could be categorised into groups on their attitude to competition as a sales promotion tool. These are non-competitors, passive competitors, and active competitors. This schema shows a range of attitude from total lack of interest to active participation in competition. Perhaps, an explanation for these complexities and erratic attitudes and behaviour to these various promotion tools is in the claim of Harker (2006: 43) that 'people do not behave as quickly or as rationally as simulation models predict. Human behaviour... is unsurprisingly hard to model'. These conflicting results about consumers' reactions to sales promotions are further pointers to the need for probing into how low-income consumers react to these sales promotion tools.

## **Methodology**

The philosophy of this study is entrenched in phenomenological tradition and, in turn this logically suggests the research strategy to be qualitative. It is important to state however, that this is not meant to demean the positivism paradigm which affirms the importance of imitating the natural sciences (Bryman 2001). Rather, the decision is based on the objective of the research, which by its nature necessitates minimization of the distance between those being investigated and the researcher. The epistemological assumption of the study is that the subject matter of social sciences – the people (consumers in this context) and their institutions – are fundamentally different from that of the natural sciences and the study of the social world therefore requires a different logic of research procedure, one that reflects the distinctiveness of humans as against the natural order (Bryman and Bell 2003). The ontological assumption is rooted in constructionism which implies that the only reality is that which is actually constructed by social actors involved in any research situation-the people being investigated, the researcher, and the audience interpreting a study; and the interactions are in a constant state of revision (Hill 2000; Bryman 2001).

Evidence in the literature suggest that there is a vast array of methods of generating data qualitatively (Denzin and Lincoln 2003), but based on the overall aim and objectives of this research, focus group discussion and individual interviews were considered more appropriate methods for the study.

### ***Focus Group Discussion***

Focus group discussion was used to gather the initial data in the research process. A group of nine low-income women was used for this present study to explore the issue of what they really consider as low involvement products and the effects of promotional strategies on their purchase behaviour of these products. The participants were all women from a confirmed low-socio-economic area of the North West of England, UK (ONS 2005). Income status was ascertained before respondents were invited to participate. They were invited to a comfortable venue in Salford (UK) and paid £10 each at the end of the session, which lasted approximately one hour and the discussion was tape-recorded with the consent of all the participants.

### ***In-depth Interview***

In total, thirty in-depth interviews were conducted with low-income women consumers in the Salford area of the North-west of England. Seventeen of the respondents were on one benefit or the other, or received a pension; and while eleven of them were on part-time employment, only two of them were on full time employment. The participants were recruited with the use of a snowballing sampling method. The participants were interviewed in their homes as this option was the most convenient for the informants, which is one of the key requirements in the use of an in-depth interview (Burns and Bush 1995). The interviews were tape recorded and written notes were also taken to record respondents' reactions as the interviews progressed. Each of the respondents received an honorarium of £10 at the end of the interview for their time.

Essentially the conduct of the thirty interviews is guided with the sampling principle consistent with grounded theory methodology which is the number at which a theoretical saturation was reached. This is a stage where no new idea is produced through the inclusion of another interview (Strauss and Corbin 1998; Bryman 2001; Smith and Fletcher 2001). Besides, this sample size is also in line with some suggestions about numbers of interviews for qualitative studies. For instance, Smith and Fletcher (2001) claim that although there is no hard and fast rule about it, qualitative studies typically use around 30 respondents; while

Gaskell (2000) suggests between 15 and 25 individual interviews for a single researcher. Thus, the sample size in this study appears consistent with the extant literature.

The data collection and analysis for this study were conducted in line with the grounded theory orientation, which has been widely credited to Glaser and Strauss, (1967) in the literature (e.g. Strauss and Corbin 1998: 9; Silverman 2000: 62).

The use of women for the in-depth interview is based on the fact that household purchases have traditionally been the role of the woman in the household (Fuller 1999; Leather Food Research Association 2002; Harmon and Hill 2003). And in support of this position, Herne (1995) asserts that ‘the traditional division of labour in UK households place the bulk of responsibility for food shopping and preparation with women’.

### ***The Study Area***

The study was conducted in the city of Salford, which is about 200 miles North West of London, and covers 37 square miles and five districts namely, Salford, Eccles, Wosley, Irlam and Cadishead, and Swinton and Pendlebury (Salford Official Guide 2000; Salford City Council 2006). Although in recent times Salford has become a place that could attract tourists, it was noted for poverty and industrial squalor during the 19<sup>th</sup> and early 20<sup>th</sup> century (Papillon Graphics 2002). In addition to this description of Salford as a city, a number of studies in the UK conducted in the past that targeted low-income people have drawn samples from Salford and reported quite interesting and very useful findings (Townsend 1979; Schmidt, et al. 1994). The SN 4755 – studies of poverty among the sub-employed in three Special Areas between 1968 – 1969 financed by Joseph Rowntree Memorial Trust which covered three areas in the whole of Britain used Salford, Glasgow, and Belfast. This is in addition to another SN 1671 – poverty in the United Kingdom: a survey of household resources and standard of living, in which Salford, Glasgow, Belfast, and Neath were chosen for the study. As noted by Corti and Thomspson (1997: 113), the choice is because the proportion of low-income households there was high. Besides, in the study of two-stop shopping or polarization, Schmidt et al. (1994) used MOSAIC lifestyle classification in the selection of areas of contrasting affluence levels and socio-economic composition. In this classification, Salford and Longsight represented the down-market areas, while Didsbury represented the up-market, and Chorlton lay in between the two classifications.

This historical antecedent of Salford and its use by previous studies on related issues suggest that using it as the study area for this research will most likely lead to a robust study of low-income consumers and enhance the achievement of the objective of this present study.

## **Findings**

### ***Low Involvement Products***

In line with the definition of low-involvement given earlier, eight products constitute the main products which are used as low involvement products in this study as identified by respondents in the focus group discussion. These are table salt, sugar, bread, coffee, tea bags, potatoes, soap powder, and crisps.

### ***Sales Promotions***

Findings suggest that low-income consumers appear to be sensitive to sales promotions. This stance is closely linked to their belief that the brands of these products are similar in many

respects, and higher prices do not connote better quality for these products. Hence any brand with good<sup>2</sup> promotion will attract their attention:

Sometimes as you reach out for a brand on the shelf, you see...another brand like buy one get one free or buy 3 for the price of 2. I sometimes change my mind to buy that 'cos next time the offer may no longer be there.

The common view among the respondents is that the basic difference between the brands lie in the brand name and the expensive packaging, hence sales promotions of brands often serve as cues to their choices when confronted with decision dilemma:

A lot of what people buy is because of brand name, yes! They've got the brand name on them. I'm not saying it's superior. Well, I suppose they think it's superior in some ways from the label on the jar. Tesco and Asda are not paying for fancy label, are they? They've got a plain straightforward label, right? Whereas a lot of other products have got fancy label on, which means they will have to pay more for the fancy works instead of the coffee inside the jar.

Nonetheless, the degree of their responsiveness to them varies with the relative attractiveness of the promotional tools used. The respondents' order of preference of these commonly used sales promotion tools appears to be in the order of: (1) buy-one-get-one-free (BOGOF); (2) free sample; and (3) discount. Coupons were ranked fourth, free gifts ranked fifth, and competitions were ranked sixth. It was also commonly stated that point of purchase materials also impact on their purchase behaviour of these products but exposures to these are often inadvertent.

#### *Buy-One-Get-One-Free (BOGOF)*

Overall, this sales promotional tool significantly dominates other promotion tools in terms of the preference of the interviewees. It was repeatedly ranked first by a majority of the interviewees in the course of the interviews. Informants believe that they are getting something of real value in the offer, and it is widely acknowledged as honest in that they receive two product items for the price of one:

I love that buy one get one free because you are going to buy that bread anyway, and you are getting an extra one. You feel that you are getting something.

The first one will be buy-one-get-one-free because it's just a good bargain because you get two for the price of one.

Nevertheless, the findings indicate further that the effectiveness of this sales promotional tool at impacting on low-income consumers' attitudes will very likely be contingent on the nature of the product involved and the type of household involved. In this study, the low income consumers in a single-person household for instance believe that stockpiling perishable products might lead to a waste of resources as they have limit of what is needed and could be used within the reasonable time it will take before the product goes into 'expiration'.

#### *Free Sample*

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<sup>2</sup> Respondents' definition of good promotion in the study is the one that gives the most savings on the products compared to others.

The view of the respondents is that free samples are good and often desirable, but their success at making them buy the products is dependent on the experience after the taste/usage in the light of the relevant characteristics such as flavour, smell, texture, and the price:

Free sample definitely, I love free, free is the best price.

Free sample is good. Because I will be able to taste to see if I like it, and like I said, I go by flavour.

### ***Discount***

Since price discounts offer immediate savings on the products concerned, the effect of this on low income consumers' purchase behaviour appears to be significant when the difference is substantial. The popular opinion here is that the discount will have to make them better off compared to the one they usually buy for the offer to impact on their purchase behaviour. But it is claimed further that when the offer ends, they are likely to switch back to their regular brand:

I like the one where they slash the prices, [why?] because you are getting what you want at a reduced price. It's good. Isn't it? Supermarkets do it. I think it's good for products that I want to buy.

I'll prefer the discounts...20p could get me a box of matches or something like that. Do you understand what I mean?

### ***Coupons***

Coupons are also favoured by this group of consumers because, they claimed, there is a firm assurance that they are getting something off the price of the product(s), especially with the loyalty cards which they claimed are easy to redeem:

I would like the coupon because as I said, I can use them when...or they could be what to spend when I don't have enough money.

If there is any coupon, I'll use coupons. It's a good one as well. I like it.

### ***Gifts***

Gift items supplied to promote products are considered 'worthless' in terms of the value, and most of them are considered suitable only for people who have children or grandchildren. Another belief is that, if such items have any significant economical value, this is likely to have been cleverly disguised in the form of hidden charges. As some claimed, *'there is nothing that is free'*. Even those respondents with children appear to prefer other tools of sales promotion to gifts as they claim the items that are often used as gifts could be bought cheaper rather than buying an expensive brand of low involvement products because of them:

No, they are only rubbish, it won't bother me, they are probably rubbish, they only give rubbish away. You know that and I know that.

I can't be wasting time for gifts like pen, pencil, or things like that and buy something, how much is it?

I hate those gifts because they last a few seconds and break.

### ***Competitions***

Competitions were perceived as the least popular of all the promotional tools. The main reason is because it is considered to be too competitive, as the chance of winning is very low. Respondents believe it amounts to a waste of time and effort. Hence, they claimed it could not really trigger them to try a product. It could be described as a motivation, which though desirable, is believed to be almost unattainable:

It's too much messing about, carrying it about... I can't see properly to do it. I just can't be bothered. No [why not?] I never win. I'm too old for that. I am not clever enough.

I'll never fall for that...the phone drives me mad nowadays, they will call you and say a member of your household has won an holiday call this number to claim it, they are lying 'cos I'm the only one here, which member of my family?

### ***Point of Purchase (POP) Promotion Displays***

Although findings of the study suggest that low-income consumers are influenced by point of purchase displays in their purchases, exposure to these displays are sometimes inadvertent:

I read whatever is on the shelf and the wall, you don't specifically look for them, but you see them anyway

... any woman who says she doesn't look at them is lying. Especially now that Tesco and Iceland are trying to outbeat each other, they put that yellow signs in Iceland.

### ***Conclusions***

By and large, this study suggests that low-income consumers are sensitive to sales promotion stimuli of low involvement products, albeit in varying degrees. And the variations in the impact of these tools are essentially due to their relative attractiveness to these consumers at the lower end of income spectrum. Moreover, these consumers perceive the various brands of these products as similar in many ramifications apart from the price differences which they attribute to the expensive packaging of the 'expensive' alternatives. Consequently, these sales promotion stimuli appear to be serving as the basic means of resolving choice dilemma among the surfeit of brands of these products that are available in the marketplace for this group of consumers. This conclusion finds strong support in the extant literature (Blattberg and Neslin 1990) but robustly contradicts Kassarian's (1981) viewpoint that consumers obviously ignore promotional activities for low involvement products.

It is also a noteworthy conclusion that the preference of low-income consumers to sales promotion stimuli appears to follow a pattern of buy-one-get-one free; samples, discounts, coupons, gifts, and competition in sequence order. This finding is partly corroborated by that of Gilbert and Jackaria (2002) and Shi et al. (2005) as these studies also found buy-one-get-one free as the most popular of the tools. However, some of the findings of the present study are at variance with Gilbert and Jackaria's study in some ways, especially in terms of the order of effectiveness of other tools at influencing buyer behaviour. For instance while the ranking in their study puts discounts in the second, and free samples in the third place, they are ranked third and second respectively by respondents in the present study. As this present study suggests, this discrepancy could be attributed to the low-income status of the subjects of the study which makes them to be more receptive to value-increasing promotions. According to Peattie (1998: 286) while value increasing promotions involves manipulating the quantity/price (or sometimes the quality/price) equation to increase the perceived value of a product offering, the value adding promotions leave the price and core product untouched,

and offer the customer 'something extra'. Kwok and Uncles (2005) refer to these two types promotions as monetary promotions and non-monetary promotions relatively. Moreover, this study also suggests that low-income consumers are influenced by point-of-purchase (POP) displays when buying low-involvement products. This finding is supported by East et al. (2003) which indicates that in-store displays increase sales. However, the present study suggests further that sometimes, the exposure of these consumers to these displays is often inadvertent.

### **Implications of the Study**

This study has some considerable implications for marketing, especially in the area of analysis, planning, implementation, and control of promotions for low involvement products. In specific terms, the study proposes that it will be of immense advantage if organisations could use these various sales promotion stimuli in the order of their suggested effectiveness when targeting low-income consumers in respect of the sales of low-involvement products. Adherence to this appears beneficial and could lead to immense rewards such as increase in market share, turnover, and consequently, profits of the marketers' brands amongst others in this increasingly competitive marketing environment. Besides, given the findings of the study which suggest that the exposures to point of purchase (POP) displays could often be inadvertent; it appears logical for marketers of these products to ensure a conspicuous display of such materials such that the target audience will not only be reached effectively but also finds them fascinating so that the promoted brands could find the topmost position in the mind of these consumers among the competing ones in the marketplace. This is especially necessary as these consumers do not often acknowledge any significant difference among brands of low-involvement products.

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# Views from Down the Rabbit Hole

**Denise Gurney**

## **Abstract**

Kinesiology as energy medicine is an emerging modality in Complementary and Alternative Medicine. Professional Kinesiology Practice (PKP) is arguably the most holistic form available for study, taking the client beyond their everyday world to a realm of profound insight, transformational experience and moving them physically towards reaching their potential. Mapping these experiences from the observational perspective of dualistic, positivistic science, in the form of measurements, RCT's, black box studies or comparisons of any kind, holds the experience in the physical world. This paper explores the view that holistic practice cannot fit into a reductionist paradigm of research. The study design discusses making the PKP process explicit by using a phenomenological approach to get a sense of the richness of the subjects' experiences. This will give practitioners a better understanding of what is happening in their practice. The study will include reflexive views, both the clients' and also my own, as the research progresses down the rabbit hole in co-operative, heuristic inquiry.

As I wrestle to put my thoughts down on paper, I ask myself the question from the movie, the Matrix, 'Oh why didn't I take the blue pill?' Going down the rabbit hole on an experiential journey with my clients seemed like a good idea at the time, but I am beginning to realise that it might be easier to ask a 'straightforward' research question and do a 'straightforward' literature review than to do any form of contextual heuristic research. Van Manen (1997) states that, 'the person who begins a hermeneutic phenomenological study, soon discovers that this is not a closed system', and that it is hard to describe, or find the words for it. I am at that challenging word-searching part.

## ***Which conceptual framework?***

I work in the field of kinesiology, as it is used in the world of alternative and energy medicine. It is well documented that alternative and complementary medicines are at odds with the prevailing models of medicine (Ballantine 1999, Wayne 2005) and also with the prevailing models of science (Goswami 2004, Samanta-Laughton 2006, Oschman 2000). My finished study will include discussion of the limitations of conventional science in researching a holistic therapy, and will include some of the theories emerging in the 21<sup>st</sup> century science which seem to be proving more useful.

Since Thomas Kuhn's *Structure of Scientific Revolutions* was first published in 1962, the word paradigm is used and misused to describe all sorts of models and ways of being. PKP does not fit completely into the traditional western scientific paradigm of which Kuhn speaks. Indeed PKP uses methods drawn from western schools of thought such as psychology, nutrition, and chiropractic, but also drawn from Chinese and Japanese acupuncture, eastern physiology and physiognomy, Ayurvedic philosophy, as well as healing methods from the Tibetan and indigenous peoples of the world.

There are research challenges facing those wanting to study a therapy which claims to be so holistic in its approach. Some researchers do not believe that any therapy is totally holistic (Ribeaux and Spence 2001), and that it is not possible to explore the person's mind, body, spirit and way of life all in one session. However, an illness which manifests at the physical

level, also creates certain emotions around the ideas of ill health, thoughts that something is wrong on the mental level and feelings of spiritual separation from God, what Goswami calls the Supraconscious level. It is not possible to treat one area of the whole system without having an effect on the other levels.

While the view of Ribeaux and Spence is that therapies can be described as ‘more or less holistic’, Professional Kinesiology Practice (PKP) is interested in ‘better health, wholeness and high level wellness, physical, mental, emotional and spiritual’ (Dewe and Dewe 1999a). Practitioners use the PKP process for themselves and for their clients to achieve higher levels of wellness. Each PKP session does in fact touch on all the levels traditionally included in holistic health. The participatory paradigm described by Skolimowski (1994) and Reason (1998) is a more fitting worldview for the client’s participatory experiences of PKP.

Users of Complementary and Alternative Medicines (CAM) may be aware of some of the types of kinesiology practised in the U.K., but figuring out which kinesiologist to go to is a complicated affair. It would be reasonable to assume that all kinesiologies are similar, but that is not the case and there are many different uses of even the basic tool of manual muscle testing. Therefore, the PKP method of kinesiology will be described to make explicit how it fits into the energy medicine paradigm and how it differs from both other kinesiologies as well as traditional allopathic medicine.

### ***The history of Kinesiology***

In order to describe Professional Kinesiology Practice (PKP) and put it into context, it is necessary to give some account of its origins and development over the past thirty years. The Greek term *kinesis*, meaning movement, has become associated with the study of movement in humans and animals. It has its origins as far back as Aristotle (384-322 B.C.), and the continued exploration of human biomechanics of Leonardo da Vinci (1452-1519) in his studies of human movement, then Luigi Galvani (1737-1798) who discovered that muscles can be moved by electrical stimulation. The modern study of neurophysiology had its beginnings in Galvani’s discoveries and the discovery that nerve impulses are electrical in origin and not made of liquids flowing in channels challenged the existing mechanistic Cartesian science of the time. This understanding of nerve-muscle function would be proved later with the development of electro-magnetism and the ampere for electrical measurement.

In 1949, Henry and Florence Kendall produced their seminal work on muscle testing and function which is now in its third edition (Kendall and McCreary 1983). This excellent volume has been the foundation of manual muscle function assessment, and has been used by sports trainers, physiotherapists, chiropractors, and other therapists testing for disabilities. Today, for many of the people who have heard of kinesiology, the word is linked with sporting performance and sports medicine or physiotherapy, (Floyd and Thompson 2001). Kinesiology as it relates to sports performance is taught at Loughborough University in the United Kingdom and at many Universities across Canada and the United States.

Chiropractor Dr. George Goodheart’s copy of the Kendall and Kendall book provided him with a solution in 1964 for a puzzling shoulder problem in a client. After testing the muscle using the Kendall and Kendall techniques, Goodheart found that the muscle was not functioning at 100%. He began palpating the muscle and found some tender nodules, to which he applied firm pressure (Goodheart 2005). Re-testing the muscle revealed that the muscle function had been restored. Excited at his new discovery, Goodheart began testing muscles as part of his normal client examination procedure. At the same time he was

exploring other innovative healing methods including Chinese acupuncture, lymphatic drainage, nutrition, and cranial osteopathy, (Frost 2002, McCord 2006) and the combination of the muscle testing findings along with the various healing modalities were combined by Goodheart into what has become known as Applied Kinesiology.

Goodheart came to the conclusion that the body, ‘communicates balance or imbalance, function or dysfunction through its muscles’, (McCord 2006), and this has become an integral hypothesis for all the kinesiology modalities that have emerged following the development of Applied Kinesiology. Of primary importance to the Applied Kinesiologists, is the understanding that kinesiology is designed to be an adjunct to normal clinical diagnosis, and that the techniques should, ‘only be done by one thoroughly knowledgeable in physical, orthopaedic, and neurologic examination and other examination methodology in the healing arts to properly make a differential diagnosis’ (Walther 2000).

As a result of the kinesiology connection to chiropractic, the International College of Applied Kinesiology (ICAK) was established in 1973 to ensure that those using kinesiology were professionals trained in the medical diagnosis of illness. The ICAK states that kinesiology should only be used in addition to other clinical testing facilities, and only ‘to augment normal examination procedures’, (ICAK 2007). Applied Kinesiology is now taught as a postgraduate course at chiropractic colleges.

One of Goodheart’s early chiropractic students, John Thie, had a vision of opening up the teaching of kinesiology to lay people so that families could take care of their own health. In 1977 he produced the first edition of the now famous Touch for Health book, and courses sprang up around the world training lay people to use the amazing effects (Thie 1994). Many branches of kinesiology have emerged from the introduction of the techniques to lay people and these are represented on the picture of the Touch for Health tree. This picture gives a clear indication of some of the many different types of kinesiology that have developed.

**Touch for Health  
Interactive Tree  
of Energy Kinesiology**

A growing body  
of knowledge



*Reprinted with permission from Touch for Health Kinesiology Association of the United States.*

Professional Kinesiology Practice sits above John Thie DC at the base of the tree, as it developed straight from Touch for Health, to provide more advanced techniques for those wanting to continue their kinesiology training and to become professional practitioners. Medical doctor Bruce Dewe and his wife Joan were early students of John Thie, and they expanded the repertoire of muscles available for testing. The Dewes adapted more techniques from the field of Applied Kinesiology, and added hundreds of other techniques so that no thrusts or chiropractic adjustments are involved in PKP corrections to muscle function. Importantly, they developed a non-verbal method of using finger positions (called Finger Modes) to access what the client needs to restore health and muscle function. This non-verbal language has been found empirically to be fast, effective, and incredibly accurate. Vital to the Dewes' model of kinesiology is the use of emotions in every muscle imbalance and correction technique (Dewe and Dewe 1999a). The Dewe's vision was that kinesiology would be a profession in its own right, and things have now come full circle with the development of what has become Professional Kinesiology Practice (PKP). This is taught as a four year diploma course in private training establishments in thirteen countries, with the main International College of Professional Kinesiology Practice based in New Zealand.

There is a key philosophical difference between Applied Kinesiology and Professional Kinesiology Practice. The diagnosis and treatment of named medical conditions which is so key to the Applied Kinesiology approach, plays no part in the PKP process. PKP has developed an educational or energy model which means practitioners do not 'treat' medical conditions unless they are medically trained. The focus for Practitioners has moved towards education so that the client understands how their body is functioning. The client is an active participant in the process, rather than a passive patient receiving a treatment. Practitioners

assist the client in balancing the body energies in relation to a goal that the client wants to achieve.

### ***The Professional Kinesiology Practice (PKP) method***

There are many ways to practice muscle testing, and most are very different from the PKP method. PKP has a very specific use of muscle testing with the tester using the hand with a flat palm and exerting light pressure onto the client's muscle. A muscle which cannot hold up under such light testing pressure is considered to be demonstrating stress and imbalance in the nervous system. This is very different from muscle *strength* testing which is used by other therapies.

Some description of the Professional Kinesiology Practice procedure may help in clarifying the reasons for the choice of research methodology. A copy of the procedure is attached at Appendix B.

After taking a client history, and learning why the client has come for the appointment, muscle testing is used to assist with finding and clarifying a goal for the session. This would be the outcome that the client is looking for from this session, and it will not include the names of medical conditions or use of negative language. For instance, a client suffering from arthritis in the fingers and with muscle weakness of the hands might have a goal such as lifting a cup of tea without spilling it. The goal is always stated as a present-time reality, and it will focus on the positive-for example, 'I lift a cup of tea easily and steadily'. This is the desired outcome, and it will be the factor which determines the course that the session takes. The goal creates intentionality, and complementary medicine practitioners are often heard saying that 'energy follows intention'. Psychiatrist Stanislav Grof states that there is a fundamental difference in the life of a person who pursues goals, and he likens it to surfing – following the energy. The goal oriented person has much more ability to enjoy the process of life rather than waiting to get there (Grof 2003). Stanford Professor William Tiller (1997) gives his own explanations for the science and mathematics behind this human intentionality and creativity. Coherence of thinking plays an important part in setting and achieving goals, and is discussed by Tiller (1997), Goswami (2004) and Emmons (2003), although each has their own very different perspective of what coherence means. For Tiller it is the wave function, for Goswami it is the coherence of the conscious, subconscious and body minds, and for Emmons it is coherence with the ultimate goal of knowing God. For the mystic, of course, these all mean the same thing.

Muscle testing is then used to find out as many areas of function as possible that are affected by this goal. Information will include, but is not limited to, the following items: The emotion relating to the goal (e.g. frustration in relation to self) % stress over the goal, % life energy available towards achieving the goal they have chosen (of picking up the cup).

Pre-tests which may include any of the following: an analogue pain scale (for emotional or physical pain), limitations in movement or flexibility of joints, functional assessment of muscles, observation of posture, other relevant pre-tests suggested by the goal such as reaching, eye movements, brain integration, gaits etc. Pre-activity such as picking up a cup of water. The balance part of the protocol, which is an interactive process with the client taking part throughout. It is not a passive exercise for the practitioner to 'do' something to the client. It may include clearing issues of willingness, psychological self-sabotage, or life path. Age recession is used to clear the goal at all the past/future ages. All the pre-tests and pre-activities are checked again to see if there have been any changes in light of issues that have



been resolved as part of the balancing process itself. The goal, emotion, stress and life energy levels are also re-checked.

Any homework for the client is discussed, and a date set for the next session.

Muscle testing can provide a means of obtaining such information with a double heuristic method: a statement made by a client who may believe it to be the truth, can then be tested to determine whether their nervous system and muscle function reacts stressfully or is accepting of that 'truth'. An example of this would be a statement made by the client such as, 'I want to be healthy', which one would expect to be a true statement for most people. In fact their muscles may indicate a stressed response, while their mind thinks this is the truth. This kind of incoherence in the bodymind is what emerges for the client in the pretests, and what is cleared during the balancing session. More coherence in the thinking and living system that is the human body, has effects on many levels, not just the physical, and ensures that the client is better able to achieve their goal.

Moustakas (1994) reminds us that the phenomenological researcher must return again and again to the data to check the description of the experience. In every day clinical practice, and the PKP kinesiologist returns again and again to check the information that the client is supplying. PKP is an heuristic phenomenological practice in and of itself.

### ***Researching Complementary and Alternative Medicines***

Although traditional approaches to health have been around for centuries, research into the safety and efficacy of Complementary and Alternative Medicine (CAM) is a twentieth century phenomenon. CAM research has been compared by Lewith, Jones and Walach (2002) to the early research undertaken in the field of psychotherapy in the 1960s. Practitioners and users of psychotherapy were generally agreed that it worked but there was no evidence. Initial research attempts to provide the required evidence followed the models that had developed in the field of medical research. Blinded and placebo controlled trials were tried first, and then comparison trials. Kinesiology research has started down the same route of the medically led model, with most of the research so far focussing on internal validity issues such as proving that manual muscle testing works.

It is not necessarily the case that users of CAM or kinesiology are looking only for effective cures or solutions to their health challenges, and that as Lewith states (2000), they may also be looking for 'meaning and context for their illness'. The gold standard clinical trial is unlikely to be the best way forward in researching CAM therapies such as kinesiology.

### ***Searching for papers***

The parameters I used for searching for kinesiology papers must be specified, as there are so many more understandings of the topic than those that appear on the Touch for Health tree. The PKP method is so different from many other practices of muscle testing, that studies using dissimilar muscle testing techniques were excluded. Those kinesiology which use firm pressure muscle strength testing such as in physiotherapy or sports medicine (Kendall and McCreary 1983), are excluded, since the purpose, the technique and the outcome of such muscle testing bears no relation to the PKP energy model of health. Papers relating to muscle testing done using machines to test rather than a manual test (Hsieh and Phillips 1990) are also excluded as no machines are used in PKP. It is not the process of muscle testing that is the topic of this study, but the phenomenon of the PKP process in which the muscle testing is a tool. Energetic methods used to correct imbalanced muscle function include techniques based on acupuncture theory, or from the world of vibrational medicine such as flower

essences, gems and sound (Gerber 1996). If energetic corrections are not used as part of a kinesiology approach, as in sports medicine or physiotherapy diagnosis, those forms of kinesiology will be excluded. Studies using kinesiology as a means of assessing muscle strength or weakness as part of a diagnostic assessment of ill health or poor functioning and which then go on to attempt to correct the imbalance in the muscle using a holistic approach (mind, body or spirit) are included, for example research papers from the world of chiropractic and Applied Kinesiology, Systematic Kinesiology, Health Kinesiology and any other branches of the energy kinesiology family. Therefore, excluded from any findings are research papers on kinesiology applications in physiotherapy, sports medicine, Dental Kinesiology, kinesiotherapy and any kinesiology using mechanical methods of testing muscle strength. Most forms of kinesiology practice do not follow the educational model of PKP, and are still focussed on treating a particular health problem such as an allergy or migraine rather than working in an energy model, so they will be of limited use although they are included in the search. Relevant Applied Kinesiology papers, research papers from other energy model kinesiologies such as Touch for Health, any qualitative kinesiology studies, and studies concerned with patient perceptions of related complementary therapies (such as acupuncture, homeopathy) will be included.

During an early search into kinesiology, a list of key terms (appendix A), and variations of different key words were considered, including North American spellings. The initial general search was undertaken in an exploratory sense to obtain an overview of what kind of literature has been published, and then with a narrower focus looking specifically for kinesiology research studies. It has not proved possible so far to obtain a qualitative study on any form of energy kinesiology, and no published studies at all on PKP. A colleague is currently researching PKP at Southampton University using a single blind randomised controlled trial for patients with chronic back pain.

Further searching is planned to include kinesiology items in foreign languages and more papers in client/patient perceptions of complementary medicines, particularly the energy-based therapies such as acupuncture, homeopathy and even chiropractic. It is realistic to exclude kinesiology research prior to 1995 because kinesiology has been developing at a fast pace with new techniques evolving all the time, and much of the work of the early days has been superseded by more precise, quicker and generally easier methods. Electronic databases were used, mainly Ovid MEDLINE ® 1996 to April Week 2, 2005, but also AMED 1985 to May 2005, CINAHL 1982 to April Week 2, 2005, Biomed Central, PsychINFO 1985 to April week 2, 2005: the Cochrane Collaboration, and the Department of Health Research findings register. Biomed seemed to have the least user friendly database and search terms. Databases that gave zero results included: Cochrane, PsychInfo, BMJ website, including Netprints (non-peer reviewed articles on the BMJ website), the Department of Health Research findings register, and Science Direct. Hand searching took place at the University of Salford library and online searching of journals was done at home. Websites of organisations such as ICAK and Educational Kinesiology were searched, and professional colleagues gathering research data in UK and USA were contacted to provide useful avenues to follow. Many papers are not available to researchers who are not professional members of the International College of Applied Kinesiology.

	<b>OVID medline</b>	<b>AMED</b>	<b>ICAK</b>	<b>BIOMED</b>	<b>Handsearch</b>	<b>Citation tracking</b>	<b>TOTAL</b>
<b>studies found</b>	9	1	1	1	2	2	16
<b>selected</b>	3	1	0	0	0	0	4
<b>Relevant</b>	1	1	0	0	0	0	2

### *Summary of sources of the studies found*

There have been frustrated attempts over the years to verify the phenomenon of manual muscle testing as a valid diagnostic tool (Jacobs 1981, Hsieh and Phillips 1990, Bohannon 1997, Monti et al. 1999, Scopp 1978), with results leading to more questions than answers. More recently, Cuthbert and Goodheart (2007) produced a literature review of more than 100 papers on the reliability and validity of manual muscle testing that have been published up to June 2006. The review was not exhaustive, but they concluded that while manual muscle testing seems to be a clinically useful tool, studies are needed to scientifically validate the muscle test. They suggest ‘sophisticated research models in the areas of neurophysiology, biomechanics, RCT’s, and statistical analysis’ are needed to validate manual muscle testing.

Applied Kinesiologists have been putting their energies into validating the muscle testing tool, using strategies such as maintaining standardisation of joint position or using testers with similar amounts of professional expertise (inter-examiner reliability), and also into validating the content of a manual muscle test by attempting to quantify the specific muscle strength used. This kind of research fits with the positivist-empiricist approach from which emerged the clinical teachings of chiropractic and then Applied Kinesiology. The assumptions of the positivist philosophy of science are used as the basis for setting up an experimental situation involving interaction between two human beings, which are complex biological systems, in order to study the muscle testing phenomena. So far, I have found no satisfactory studies validating the phenomenon of manual muscle testing but the metaphors of science are being well and truly mixed and the results are messy.

Existing kinesiology research has low external and model validity as the muscle testing is taken out of the clinical and therapeutic context and into the laboratory. In moving the context, the muscle testing loses its meaning. Muscle testing is used as an indicator of stress and imbalance in a human system, a system which moves its muscles only in relation to a lived life, and therefore it is ill-advised to test muscle function by taking a human being out of context and into a laboratory. The human subjects take their physical, chemical and emotional histories, their values and beliefs, their cultures and their current stress levels into the experimental setting, and it is not possible to set those implicit factors aside to isolate their muscle function. The experimenters similarly take their own implicit agenda, and their historic, value and cultural data into the experimental arena.

An exploratory study undertaken on traditional research lines would involve analysis of the items which make up the topic of interest, and in this case the items would be manual muscle testing, inter-examiner reliability, muscle strength measurement, inter-rata reliability,

followed as Harré explains (1981), by some explanatory scheme to formulate theories of how the analysed items work.

Some studies have tested several examiners (Ludtke et al. 2001, Jacobs 1981, Monti et al. 1999) to determine the inter-examiner reliability of muscle testing under the assumption that all the examiners were value-free, and were bringing only their muscle testing style and clinical experience to the situation. The examiners' expectations, and those of the subjects, and the clinical effects of the relationship between the practitioner/researcher and the subject were not discussed. 21<sup>st</sup> century questions of entanglement, entrainment, consciousness and perception did not present in the discussions or conclusions. These previous studies have been useful in highlighting the limitations of reductionist science in measuring a tool used to assess the human musculoskeletal and nervous systems. It has encouraged me to find a research method that would incorporate more of the whole of what happens in a kinesiology session. Walter (2000) describes the philosophical approach to health taken by Applied Kinesiology and chiropractors as being based on 'the role an organism plays in response to environmental stress'. This is a different philosophy from the allopathic tradition of treatment of illness and the conquering of disease. Walther sees that with the different perspectives of the medical and chiropractic models of health, there is a need for Applied Kinesiologists to develop their own research methodology.

While PKP utilises some Applied Kinesiology techniques, it does not follow the AK diagnostic and prescriptive model. Dewe and Dewe (1999a) state that where methods based on AK are used, the PKP adaptations are very rarely the same. The Dewes' opinion is that the AK model is problem orientated, and 'is becoming closer to the medical model' from which PKP has moved away.

### ***Choosing a research model***

Kinesiology research is in its infancy, and given that there is no published research in my field of kinesiology interest, an heuristic phenomenological study will be a beginning in discovering the clients' perceptions of a PKP intervention. Some open-ended, inductive research aimed at theory generation and the exploration of meanings and assumptions made in kinesiology, is a useful place to start. The phenomenological approach to research according to Van Manen (1997a) concerns looking at the world as we find it, and not looking for a conclusion. At the beginning of a search into a new modality, there are more questions than answers, and it seems more appropriate to look for a research paradigm that will be exploratory and invite investigation.

Exploratory research done initially will lead to the formation of questions which could be used to generate hypotheses for future quantitative research or to establish trustworthiness in this new therapy. Previous studies seem to put the cart before the horse in attempting to prove that a particular part of the whole process, in this case the muscle testing part, is valid, and to ignore the other aspects of the process which may be just as relevant. Client patient interaction, the clinical setting, the client's ongoing health or relationship challenges, the placebo effect, awareness of and exploration of emotions, nutritional deficiencies or excesses and more, are all too difficult to eliminate in order to determine whether one part of the process works in isolation. It is important for Professional Kinesiology Practitioners to know whether the effects we think we are getting with the process are the same for the clients. We assume we are delivering an effective means of healthcare, but we may be mistaken. The public must be assured that PKP is a quality product which is safe and effective, with highly trained professionals delivering a trustworthy service. If this proves to be the case, it may be a

modality that should be used more widely in health related settings, or perhaps with a different group of users such as criminals for rehabilitation, or those involved in career change.

According to Dermot Moran (2000), in phenomenology, ‘explanations are not to be imposed before the phenomena have been understood from within’, and this philosophy reflects Professional Kinesiology Practice. It is more appropriate to the format of the PKP protocol to use a research method which allows the client’s perceptions to emerge from the experience rather than have a pre-formed hypothesis which needs to be proven or disproved. Husserl’s concept of Epoche resonates with Professional Kinesiology Practice. In Epoche, all presuppositions and judgements are set aside so that the underlying essence of the matter can surface. The phenomenological Principle of Suppositionlessness is reflected in the ‘compassionate detachment’ of the Professional Kinesiology Practitioner, the non-judgemental attitude towards the client, and the openness to exploring what happens in each session. Each PKP client session is undertaken in a spirit of such scientific inquiry. Krishnamurti describes this, ‘for the scientist to discover something new, he must have a certain emptiness from which there will be a different perception’ (Krishnamurti and Bohm 1985).

Moustakas (1994) says that perception is considered the foremost knowledge source, and one which cannot be refuted. A scientist’s research attempts to get to the truth of the matter. To access this fundamental knowledge source, I have decided to use client perceptions as the basis for my study. The kinesiologist works on the premise that an individual’s personal truth can be elicited through testing muscle function and performance, and that the body doesn’t lie (Goodheart 2005). We are not afraid to find out the truth, and indeed, spend most of our working life helping others find out what their truth is. Moustakas describes the phenomenology of Edward Husserl (1859-1938) which emphasized that only the material available to consciousness, the appearance of things, be accepted as knowledge. Maurice Merleau-Ponty goes further than Husserl in his descriptive study of the lived world, as he describes the intentionality of consciousness as ‘first and foremost a bodily intentionality’ (Langer 1989). For Merleau-Ponty, it is not possible to separate the lived body from the world as it is experienced; a person’s body is not separate from the world that they perceive, from other people that they see, from the emotions they feel, nor from the thoughts that they think. The client’s world view, and their thoughts about the goal for the session are therefore embodied (I can pick up a cup of tea easily, or not).

Cellular biologist Bruce Lipton, provides the exciting new model for how the human cell embodies our perceptions. His vibrant and refreshing demonstrations of how cellular function changes as we shift our perceptions and our belief systems are thoughtfully and knowledgeably put together, (Lipton 2005, Lipton and Williams 2001). Biologist Mae-Wan Ho provides the quantum physics behind the biology of organisms, and includes discussion on the enfoldment of perception into the structure of the organism (Ho 1998). Science may at last be providing the explanations behind the kinesiology techniques that have been working well in the clinics for 30 years, but for which there has been, until now, no hard evidence.

### ***The study***

Describing the phenomena of lived experience requires language to make it real for the reader. Clients will describe in their own language how they feel both before and after the PKP intervention, and what, if anything feels different for them afterwards. Interviews will include questions on the expectations of clients before the session in order to gather some

information on the worldviews of people seeking help from a PKP kinesiologist. A focus group of PKP clients, will inform the questions that will be asked in the interviews.

The responses will be obtained by using semi-structured interviews with open ended questions to allow as much free thinking as possible. The questions will be a guide to prompt responses in the clients. Conversations will be recorded using a digital recording device and be undertaken by myself – the PKP session will be handled by other kinesiologists so that they can focus solely on the interventions, and not be concerned with undertaking the research at the same time. Interviews will be transcribed by myself and then analysed using Interpretive Phenomenological Analysis (IPA). According to Jonathan Smith (2003), IPA is particularly useful when researching something of ‘complexity, process or novelty’, so it will be useful for this new area of research. Small numbers of interviews are needed, (perhaps even less than 10 subjects), so while the interviews are time consuming to transcribe and analyse, the size of the study is appropriate for a privately funded single researcher. One aspect of IPA which could be challenged, is the requirement to interpret the commentary of the client, as this will draw on my own implicit agenda and cultural history that I take into the study. Moustakas (1994) states that, ‘interpretation not only adds nothing to heuristic knowledge but removes the aliveness and vitality from the nature, roots, meanings, and essences of experience’. The clients will have an opportunity to comment on their experience, as well as practitioners and the researcher being given an opportunity to comment on their own version of events.

In this heuristic piece of co-operative inquiry, this may be the closest I can get in my study to finding out what Moustakas calls the ‘truth of things’.

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## **Appendix A**

### **List of keywords used in the initial search:**

Kinesiology

Applied kinesiology

Muscle testing

Kinesiology + health

Spiritual therapies

Complementary Medicine

Energy Medicine

Alternative medicine

Complementary therapy/therapies

Therapy or methods

Holistic health

Patient satisfaction or Client satisfaction

Qualitative

Attitude to health or emotions

Research

Questionnaire(s)

Complementary diagnosis

Consciousness

Treatment outcome(s)

Practitioner views.

**Appendix B follows on next page:**



# ICPKP Balancing Procedure

NB. It is quite safe to omit any step you have not yet studied

- |                              |  |
|------------------------------|--|
| <b>History:</b>              | 1. History   |
| <b>Assessment:</b>           | 1. Locked IM - Make sure you have a clear circuit.<br>2. Clear switching, dehydration, CV integrity, ionization  |
| <b>Goal Setting:</b>         | 1. Set Goal for the session. Ask: "Is this the best goal in your highest good for now?" (Yes/No response- if 'No', redefine the goal)<br>2. Find the emotion, % Life Energy and % stress on the goal.  |
| <b>Evaluation Phase:</b>     | 1. Do relevant pretests or complete the client behaviour evaluation sheet.<br>2. Do pretest activities or complete the integration checklist.<br>3. Make a 5-Element (14 muscle) assessment. Do NOT balance at this stage.<br>4a. Test Yes/No, "This being is 100% willing to release the need for the problem." If 'No', clear now.<br>4b. Test Yes/No, "This being is 100% willing to accept benefits of change." If 'No', clear now.<br>4c. Test Yes/No, "This being has 100% determination to implement the goal." If 'No', clear now.<br>4d. Test Yes/No, "This person is 100% protected and safe during the implementation and outworking of this goal." If 'No', clear now. Correct as for Sp#8f(EMS 306).<br>5a. Test Yes/No, Are there sabotage programmes to clear? If 'Yes', clear now. (Em#5 <sup>4b</sup> , EMS 302)<br>5b. Is there 'life path' energy clearing needed to allow for growth? (Sp#7 <sup>4e</sup> , EMS 303) Clear now.<br>6. Reassess the emotion, % Life Energy and % stress on the goal. (do if you have worked on 4. or 5. above.)   |
| <b>Balancing Phase:</b>      | 1a. State: "The finger modes will only show the priority for correction." Anchor with a locked IM.<br>1b. Check the finger modes in present time. (Always check emotion on involved mode.)<br>1c. Balance what you find. Repeat finger modes until all clear in present time.<br><br>2a. State: "There is a time in the past to be balanced for this goal." Yes/No response.<br>2b. IM locked = Ready for age recession. Test specified/non-specified. Yes/No response.<br>2c. i. If 'non-specified', state: "Take yourself to that time and indicate this with an unlocked IM."<br>ii. If 'specified', age recess by ten year chunks and return to present time between each recession.<br>2d. Ask for a locked IM and re-do the finger modes (always check emotion).<br>2e. Balance what you find. Repeat finger modes until all clear in this time.<br><br>3a. State: "There is another time to be dealt with to balance for this goal." Yes/No response.<br>3b. If 'non-specified', state: "Take yourself to that time and indicate this with an unlocked IM."<br>3c. Ask for a locked IM and re-do the finger modes (always check emotion).<br>3d. Balance what you find. Repeat 3a - 3d until no 'other time' is indicated.<br><br>4a. State: "Come back to present time," and re-do the finger modes.<br>4b. Balance what you find. (Always check emotion.)<br>4c. Repeat finger modes until all clear in present time. |
| <b>Checking the Changes:</b> | 1. Check that the goal and emotion are clear. Draw client's attention to changes.<br>2. Check the % increased life energy towards achieving the goal and the % reduction of stress on the goal.<br>3. Check the 5-Element (14 muscle) assessment is clear. Draw client's attention to changes.<br>4. Check all pretests and pre-activities are clear. Draw client's attention to changes.<br>5. State: "This being is 100% accepting and taking responsibility for the implementation and outworking of this balance." (If 'No', clear now.)<br>6. State: "There is home reinforcement to maintain the balance." (their part). If 'Yes' find it.<br>7. State: "This person needs a follow-up balance." If 'Yes', find how soon.<br>8. Future Pacing: "What is it like to function in this new way? How will you look? What will you wear? What colour? How will you walk? Posture? How will you act? How will you be different?"<br>9. State: "There is residual stress over this session". If 'Yes', clear now.<br>10. State: "The process is now complete". If 'No', do what is needed. If 'Yes', ...Celebrate!  |

Note:  
4d, 5, 6  
Senior  
Students  
only

# Experimental and Numerical Study of Composite Material Subjected to Low Velocity Impact

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## **Abstract**

Numerical validation exercises for low velocity impacts of metal and composite targets has been conducted using examples taken from published literature to determine if the numerical techniques used in the FE software ANSYS/LS-DYNA accurately represents the transient dynamic response of projectile impacts. An instrumented low velocity impact rig has also been constructed to acquire experimental data for comparison with numerical results. Results for both the numerical and experimental work are presented here and are shown to be in good agreement.

## **Introduction**

In this present time composites are still treated with caution because even though we can gain an understanding for their potential, there are still many unknowns with regards to their behaviour; especially after they have been subjected to damage. Take for example the aerospace industry, the knowledge of metallic structures is well documented and experience with these materials has allowed us to predict with great accuracy the behaviour of aircraft structures. Composites are now, however, starting to replace components that were once traditionally constructed from metals; for these new materials and construction methods, the engineer doesn't have the same extensive historic knowledge base and therefore components are generally over-engineered. Even in this cautionary state the composites offer great advantages, but as time progresses and knowledge increases (in manufacturing, repair, and application), these components can then be optimised to take the greatest advantage of the material properties that composites have to offer.

Since composites have superior strength to weight ratios they are now being widely used in aerospace primary and secondary structures [1] but, as with all engineering materials it is important to fully understand their properties and behaviour before the designer can confidently incorporate them into structures.

An important consideration when designing composite structures is their susceptibility to damage caused by impact loading. Even under low-velocity impact conditions, composites are vulnerable to internal damage caused by transverse loads. Unlike metallic structures, material damage for composites can be hidden within the material and show no form of external damage. In some cases, barely visible impact damage (BVID) may occur which, even if detected by visual inspection, will give no real indication to the severity of the internal material structural degradation.

Since many composites are being used in high-performance applications, it is an important consideration that the formation of damage under impact conditions is understood. Through an understanding of the different damage mechanisms experienced by composite materials, improvements in the damage-resistance characteristics of the composites can be made.

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## **Numerical Modelling**

Numerical modelling is carried out using finite element (FE) software for solving a wide variety of mechanical problems. These problems include disciplines such as; static or dynamic structural analysis for both linear (implicit) and non-linear (explicit) problems, thermal and fluid flow, electromagnetics and acoustics.

Composites present greater numerical modelling challenges than those of an isotropic material such as iron or steel, since care needs to be taken when defining the properties and orientations of the various layers that make up the composite because each layer may have different orthotropic material properties. For composites to be used effectively it is important that accurate and reliable predictive techniques can be used to determine information on their failure modes and characterise their fracture behaviour.

In FE software, failure criteria are applied to a model and used to assess the possibility of failure for a particular material. This allows the consideration of orthotropic materials, which might be much weaker in one direction than another. Several criteria originate from those used mainly for the failure of metals, but some have been developed which are specific to composites.

For the numerical work conducted in this study, the finite element software ANSYS/LS-DYNA has been employed. This software provides ANSYS with an interface to the LS-DYNA explicit dynamics program which is suited for the solution of short duration dynamic problems.

The problem is first modelled using the ANSYS PREP7 pre-processor, and then solved explicitly using LS-DYNA. Once a solution has been obtained, the results are then viewed using LS-PrePost.

## **Numerical Validation Studies**

To verify the accuracy of the ANSYS/LS-DYNA software for low velocity contact analysis, a classical impact problem of a metal impactor/metal target, originally solved by Karas [2] was investigated and compared to previously published works presented by Wu and Chang [3] and Chun and Lam [4]. The problem is described as an isotropic steel plate (200 x 200 x 8 mm) which is impacted by a rigid ball of radius 10 mm at its centre at a velocity of 1 m/s.

At the very least, the information required to describe an isotropic material in the ANSYS/LS-DYNA software is the Young's Modulus, Poisson's ratio and density. The density,  $\rho$ , used for the rigid ball impactor is not explicitly stated in any of the published text and only the radius and mass were stated which were given as, 10 mm and 0.0329 kg respectively. Therefore, using the available geometry and mass data provided, the density was calculated as  $7854 \text{ kg/m}^3$ .

The value of  $7854 \text{ kg/m}^3$  coincided with that of Steel and therefore this assumption was made for the numerical analysis. The plate was modelled with plastic kinematic behaviour and the impactor as a rigid model using the material data shown in table 1.

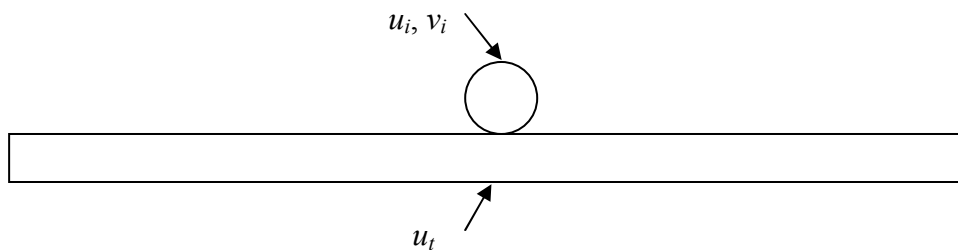
	Plate	Impactor
Material Name	Steel	Steel (Rigid Ball)
Young's Modulus	200 GPa	200 GPa
Poisson's Ratio	0.3	0.3
Yield Strength	$310 \times 10^6 \text{ Pa}^{[*]}$	-
Tangent Modulus	$763 \times 10^6 \text{ Pa}^{[*]}$	-
Density	$7854 \text{ kg/m}^3$	$7854 \text{ kg/m}^3$

<sup>[\*]</sup> ANSYS suggested values

*Table 1. Target and Impactor Material Properties*

The problem was modelled in ANSYS using solid elements (SOLID 164) for both the plate and the impactor. The plate was assigned fully clamped boundary conditions and the problem solved using the LS-DYNA solver. The transient response of both the plate and impactor was examined.

Once a solution was obtained, the resulting d3plot binary data file was imported into LS-PREPOST and the deflection and velocity data for the points (nodes) shown in figure 1 where extracted.



*Figure 1. Points selected for deflection and velocity data*

The impactor displacements,  $u_i$  and plate displacement  $u_t$  where substituted into the Hertzian contact law equation [5] to determine the contact force.

In figures 2-4 are comparisons for displacement, velocity and contact force time-histories. It can be seen that the numerical results provided by ANSYS/LS-DYNA are in excellent agreement with previously published literature.

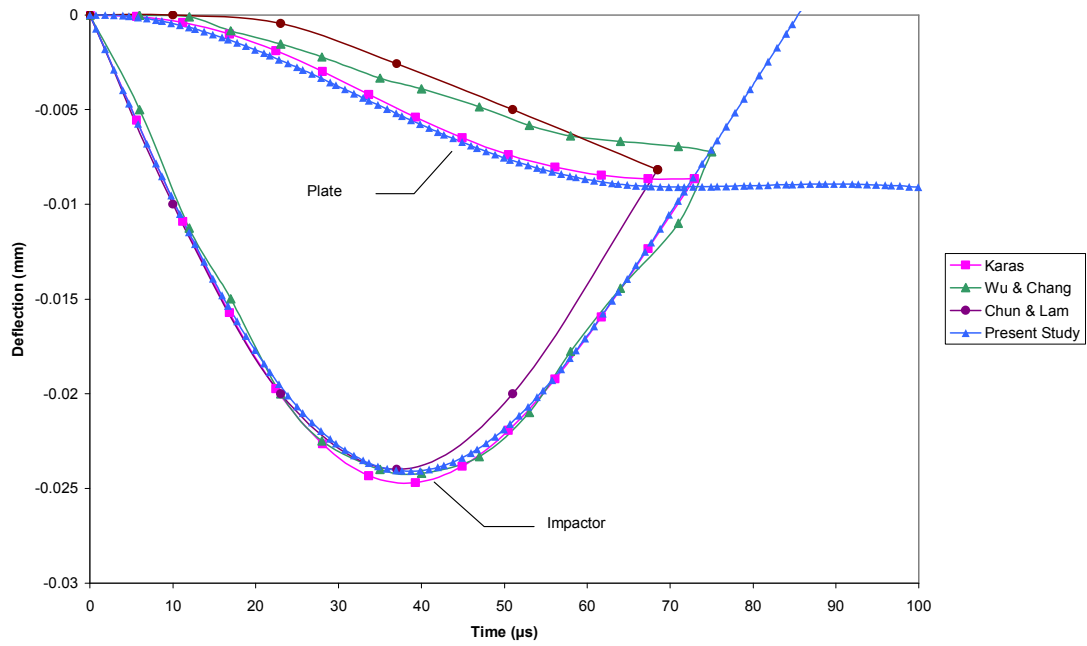


Figure 2. Comparison of Plate and Impactor Displacement

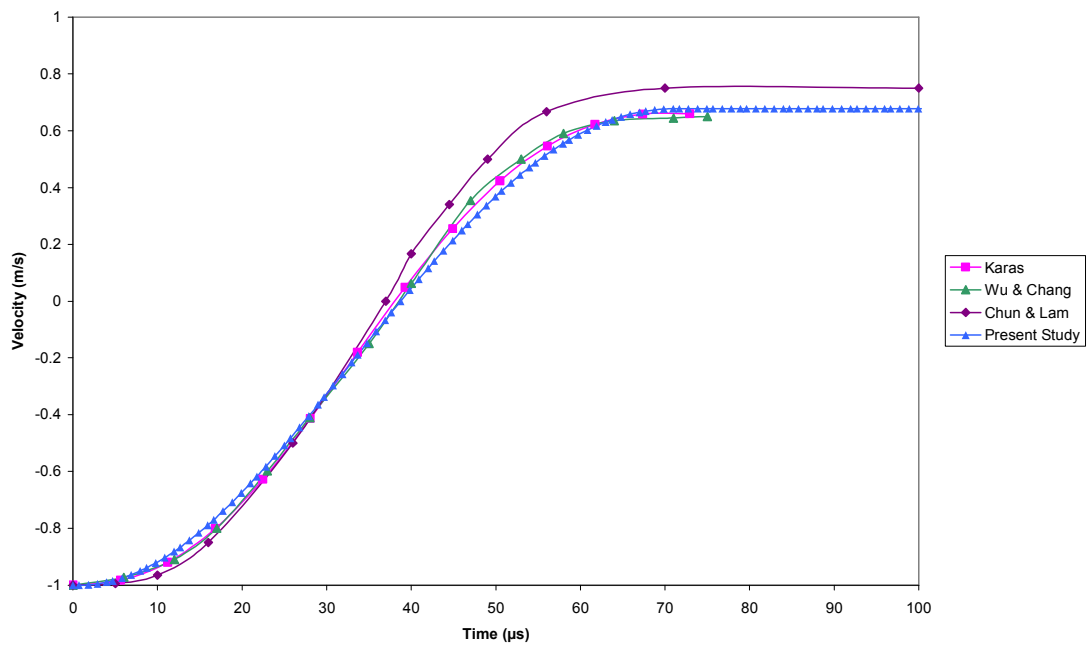


Figure 3. Comparison of Impactor's Velocity

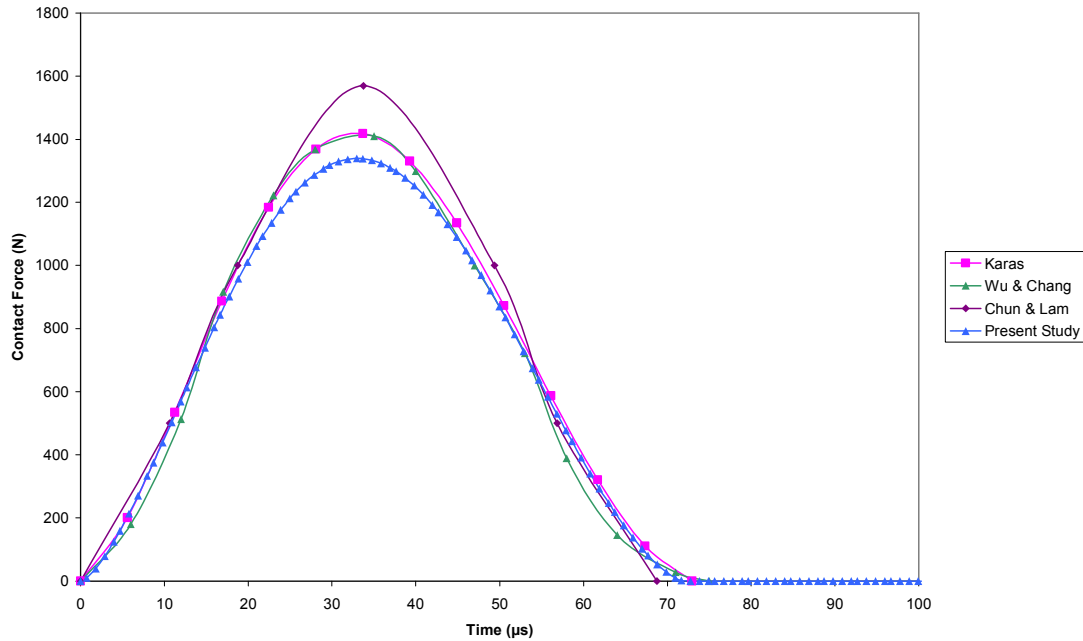


Figure 4. Comparison of Contact Forces

For metal impactor/composite target validation, a paper published by Oguibe and Webb [6] was selected which investigated the response of a fibre-reinforced composite plate subjected to a central impact by a blunt-ended projectile, in which they developed a numerical model which included the effects of transverse shear deformation and a failure algorithm. The numerical work was compared to experimental data and it was found that the results for laminate deformation were shown to compare qualitatively well with experimental tests which utilised a small steel cylinder being fired from a gas gun.

The composite under investigation consisted of three layers of uni-directional fibre-reinforced material, of ply configuration [0,90,0]. Each individual lamina was made from Scotchply 1002 E-glass epoxy which had the following material properties:

$$\begin{array}{ll}
 E_1 = 40.0 \text{ GPa} & E_2 = 8.27 \text{ GPa} \\
 G_{12} = G_{13} = 4.13 \text{ GPa} & G_{23} = 3.03 \text{ GPa} \\
 \nu_{12} = 0.26 & \rho = 1901.5 \text{ kg/m}^3
 \end{array}$$

where  $E$  is modulus of elasticity,  $G$  is the modulus of rigidity and  $\rho$  is the density of the lamina. 1-Direction is along the fibres, the 2-direction is transverse to the fibres in the surface of the lamina, and the 3-direction is normal to the lamina.

The composite test specimen used was a 140 mm square plate which had a thickness of 4.29 mm. The blunt-ended circular cylinder impactor was made from steel and had a diameter, length and mass of 0.9525 cm, 2.54 cm and 14.175 g, respectively. Initial velocity for the impactor was 22.6 m/s.

For the FE analysis, only one quarter of the impact problem was modelled. The quarter of the cylindrical impactor was modelled using SOLID164 elements and as a rigid body since the stiffness of the steel impactor is much higher than the transverse stiffness of the composite plate. The composite plate was modelled using SHELL163 elements and material behaviour

was assigned a composite damage model. The plate was fully clamped on the edges as reported in the experimental analysis.

Figure 5, shows the composite plate's central transverse deflection history for Oguibe and Webb's FE technique with and without failure along with the experimental observations and that determined by the present study.

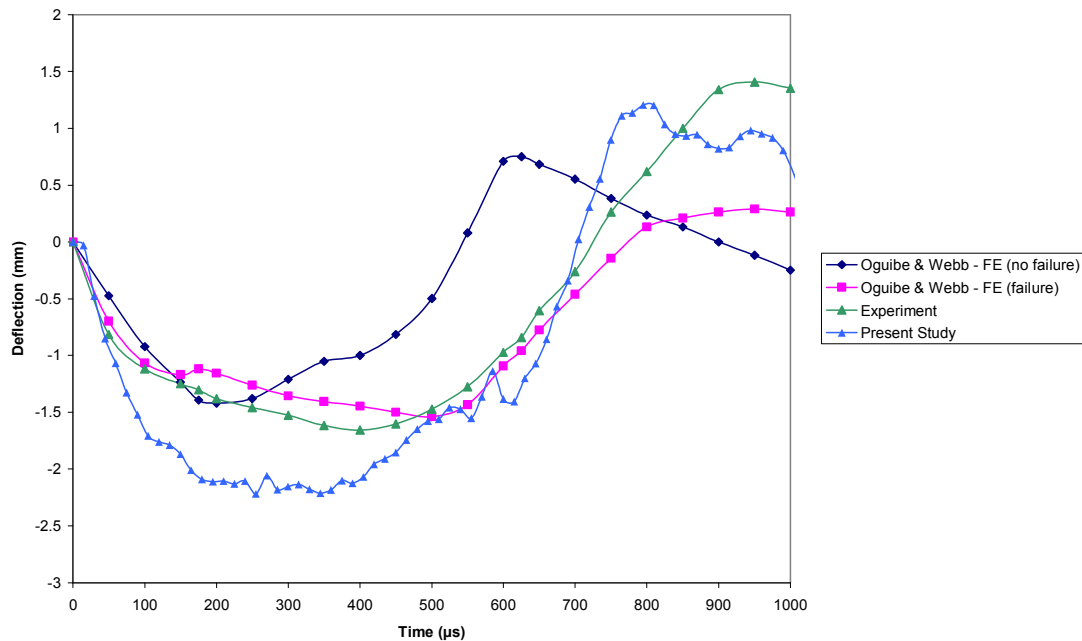


Figure 5. Comparison of experimental and numerical displacement time history for the centre of the composite plate

It can be seen that for the two cases originally solved by Oguibe and Webb, the model which incorporated the failure algorithm agrees more closely with the experimental data. The correlation for present study is also seen to agree closely with that of Oguibe and Webb (with FE failure), and the experimental data.

The impact duration is approximately 700  $\mu\text{s}$  with a maximum experimental central plate deflection of -1.7 mm. The present study does over predict this deflection slightly but this can be explained by the sensitivity for the requirement of having the full material data when modelling composites. For this validation an assumption was made that  $E_3 = 8.27 \text{ GPa}$ , and this coupled with Poisson ratio values that would have been calculated by the software can account for the small discrepancy in results. The present study shows a better correlation for the plate deflection as it springs back with the experimental value of +1.4 mm and the present study +1.2 mm; the Oguibe and Webb (with FE failure) although following the experimental data closely for the first 700  $\mu\text{s}$  of the impact, only predicted a deflection of +0.29 mm.

A second composite validation study was also conducted. In 1988, Sun and Liou [7] and then later in 1998, Chun and Lam [4] published papers on laminated composite plates when subjected to dynamic impact loading. In order to validate their methodology, each studied the behavioural response for a fully clamped cross ply laminated plate when subjected to central impact.

In this study, the composite under investigation consisted of three layers of uni-directional fibre-reinforced material, of ply configuration [0,90,0]. Each individual lamina was made from graphite-epoxy AS-3501-6 which had the following material properties:

$$\begin{array}{lll}
 E_1 = 142.73 \text{ GPa} & E_2 = 13.79 \text{ GPa} & G_{12} = 4.64 \text{ GPa} \\
 \nu_{12} = 0.23 & \nu_{12} = 0.23 & \rho = 1610 \text{ kg/m}^3 \\
 & T_3 = 54 \text{ MPa} &
 \end{array}$$

where,  $T_3$  is the transverse tensile strength

The composite test specimen used was a 140 mm square plate which had a thickness of 3.81 mm. The blunt-ended circular cylinder impactor was made from steel and had a diameter, length and mass of 0.9525 cm, 2.54 cm and 14.175 g, respectively. Initial velocity for the impactor was 22.6 m/s.

For the FE analysis, only one quarter of the impact problem was modelled. The cylindrical impactor was modelled using SOLID164 elements and as a rigid body. The composite plate was modelled using SHELL163 elements and was fully clamped on the edges as reported in the experimental analysis.

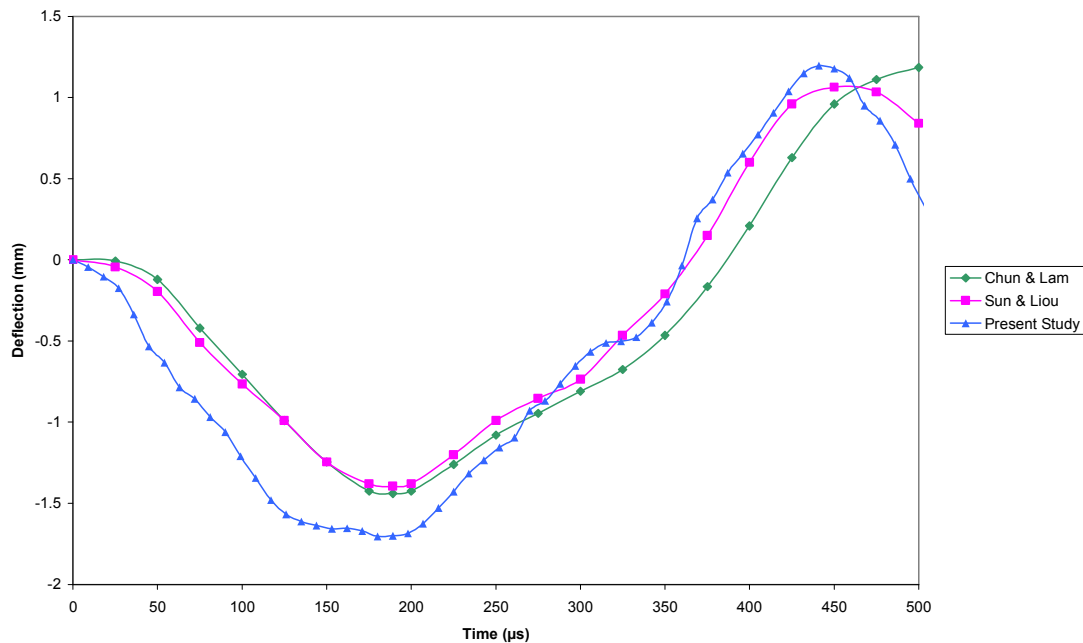


Figure 6. Comparison of central plate deflection for present study with two other published results

From figure 6, it can be seen that all of the investigations are in close agreement with peak deflection occurring at approximately 190  $\mu\text{s}$  during an impact duration of approximately 370  $\mu\text{s}$  for all results.

Maximum central plate deflection from the two published comparative results are approximately -1.45 mm. A slight over prediction is made in the present study with a value of -1.7 mm, but as before this can be explained by the need for full material data when modelling composites, and for this validation the assumption was made that  $G_{13} = G_{23} = 4.14$



GPa. Overall, the numerical solution in the present study agreed reasonably well with the published literature.

### Low Velocity Experimental Equipment

For the experiment investigation, a low velocity impact rig (figure 7) was built which incorporated an instrumented drop weight which was guided by a tube. The impact rig specifications are shown in table 2.

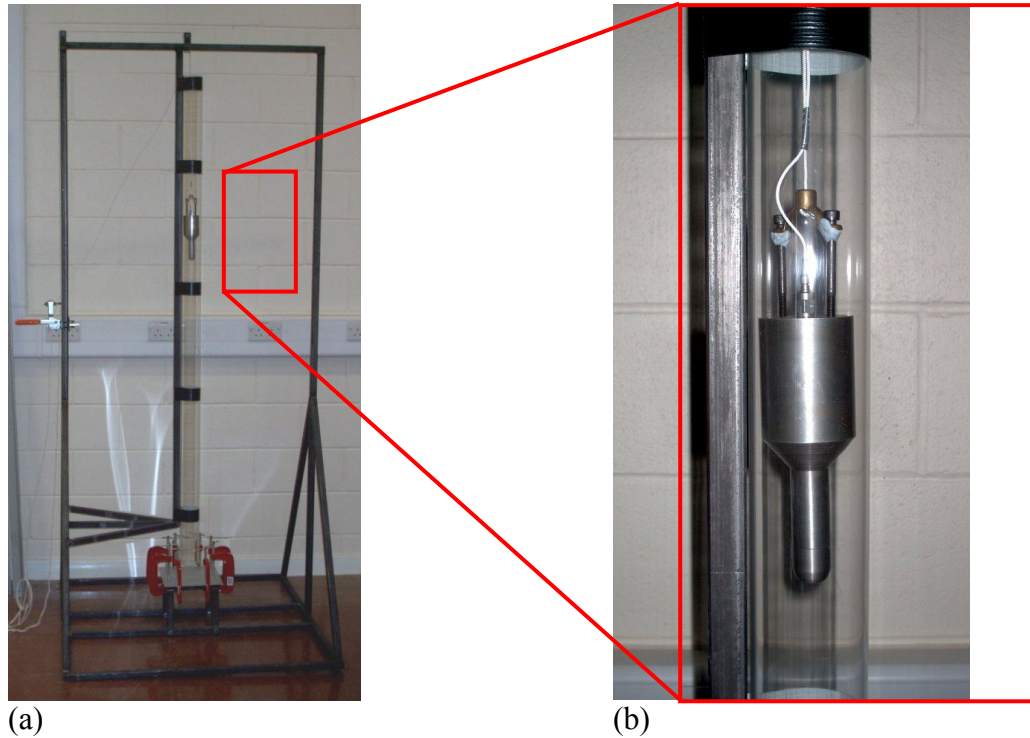


Figure 7. (a) Low velocity impact rig, (b) drop weight guided by tube

Maximum drop height	1.8 m
Fixed weight impactor	2 kg
Maximum velocity	6 m/s
Maximum energy	35 J
Changeable tip	Hemispherical, Flat, Conical (25 mm diameter)

Table 2. Low Velocity Impact Rig Specifications

The impact rig had a choice of three different impactor tups and in order to determine the most suitable for validating the ANSYS/LS-DYNA software, a preliminary investigation was conducted to assess the impact damage caused by the three tups when impacting an aluminium target. As a result of these initial impact tests it was decided that for software validation purposes, it would be suitable to conduct subsequent experimental investigations using only the hemispherical tup.

Before the impactor was instrumented with an accelerometer, some initial calculations were carried out to determine the impact conditions the instrument would need to withstand. Consideration also had to be given to whether a more robust accelerometer would need to be chosen at the expense of reduced sensitivity. Assuming the impactor would fall from the

greatest height allowable by the impact rig it was determined that a general purpose accelerometer with an operating range of  $\pm 500g$  would be suitable for the low velocity impact rig. An accelerometer (model 3056B1) produced by Dytran Instruments was selected due to its operating range, sensitivity, and frequency response. The ease of connection and compatibility with the existing lab equipment was also an important consideration.

The accelerometer was mounted on the top of the drop-weight impactor using the mounting surface and fittings provided and a data resolution study was conducted to determine the optimum data sampling rate to ensure that peak outputs were captured.

The low velocity experimental rig was set as shown schematically in figure 8.

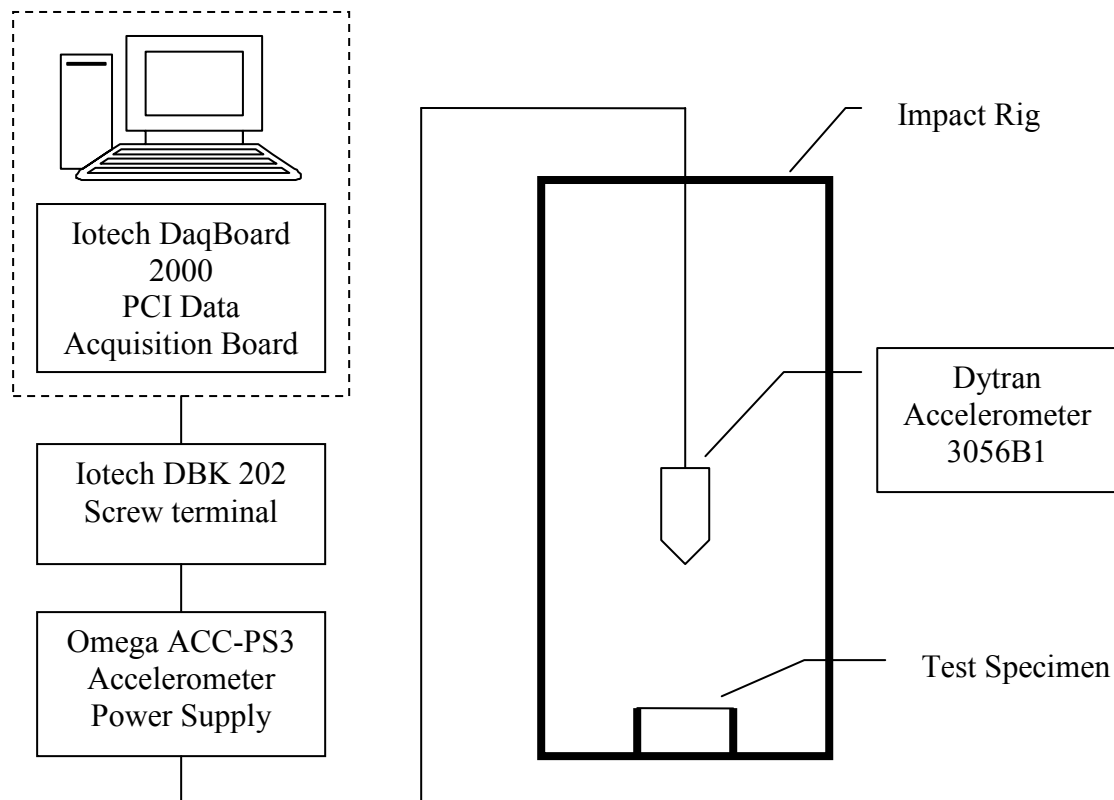


Figure 8. Schematic Diagram of Instrumented Low Velocity Impact Rig

The computer terminal utilised for the experimental investigation was running on an AMD Athlon processor at 951 MHz with 128 MB RAM and was installed with a DaqBoard 2000 series PCI Data Acquisition card 16-bit, 200 kHz analogue-to-digital converter. This card was used as the main data primary acquisition device for the experiment and provided a data conversion and communications link between the data source and the processor of the host computer. Sensor connection to the data acquisition card was provided via a DBK202 Board which provided screw-terminal signal connections. Data acquisition software was provided through a package called DaqView which provided a graphical user interface for viewing signal channel data.

### **Metal Impactor/Metal Target Experimental and Numerical Comparison**

The metal impactor/metal target experimental investigation was conducted using unalloyed Aluminium 1050A test specimens with an average thickness of 1.41 mm. The hemispherical

impact tup was used from a drop height of 1 m. Three separate drop tests were conducted with data collected at a rate of 40 kHz for a duration of 1.5 seconds which was sufficient to capture the impact event. All three tests resulted in impact responses which were practically identical; these results were then averaged to provide a comparison for the numerical investigation.

For the numerical study only one quarter of the problem was analysed due to symmetry conditions. The target plate was modelled using an elastic-plastic strain hardening material model (Plastic Kinematic) and assigned simply supported boundary conditions. The mild steel drop-weight was modelled as a rigid model and assigned an initial velocity of 4.43 m/s at the point of contact with the aluminium plate. Material properties for the target and drop-weight are shown in table 3.

	Target	Drop-weight
Material Name	Aluminium 1050A	Mild Steel
Young's Modulus	76 GPa	200 GPa
Poisson's Ratio	0.34	0.3
Yield Strength	0.34475 GPa	-
Tangent Modulus	0.6895 GPa	-
Hardening Parameter	0.2	-
Density	2720 kg/m <sup>3</sup>	7854 kg/m <sup>3</sup>
Failure Strain	0.2	-

Table 3. Metal Impactor/Metal Target Experimental Material Data

From figure 9, it can be seen that there is close agreement between the experimental and numerical impactor acceleration history. Both show a total impact duration of 6.5 ms with a peak acceleration of 1680 m/s<sup>2</sup> occurring at 4 ms into the impact.

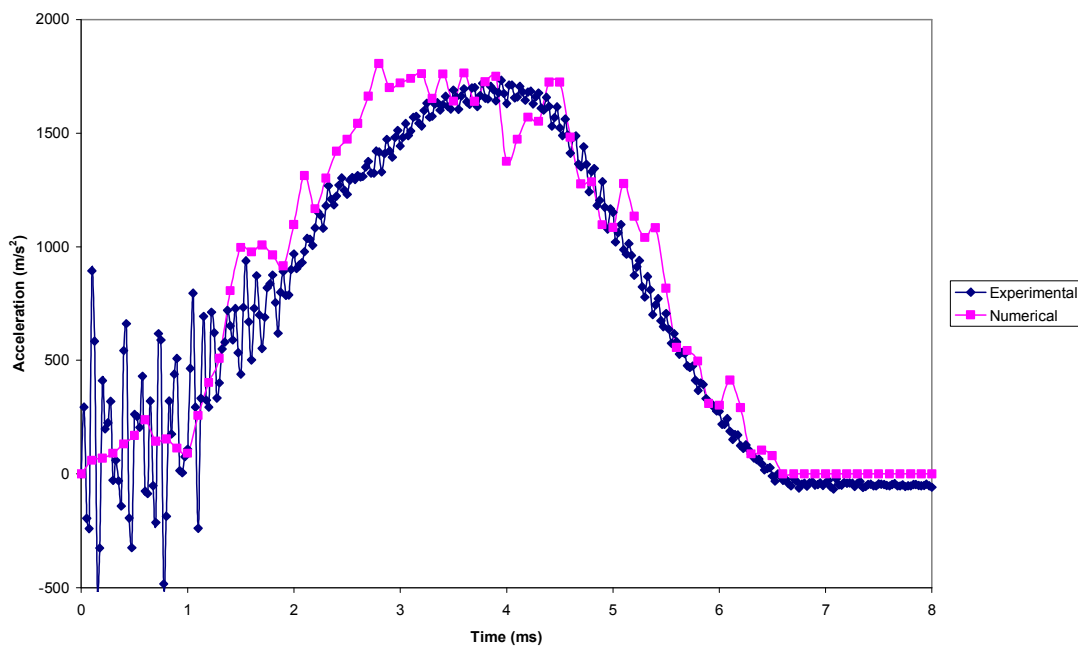


Figure 9: Comparison of Experimental and Numerical Impactor Acceleration (Aluminium Target)

The experimental impact test of the aluminium plates resulted in plastic deformation with an average central plate deflection of 7.9 mm. From figure 10 it can be seen that the numerical result closely predicted this with a value of approximately 8.1 mm.

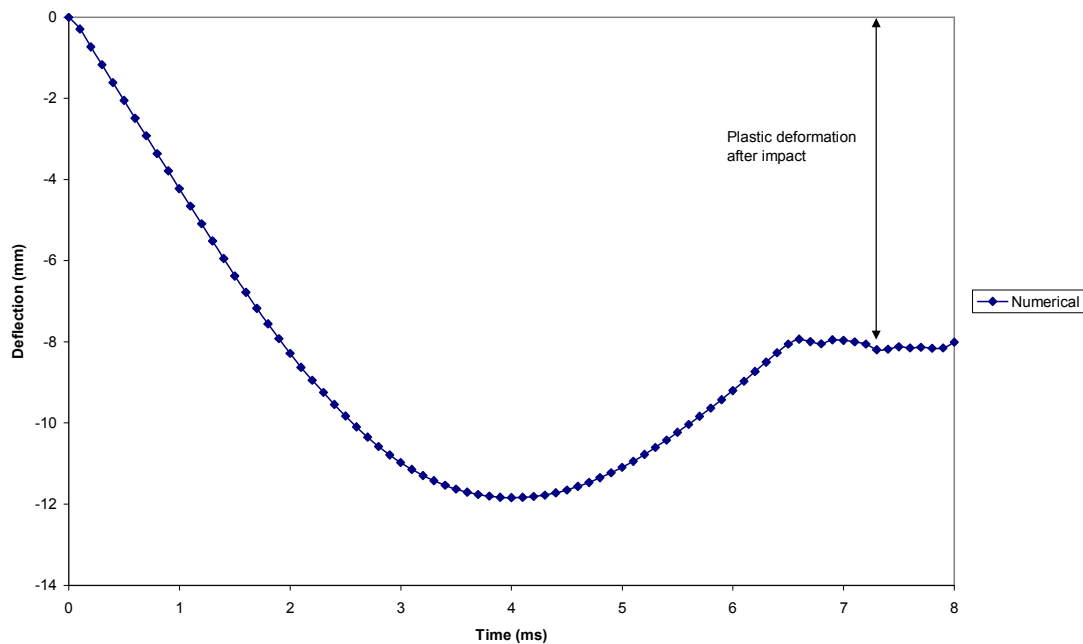


Figure 10. Central Plate Deflection showing resulting plastic deformation

The comparison between the experimental and numerical investigation shows excellent agreement. Any slight discrepancies can be attributed to the assumption of a negligible frictional loss to the drop-weight as it contacts the guiding tube prior to impact, and hence, a minor reduction in the initial contact velocity. The numerical model also assumes impact at the exact centre of the target plate which experimentally is difficult to achieve with the drop-weight impact rig where usually impact occurs within approximately a 2 cm diameter of the centre.

#### Metal Impactor/Composite Target Experimental and Numerical Comparison

The metal impactor/composite target experimental investigation utilised a T300 carbon fibre reinforced plastic specimen which was manufactured between two sheets of glass and then cured in a vacuum bag to achieve high quality standards. The laminate lay-up construction was 3 plies of 200gsm 2 x 2 Twill at 0/90 with the following material properties:

$$E_1 = 64.3 \text{ GPa} \quad E_2 = 64.3 \text{ GPa} \quad E_3 = 56.0 \text{ GPa}$$

$$G_{12} = G_{23} = G_{13} = 4.7 \text{ GPa} \quad \nu_{12} = 0.04$$

For composite damage modelling the values for transverse tensile strength and transverse compressive strength were 752 MPa and 693 MPa respectively.

Figure 11 shows the geometry of the test specimen which were ordered to fit the low velocity impact apparatus (figure 12).

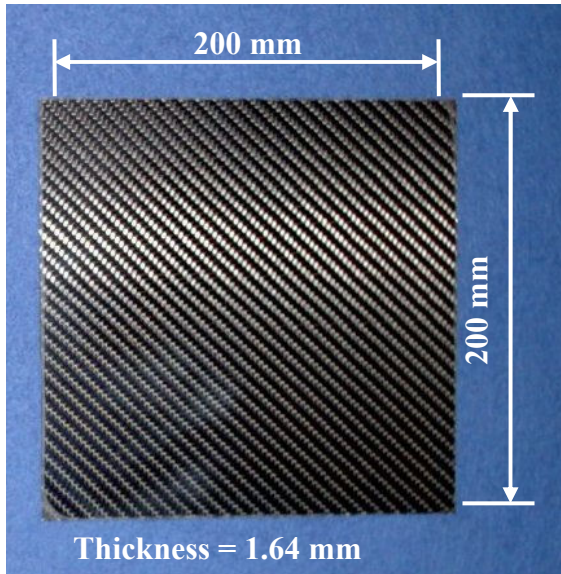


Figure 11. Composite Specimen Geometry

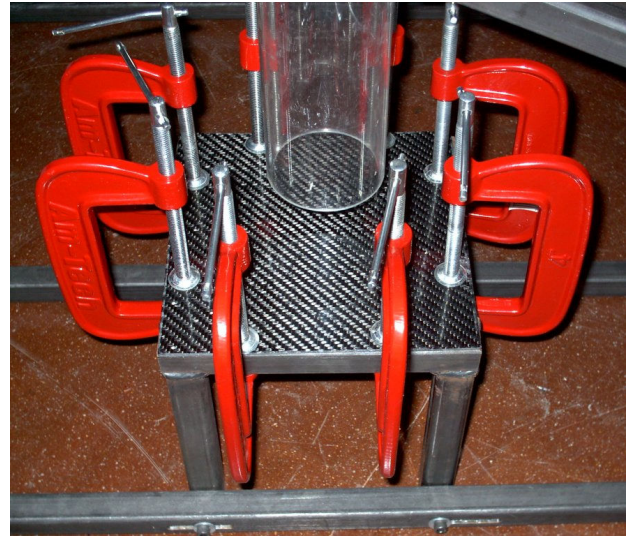


Figure 12. Clamped Composite Specimen

The experimental investigation was conducted using with the hemispherical impactor from a drop height of 0.5 m. Three separate drop tests were conducted with data collected at a rate of 40 kHz for a duration of 1.5 seconds which was sufficient to capture the impact event. All three tests resulted in impact responses which were practically identical; these results were then averaged to provide a comparison for the numerical investigation.

For the numerical study only one quarter of the problem was analysed due to symmetry conditions. The composite plate was modelled using SHELL163 elements and the material behaviour was assigned a composite damage model. The mild steel drop-weight was modelled as a rigid model using SOLID164 elements and assigned an initial velocity of 3.13 m/s at the point of contact with the composite plate.

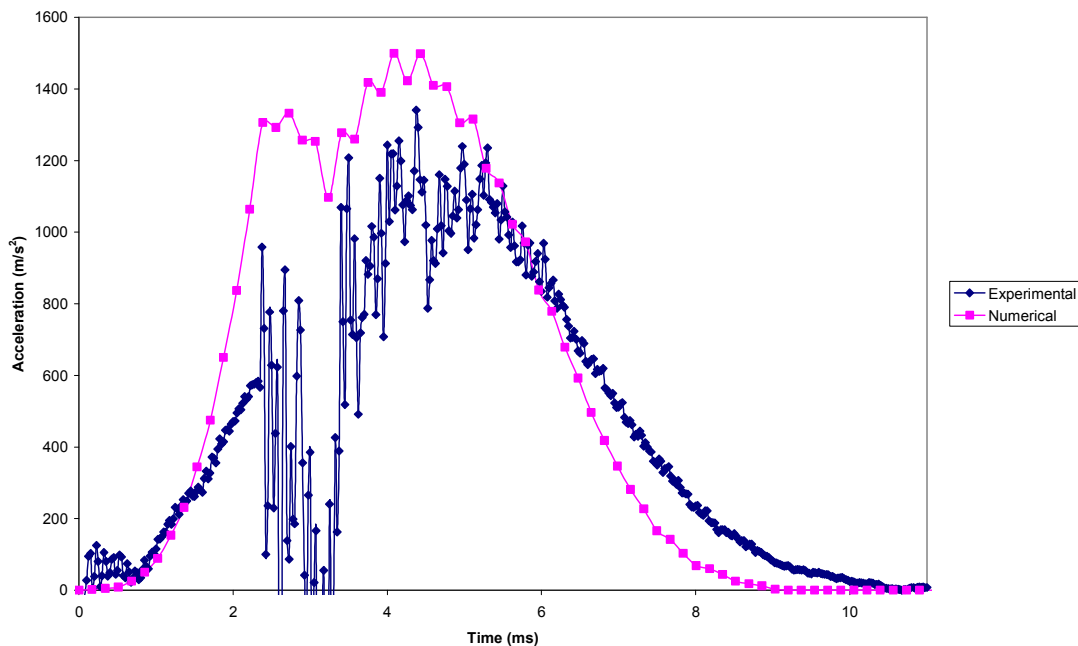


Figure 13. Comparison of Experimental and Numerical Impactor Acceleration (Composite Target)

In figure 13, it can be seen that there is reasonably close agreement between the experimental and numerical impactor acceleration history.

The numerical impact duration is approximately 2 ms shorter than the experimental results and the peak acceleration slightly higher. It's interesting to note that the experimental reduction in acceleration that occurs just after 3 ms is also demonstrated in the numerical results at the same time although to a lesser dramatic extent.

The reasons for these differences are do to the complex nature of the behaviour of woven composite material. For this study, each lamina was assumed to be an homogenised material thus neglecting the effects of fibre cross-over within each lamina.

It should also be noted that, as for the metal impactor/metal target investigation, any slight discrepancies can also be attributed frictional losses causing a minor reduction in the initial contact velocity of the drop-weight prior to impact, and that the drop-weight may not have impacted at the exact centre of the target plate.

### **Discussion**

The impact study of composites is important because many automotive and aerospace applications are utilising fully-composite structures as a viable alternative to the more conventional metal constructions. Despite composites having many advantages over metal, i.e. high strength to weight ratio, there is still the problem of detecting impact damage. Metals will display some form of visible surface damage when subjected to impact, but composite impact damage is usually hidden inside the material, particularly for low velocity impact. These undetected material failures can greatly reduce the strength of the composite and can occur quite easily during production and maintenance operations. Composite behaviour is still a strong research topic with many areas still to be explored.

For this report several numerical validation studies have been conducted using published literature for comparison. Metal impactor/metal target impact was first considered in order to gain an understanding of the modelling methods associated with dynamic studies. Once this was completed, the more advanced metal impactor/composite target impact was investigated. All validations agreed well with published works and therefore it was assumed that the modelling methodology employed, such as element type and material models, was correct and the ANSYS/LS-DYNA software was suitable for investigating transient dynamic impact problems.

Instrumentation of a low-velocity impact rig was then discussed along with calibration and data capture resolution studies. Experimental metal impactor/metal target impact was then conducted using Aluminium 1050A plates and compared to the numerical solution. The experimental study was then repeated using T300 carbon fibre reinforced plastic and numerical results were found to agree well with experimental observations and impactor acceleration histories.

### **Conclusions**

The need for research into composite impact behaviour has been discussed and successful numerical validation studies have been conducted for both metal impactor/metal target and metal impactor/composite target transient dynamic impact.

An instrumented drop-weight impact rig has been constructed and experimental procedures for low-velocity impact investigation has been achieved along with numerical comparisons. Results for both the numerical and experimental work are shown to be in good agreement and demonstrate that ANSYS/LS-DYNA software is suitable for the investigation of transient dynamic impact problems.

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# The Media in Mexico: Does it Favour a Democratic Public Sphere?

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## I. Introduction

Scholars of deliberative democracy, from Habermas to John Rawls have discussed the principles of this form of government in order to fulfil its goal of reasoned agreement between free and equal citizens (Staats 2004). These principles discussed in the academic world, among others, are: a) equality of resources, b) equality of opportunities, c) freedom of speech, d) openness, e) plurality, f) publicity of dialogue and g) inclusion. Due to the complexity and large scale of modern societies, not every citizen can take part directly in the political decision making process of his or her respective political community. Representative democracy emerged as a solution for this situation (Bohman 2004).

The public sphere has been defined as the space where citizens form their opinion about public affairs and its importance for the empirical and theoretical study of democracy resides on the fact that the political decision making process in representative political institutions of a political community is influenced or even determined by the support or rejection that citizens express within the respective public sphere about the implementation of certain policies or law (Kim 1999).

The Media is, perhaps, the most important space where this communicative interaction among citizens can take place, the most important space where they can influence each other in order to have a specific opinion about public affairs. It is the space where information and knowledge of the 'political community' can flow to the people and make them take determined kind of public decisions. The social, economic and political forces that participate in the public sphere can even determine the nature of the regime (authoritarian, oligarchic or democratic) in the respective political community. As Daniel C. Hallin has argued, if we find in certain public sphere a tradition of advocacy reporting, the instrumentalisation of privately owned media and the politicization of public broadcast, the transition to democracy becomes difficult to achieve (Hallin et al. 2002). This means that the democratic nature of a political regime depends on the way opinion about public affairs is shaped and formed in the respective political community.

The debate on the 'structural transformation of the public sphere' in Europe in the XIX y XX centuries has encouraged scholars to search the principles that should guide the 'public' sphere in order to conform it to a 'democratic' form of government.

The following principles, among others, have been proposed for the use of the media in order to be in accordance with a democratic form of government: *professionalism, balance, independence, autonomy, diversity, plurality, transparency, quality, no censorship, dialogue and civic journalism* (Parkinson 2005).

In order to consider the 'democratic' character of certain political regime it is as important to consider the fairness of the process through which citizens arrive to a specific 'public' opinion as to consider the fairness of the process through which their political decisions



(votes) will be counted and considered in the political decision-making process of the respective political community.

The first aspect is related with the principles of the 'public sphere' in order to conform it to a 'democratic' form of government and the second aspect is related with the rules of the law in order to organize democratic elections. There is a third aspect that should be considered in order to assess the democratic character of a political regime: the 'fairness' of the process through which policies and the law are enacted by the three branches of government (Habermas 1998: 137-144).

In order to assess the 'fairness' of the process through which 'public' opinion is made in the 'public' sphere and in order to consider the complete democratic character of a political regime it is necessary to evaluate if citizens enjoy the necessary freedom and equality to have a 'say' in the process of public discussion of the decision-making process carry out in formal political institutions, if they have access to quality information in order to hold certain opinion in 'public' affairs and if there is not manipulation of this 'information' so that they may be induced to take certain standing in 'public' affairs or vote in a determined sense (Habermas 1998: 373).

The principles of freedom and equality should not be restricted to the electoral process in order to guarantee democracy, but be considered for the process of formation of 'public' opinion, in which citizens should enjoy freedom, equality of resources and of opportunities to influence each other in order to arrive to a reasoned agreement for the best interest of the political community, and vote in a determined sense.

If democracy is conceived as a forum rather than a market, the analysis of the public sphere becomes indispensable in order to understand the democratic nature of a particular political regime, since it is precisely there, in the public sphere, where citizens can exercise fully their freedom and equality in order to influence the outcome of the political decision-making process carried out in representative political institutions.

If citizens do not enjoy a reasonable degree of freedom and equality (of resources and opportunities) in the public sphere in order to influence the outcome of the political decision-making process carried out in political institutions, they won't be able to achieve a true democratic form of government, and this lack of freedom and equality of citizens in the public sphere may be reflected subsequently in the constitution of formal political institutions (Habermas 1989: 223).

The rights of freedom and equality among citizens are exercised in substance more in the 'world' of the public sphere than in the world of formal political institutions since it is in the public sphere where citizens can mobilise themselves to influence the formal political decision-making process, the place where it is possible for them to pressure this process.

The elections are the final part of the democratic process which is formed largely by the procedural and substantive values of deliberative democracy in the public sphere, such as freedom of speech, equality of opportunities and resources to participate in public deliberation, openness of debate, plurality of perspectives and their inclusion in the public debate. The fairness of this process resides both in the fairness and transparency of the electoral process as well as the real practice of the procedural and substantive values of deliberative democracy in the public sphere.

The purpose of this present paper is to analyse if the public opinion making process in the Mexican public sphere respects and fulfils the procedural and substantive values of deliberative democracy, thus if it is fair and democratic. If the process through which 'public' opinion is formed becomes manipulated, biased, closed, exclusive, not transparent, violated, etc., this situation could give an 'oligarchic' character to a certain political regime since it will be the influence of a small number of people which will determine the support or rejection from citizens of specific policies or law in the public sphere, support or rejection which will be reflected afterwards in the constitution of representative political institutions.

The social and economical forces that take part in the public sphere could also lead citizens to political apathy or indifference, if that is convenient to their political interests and if they do not want these citizens to have a specific political reaction. In order to develop a public sphere and transform it democratically various factors are necessary: a) the social initiative of citizens to participate within it, b) adequate political education in order to influence effectively, c) reasonable degree of equality of resources and of opportunities in the access to the means of social communication, d) the development of civic journalism, e) the diffusion of quality information in the Media, among others.

It becomes indispensable for the democratic analysis of Mexico to consider the social and economic forces that decide the kind of information that is diffused through the Media since this 'power' influence people greatly to acquire certain opinion in public affairs and can influence in such a way the decision-making process in representative political institutions that can force it to take certain direction.

The power in the public sphere is closely connected with the 'economic' power of social forces within a political community since this latter power determines the access to resources and opportunities that control the kind of information that will set up the opinion in public affairs. But the power in the public sphere also depends on the initiative, quality activity and education of citizens in order to participate and design the rules, framework and methods to transform it democratically.

Unfortunately in Mexico, there is neither an adequate framework nor enough rules nor enough culture nor methods to promote the full development of a democratic public sphere.

I could summarise the argument of this paper in the following terms: In order to complete the transition of Mexico to democracy it is necessary to promote the development and transformation of the Mexican public sphere. Both development and transformation should pass through the reform of the legal framework of the Media and the transformation of its ownership scheme and journalistic culture. The development and transformation of the Mexican public sphere needs also the development of a public service approach in the use of the Media and the restraint of the market approach which have caused negative consequences for the complete transformation of Mexico's political regime.

Among these negative consequences of the excessive market approach in the Mexican media we find: a) the deepening of the inequalities in resources, opportunities and capabilities among Mexicans in order to influence effectively the political decision-making process, b) the alienation of civil society from politics, c) the contradiction of the interests between the owners of the Media and the community as a whole and d) the spread of programs that

undermine the intellectual development of people and propose destructive social values for democracy.

The development and transformation of the public sphere requires that Congress men in Mexico design and enforce rules, methods and mechanisms to make the Media work really for the general interest of the country. Although the Mexican Constitution has established certain principles to enable the State to guide the use of the Media for the interest of the whole community, the secondary law does not establish the rules, institutions and methods through which this use of the Media could be guided for the interest of the whole community. We do not find, for example, that the secondary law in Mexico promotes a forum approach of democracy in the Media.

First of all, Mexico needs to promote more diversity and competition within commercial media in order to limit the power of the elite that controls them, it also needs to grant more 'faculties' or 'rights' to 'cultural' media, especially the right to find sponsors in order to produce high quality programs that enhance the political culture of Mexicans and their adequate public functioning so that they may be able to influence effectively the political decision-making process carry out in formal political institutions (Villanueva 2004: 134).

Unfortunately, the political, social and economic forces that want to preserve the market approach of the Mexican media are very powerful in spite of the defeat of the PRI regime in the year of 2000. They had developed profound clientelistic ties with the previous regime that allowed them to earn extraordinary great revenues in exchange of political support through controlling the information that flowed through them.

The Mexican Media and political regime formed a system of mutual privileges in order to preserve the 'status quo', which is very difficult to take over for the development of a democratic public sphere. Unfortunately this system of mutual privileges undermined the balance, diversity and plurality of the media and this has become an obstacle for the transition of Mexico to democracy (Hallin et al. 2002: 181).

The post-revolutionary political regime in Mexico developed an oligarchic ownership in the Media whose extreme profit oriented logic discouraged civic journalism and encouraged low level content journalism. In practical terms, its logic was antagonistic to the logic of public service that the Constitution prescribed for the use of the Media.

## **II. The Debate on the Public Sphere in Mexico**

For the purposes of this research, I will classify two kinds of debates relevant for the study of the public sphere in Mexico. The first one is a theoretical and normative debate about the conditions, principles and factors from the Media that contribute to the democratic development of any public sphere, regardless of its context, and the second one is an empirical debate about the specific conditions and factors needed in Mexico in order to develop a suitable Media for the transition of Mexico to democracy.

Nevertheless, the theoretical debate on the media and the public sphere is based on the experience of the culture, framework, ownership scheme, approach and context of specific Media, from which general principles have been draw and proposed. For example, Sallie Hughes and Chappell Lawson have contributed to this debate by stating that pluralism and diversity in the ownership of the media contributes to democratic transitions (Hughes et al. 1994: 83-85). J. S. McClenaghan and Ruth Ann Ragland have contributed by stating that

these principles should not be constrained to the ownership of commercial media but also to the ownership of public service and community media (McCleneghan et al. 2002: 207 – 208).

John Parkinson argues that ‘media debate is ill-informed and based on ‘rickety opinions’, that the media focuses on the ‘horse race’ of electoral politics rather than issues, institutions and ideas, or that powerful interests can dominate or distort’s media’s agenda’ (Parkinson 2005: 176).

Also, within this theoretical debate of the media and the public sphere, Joseph L. Staats have proposed the independence and autonomy of the Media, not only from political authorities, but especially from the corporate power which nowadays exercise news censorship through advertising (Staats 2004: 590). In order to avoid that public media could be used as a political instrument for partisan propaganda, some models of social representation, especially in Europe, have emerged for the government of the respective broadcast boards, in order to express their views about news-reporting and programs (Linnarz 2004: 54).

In the American context of broadcast, especially because it is constituted mainly by commercial media, the influence of corporate companies has been acknowledged in news reporting when these companies become, through advertising, the main source of revenue for this kind of media. Due to this situation, Ernesto Villanueva has proposed to limit this power by encouraging commercial and non-commercial Media to obtain alternative sources of funding (Villanueva 2004: 134).

The transformation of the journalistic culture in the Media has been proposed as an indispensable condition for the promotion of democracy and the development of democratic public spheres. John Parkinson suggests that a more civic oriented journalism focused on thematic news rather than episodic ones would further democratic citizenship, civic engagement and political participation (Parkinson 2005: 179).

Civic journalism entails various practices and institutions in the Media, such as the creation of deliberative spaces for citizens in order to promote debate on public issues, as well as the promotion of thematic news and cultural programs that provide high quality information on public issues (Kurpius 2002: 588).

As an independent variable, civic engagement and participation in communicative interaction with other citizens have been discussed in academic literature as an important factor to transform democratically the public sphere, since they constitute conditions in order to make the different voices of society be heard and taken into account in the public – opinion making process (Dahlgren 2002: 20-22). Jennifer Jerit, Jason Barabas and Bolsen Toby have argued that when there is an adequate information environment citizens enjoy more opportunities to learn about politics and their political knowledge is enhanced, but this adequate information environment depends heavily on media coverage which determines the kind of issues that are given importance (Jerit et al. 2006: 266).

Joseph L. Staats argues that public opinion is ‘authentic’ if citizens can express and receive reciprocally their opinions in the public sphere, if they are able to ‘answer’ back comments or opinions from others and if they find outlets for effective action. Staats also argues that we find a pathological condition of public opinion in the public sphere when not every citizen can express their views on public affairs, when they are prevented from answering back

opinions or critics, for whatever reason, and when the media is controlled and infiltrated by agents favourable to the regime (Staats 2004: 586).

On the other hand, Peter Dahlgren argues that the easy access to the means of social communication by the different groups of civil society through a suitable legal framework and the promotion of social spaces for public discussion constitute convenient means to overcome the pathological condition of public opinion in the public sphere (Dahlgren 2002: 12).

But the debate on the media and the public sphere is more profound and it even comprehends the debate on the nature of the media, whether it should be approached as a market governed by the laws of supply and demand or as a public service working for the general interest of society (Keane 1991: 116-121). For example, John Keane has considered the benefits and disadvantages of the market approach to the media and compared them with those of the public service in order to develop a truly democratic public sphere. Sallie Hughes and Chappell H. Lawson argue that the Market approach, which possesses some positive features, should be limited through the implementation of public service obligations for the owners of commercial media so that they can be ordered to the general interest of society and limiting the extreme profit mentality (Hughes et al. 2005: 18).

On the other hand, the empirical debate on the Media and the Mexican public sphere have listed the factors that have both contributed and prevented the development of the Mexican public sphere. According to Darrin Wallis, one positive factor that helped the transition of Mexico to democracy was its economic liberalization as consequence of the implementation of the structural reforms recommended by the IMF and the World Bank after the economic crisis of 1982, which led to the privatization of the second national TV broadcasting chain that introduced competition into commercial media monopolised then by the corporate power of Televisa (Televisión Vía Satélite, S.A.) (Wallis 2004: 120).

Wallis also argues that the pursuit of preferences from the audience encouraged both broadcasting chains to improve their news reporting style and provide more diversity and pluralism in their content; nevertheless they did not improve substantially the quality of information since most of their news remained episodic (Wallis 2004: 120).

Sallie Hughes and Chappel Lawson argue that an important factor that has undermined freedom in the Mexican public sphere, especially recently, has been the violence against journalists. According to them, these repressive measures have not been exercised exclusively by political authorities, but especially by powerful social and economic forces which aim at preserving their privileges threatened by the diffusion of information (Hughes et al. 2005: 11).

They also argue that this violence has not been stopped due to the weakness of the rule of law in Mexico which has not punished adequately this kind of crimes against free press. If the rule of law was strong and prevented and punished adequately this kind of crimes in Mexico, journalists would be able to report quality information more confidently (Hughes et al. 2005: 17).

Ana Azurmendi proposes 'the decriminalization of interferences in the rights to honor, personal and family privacy and one's own image' in Mexico, since their status of crime has

chilled assertive journalism and discouraged journalists to disclose information about corruption, when they do possess confidential evidence (Azurmendi 2006: 3).

Adrián Ventura considers the protection and confidentiality of journalist's sources as an essential condition to protect access to public information in the Mexican public sphere, especially when the degree of transparency in some States of Mexico does not secure such access (Ventura 2004: 113 – 128). On the other hand, Ernesto Villanueva argues that adequate access to public information is an essential condition for the transition of Mexico to democracy, for its adequate accountability and for the possibility of government alternation (Villanueva 2003: 112). Finally, Sallie Hughes and Chappell H. Lawson argue that the legal framework in Mexico must assure transparency and lack of discretion in broadcast concessions and impartiality in their legal supervision (Hughes et al. 2005: 18).

### **III. The General Situation of the Media and the Public Sphere in Mexico**

There are clearly two opposite tendencies on the Mexican public sphere. On the one hand there is a progressive tendency by which the Media, especially Radio broadcasting and Print Media, have improved the quality of its political information and analysis, although it is still on its way to develop better deliberative practices; there is certainly more civic journalism within broadcast Media, even from Televisa and TV Azteca, and there is more diversity, quality, professional culture and public service approach from the Print Media; and the new regime at the federal level does not practice – at least not at the same extent-the subtle methods that the post revolutionary regime used to practice in order to control the Media. These are all positive factors that contribute to the development of democracy in Mexico.

On the other hand there are still great challenges for the development of the Mexican public sphere such as the great spread of violence against assertive journalists who have denounced the activities of criminal organizations and their collusion with some public authorities. This is a great challenge even for the State since criminal organizations are threatening every person who interferes in its activities, no matter his or her position in Government. The Mexican State needs to design and implement measures in order to reinforce the law and punish effectively crimes against journalists.

Another challenge for the democratic development of the Mexican public sphere is the oligopoly in television broadcast, where competition, diversity and plurality should be encouraged as well as the access to ownership by representative groups of civil society in order to open this kind of Media to the different plural voices of civil society.

The Law, on the other hand, does not introduce public service obligations to owners of commercial concessions of television, especially in electoral issues where hundreds of millions of dollars from the national budget are spent every year in order to buy spaces in 'commercial' television and which can be saved if the Electoral Law commanded 'commercial' television and radio to broadcast debates or even certain amount of partisan propaganda freely.

Finally, the internet in Mexico has become an extraordinary Media tool that offers many opportunities for people to obtain plural and diverse information and that allows alternative perspectives in the public sphere to be 'heard'. Internet is especially relevant for enhancing the informational environment and increasing the opportunities of people to learn about public issues, and it has become the most suitable means of social communication for the

communicative interaction among citizens, which is indispensable for the democratic development of the Mexican public sphere.

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# Medication Error Reporting: A Review of Nurses' Perceptions

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## **Background**

Medication safety has recently become an important healthcare priority worldwide (Runciman et al. 2003; Department of Health UK 2004; Department of Health, Taiwan 2005; IOM 2006; JCAHO 2006). According to the available evidence, the incidence and cost of medication errors and harmful events is high. A major study in USA, using observation to identify medication errors in 36 health care settings, showed that nearly one in every five doses in hospital settings is an error (n=3216) (Barker et al. 2002). In the United Kingdom, according to the Department of Health (2004), the actual incidence of medication errors is unknown because of low reporting rates and lack of a national incident reporting system. Between 10% and 20% of all adverse events are reported as medication errors consistently. In NHS hospitals medication errors and the ensuing cost are estimated at between £200 and £400 million per year.

## **Definition of Terms**

There is no consensus definition of medication safety terms in the literature (Grandhi et al. 2000; Cousins 2005; Yu et al. 2005). A study based on a search of 160 websites associated with medication safety organisations, examined the terms used to describe medication errors currently in use. It identified twenty-five different terms with 119 definitions (Yu et al. 2005). In addition, the Department of Health UK (2004) also pointed out that it did not differentiate between errors and adverse drug reactions in either the published studies or in the World Health Organisation's International Statistical Classification of Disease and Related Health Problems (ICD-10).

After comparing the relevant literature and Internet resources, the common terms used in the context of medication safety are summarized in **Box 1** along with their conceptual definitions and general meanings. Furthermore, the terms for medication errors, adverse drug errors, and adverse drug reactions are related. **Figure 1** illustrates this relationship between medication errors and adverse drug events (Grandhi et al. 2000; Morimoto et al. 2004; IOM, 2006).

### **Box 1** The Common Terms Related to Medication Safety

**An error** is defined as the failure of a planned action to be completed as intended or the use of a wrong plan to achieve a plan (IOM 2000). Furthermore, an error may be an act of commission or an act of omission (IOM 2004).

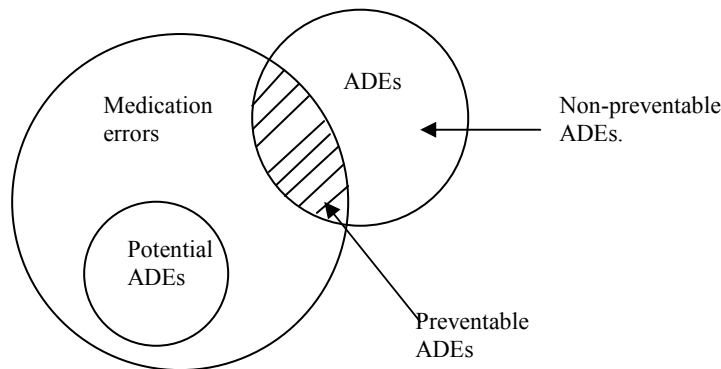
**A medication error** is defined as any error occurring at any step of the medication use process, including ordering, transcribing, dispensing, administering and monitoring (Bates et al. 1995; Morimoto et al. 2004).

**An adverse drug event**, often abbreviated as ADE, is defined as any injuries caused by medications (Bates et al. 1995; Leape et al. 1991). An injury includes physical harms (for example, a rash), mental harm (for example, confusion), or loss of function (for example, inability to drive).

**An adverse drug reaction** is defined as an unintended noxious response to a drug, which occurred at normal dose use in man for prophylaxis or the treatment of disease (WHO 1975).

**Near miss:** any incident that had the potential to cause harm but was prevented, resulting in no harm to patients (NPSA 2004b).

**Figure 1.** Relationships between medication errors and adverse drugs events.  
(Adapted from Grandhi et al. 2000; Morimoto et al. 2004)



Medication errors are the broadest category. Some medication errors have little potential for harmful consequences; others are either potential or preventable adverse drug events (Grandhi et al. 2000; Morimoto et al. 2004). The occurrence of medication errors is higher than that for adverse drug events (Bates et al. 1995); only a small proportion of medication errors cause adverse drug events (Bates et al. 1995). Adverse drug events (ADE) can be either preventable (e.g. a wrong dose leads to injury) or non-preventable (e.g. an allergic reaction in a patient not known to be allergic) depending on what injuries occurred (Grandhi et al. 2000; Morimoto et al. 2004). A preventable ADE is indicated as a serious type of medication error (IOM 2006).

The National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP 1995) consisting of 22 American national organizations approved the working definition of medication errors giving a more comprehensive, detailed definition (See **Box 2**). The purpose of this working definition is to offer a research focus and guidance for the type of information to collect (De Vaus 2002). Within this definition, the nature and causes of medication errors are included.

## Box 2 The Working Definition of Medication Errors

The **functional meaning of “medication error”** was defined by the NCC MERP (1995) as follows:

“A medication error is any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing; order communication; product labeling, packaging, and nomenclature; compounding; dispensing; distribution; administration; education; monitoring; and use” (p.1).

The researchers state that definitions are crucial to the study of medication errors (Grandhi et al. 2000) because of the analysis of incidence data and the development of error prevention strategies (Yu et al. 2005). In addition, the Department of Health UK (2004) states that it is crucial for error reporting programmes to distinguish between adverse events resulting from medication errors and those occurring during correct medication usage. Therefore, the multiplicity of terms for medication errors, including definitions and functional meanings, urgently need to be standardised (IOM 2004; Yu et al. 2005).

### The Role of Medication Error Reporting

In order to minimise the risk to patient safety involving medicines, successful incident reporting is indicated as an effective approach to medication error reduction (Anderson and Webster 2001; Wachter 2004; Department of Health Taiwan 2006; Giles et al. 2006) because identification of medication errors is recognised as a significant first step towards medication safety (Grandhi et al. 2000; Anderson and Webster, 2001; Morimoto et al. 2004; Preston 2004). The origins of incident reporting are high-risk industries, such as aviation and nuclear power plants (Barach and Small 2000; Helmreich 2000; Reason 2000). The primary purpose of incident reporting is to learn from errors in order to prevent a recurrence and to deliver safer health care to patients (Leap 2002).

There has been a growing interest in incident reporting in healthcare systems globally (Giles et al. 2006), including Taiwan. Incident reporting systems have been established in many advanced countries (See **Table 1**).

**Table 1** Current Reporting Systems Worldwide

Year	Reporting System	Organisations	Country
1995	Sentinel Event Reporting System	Joint Commission on Accreditation of Healthcare Organisations (JCAHO).	America
1998	Australia Incident Monitoring System (AIMS)	Australia Patient Safety Foundation (APSF)	Australia
2000	Patient safety reporting system (PSRS)	Department of Veteran Affairs (VA)	America
2001	National reporting and learning system (NRLS)	National Patient Safety Agency (NPSA)	Britain
2001	Canadian Coalition on Medication Incident Reporting and Prevention System (CMIRPS)	A coalition of health and consumer organisations	Canada

2004	Taiwan Patient-Safety Reporting System (TPR)	Department of Health	Taiwan
Not stated	Medication Error Reporting Programme	Institute for Safe Medication Practice (ISMP) and U.S. Pharmacopeia (USP).	America
Not stated	MedMARx	U.S. Pharmacopeia (USP).	America

Data are summarised according to the website by APSF (no date), Department of Health Taiwan (2005), Health Canada (2004), JCAHO (2005), NPSA (no date), U.S. Pharmacopeia (no date), and US Veteran Affairs (2006).

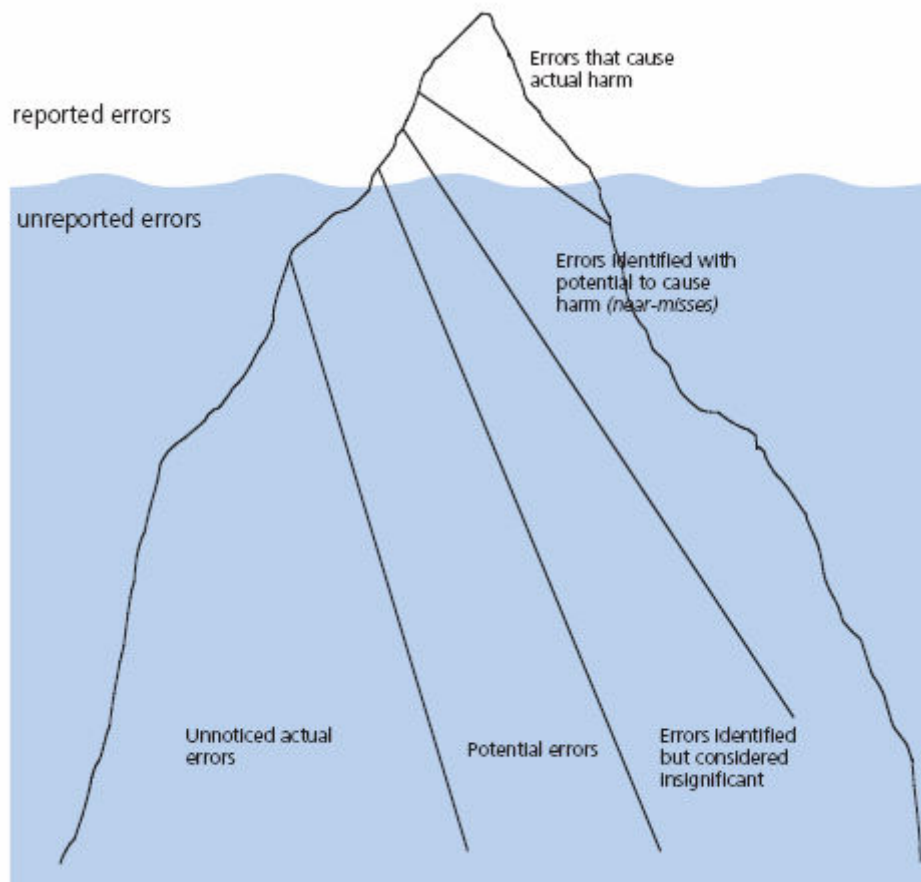
Although it has been recognised that voluntary reporting only detects a small proportion of medication errors and cannot be used to measure the actual frequency of errors (Flynn et al. 2002), the role of medication error reporting is still significant. Voluntary reporting can collect information on errors and adverse events, as well as enhance learning and improvement through the analysis of epidemiological data (Leap 2002; Shaw et al. 2005; Giles et al. 2006). Voluntary reporting is useful for Root-Cause Analysis and for trend analysis of medication errors, for example medications involved, doses, forms, and routes. Additionally, a large database can aid trend analysis (Flynn et al. 2002; IOM 2006). Moreover, voluntary reporting provides a stimulus for change. A good reporting system can help healthcare professionals be aware of major hazards and is also important to the monitoring process for preventing errors (Leap 2002; IOM 2006).

### **The Challenge**

The existing literature emphasises the importance of reporting all errors and incidents in the administration of medication, including near-misses (Anderson and Webster 2001; NMC 2004; IOM 2006). In America, The IOM (2006) recommended that medication error-reporting should be facilitated aggressively by all stakeholders that shape the environment of healthcare delivery, including legislators, regulators, accreditors, payers and patient safety organisations. In Britain, since 2004 The Nursing and Midwifery Council (NMC), the Professional Nursing Regulatory Body, has clearly indicated that all errors in the administration of medicines must be reported to managers or employers in “The Guidelines for the Administration of Medicines”.

However, the major challenge to voluntary reporting is the low reporting rate (Grandhi et al. 2000; Department of Health UK 2004). The Department of Health Report (2004), ‘Building a safer NHS for patients. Improving medication safety’ uses the ‘tip of the iceberg’ analogy (See **Figure 2**) to illustrate the problem of low reporting, where the majority of medication errors remain unknown.

**Figure 2:** The Iceberg of Medication Errors (Adapted from Department of Health UK, 2004)



Low reporting of medication errors could be potentially harmful to patients and the provision of standard care (NMC 2004). After reviewing the current research literature the IOM (2006) identified that a large gap exists in the understanding of incident rates, costs and prevention strategies for medication errors; however, some data are ten years old (Bates et al. 1997). Furthermore, the development of medication error prevention strategies requires a better understanding of error occurrences, costs and consequences (IOM 2006). Moreover, the IOM (2006) costs of medication errors may be underestimated since the current understanding of the costs of medication errors is drawn from preventable adverse drug events (IOM 2006).

### **The Taiwan Context**

Little literature discussed the issue of medication error reporting and strategies to promote reporting in the author's country, Taiwan. The issue of medication errors has not been an open topic for discussion and education in Taiwan. Later, two serious medication errors that occurred in 2002 (See **Box 3**) had shown that hospital administrators focused on the "person" who made an error (Chiu et al. 2004) and who therefore must be 'incompetent' (Lee et al. 2004). It is evident that nobody has discussed medication errors unless they have resulted in a critical incident.

### Box 3 Outline of Two Critical Incidents in Taiwan

- At the end of 2002, a registered nurse mistakenly injected a muscle relaxant rather than Hepatitis B vaccine to seven newborn babies in a Women and Children hospital. One baby died immediately and six babies suffered brain damaged after receiving cardiopulmonary resuscitation (Chen 2003).
- Two weeks later, diabetic medications were dispensed instead of antihistamine agents to more than one hundred and twenty patients in a clinic. One child died and many patients were affected because of the use of the wrong drug (Department of Health Taiwan 2005).

Additionally, the education for preventing medication errors and adverse drug events was still limited to the “five-rights” principle (Chen 2003). The “five-rights” in the process of medication administration mean the right time, the right dose, the right route, the right medicine and the right patient (Chen 2003). For example, in the author’s five-year nursing diploma programme in the 90’s and a recent three-year bachelor’s degree in nursing education, the “five- rights” principle has been the only method addressed for medication safety. Additionally, in the author’s four years clinical practice in two organisations, medication errors did occur and the issue of medication safety was not included in in-service education.

These two serious medication errors raised public, healthcare and government awareness regarding the safety of medication treatment. A Taiwan Patient-Safety Reporting System, which is a national, anonymous and voluntary electronic reporting system, was established in 2004 (See **Table 1**); the national launch was scheduled for 2006 after the testing stage (Department of Health Taiwan 2006). Medication safety has become one of Taiwan’s major healthcare delivery goals since 2004 (Department of Health Taiwan 2005).

However, medication safety cannot be achieved by the incident reporting system alone since error reporting is crucial to the process of error management (Lawton and Parker 2002). Expert opinions suggest that under-reporting may occur for a number of reasons (Department of Health UK 2004; IOM 2006). In order to achieve medication safety, there is a need to bridge the knowledge gap of costs, occurrence and prevention strategies of medication errors by producing a large database in Taiwan. Evidence suggests that the role of medication error reporting is crucial in the identification, trend analysis and prevention of medication errors.

#### Review Aims

This review examined the evidence about nurses’ perceptions of medication error reporting. Nurses play a key role in facilitating medication safety. Armitage and Knapman, (2003) claim that nurses spend 40% of their time administering medications. Nurses also carry out the last two steps in the complex process of drug administration: administering and monitoring. Hence, it is essential for researchers and policy makers to gain greater insight into the nurses’ perceptions and feelings towards medication error reporting as these may affect patient safety involving medication usage. As little is known regarding medication error and reporting in Taiwan; the following review will analyse the issue of medication error reporting using evidence from Western countries. Thus, the review of nurses’ perceptions of medication error reporting would help to provide information relevant to improving medication safety.

#### Method

In order to locate the best available evidence, the strategies of using electronic databases and reference lists (Timmins and McCabe 2005) were applied to ensure systematic, thorough and comprehensive searches. Firstly, several electronic databases were used. The purpose of using multiple databases was to increase coverage, as databases have strengths in different areas. (Muir Gray 2001). In order to identify relevant studies, the year of search was not set. Secondly, once a relevant study was identified, the reference list was examined in order to gain more understanding of the topic (Timmins and McCabe 2005).

For identifying relevant studies in Western countries, three electronic databases were used including MEDLINE (United States National Library of Medicine Database) from 1966, EMBASE (Excerpta Medical Database) from 1980 and CINAHL (Cumulative Index to Nursing and Allied Health) from 1982. In terms of Taiwanese studies, three electronic systems were searched. The first database was the Electronic Theses and Dissertations System which is a national electronic database, which collects theses and dissertations in Taiwan since 1956 (National Central Library 2005). The second was the READncl Service System, a national electronic database containing published Taiwanese journals since 1991 (National Central Library 2004). The third was the Chinese Electronic Periodical Service (CEPS), covering all journals written in Mandarin and those published in Mainland China, Hong Kong and Taiwan since 1991 (Airiti Company 2006).

The key search terms employed to identify studies included: medication administration, drug administration, medication safety, medication errors, patient safety, medication administration errors, drug administration errors, knowledge, incident reporting, voluntary reporting, self-reporting, error prevention, quality improvement, perception, blame, nurses, nursing staff, registered nurses, culture, organisational culture, attitude to change, attitude to risk and finally attitude of health personnel. The differences between British and American spellings were also noticed. Furthermore, key terms were utilized in both single and combined searches.

## **Findings**

### **Search Results**

In total, 217 studies were found. Regarding the Western studies, only studies written in English were recruited. Studies were screened for relevance by reading the abstracts. If their focus was the reporting of medication or administration errors among staff nurses, the study was selected. A total of 13 studies were selected for this review. The studies were drawn from Australia, Taiwan, the United Kingdom and the United States of America.

### **Review of the Selected Studies**

The characteristics of each study are listed in **Appendix 1**. Seven out of thirteen studies were designed as quantitative research using the survey approach (Osborne et al. 1999; Wakefield et al. 1999; Blegen et al. 2004; Mayo and Duncan 2004; Stratton et al. 2004; Hsu 2005; Shih et al. 2005). Another three studies were qualitative research (Hand and Barber 2000; Jeffe et al. 2004; Kingston et al. 2004). The other three studies used mixed methods i.e. they adopted both qualitative and quantitative methods (Gladstone 1995; Walker and Lowe 1998; Handler et al. 2004). Gladstone (1995) used a document review and interviews to gain additional data. Handler et al. (2004) supplemented their quantitative data with observation, semi-structured interviews and document review. Walker and Lowe (1998) conducted focus groups to obtain the perceptions of staff nurses.

Seven studies were from the United States of America, including five surveys, one mixed-method approach and one qualitative study. Four studies used questionnaires to survey nurses' perceived proportion of medication error reporting, knowledge regarding what constituted medication errors and when to report them, perceptions regarding reporting and the reasons for under-reporting. Osborne et al. (1999) conducted a small study (n=57) exploring nurses' perceptions and reporting of medication errors in one hospital by convenience sampling. A large-scale study was conducted by Mayo and Duncan (2004) exploring registered nurses (n=983) across 16 acute care hospitals in Southern California by simple random sampling. The study by Stratton et al. (2004), which was a pilot study prior to the study by Blegen et al. (2004), surveyed acute care registered nurses (n=227) and paediatric registered nurses (n=57) across 11 hospitals in two states. These were sampled by convenience sampling. Next, Blegen et al. (2004) conducted an American nationwide study survey of registered nurses (n=1105) across 25 acute care hospitals; the sampling strategy was not stated in the published journal.

Only one survey, by Wakefield et al. (1999), examined potential barriers to medication error reporting among nurses (n=1428) by convenience sampling across 29 acute care hospitals in Iowa State, USA. Only Handler et al. (2004) adopted the mixed-method approach to study the processes of medication administration and error reporting among registered nurses (n=20) working in one long-term care setting through observing, interviewing and a questionnaire survey. They also reviewed medication error documents. Only Jeffe et al. (2004) conducted a qualitative study using convenience sampling and focus groups to explore the views of 30 doctors, 49 staff nurses and 10 nurse managers across 20 academic and community hospitals serving adult and/or paediatric patients in the St. Louis metropolitan area.

Two studies from the United Kingdom were included. Gladstone's (1995) study, the earliest study in this review, adopted a combination approach to examine the common issues underlying medication errors and reporting in one district general hospital. Incident report documents were analysed (n=79), staff nurses were surveyed (n=81) by stratified sampling and nurses who made errors were interviewed (n=14) by convenience sampling. Hand and Barber (2000) conducted a qualitative study through interviews (n=17) to explore nurses' attitudes and beliefs about medication errors in one London teaching hospital.

Two studies from Australia were included. Walker and Lowe (1998) surveyed and interviewed staff nurses' beliefs (n=43) concerning medication error reporting after the introduction of a new medication incident reporting system in one hospital. Its sampling strategy was not stated. Kingston et al. (2004) conducted a qualitative study exploring 14 medical and 19 nursing staff across three tertiary metropolitan public hospitals by purposive sampling and focus groups.

Two studies have been included from Taiwan; both were surveys. The study by Hsu (2005) adopted the questionnaire of Mayo and Duncan (2004) to survey registered nurses (n=1352) in one medical centre and one regional hospital by convenience sampling. The study by Shih et al. (2005), a Taiwanese nationwide study by stratified sampling (n=2579), surveyed the current incident reporting systems in all Taiwanese hospital settings (n=327) and healthcare professionals' perceptions of the willingness to practise incident reporting, including medication errors, and the barriers against it. Nearly half of the participants (n=1287, 49.9%) were registered nurses.



Most studies explored the perceived proportions of medication error reporting and knowledge regarding what constituted medication errors and when to report them. Perceptions among registered nurses regarding reporting and the reasons for under-reporting were also examined. There was little exploration of barriers to medication errors. Additionally, eight of thirteen studies were published in the past two years: 2004 and 2005, indicating that the issue of medication errors has been paid much more attention in recent years.

### **Data Summary**

After appraising the thirteen studies, the following themes were identified as factors affecting medication error reporting: under-reporting of medication errors, fear of consequences, fear of managers' and colleagues' reactions, unobvious and non-serious errors, insufficient knowledge of medication error-identification and reporting and a lack of perceived value of reporting itself. The strength of evidence regarding these themes was also critically appraised.

#### *Reporting Medication Errors*

From the analysis it was evident that medication errors are under-reported in many surveys. Some studies indicated that the actual medication error reporting rates estimated by staff nurses were less than half (Gladstone 1995; Osborne et al. 1999; Blegen et al. 2004; Mayo and Duncan 2004). Despite higher perceived rates of medication error reporting being found in a few studies; under-reporting was also perceived by staff nurses generally (Stratton et al. 2004; Hsu 2005; Shih et al. 2005). The evidence was drawn from survey studies and, although each study had strengths and limitations, the findings were the same. Therefore, the conclusion reached was that medication errors are under-reported in clinical practice in hospital facilities.

#### *Fear of Consequences*

Evidence from a number of studies indicated that fear of consequences after committing a medication error is a major reason for not reporting the incident. Ten out of thirteen studies included in this analysis, including both qualitative and quantitative research, found that the majority of nurses were afraid of the punitive, disciplinary actions after errors had been committed, (Gladstone 1995; Walker and Lowe 1998; Osborne et al. 1999; Wakefield et al. 1999; Hand and Barber 2000; Blegen et al. 2004; Handler et al. 2004; Jeffe et al. 2004; Kingston et al. 2004; Stratton et al. 2004; Shih et al. 2005). Two studies indicated that over 80% of nurses reported that the reason for not reporting medication errors was fear of reprimand (Osborne 1999; Handler et al. 2004). 25% of registered nurses acknowledged that they had failed to report errors because of fear (Osborne 1995).

Two Taiwanese studies indicated that registered nurses had been punished after committing errors (Hsu 2005; Shih et al. 2005). Shih et al.'s (2005) study indicated that fear of punitive action was the fourth reason for not reporting an error and nearly 40% stated that they had been punished. Only 33% of hospitals stated that the reporting systems would not be used for punitive action (Shih et al. 2005). However, 59% reported that they had received oral cautions from administrators (Hsu 2005).

Three survey studies showed that there was a significant relationship between fear of consequences and medication error under-reporting (Wakefield et al. 1999; Blegen et al. 2004; Stratton et al. 2004). In terms of qualitative studies, fear of consequences was derived from interviews or focus groups (Gladstone 1995; Walker and Lowe 1998; Hand and Barber 2000; Jeffe et al. 2004; Kingston et al. 2004). The fear of consequences was expressed more specifically by nurses as a result of the existence of a culture of blame in two studies (Jefe et

al. 2004; Kingston et al. 2004). Nurses used “name, blame, shame” to express their fears in Jeffe et al.’s (2004) study.

Only two survey studies indicated that the disciplinary actions were not the primary concerns for not reporting medication errors (Mayo and Duncan 2004; Hsu 2005). Only 17% of staff nurses reported that fear was the reason not to report medication errors in the study by Hsu (2005); the study by Mayo and Duncan (2004) had similar findings. Although 80.4% of staff was not concerned about disciplinary actions as the primary reason for under-reporting, the results indicated that the majority were concerned about the reactions of managers and colleagues (Mayo and Duncan 2004). This point is discussed in a later section.

Strong evidence showed that fear of reprimand, such as punitive actions, was one of the primary reasons for under-reporting; the two Taiwanese studies found 30-40% of nurses had been punished after reporting an error. Although no study included in this analysis had conducted a culture survey, it is suggested that fear of consequences leading to low reporting was associated with a ‘culture of blame’ within the organisations being studied.

#### *Fear of Managers’ and Colleagues’ Reactions*

Evidence also indicated that fear of managers’ reaction was another reason for the under-reporting of medication errors (Gladstone 1995; Wakefield et al. 1999; Blegen et al. 2004; Mayo and Duncan 2004; Stratton et al. 2004). The evidence was mostly drawn from several large-scale survey studies; the exception was the study by Gladstone (1995). Over 70% of participants reported this concern (Gladstone 1995; Mayo and Duncan 2004). Three studies showed that there was a significant relationship between fear of administrators’ reactions and medication error under-reporting (Blegen et al. 2004; Stratton et al. 2004; Wakefield et al. 1999), whilst two qualitative studies indicated that lack of feedback after an error was reported was one barrier to medication error reporting (Jeffe et al. 2004; Kingston et al. 2004).

Limited evidence indicated that nurses did not report medication errors because of concerns of colleagues’ reaction. Over 50% of nurses reported concerns about their colleagues’ reactions in two studies (Mayo and Duncan 2004; Hsu 2005), which indicated that nurses were concerned about being judged as an incompetent nurse by their colleagues in the workplace setting.

The evidence suggests that the expected negative responses of managers and colleagues might affect nurses’ medication error reporting; in particular negative or unsupportive responses of managers after a report was made was recognised as one constraint to medication error reporting.

#### *Unobvious and Non-Serious Errors*

Some evidence was located that showed that unobvious and non-serious errors were a barrier to the reporting of medication errors. For example, some errors were not severe enough to cause adverse drug events. Walker and Lowe (1998) identified that nurses were less likely to report medication errors resulting from documentation errors or minor deviation from prescriptions. Unobvious and non-serious errors were ranked as the first and second reasons not to report errors in Shih’s study, however, nurses were more likely to report errors if they caused adverse consequences (Shih et al. 2005). Over half of nurses in Mayo and Duncan’s (2004) study reported non-serious errors as the reason not to report medication errors. One qualitative study indicated that staff nurses were not certain regarding the reporting of errors

with less serious consequences in the focus groups (Jefte et al. 2004). Additionally, only two studies investigated the reporting of near-miss events. The reporting rates of near misses were relatively low, about 35% in the studies of Blegen et al. 2004 and Shih et al. 2005. These two studies, also published in recent years, may imply that little attention has been paid to the reporting of near-miss events. Therefore, there is medium-strength evidence that unobvious and non-serious errors were identified as a barrier to the reporting of medication errors. Meanwhile, the studies regarding near-miss event reporting were limited.

#### *Insufficient Knowledge of Medication Error Identification and Reporting*

Many studies identified that nurses reported that they knew what constituted medication errors and when to report them (Osborne 1999; Blegen et al. 2004; Mayo and Duncan 2004; Hsu 2005; Shih et al. 2005). However, Mayo and Duncan (2004) pointed out that a gap between perceived knowledge and actual knowledge may exist. In their study, nurses reported a high level of knowledge regarding what constitutes a medication error (92.6%) and the timing in which to report an incident (91.3%). However, these self-report results did not correspond with the findings of medication scenarios. For example, nurses were dissimilar in classifying a medication error in some scenarios. In one medication scenario involving dosage omission because a patient was sleeping, nurses' responses were divergent (Yes 58% versus No 42%). In three scenarios, more nurses did not classify as medication errors such events as dosage omission and administering pain medication that deviated from the prescription. The rest of the 12 studies, in particular the study by Hsu (2005) which adopted the same questionnaire, did not explore whether the perceived knowledge of nurses was correspondent to their actual knowledge. Additionally, the error reporting process might not be familiar to staff nurses. Staff nurses who did not know what constituted an error and were not familiar with the reporting process were also identified by one qualitative study (Kingston et al. 2004).

There was limited evidence indicating that there was a gap between perceived and actual knowledge regarding the identification of medication errors and the reporting process. However, the problem of insufficient knowledge regarding medication errors cannot be ignored.

#### *Lack of Perceived Value of Reporting Itself*

Limited evidence indicated that the perceived value of reporting itself would affect error reporting. The study by Kingston et al. (2004) identified through focus discussions that a perceived lack of value in the reporting process was one of the common barriers to incident reporting. In the study by Shih et al. (2005), staff nurses reported that the situation would not be improved after a report was made - the sixth reason not to report errors. However, the majority of studies included in this substantive investigation employed closed-ended questions in their questionnaires. Consequently, the answers of registered nurses may be limited due to the questionnaire design. Therefore, one question that could be posed here is if the perceived value of reporting itself were to be included in the questionnaires would the responses be different?

#### *Other Themes with Insufficient Evidence*

Some themes were drawn from studies with insufficient evidence, including the complexity of reporting forms, lack of time, lack of confidentiality regarding incident reporting and nurses' characteristics.

In terms of the complexity of the reporting format, the study by Kingston et al. (2004) indicated that this was one of the main barriers to reporting incidents. On the contrary, in Shih et al.'s (2005) study the complexity of the reporting form was ranked as a bottom third reason not to report incidents. Two studies showed that lack of time caused under-reporting (Jeffe et al. 2004; Kingston et al. 2004). On the contrary, insufficient time was ranked as the second bottom reason affecting incident reporting (Shih et al. 2005). In terms of the confidentiality of incident reporting, only one study indicated that this was a barrier to reporting errors (Jeffe et al. 2004).

Most studies did not explore the relationship between the characteristics of staff nurses and under-reporting. The exceptions were Mayo and Duncan (2004) and Stratton et al. (2004). Mayo and Duncan (2004) indicated that there was no significant relationship between years of experience, working units and the perceived proportion of medication error reporting. Whist Stratton et al. (2004) claimed that paediatric nurses were more likely to report medication errors than nurses of adults. However, Stratton et al.'s (2004) conclusion did not consider that the education degree of paediatric nurses was significantly higher than those of nurses of adults.

### **Conclusions**

Medication safety has recently become a priority in healthcare worldwide. Medication incident reporting is an effective approach to reducing errors and promoting learning from errors. Consequently, incident reporting systems have been established in many advanced countries. However, low reporting is a major challenge in achieving medication safety; reported medication errors are only the tip of iceberg. The review of the relevant literature identified multiple terminologies regarding medication errors as being currently in use in different studies. Sufficient evidence indicated that medication errors were underreported in nursing practice in Western and Taiwanese hospital settings. In addition, several themes regarding nurses' perceptions towards medication error reporting have been highlighted, which can be summarised under the following headings:

- Factors affecting under-reporting. Strong evidence showed that fear of consequences, such as punitive actions, was one of the primary reasons for under-reporting, particularly in the Taiwanese studies.
- Sufficient evidence showed that negative or unsupportive responses of managers and colleges might affect medication error reporting by nurses.
- Despite a lack of evidence of organisational culture surveys in this investigation, fear of consequences leading to low reporting is suggested as being associated with a culture of blame within organisations.
- Medium-strength evidence showed that unobvious and non-serious errors were a barrier to medication error reporting.
- Insufficient studies regarding near-miss event reporting were identified.
- A knowledge gap regarding medication errors among registered nurses may exist.
- The studies regarding the influence of the perceived value of reporting itself on medication error reporting were limited and need more research.
- Some factors lacked sufficient evidence, including complexity of reporting forms, lack of confidentiality regarding incident reporting, lack of time and nurses' characteristics.

To sum up, the studies included in this review indicated that the perceptions of medication error reporting among registered nurses are generally negative as a result of fear and ignorance. Studies providing evidence and insight into medication error reporting have adopted different designs, including quantitative, qualitative or mixed-methods.

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**Appendix 1** Study Characteristics

<b>Authors</b>	<b>Year</b>	<b>Title</b>	<b>Journal</b>	<b>Design</b>	<b>Country</b>	<b>Database</b>
Gladstone	1995	Drug administration errors: a study into the factors underlying the occurrence and reporting of drug errors in a district general hospital	Journal of Advanced Nursing	Mixed-method study	UK	CINAHL MEDLINE BNI
Walker and Lowe	1998	Nurses' views on reporting medication incidents	International Journal of Nursing Practice	Mixed-method study	Australia	CINAHL MEDLINE
Osborne et al.	1999	Nurses' perceptions: What is it a medication error?	Journal of Nursing Administration	Survey study (Descriptive, comparative, cross-sectional)	USA	CINAHL EMBASE
Wakefield et al.	1999	Understanding why medication administration errors may not be reported	American Journal of Medical Quality	Survey study (Correlational, cross-sectional )	USA	CINAHL MEDLINE
Hand and Barber	2000	Nurses' attitudes and beliefs about medication errors in a UK hospital	International Journal of Pharmacy Practice	Qualitative study	UK	EMBASE
Blegen et al.	2004	Patient and staff safety: Voluntary reporting	American Journal of Medical Quality	Survey study (Descriptive, cross-sectional)	USA	CINAHL MEDLINE
Handler et al.	2004	Medication error reporting in Long-Term Care	The American Journal of Geriatric Pharmacotherapy	Mixed-method	USA	EMBASE MEDLINE

**Appendix 1** Study Characteristics (Continued)

<b>Authors</b>	<b>Year</b>	<b>Title</b>	<b>Journal</b>	<b>Design</b>	<b>Country</b>	<b>Database</b>
Kingston et al.	2004	Attitudes of doctors and nurses towards incident reporting: a qualitative study	Medical Journal of Australia	Qualitative study	Australia	CINAHL MEDLINE EMBASE
Mayo and Duncan	2004	Nurses perceptions of medication errors: What we need to know for patient safety.	Journal of Nursing Care Quality	Survey study (Descriptive, correlational, cross-sectional)	USA	CINAHL
Stratton et al.	2004	Reporting of medication errors by pediatric nurses	Journal of Pediatric Nursing	Survey study (Descriptive, cross-sectional a pilot test)	USA	CINAHL MEDLINE
Hsu	2005	A study of nurse perceptions of medication errors	Kauhsung Medical University (Unpublished thesis)	Survey study (Descriptive, cross-sectional)	Taiwan (In Chinese)	Taiwan Electronic Theses and Dissertations System
Jeffe et al.	2005	Using focus groups to understand physicians' and nurses' perspectives on error reporting in hospitals	Joint Commission Journal in Quality and Safety	Qualitative study	USA	CINAHL MEDLINE
Shih et al.	2005	Incidents reporting system and reporting barriers.	Formosan Journal of Medicine	Survey study (Descriptive, cross-sectional)	Taiwan (In Chinese)	National Central Library

# **An Institutional model for diffusion and implementation of Innovation in Construction Industry: Case Study of CCI**

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## **Abstract**

United Kingdom has a highly developed construction industry with a specialised institutional framework. Institutions related to universities are the major elements of innovation diffusion and dissemination in this framework. These highly motivated institutions are behaving as innovation brokers between industry and academia. In this paper, it is argued that these institutions can be taken as good practice exemplars by the developing countries to improve the innovative performance of their construction industries. One of the enterprise centres of the University of Salford, Centre for Construction Innovation (CCI) is analyzed with the case study method in order to reveal its success factors. Apart from the previous research on CCI, this time an institution building conceptual model is used in this study. As a result, the important role of the centre in stimulating innovation in the construction industry is explored.

## **Introduction**

Higher education institutions play a significant role in the production of knowledge and stimulation of innovation within the industry. From the perspective of the construction industry, however, the literature indicates the poor relationship between the universities and the industry. The Fairclough Report (2002) describes the construction industry as wary of academia. In order to overcome this barrier for innovation, engagement mechanisms play a crucial role in bringing together the knowledge of the higher education and the construction industry. Four types of engagement mechanisms are identified by Lambert (2003) in the UK context: Personal contacts and staff exchanges (such as visiting professors, guest lecturers, or industry secondments); business support and consultancy; collaborative and contract research; establishment of joint ventures and spinout companies. Building specialised institutions is a more holistic approach which comprise a variety of mechanisms designed for bringing together the universities and the industry. In this context, the success factors for an institution in diffusing and implementing innovation will be explored according to an institution building model.

## **Innovation and the Construction Industry**

Competitive environment of the world economies is getting more severe as globalization changes the world. Developing countries are challenging developed countries for the value added products and high-tech industries. In this severe environment of competitiveness, even successful companies of the past are trembling against the rapid change we face.

Porter (1998) states that, during the past 20 years, western companies have responded the competition with continuous improvement. Companies are remaining competitive by information technology (IT) investments, re-engineering, Total Quality Management (TQM), lean production and other similar techniques for optimizing their productivity. He also suggests that companies have to offer value creating and differentiated new products for creating unique competitive positions by integrating all their competencies.

In addition to these competitive needs, spectacular achievements of the high-technology sectors of the economy have driven interest in the generation of new ideas and its implementation, i.e. what is now being considered innovation (Seaden et al. 2001). Differentiation of products, processes and services in an innovative way is a major key to sustainability and competitiveness for the market share. This differentiation may be achieved through a completely new product/process or an adaptation, whereas it can be achieved by developing an existing product/process or service.

In this context, there are several different definitions of innovation reflecting its principal characteristics. Rogers (2003) defines innovation as ‘...an idea, a practice or object that is perceived as new by an individual or other unit of adoption’. He argues that the idea should be new to the observer rather than being newly discovered in that period of time. Freeman (1989), defines innovation as ‘...the actual use of non-trivial change and improvement process, product or system that is novel to the institution developing change’ in his popular definition which is also used by Koskela and Vrijhoef (2001) and Slaughter (1998).

The definition of innovation in the construction industry is not far away from these above. Tatum (1987) highlights the subjectivity of being new, and defines innovation as the first use of technology for construction firms. Toole (1998) used the definition of ‘Application of technology that is new to an organization and that significantly improves the design and construction of a living space by decreasing installed cost, increasing installed performance, and/or improving the business process’. Construction Research and Innovation Strategy Panel (CRISP), defined innovation as ‘The successful exploitation of new ideas, where ideas are new to a particular enterprise, and are more than just technology related – new ideas can relate to process, market or management’ in 1997. ‘The successful exploitation of new ideas’, which is also used by the Department of Trade and Industry (DTI), is widely used and accepted in the construction industry and academia in the UK.

Construction activities are project based which have a discrete nature and many different types like roads, bridges, houses, airports. On the other hand, contractors usually build projects designed by design professionals. This diverse and discrete nature of these projects make long term development and improvement very difficult. Contractors are reluctant to spend money on anything rather than the immediate needs of individual projects. Even most of the employees are hired for specific projects and firms are being reluctant even for training their work force, because of the possibility of losing their staff to another company for the next project. In these circumstances research and development are usually being neglected. This market structure seems to be the main barrier for the long term improvement and innovation in construction.

The construction industry has been examined with some concerns about its innovativeness but these concerns have motivated some researchers to pay attention on the issues and solutions for the construction industry (Gann et al. 2000). Although the level of innovation is considered as low compared to other industries, potential of the industry to innovate is also acknowledged (Pries et al. 1995; Slaughter 1998)

Construction industry is considered to perform badly compared to other industrial sectors and poorly innovative. Winch (2003) argues that the evidence for this perception is usually based on comparative industrial performance data which is not suitable for construction, however, after the peak point of construction industry in the nineteenth century, it fell further behind

the rest of the manufacturing industry in terms of productivity, quality and innovation. Hence, like any industry 'construction' needs to increase the rate of innovation (Fairclough 2002)

Institutions associated to universities are mostly considered as organizations with specific expertise. Therefore Modular innovations (a significant improvement or a new concept within a specific region) and radical innovations (a completely new concept or approach which often renders previous solutions obsolete, including interdependent components or systems) are considered to be developed by such institutions (Slaughter 2000)

### **Institutional Development for Innovation in Construction**

Without diffusion, innovation would have little social or economic impact (Hall 2006). Hall (2006) also states that diffusion is not the means by which innovations become useful by being spread throughout the population but it is also an intrinsic part of the innovation process: Understanding the diffusion process is the key to understanding how conscious innovative activities conducted by firms and governmental institutions (activities such as funding research and development, transferring technology, launching new products or creating new process) produce the improvements in economic and social welfare that are usually the goal of the activities. For entities which are 'catching up', such as developing economies, backward regions, or technologically laggard firms, diffusion can be the most important part of the innovative process (Hall 2006).

Rogers (2003) explains how Jack Walker studied the 50 states of USA in 1966 and 1971, and found out that innovations all spread across the US by the pioneering role of leader states. Walker states that, organizations, like people, look for innovations in similar organizations and especially who are opinion leaders in that region. The study shows that innovations can diffuse from organization to organization through inter organizational networks, in a process parallel to that among individuals in a social system.

Universities are widely cited as critical institutional actors in national innovation systems (Nelson 1993). The literature on national innovation systems emphasizes the importance of strong linkages among these various institutions in improving national innovative and competitive performance, and this emphasis applies in particular to universities within national innovation systems (Bowery, D. and Sampat, B. N. 2006).

These arguments can easily show the potential need and success of institutions which are funded by governments or together with the involvement of a large amount of construction companies. They can be placed in three broad categories: learned societies, trade associations and training, research and development institutions. In the UK context, Institution of Civil Engineers (ICE), Royal Institute of British Architects (RIBA), Royal Institute of Chartered Surveyors (RICS) are learned society examples and Federation of Civil Engineering Contractors, Building Employers Conference are trade associations. Construction Industry Training Board (training organisation), Construction Industry Research and Information Association (a research and information association) are examples of the third type. This third type, training, research and development institutions are more at the centre of interest of this paper as an institutional category.

Existing institutional structures in developed countries have strong influences on the process of construction like 'invisible hands', but this influence can be benignly as well as malignly (McDermott and Quinn 1995). Performance improvement for the construction industry is important especially for the developing countries, where construction industry is usually the

second largest industry after agriculture, in the means of GNP and has a significant amount in the total investments. On the other side, industrialised countries have an evolved construction industry with specialised institutional frameworks. Some of these institutions have their own privatized interests like training and development of professional skills, organisational management, regulating the industry through contractual procedures, standard setting and inspection, etc. Developing countries have to create their own frameworks by establishing dedicated institutions (Miles and Neale 1991). On the other hand, besides the strong need for institution building in developing countries, there is a possible danger of creating unwieldy bureaucracies (Austen and Neale 1986).

Qualifications of these institutions are important as there are examples that fail to understand and meet their client's needs. Institutions of such, usually end up with the effects of their own insignificant bureaucracy or as they struggle to engage an academic status building rather than focusing on the needs of the industry (Miles and Neale 1991).

In order to find the success parameters in construction industry development and answer questions like how successful institutions fulfil their clients needs, the institutional factors that carry them to success and their dynamic linkages in their operational environment should be analysed well. Operational environment of organisations are much more complicated than what it seems because they contain both man-made and physical elements. In contrast with the physical environment, man-made-elements tend to be more '...irregular, nonrecurring, irrational and unpredictable' (Bennis et al. 1985)

### **Research Methodology**

This study is structured as a single case design with embedded units of analysis.

Case study approach is considered to be weak and dubious (Robson 2002) by some researchers. However other researchers have regarded this method as effective for appropriate conditions. Cook et al. (1979) define this strategy as a fundamentally different research strategy with its own design. This approach allows investigators to gather the holistic and meaningful characteristics of real life events Yin (2003).

Evidence for case studies may come from six sources: documents, archival records, interviews, direct observation, participant-observation and physical artifacts (Yin 2003: 83). As the various sources are highly complementary, a good case study should use as many sources as possible. Yin (2003: 85) explains extremely important characteristics of high-quality case studies as: using multiple, not single source of evidence, creating a case study database and maintaining a chain of evidence where possible.

This CCI case study relies on multiple sources of evidence. These sources are: documentation, archival records, interviews and direct observations. Agendas, announcements and reports online from the web page of cci ([www.ccinw.com](http://www.ccinw.com)) are used as present documentations. Allen Director of CCI, Mr Andrew Thomas is interviewed, and he explained the Centre's past, targets set, activities and services given, their relationship with public and private bodies and the future predictions for CCI in a two hours open-ended interview. Most of the documents which are not accessible on the internet are provided by him. Academicians from the University of Salford like Dr Peter McDermott, Mr Carl Abbott and Prof Mike Kagioglu filled some gaps by their valuable contribution. Participation to a Twilight Seminar-Innovating in the built environment, held on the 25th of April by CCI, added direct observations to this framework. Finally, a previous case study on CCI

‘Facilitating Innovation-The Role of CCI’ by Carl Abbott and Stephen Allen (2005), was both informative and testimonial for this study.

This case study is explored by Esman’s (1972) institution building conceptual framework. The same model is used by Miles and Neale (1991) for structuring case studies on a construction programme of ILO, and McDermott (1995) for criticising Latham Report on its proposed institutional framework for implementation.

### Esman’s Model

Milton J Esman (1972) captures the essential elements of the institutional process in his conceptual framework ‘The institution building universe’. These essential elements are characteristics of the institution itself, institutions linkages with its environment and purposeful exchanges in between: ‘transactions’ (Figure 1).

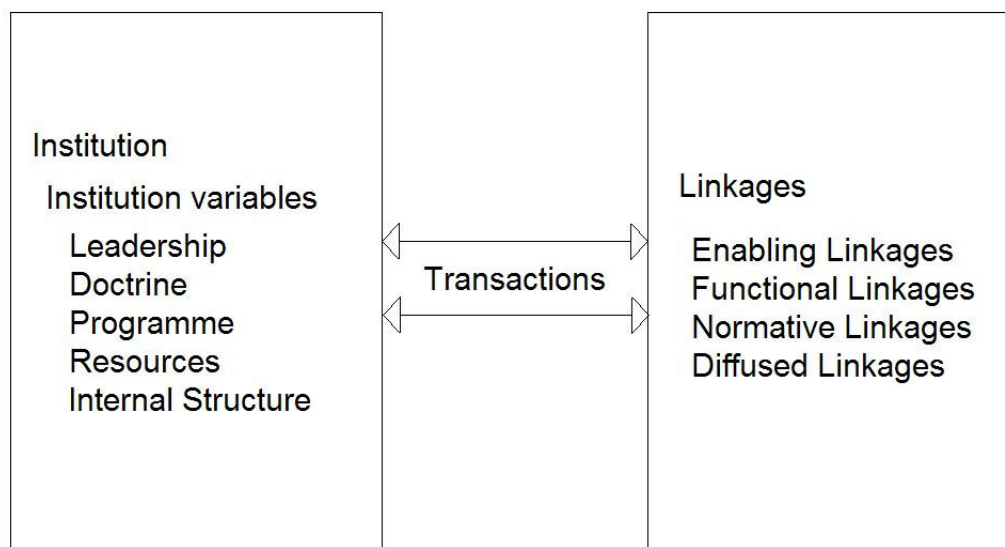


Figure 1. – The institution building universe

Five major variables of the institution are listed as follows:

- Leadership: Innovative organisations needs strong leaderships to reach their aims; especially when they are new. Every single organisational procedure should be set from the beginning, from a draft of ideas. This appears to be the most important factor an organisation should have.
- Doctrine: Defines the institution’s aim to achieve, what the institution stands for and in relation with the leadership, its values and style.
- Programme: What the institution does to achieve its goals, services and functions defining the resource needs.
- Resources: The main expenditure of the institution-building is usually the staff they recruit.
- Internal Structure: Insitution’s management framework. As it has strong cultural dimensions, it should be devised to suit the needs of its local environment.

As the existance of an institution strongly depends on its relations with its environment, these links are considered under four categories:

- Enabling linkages: Vital relationships which give the institution its legality, purpose, resources and form.
- Functional linkages: linkages with complementary or competing organisations that support or help in general to achieve objectives.
- Normative linkages: These are relationships with institutions which have similar interests and purposes. Such relations can be either friendly or on the icy side.
- Diffused linkages: Individuals or groups who are not directly related with the Institution but may have big impact for reaching the desired objectives with their influence and create acceptability. Project champions can be an example for this kind of relationship.

### **Case Study: Centre for Construction Innovation (CCI)**

CCI was formed in 2000 for the promotion of the Rethinking Construction agenda in the North West region of UK. North West Development Agency NWDA and CCI was partnering in the first years of the establishment. CCI is a 'not for profit' enterprise and one of the three enterprise centres of University of Salford's School of Built Environment.

### **Leadership**

Centre is being managed by an operations director, an associate director and a general manager. CCI has a strong leadership, directed by a professional from the industry who has a successful past and an extensive knowledge background. He is the one who provides leadership and directs the team strategically. He is the second director of the centre after Dennis Lenard but he has been within the centre from the first day of its foundation. Co-director of the Centre is an academic who has publications on supply chain management, decision support systems, trust, and implementing innovation in construction. Dealing with the centre's projects and supporting the project managers is the duty of the general manager and he is also responsible for the future work.

### **Doctrine**

CCI is formed to promote the Rethinking Construction agenda derived from the Egan Report, in the NW region. Whilst this started with the 'Rethinking Construction' agenda it has now been expanded to wider issues of the built environment such as sustainability, design, procurement, skills and process. The main aim is to provide industry and its clients act collectively to improve performance in the means of productivity, profits, defects and reduced accidents, through the application of best practices and create a 'movement for change'. The Centre was also positioned as an organisation for the diffusion of innovation created by the research in its academic sister SCRI.

### **Programme**

CCI has a wide range of activities like training, coaching, consultancy, mentoring, procurement and event management services. Training programmes include Respect for People, Better Public Buildings, Sustainability and Environment, Lean Construction, KPI and Benchmarking, Supply Chain Management, Procurement Value Based, Contractual Agreements, Whole Life Costing, Integrating Teams and Post Project Review. Other main service modules are: Procurement Coaching, Partnering and Team Integration, Bid Coaching and Debriefing, SME Capacity Building, KPI.

The Centre also has some 'products' like 3D visualisation/VR suite aiming to present practical uses of visualisation in various industries from construction to retailing, showing ideas on how 3D visualisation can implemented for different economical and consultation



issues; on-line KPI management tool to allow companies to store and analyse their own data supported through consultancy and advice

The Centre hosts 6 of the region's Best Practice Clubs, manages the CUBE – regional ABEC Gallery and Seminar space and participates in many AE/Industry Link for University Research.

### **Resources**

CCI is not a large organisation. Total number of employees is currently about 20, including management team, project managers and administrative staff. 20 staff. 9 of them are Project Managers, 3 of them are administrative staff. They also have gallery assistants for the ABEC gallery and seminar space. The ratio of the professionals to the academics is %70 to %30. Academics and postgraduate students also participate in process and services.

There is a 'ring-fenced' structure between the centre and the University of Salford. This structure enables them to invest surpluses for future research and development. Annual turnover is between 1.5 to 2 million Pounds. Main amount of this turnover comes from ERDF, NWRDA, Construction Industry Training Board (CITB), Manchester City Council (MCC) and Constructing Excellence. Apart from these, sales of the products and services of developed by CCI have an important share in the total turnover. 3D visualisation/VR suite and on-line KPI engine are two of the most money-earning 'products' of the Centre. Apart from the listed above, at least half of the income is from the other small projects and consultancy services. The centre is trying to secure itself by bidding for new opportunities continuously.

The main expenditure of the Centre is its staff, which is common for similar institutions all over the world (Miles and Neale 1991). Termination of the ERDF funding in 2008, will be challenging for the near future. A replacement should be found in the near future, to secure the Centre's human resources and activities.

### **Internal Structure**

Being a small organisation, CCI does not have a complex organisational structure. The Centre is guided and advised by a non executive Board. The Board consists of representatives of University of Salford and other academics, representatives of other organisations (like Northwest Development Agency, Constructing Excellence, CITB and so on), contractors and even clients who all have an influence on the Centre's activities. They come together bi-annually and focus on the sectoral activity and interaction of the CCI.

Under the management level, there are two functional divisions: Project Management and Project Support (Figure 2). The centre has nine Project Managers (PM), each of them experts of their field. Every PM runs projects and service modules of his/her own interest. However, the team work approach adopted by CCI is also leading them towards supporting other projects of expertise, running under the initiative of other colleagues and work together as equal parties in the workshops. Administrative staff including an events manager and exhibition assistants are in the Project Support section.

The team is also leading them towards supporting other projects of expertise, running under the initiative of other colleagues and work together as equal parties in the workshops.

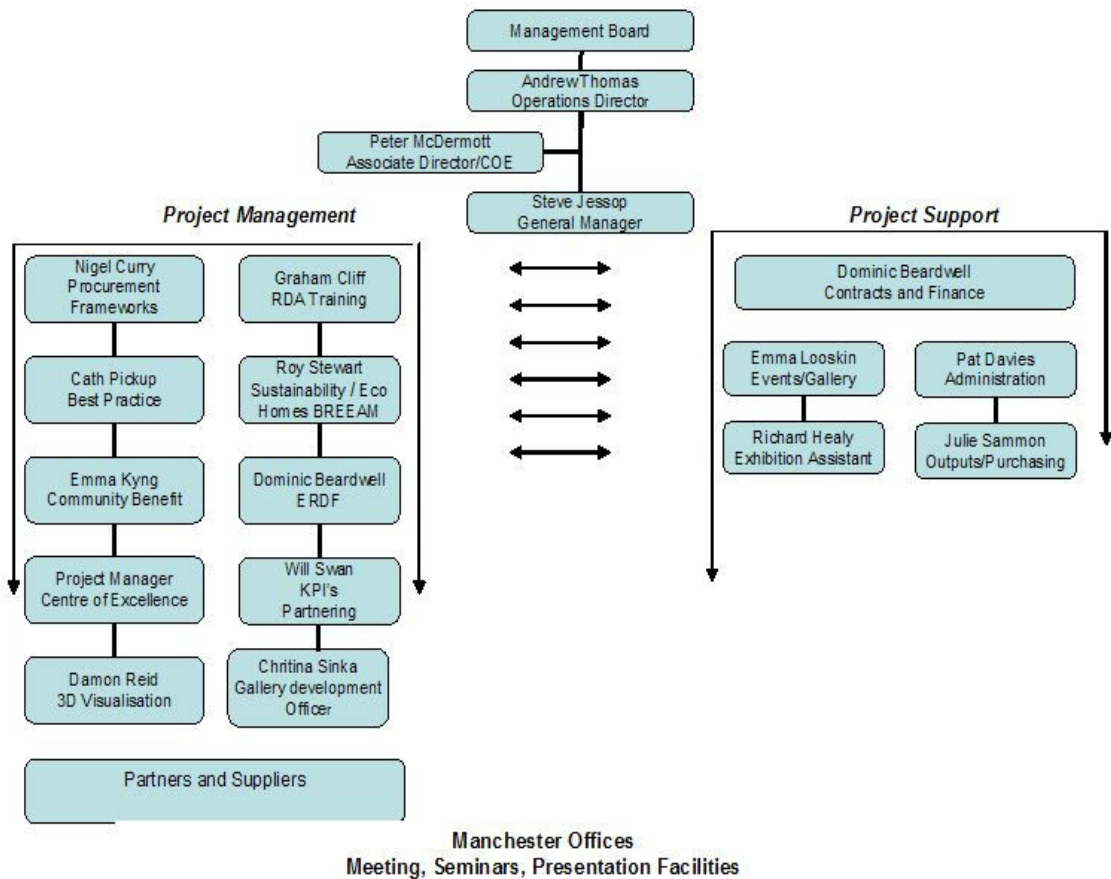


Figure 2. –Organizational structure of CCI (Source CCI)

### Linkages

In many ways, CCI case study is a study of linkages. The Centre has strong relationships with every stakeholder in the NW construction industry with a contact database of 14000 individuals and 2300 companies of varying sizes. The number of people the centre engages through its many activities in a year is over 2000.

The fact that it was founded, and is governed in partnership by academia, members of industry and public bodies gives CCI strong enabling and functional linkages. Its educational programmes involve significant number of members of academic institutions and professionals from the main sectors of the industry, thus enhancing the functional linkages and promoting normative ones. Through the development of the ‘Rethinking Construction’ agenda CCI has become a key provider of advisory and grant aided services to the construction sector. The Centre is now promoting influence of a powerful agenda-rethinking construction and is promoting these agendas for the UK construction

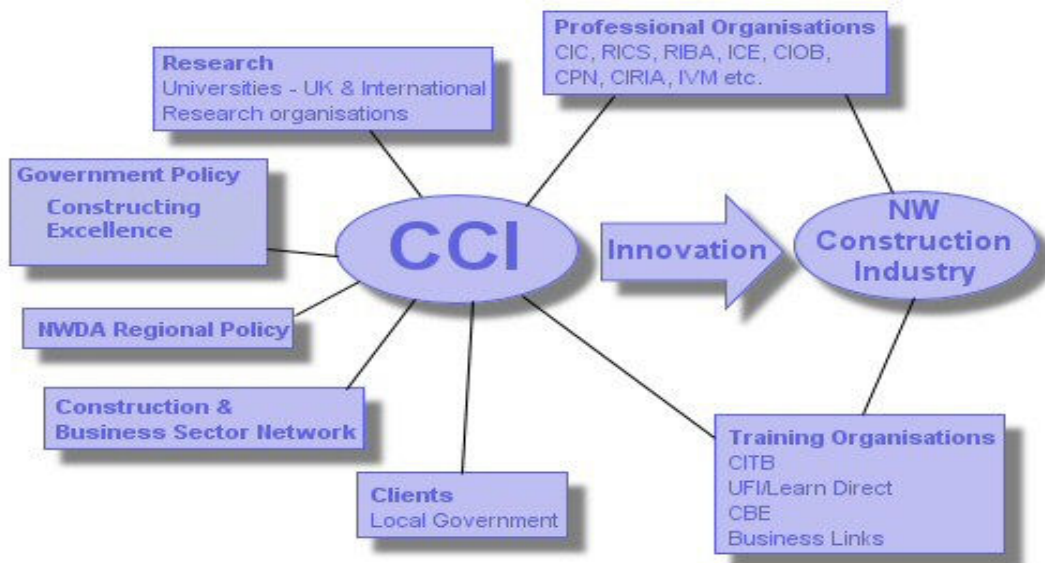


Figure 3. – Scheme showing the linkages of CCI ([www.ccinw.com](http://www.ccinw.com))

CCI keeps its good relations with all the participants of the Industry and is part of a wide industry network including research centres, governmental and regional policy bodies, training organisations, professional organisations like CIC, RICS and RIBA as well as private sector companies and clients. The Centre is now at a stage of establishing both national and international franchises.

### Conclusion

Centre for Construction Innovation is an institution established and formed with the influence of the reports commissioned by both the Government and industry, towards enabling the construction change agenda in the Northwest region of UK. Affiliated to the University of Salford, the Centre to transfers knowledge and acts as a hub for the industry. They bring together research and industry and help working in close partnership with other agencies to deliver knowledge, skills and services to all members of the construction supply chain; from clients through to construction delivery teams and product suppliers.

Case study of CCI shows the importance of the efficient governmental policies and support of public and private bodies for their common interest. University/research link provides prestige and gravity to the institution.

CCI is a sound example for diffusing and fostering innovation in the construction industry. Strong leadership, close relations with public and private bodies as well as the industry, wide range of activities, not for profit structure of the the Centre are all important issues for being a leading institution example. However the governmental policies and the movement for change agenda shapes the UK construction industry and requires a good understanding to form similar institutions in developing countries for the diffusion and implementation of innovation in construction. Further examples should be studied and number o case studies should be increased for further decisions.

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# **The Institutional Development of Alternative Dispute Resolution Methods in the UK Construction Industry**

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*The present and the future are connected to the past by the continuity of a society's institutions. Today's and tomorrow's choices are shaped by the past, and the past can only be made intelligible as a story of institutional evolution (North 1990).*

## **Abstract**

In the last decade, Alternative Dispute Resolution (ADR) methods have become an established part of the dispute resolution in the UK construction industry, both with respect to the enactment of regulations and to the wide acceptance in practice. A substantial reduction in domestic litigation and arbitration has been observed with the rise of ADR, where the number of new proceedings issued in the Technology and Construction Court dropped to 390 in 2004, which is only 22% of the 1,778 proceedings in 1995 (Gaitskell 2005). The deployment of ADR was initiated by the robust government policies and regulations that promote ADR, such as the Housing Grants, Construction and Regeneration Act in 1996; however, the ADR promoter and provider institutions had also a significant role in the development of ADR in the UK. This study analyses the role of the ADR institutions as a promoter of ADR within an institution building and institutional development concept in quest for constituting a model for developing countries. The research was conducted by a series of semi-structured interviews undertaken with dispute resolution professionals and researchers in the UK and an analysis of an ADR institution 'Centre for Effective Dispute Resolution' (CEDR) with a case study approach based on the conceptual framework proposed by Esman.

## **Introduction**

In a construction project, although all parties have the same objective, a building, the motivation for providing the building is generally concerned with the profit to be earned or the benefit to be obtained. Profit for the contractor, sub-contractor and the promoter of the building is earned in different ways. It is often assumed this means that when the profit position of either party is threatened, conflict will emerge (Hibberd and Newman 1997). Cheung et al. (2002) also suggest that disputes are frequently the rule rather than exception in the construction industry and they arise during a construction process for a number of reasons. The quality of materials, standard of workmanship, contractor delays, applications for extensions of time not being granted, variations, cost overruns and the meaning of contractual terms can be the subject of expensive claims and turn into disputes that threaten the success of the project (Adriaanse 2005). It is sufficient to regard it as securely established that disputes are a significant phenomenon within the UK construction industry and that they are a matter of importance to the disputants, as well as to other stakeholders such as developers, owners, non-owning occupiers, contractors, subcontractors and suppliers and professional consultants. Given that, the question arises almost automatically as to how they are resolved. Traditionally, the means of resolution have been straightforward: construction disputes were resolved by litigation or arbitration, like other commercial disputes. The former could be regarded as the legal system's provision of a response to the need for dispute resolution, the latter as industry's alternative, an alternative historically so much favoured

that major construction and engineering contracts included provision for it. Yet currently neither can be said to generate unqualified enthusiasm within the construction industry. As a result of a general disappointment with the traditional dispute resolution methods, interest in Alternative Dispute Resolution (ADR) began to grow (Brooker and Lavers 1997).

ADR is a non-adversarial technique which is aimed at resolving disputes without resorting to the traditional forms of either litigation or arbitration (Ashworth 2005: 53). It is defined in the European Commission's Green Paper (2002: 6) as 'out-of-court dispute resolution processes conducted by a neutral third party excluding arbitration'. The most widely used ADR methods are mediation, conciliation, adjudication and dispute review boards/panels. The discussion on arbitration in the literature seems to result in defining arbitration not an ADR method but a quasi-judicial procedure because of its features closer to (or worse than) litigation in terms of duration, cost and the level of bureaucracy (EC Green Paper 2002: 6; Adriaanse 2005: 347; Carmichael 2002: 265). The European Commission's Green Paper also suggests that expert opinion process should not be considered as a dispute resolution method as it is a procedure involving recourse to an expert in support, usually in litigation or arbitration. In this paper, the definition by the European Commission's Green Paper is followed and Alternative Dispute Resolution methods are referred to by the acronym 'ADR', following the already widespread practice.

Rubin and Quintas (2003) suggest that the salient characteristics of ADR make it an attractive option for settling the complex and time sensitive disputes that often arise during the course of construction projects. Beside being a faster, less bureaucratic and more cost-effective process that do not require the use of attorneys to present claims, the real-time approach to disputes can prevent deterioration of business relations and the consideration of disputes by knowledgeable industry professionals can provide reaching more equitable results based on the realities of the construction process instead of applying the strict letter-of-the-law removed from its relevant context.

ADR is widely used in many countries' construction industries and is spreading fast globally (Cheung 2006). However, although the benefits of ADR are widely appreciated as Cheung (2006) suggests, the adoption and implementation of such new methods is obstructed by the relevant laws, regulations and the absence of adequate institutions. Therefore, resolute government policies for both the adaptation of the legislation and the institutional development are required for viable implementation.

The purpose of this research is to examine the role of institutions in the development of ADR in the UK construction industry within an institution building and institutional development concept in quest for constituting a model for developing countries by semi-structured interviews undertaken with dispute resolution professionals and researchers in the UK and the analysis of an ADR institution 'Centre for Effective Dispute Resolution' (CEDR) with a case study approach.

### **The Development of ADR in the UK Construction Industry**

In the last decade, ADR has become an established part of the dispute resolution in construction, and in general commercial dispute resolution in the UK, following its birth and the rapid growth in the United States. Compared to other member states, UK is the first in the EU to institutionalize ADR both with respect to enactment of regulations and to the wide acceptance in practice (Cairns 2005).

The extent to which ADR methods are used is difficult to assess since no national data is available like the number of referrals to the County Court and the High Court in the case of litigation. This is because of the lack of a single point of institutional control of ADR in the UK like arbitration. In the same way that arbitrators may be appointed by a number of appointing bodies, the growth of ADR depends on the efforts of several institutions which at times appear to be in competition with each other rather than merely complementary. According to ADR Group, which is one of the prominent ADR institutions in the UK, there has been a considerable change in the public perception of ADR. In 1990 the Group received referrals for mediation at the rate of approximately three per month, of which one on average, related to the construction industry. At that time, only one case would generally proceed as far as a full mediation. Many cases failed to reach a mediation hearing simply because one or other of the participants did not understand ADR, refused to participate or was committed to arbitration. In the period to 1993, there was a steady growth, with the number of referrals doubling to about six per month. The percentage of those relating to the construction industry remained approximately the same. The number of cases which reached a mediation hearing increased from about one third to about one-half of the cases referred. Apparently, the period from mid 1994 until mid 1995 saw a considerable change, with approximately five or six cases referred on average per week. Of those, at least 60% actually resulted in a mediation hearing and the success rate in those cases was at least 90%. During the period to 1995, there was a corresponding increase in the value of claims referred to mediation. In 1990, for what was then an untried technique, disputes with a value of more than £100,000 were rarely referred. In 1995, the ADR Group was handling cases ranging from £50,000 to £2.4 million with the number of cases at around the £1 million becoming more common (Hibberd and Newman 1997).

### ***Professional Organisations***

According to Hibberd and Newman (1997), support for ADR from professional organisations within the construction industry has been somewhat patchy. For instance, the Construction Industry Council (CIC) has endorsed ADR and in January 1993 the National Joint Consultative Committee for Building (NJCC) produced its Guidance Note 7, Alternative Dispute Resolution. The Guidance Note examines when ADR can be used, when it is inappropriate, the problem of confidentiality, and the advantages and the disadvantages of the system. The Section 'when ADR is inappropriate' suggests when auditors or others require an imposed decision. It has been a frustration to those who promote ADR that Government departments which profess a need to maintain public accountability always raise the spectre of the auditor as a ground for not adopting ADR techniques. Rather than sound such a negative sound in the Guidance Note with regard to the perceived problem of public auditors, it would have been more helpful if the NJCC had emphasised the need to carry out an educative process among local authorities and other similar organisations. Among professionals, some of the greatest oppositions to the growth of ADR in the UK has traditionally come from the RIBA, although a RIBA architect/client conciliation scheme was developed. The RIBA remains extremely conscious of the relative fragility of its members' position as contract administrators with the rise of construction procurement methods that challenge the traditional authority of architects. The JCT, of which the RIBA is a pivotal member, has after much initial reluctance, shown support for ADR by publishing its Practice Note 28 in 1995, Mediation in a Building Contract or Sub-contract Dispute.

Today, ADR is an established method for the resolution of disputes in the UK construction industry. It is adopted by the majority of actors of the industry, namely the contractors, sub-contractors, public and private employers, financing organisations, legal professionals and the

judiciary. Nestic (2002) explains, in her discussion of the status of ADR in UK, that the construction industry in UK is the largest single user of ADR (mediation), followed by other industries.

The greatest determining factor in the successful deployment of ADR in UK has been the robust government policies and regulations that promote ADR, such as the Housing Grants, Construction and Regeneration Act in 1996 which imposed the statutory adjudication for the resolution of construction disputes, the Woolf Reforms in Civil Procedure Rules in 1998 which promote the use of ADR before commencing proceedings and the ADR Pledge in 2001 committing all UK Government Departments and agencies to settle disputes by ADR. These regulations resulted in a substantial reduction in domestic arbitration and litigation, where the number of new proceedings issued in the Technology and Construction Court in 2004 dropped to 390, which is only 22% of the 1778 new proceedings in 1995 (Gaitskell 2005). In the same period, an increase is observed in the number of ADR promoter/provider institutions and organisations, who are an indispensable part of the system.

In quest for a better understanding of the role of institutions in the development of ADR in the UK construction industry, 'institution building and institutional development' phenomenon is analysed in the following section.

### **Institution Building and Institutional Development**

Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints and the framework that shape human interaction. In consequence they structure incentives in human exchange, whether political, social or economic (North 1990). World Bank's Building Institutions for Markets Report (2002) defines institutions as the rules, enforcement mechanisms and organizations supporting market transactions. Institutions can promote inclusive and integrated markets and ensure stable growth. The challenge for policymakers is to shape policies and institutional development in ways that enhance economic development. Policies affect which institutions evolve – but institutions too affect which policies are adopted. According to North (1990), institutions can be formal and informal. Institutions may be created or they may simply evolve over time. The major role of institutions in a society is to reduce uncertainty by establishing a stable structure to human interaction. But the stability of institutions in no way gainsays the fact that they are changing. From codes of conduct to statutes, institutions are evolving and, therefore continually altering the choices available to us.

Institutional building is a perspective on planned and guided social change. It is concerned with innovations that imply qualitative changes in norms, in behaviour patterns, in individual and group relationships, in new perceptions of goals as well as means. It is not concerned with reproducing familiar patterns, with marginal deviations from previous practices, or with incremental improvements in efficiency. The dominant theme is innovation (Esman 1972). Institutional development is a term closely associated with institution building; it implies that the institution already exists, and requires to be developed to meet current development needs.

In institution building one size does not fit all and guidance is always needed on how to develop appropriate institutions by building on the successes of the countries and the good practices, and learning from the failures. But notwithstanding the uniqueness of countries, analysis of country experience does hold important lessons for institutional development. There are roles for private and public, and national, local, and international actors. The World



Bank's Building Institutions for Markets Report (2002) distils four lessons on building effective institutions. The first two are about supplying effective institutions, the second two lessons are about creating the demand for the institutions and the forces for change within the countries.

- Design institutions to complement what exists in terms of other supporting institutions, human capabilities and available technologies. The availability and costs of supporting institutions and capacity determine the impact of any particular institution. By understanding how institutions interact, we can identify priorities. When building an institution or modifying one, the key thing to consider is whether supporting institutions – without which the institution would not be effective – exist.
- Innovate to identify institutions that work and those that do not. Countries may gain from expanding successful public innovations.
- Connect communities through open information flows. Exchanging information creates demand for institutional change by supplying ideas for change from outside the community.
- Promote competition, which will modify the effectiveness of existing institutions and create demand for new ones.

In establishing new institutions, developing countries can take the industrialized countries as a model. However, the differences should be analysed in detail, and the model developed should be adapted to the environment in which the new institution will work. According to The World Bank's Building Institutions for Markets Report (2002), institutions that work in industrialized countries may not produce similar results in developing countries because of differences in:

- Complementary institutions, such as those promoting transparency and the enforcement of laws
- Existing levels and perceptions of corruption
- Costs, relative to per capita income, of establishing and maintaining institutions
- Administrative capacity, including human capabilities
- Technology

Both existing and newly transplanted institutions can be more effective in developing countries if they are systematically modified to take these differences into account. Institution building is generally a cumulative process, with several changes in different areas building up to complement and support each other. Even small changes can build momentum for future changes, the whole is greater than the parts and even moderate progress in parts can contribute to a better system. Institution builders can be diverse such as policy makers, business people, or community members. Institutional reform is not just the preserve of national governments. Individuals and communities, entrepreneurs, companies, organizations can build institutions, often in partnership with each other. National governments may initiate reform or may simply respond to pressures from the private sector or from external actors. Some ineffective institutions may continue to exist in part not because there is concerted support for them, but because there are no interest groups pressing for change, or forces that would press for change are not adequately organized to do so. Whatever the reason, reforms in these areas could be accelerated. And as these reforms breed new constituencies and forces, they can lead to a demand for greater change.

In industrialized countries the construction industry has evolved gradually, as has the institutional framework which regulates it, to the present stage where it relies on the interaction of a variety of institutions, each with its own specialist priorities such as management and vocational interests of contractors, the development of professional skills and the regulation of the industry through contractual procedures, standard setting and implementation. Developing countries have to find ways to accelerate this evolutionary process, and this usually implies the establishment or development of dedicated institutions. Evidence has been accumulating that such institutions can yield significant benefits in terms of improved national construction capacity and performance, provided they focus realistically on the ambitions and needs of their clients rather than engage in fruitless empire-building (or academic status-building) for its own sake. The qualification is important, since there are other examples of institutions which have failed to understand and meet the needs of their clients, and later foundered through a combination of inertia and the weight of self-imposed bureaucratic procedures. In the UK, ADR promoter/provider institutions have emerged naturally and their survival is a testimony to their utility. The question to be asked here is if these institutions are accepted as successful in terms of their clients' needs and priorities, how they managed it and whether the seeds of the success be identified and planted elsewhere. In order to answer this question, it is necessary to analyse the institutional factors which lead to success in this specialist area of institutional development and in particular examine the dynamic linkages that must exist between such an institution and its operational environment (Miles and Neale 1991).

### **Methodology**

At the initial stage of the research, an extensive literature study on institutional development and institution building has been carried out to for a better understanding of the phenomenon and to constitute a framework in which the case study will be developed. In order to maximize the data from which conclusions might be drawn for the role of the institutions in the development of ADR in the UK, the study included two stages.

- In-depth interviews with professionals involved in construction industry research and practice.
- Analysis of an ADR institution CEDR with the case study method based on the conceptual framework by Esman.
- The findings of the first stage of the study, the in-depth interviews were used to identify the questions and design the case study as well as providing data for the research question directly.

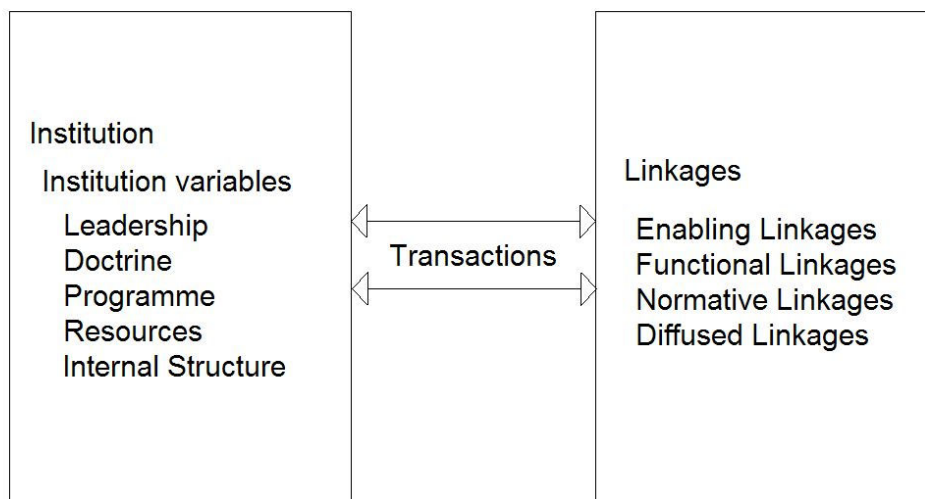
### ***Case Study as a Research Approach***

Case study has been regarded an important research strategy and yet remain controversial as a research methodology despite their popular use in various field of studies. Various scholars have expressed their pessimistic views by considering case study as a kind of 'soft option' and possible admissible as an exploratory precursor to 'more scientific' experiment or surveys, but of dubious value as a stand alone strategy (Robson 2002). However, other scholars have regarded case study as a full legitimate alternative to experimentation in appropriate circumstances and have considered case study not as a flawed experimental design but as a fundamentally different research strategy with its own design (Cook and Campbell 1979). The use of case study approach has been found allowing investigators to retain the holistic and meaningful characteristics of real life events (Yin 2003). In investigating complex situations, such as construction projects, case study approach has been proven reliable to capture the rich information for the purpose of the study (Sutrisna and

Barrett 2007). Case study has been regarded as a strategy, a stance or an approach rather than a method in research. The case study approach, as a research strategy, has been perceived as an empirical inquiry that investigates phenomena in their natural settings (Yin 2003). The case study approach in this paper followed the protocol by developed by Yin (2003) in order to improve the validity of the research. As a result, the research included a number of key elements, such as clear and concise research elements, case study selection criteria, semi-structured in depth interviews and a predetermined case study procedure.

The case study procedure was adapted from Esman’s (1972) conceptual framework on institution building in order to analyse the institutional factors which lead to success to constitute a model for the developing countries as explained in the previous section. This framework captures the essential elements of the institutional process. It shows the institution and its linkages with the environment, and the linkages being maintained through transactions, that is purposeful exchanges. According to this framework, the major factors affecting the institution are its leadership, the doctrine or style and values which it adopts, the programme of work, the quantity and quality of resources available to it, and the appropriateness of its internal structure to the task and to the culture of the industry. Linkages describe the relationships between the institution and its environment. Enabling linkages establish its legality, purpose and resources, functional linkages establish its collaboration with complementary or competing institutions, which directly help in the achievement of objectives, normative linkages are the lesser relationships with other organisations of some common interest and diffused linkages are the relationships with external people or groups, which lend credibility or acceptability (Figure 1).

Figure 1. Esman’s conceptual framework: The institution-building universe.



**Case Study: Centre for Effective Dispute Resolution (CEDR)**

In tune with the selection criteria, The Centre for Effective Dispute Resolution (CEDR) was chosen for the case study in quest for constituting a model for developing countries because of the following reasons;

- The literature survey and the interviews undertaken with dispute resolution professionals in the UK shows that CEDR is one of the oldest and most prominent promoters of ADR and provider of the ADR process of mediation in the UK.

- Construction industry is one of the core areas of their services. CEDR has set up specialist working groups, including the construction industry working group which brings together construction professionals and representatives drawn from contracting and client organisations and its purpose is to provide a forum in which developments are discussed, initiatives taken and information generally disseminated.
- CEDR has been active in the promotion of ADR providing seminars and presentations in various parts of the UK and internationally, often in conjunction with the Confederation of British Industry, to increase the general level of awareness of ADR.
- CEDR has helped to set up mediation schemes for organisations as disparate as the Department of Health, Building Employers Confederation, Computing Services & Software Association and the Institute of Grocery Distribution.

CEDR is an independent non-profit organisation which was launched in 1990 with the support of The Confederation of British Construction Industry. Its mission is to encourage and develop ADR methods in commercial and public sector disputes and as an institution, it has been a key in bringing ADR into business practice and into the judicial system.

### ***Leadership***

CEDR is autonomous institution and is managed by the chief executive, a board of directors and a chairman. It is independent and neutral, there is no government or government institution intervention, but it is supported by professional associations.

### ***Doctrine***

- International Development of ADR – CEDR has contributed to development of ADR in the EU with the preparation of the Commission of the European Communities' Green Paper in civil and commercial law (2002) and Proposal for a directive on certain aspects of the ADR process of mediation in civil and commercial matters (2004).
- Raising the awareness of ADR in the UK and internationally-CEDR has been active in providing seminars and presentations in various parts of the UK and internationally to increase the general level of awareness of ADR
- Services Quality-CEDR analyses post-mediation feedback in depth from the parties on the performance of the neutral
- Services Access-in addition to providing guidance for selecting the neutrals, CEDR also provides quality assurance for clients who wish to access neutrals directly through the CEDR Direct Service
- Service Speed-CEDR set up mediations with as little as 24 hours notice
- Neutrality-As the largest independent and neutral organisation, with neither law firms, mediators, nor special interest groups as financial stakeholders, CEDR are in a position to make an independent recommendation to both parties, removing suspicions and of a mediator suggested by the other side
- Flexibility – CEDR dealt with around 700 cases in 2005, across most sectors and case values, CEDR recognises that no two cases are the same. Disputes vary between a class action needing a special system design, a co-mediation, a time limited or scheme mediation or another process-facilitation, early neutral evaluation, an adjudication or expert determination
- Added value-CEDR has committed quality assurance and complaints system
- Experience-CEDR has experience of over 11,000 referrals covering every dispute sector and level of complexity.

- Service Choice-CEDR has access to a large group of mediators internationally, chosen from a wide range of professional and business backgrounds.

### ***Programme***

- Dispute resolution services  
CEDR is one of the leading commercial mediation provider in Europe. CEDR provides a service across a range of dispute resolution techniques and approaches, such as mediation, early neutral evaluation and expert determination. The independence enables CEDR to facilitate negotiations in complex and sensitive multi-party conflicts, where an impartial and credible third party can broker discussions and effective dialogue.
- Training  
CEDR gives business people and professionals the practical skills needed to get the best from dispute resolution processes and to apply proactive and positive approaches to conflict management throughout their work.
- Consultancy  
Leading companies, governments and public-sector organisations use the expertise of CEDR to devise schemes and procedures to manage all kinds of conflict, both internally and with customers, partners and other stakeholders.

### ***Resources***

CEDR was established with the support of professional organizations and legal firms. It is now, however, running its affairs with its own resources which are from membership (10%), dispute resolution services (60%), consultancy and training (30%).

### ***Internal Structure***

CEDR has a more horizontal structure. The chairman, the Chief Executive and the Board of Directors are at the management level.

### ***Linkages***

CEDR is supported by the Confederation of British Industry. It has a number of member organisations drawn from commerce and industry as well as support from a large number of law firms.

### ***Conclusions***

The case study reveals that, CEDR has played a significant role as an institution in helping transform the Civil Justice System, not just in the UK but in Europe as well. Since its establishment, the institution has contributed to changing the legal professionals' mindsets, changing the civil procedure rules by bringing ADR formally into the civil justice system of the UK and also the EU with the introduction of the Commission of the European Communities' Green Paper in civil and commercial law (2002) and Proposal for a directive on certain aspects of the ADR process of mediation in civil and commercial matters (2004) and the development of a mediation area of practice and practical experience in many different sectors including the construction industry with the campaigning commitments of CEDR in sector developments. Beginning from the early years of its establishment, the institution recognised excellence and innovation in ADR with giving awards in the field of corporate activity in corporate organisations for best practices every two years. The lack of a single point of institutional control of ADR in the UK makes it harder to develop policies or monitor the developments and the growth of ADR depends on the efforts of several institutions like CEDR. The deployment of ADR is a multi-layered task and the success

depends on credibility of the institutions established, the awareness raised, promotion, the contribution of the industry as well as the support of the professional organisations and the judiciary.

It is vital for the institution to be independent of government and its institutions and to be impartial to all parties for the credibility of the institution, which can be obtained by the appropriate design of the leadership. The doctrine and the code of conduct should be in tune with the international standards. The programme of the institution should be designed to meet the requirements of its environment, however promotion and awareness raising issues should be taken in serious consideration. In terms of resources, the institution should be supported at the initiation stage by the industry, however it should find the ways of creating its own resources by membership, consultancy or training for impartiality and independence. The internal structure should be horizontal to avoid bureaucracy. The linkages with the government should be established to ensure legitimacy of the institution and the linkages with government authorities should be stated and specified in regulations. The linkages with the judiciary should be established to ensure a settlement agreement reached as a result of an ADR process can be confirmed by a court or public authority that renders the agreement enforceable in a similar manner as a court judgement.

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# **Facilitating Long Distance Relationships between Malaysian Grandparents and Grandchildren Living in the UK through Computer Mediated Communication**

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## **Abstract**

Prior studies have underscored the importance of grandparent–grandchildren (GP-GC) relationship. Contact with grandchildren is highly valued by grandparents, and many grandparents wish to maintain regular contact with their grandchildren. In this study, the grandchildren are located in the UK and the grandparents are living in Malaysia. There are three major parts in this paper; it begins with a brief overview of the recent research on GP-GC relationship in Malaysia and other countries. Secondly, we discuss the statistical data on the number of Malaysian students studying in the UK. It then goes into the criteria of GP-GC for this research. Majority of grandparents are older adults, and hence the next section discusses the previous research conducted on Malaysian older people and their perspectives on computer and Internet. Lastly, it discusses computer mediated communication (CMC) for long distance GP-GC relationship

## **Introduction on GP-GC research**

In Maslow's Hierarchy of Needs Model, after physiological and safety needs are fulfilled, the third layer of human needs is social. This involves emotional based relationships in general, such as friendship, sexual intimacy or having a supportive and communicative family. Older people are the most affected group within the social need bracket. The main reason is their absence of social network (due to death and illness) and the inability or demotivation to seek new relationships (due to limited mobility) (Harwood and Lin 2000). Research on grandparenthood over the last two decades shows that the relationship between grandparents and grandchildren is seen as positive and important by both generations (Smith and Drew 2000). The relationship between GP-GC has been widely investigated in the European countries under the research project called RTN Network Project (2002-2006) which involved the GP-GC in the UK, France, Norway, Greece, Finland and Spain (RTN Network Project 2002-2006). The importance of this relationship had initiated the Economic and Social Research Council (ESRC) and the Joint Information Systems Committee (JISC) funded another GP-GC research in the UK for teenage grandchildren in 2003-2004 (Hill, Ross et al. 2006). Other GP-GC research were conducted in Switzerland (Hopflinger 2006), US (Harwood, Hewstone et al. 2005) and Taiwan (Lin, Harwood et al. 2002).

However there is only one research on grandparent-grandchild (GP-GC) in Malaysia and focusing on Malaysian Sindhis and the language used between these two generations. (David 2004). Conversely the Malaysian population is multi-racial, made up of several ethnic groups, comprising Malays and other indigenous groups (63 percent), Chinese (24 percent), Indians (7 percent) and 'Others' (1 percent), as well as over 5 percent of non-Malaysian citizens, mainly comprising immigrant labour (Social Technologies 2002). The analysis of



the previous research is shown in the Table 1 below. From the table we can see that GP-GC research in East-West is still unexplored.

Research	Description	Study
RTN Network Project (2002-2006)	GP-GC in selected European countries	West-West
ESRC and JISC (2003-2004)	GP-GC in the UK	West-West
Francios Hopflinger (2006)	GP-GC in Switzerland	West-West
Jake Harwood (2002)	GP-GC in US	West-West
Maya David (2004)	GP-GC in Malaysia	East-East
Mei-Chen Lin (2003)	GP-GC in Taiwan	East-East

*Table 1. Previous research on GP-GC research.*

To understand the GP-GC relationship, we must understand the nature of the communication between these generations. The communication in the GP-GC relationship is somewhat asymmetrical, with each side filling prescribed roles with specific repertoires of behaviour (Harwood 2000). The work of Hummert et al. (Hummert, Shaner et al. 1998) and Ryan et al. (Ryan, Giles et al. 1986) has provided new insights on the nature of stereotypes in inter-generational setting involving older persons. One major difference between the models proposed by these two groups of researchers is that, while the Communication Predicament Model of Ageing (Ryan, Hummert et al. 1995) focuses mainly on negative stereotypes that the younger generation has towards the older generation, the Stereotype Activation Model of Communication (Hummert 1994) provides a more balanced set of stereotypes of older persons and the effect different stereotypes have on inter-generational communication. The latter model will be used as a basis for understanding the GP-GC relationship. This model identifies a number of stereotypes of older persons, some of them are negative (e.g. despondent, self-centred) while some are positive (e.g. small town neighbour, liberal matriarch/patriarch). Unavoidably, negative stereotypes led to communication breakdown, as the younger generation tends to ‘over accommodate’ (e.g. overtly polite, ideologically simple) and the older generation ‘unaccommodating’ (e.g. talking in a patronizing way), producing dissatisfactory communication for both parties. However, it should be noted that even without negative stereotypes, dissatisfactory communication could still occur due to lack of common interest beyond familiar matters.

## **2. Malaysian Students in the UK and Ireland**

According to the statistic on Malaysian students overseas from 2000-2005 (Ministry of Higher Education 2007), UK and Ireland have been placed number one in the ranking for the period 2000 to 2001 and it represents 46 per cent of the population followed by United States 27 per cent and Australia 15 per cent approximately (see Figure 1). However the graph shows

that there has been a sharp drop in the number of students in the UK and Ireland in 2002 to 28 per cent. The number slightly decreases in 2003 and 2004. However it started to increase in 2005 and the total of Malaysian students studying in UK is 15,189. Since 2002 onwards, UK and Ireland have been constantly trailing behind Australia but in 2005 the difference is only 1 per cent. Unfortunately there is lack of data on the rankings, sponsored student, government staff or private student.

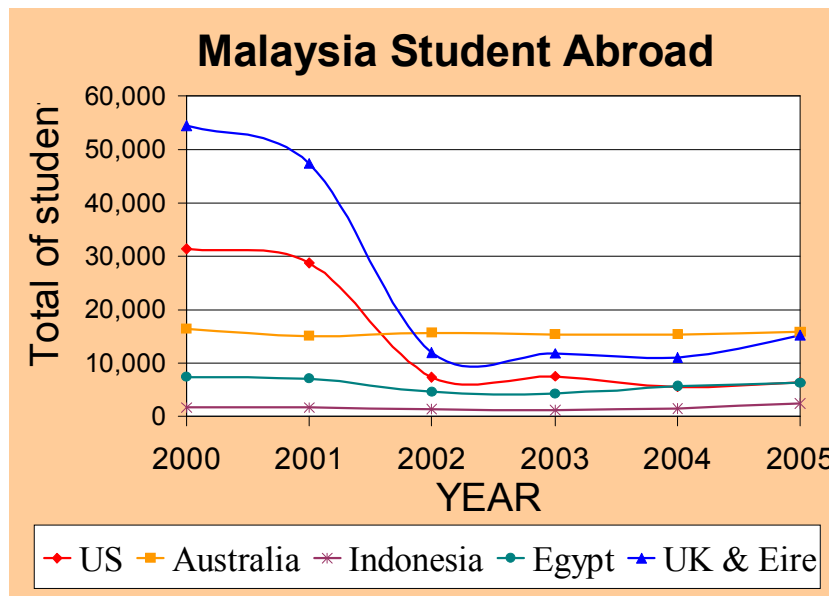


Figure 1. Malaysian Students Abroad (source: Ministry of Higher Education 2007)

Researchers believe that the number of Malaysians choosing to study overseas will increase due to the MOHE new mission to ensure at least 75% of the lecturers in the public institutes of higher education possess the Doctor of Philosophy qualification and its equivalent, and 30% of the lecturers in the polytechnics and community colleges possess the Masters' Degree and PhD and their equivalent (Ministry of Higher Education 2007). Currently there are 20 public universities, 21 polytechnics (Ministry of Higher Education 2007) and 35 community colleges (Ministry of Higher Education 2007) in Malaysia. Approximately the age range of the students is 22-40 years old because some of them will continue their Masters' straight after their degree. The study leave regulation for government staff must not exceed 40 years old (Public Service Department of Malaysia 2007). However some of the public universities do allow their staff to further study as long as they do not reach the compulsory retirement age of 56 years (Public Service Department of Malaysia 2007). In addition, the census of Malaysian population and housing 2000, show that the mean average age of males getting married is 28.6 years, whereas for females it is 25.1 years (Statistic Department of Malaysia 2000). We can therefore deduce that majority of mature students, comprise of government staff having spouse and children who accompanies them to the UK.

### 3. Age of the grandchildren

There is a significant negative correlation between the age of the grandchildren and number of living grandparent. The findings from (Hopflinger 2006) estimated that 99% of Swiss grandchildren at the age of 40 do not have any living grandparents. So based on this forecast we can assume that quite a number of Malaysians in the UK still have their grandparents in Malaysia.

There is age difference in grandchildren's perception of relation with grandparents (Creasey and Kalher 1994). As Creasey mentioned, older grandchildren express less desire to contact with the grandparent. This is because as the children grow, their relationships with others change (Olsen 1999). When the children start entering primary school, they spend a great deal of time with other children. So, this could be the early stage where the relationship between GP-GC may begin to decrease and in addition it could be worse if it is a long distance relationship.

At the same time in the UK, computer education, in the form of introduction to the ICT is initiated at the age five years to children (Curriculum Online 2007). It is estimated that 13.9 million households (57 per cent) in Great Britain can access the Internet from home between January and April 2006 and majority of the connection is broadband connection (UK National Statistic 2007). At the same time many younger children spend lot of time playing computer games in their home compared to adult children (Buchman 1996). Therefore, parents should encourage the child to keep in touch with their grandparent especially in a long distance relationship. There is also a need to educate the young regarding the value of maintaining the social dignity of the older people. This is because old people have a lot to contribute in the extended family in terms of caring for the grandchildren and great-grandchildren. The GP-GC relationship is crucial for a number of reasons. First, there may be an opportunity where future intergenerational competencies are learned. Individuals who are able to negotiate a successful intergenerational relationship within the family may stand a better chance of doing the same elsewhere (Silverstein and Parrott 1997). Second, there is evidence that this relationship is important for older adults. As peer relationships are lost (due to death) and the ability or motivation to seek new relationships decline (due to mobility limitation), the grandchild may serve as a focus for both family pride and social interaction (Harwood and Lin 2000). Finally, this relationship is valuable for grandchildren's emotional development and self-esteem (Tomlin 1998) and it provides grandchildren the feeling of connection within their extended family (Brussoni and Boon 1998).

#### **4. Malaysian Older People and the Internet**

The Institute of Gerontology (IG) is a centre for the study of ageing. Lots of research on older people in various multidisciplinary fields are carried out and in 2006 the institute received a research grant from the government to conduct research on 'Access and Utilization of Computers and The Internet Among Older Malaysians' (Universiti Putra Malaysia 2006). Another research by Syarifanor, a PhD student in York University is studying the localization of the email for Malaysian older people. She interviewed 16 older people in two senior citizens' centres in Selangor (urban) and (Hisham 2006) and compared her research with The Institute of Gerontology Research (poster presentation). The similarities of these researches are that majority of the respondents had some computer experience and they had to identify the activity they preferred when they used the internet (Hisham and Edwards in press 2007). Finding from Hisham showed that older people used email, searched for information and chatted on the internet. While the IG research showed that they searched for information, purchased goods and services and played games. This contradictory finding is due to the difference in focus in both studies. According to Hisham, one of the researchers at the Institute of Gerontology, Universiti Putra Malaysia (UPM), use of email was grouped under the category *others* in their survey (Hisham and Edwards in press 2007). Another quantitative study done by Jaafar and Sulaiman in their paper on '*Domestic Computer Usage*' in five states in West Malaysia, 112 of the respondents were older persons (age 60 and above) and they used computer for entertainment, work related activities, surfing the Internet and email or communication (Jaafar and Sulaiman 2005).

However at present, majority of the Malaysian older adults have no use of the Internet. Majority of the Internet subscribers are students and working professionals. A statistic from Malaysian Communications and Multimedia Commission (MCMC) in 2006 showed that there is no older persons subscribed to the Internet service (Malaysian Communications and Multimedia Commission 2007). This is probably due to majority of the Malaysian older people living with extended families (see Figure 2). So even though the older people do not subscribe to the Internet, majority of them live in a house with computer and Internet connection (Jomhari and Kurniawan 2007).

In order to train Malaysian older people one needs to consider the cultural aspect too. Merriam and Mohamad underscored the importance of considering the cultural context when investigating questions of adult development and learning in 2000. They interviewed 19 Malaysian older persons, 10 Malays, 5 Chinese, and 4 Indians both from rural and urban centres. They found that older adults learning in Malaysia are informal and experienced, and the learning is communal and currently much of the learning is religious or spiritual in orientation (Merriam and Mohamad 2000).

### Living Arrangement for Older Persons in Malaysia, 1994

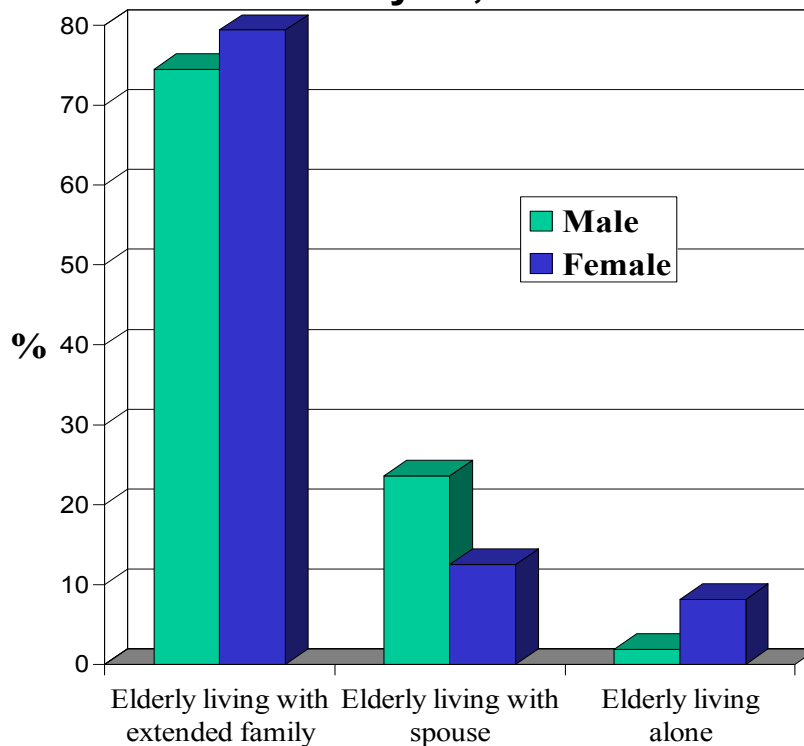


Figure 2. Malaysian Population and Family Survey in 1994

Computer use alone has no demonstrated impact on the well-being of older adults (Dickinson 2006). However training on the computer could give an impetus to the older persons, especially if they are novices. In Malaysia there is a formal training run by the Malaysian government to promote computer education amongst the older persons currently named Eagle Nest at the Computer and Community Centre, Kajang, Selangor. The study was aimed at

promoting societal inclusion and freelance employment with the use of computer and the Internet among older people in Kuala Lumpur, Selangor and Kelantan (Aspirasi Digital 2007). Another training program is called Program Latihan ICT Desa or Village ICT Training Program. This computer training is dedicated to the selected Internet centre in selected villages (not necessarily for older persons only) to promote the use of computer and Internet for the villages (Ministry of Rural and Regional Development 2007). Unfortunately there is no publication on the training for these campaigns but there is one publication on e-Bario project (Songan, Yeo et al. 2006)

Mayhorn reported that older people have difficulties in controlling their motor function primarily manifested with input devices (Mayhorn 2004). Dickinson also mentioned that one of her strategies for teaching older people was to use the World Wide Web also to use the mouse (Dickinson, Eisma et al. 2005) as it is the common input device for the computer. However older people who had experience using computer before found it easier to use mouse compared to other input devices. On the other hand they found it also easier to use touch screen for the first time (Mahmud and Kurniawan 2005, Patrick Rau 2005). There are some applications that have been developed using touch screen or tablet pc to support communication with older persons and their families abroad, for example (Victor M. Gonzalez 2006) and (Dewsbury, Sommerville et al. 2006). However touch screen is expensive compare to mouse. In Malaysia the price for touch screen is approximately MYR450 while mouse is only MYR15. As an alternative based on the current situation in Malaysia where older persons live with extended family, so their family could help them to use the computer.

## **5. Computer Mediated Communication**

Notions of social presence and media richness are central to the understanding of communication media use. Social presence is the extent to which a communication medium enables a communicator to experience communication partners as being psychologically present (Straub and Karahanna 1998). Media richness theory suggests that the choice of media (which differ in the richness of information that they provide – in terms of their capacity for immediate feedback, visual and audio cues, whether they are of a personal nature, etc) is dependent upon the communication task being attempted (Daft and Lengel 1984). In a study of GP-GC relationships of 408 grandparents spanning four European countries (UK, Spain, Finland and Estonia), when grandparents lived far away from their grandchildren, they were willing to use mediated communication technology, i.e., mobile phones with their SMS features and emails (Quadrello, Hurme et al. 2005). However, other studies pointed out that the choice of media need to be considered carefully as some media can sway towards certain stereotypes of inter-group behaviour. For example, emails were argued to precipitate de-individualisation and a reliance on negative stereotypes (Spears, Lea et al. 1990) .

Everybody, including older persons, naturally would like to see their family members regularly. Chen reported that 17% of older persons felt that they would like to see more of their families (Chen 1987). However, when they are separated by distance, the cost of communication can be high, which could be unaffordable for some older persons on small pension. Perhaps one way to overcome this problem is through video conferencing technology.

Video also is a part of recommendation of (Corson 2001) for long distance relationship with the kids. The desktop video conferencing, like Yahoo Messenger, Windows Live Messenger can be downloaded for free which is incorporated with instant messaging. There are

advantages and disadvantages of the video chat for example the network capability, the device and the quality of the video (Martin 1997; Shukla and Joyce 2002). However it will be possible that video chat will be common in the future because it would seem that a lot of the problems of paralinguistic would disappear (Orville, 1229883 et al.). However, Convertino et al. 2007 reported that older workers need both asynchronous and synchronous communication for computer supported collaborative work (CSCW) with the younger worker (Convertino, Farooq et al. 2005). For the long distance relationship it is much more difficult for synchronous communication such as video chat because of the time difference. However this drawback is absent in video chat where, one just needs to set up an appointment with the other party before starting the video chat. The difference between Malaysia and UK is 7-8 hours. During weekdays the child has to go to school from 9am to 3.30pm, perhaps the suitable time for the grandchildren to contact their grandparent in Malaysia is during morning on weekends around 10am-2pm. In addition most probably video chat conversation with older people should be supported with text chat due to network delay and hearing impairment of the grandparent.

### **Conclusion**

As society becomes more modernized, living arrangement patterns in Malaysia are changing too. Families are becoming smaller (more nuclear), 31% of the older people in Malaysia live in nuclear family households while another 56% were part of extended families (Pala 1998). Currently 75% Malaysian older people live with their children and the older persons spend 80%-90% of their lives in the home environment (Rashid and Ahmad 2005). However they believe this pattern will change soon based on the interview with 40-55 years old Malaysians, that 56 per cent of them do not have plans to move houses and they prefer to live in their own homes and the neighbourhood that is familiar to them. So may be in the next forty years, majority of the older people will be computer literate and will have internet connection at home, these could change the manner of communication between the older people in the future. There is also a high percentage of migration among Malaysians for further study overseas and spend at least 3-5 years for degree or PhD. Training is important but for Malaysian older people they prefer informal and empirical learning, and learning the use of computer from family members could be interesting for the research. At the same time older people would like to see more of their family members and the suitable technology to suit this requirement for using desktop video conferencing.

From this review we can conclude three objectives of this study. First is to understand the nature of the relationship between grandparents and grandchildren. Second is to identify the effectiveness of video conferencing technology to mediate long-distance relationship. Lastly is to develop and evaluate better video conferencing technology to support long distance communication between grandchildren and grandparent. This study will involve young grandchildren who have had some experience using video conferencing. All respondents will be interviewed about their Internet usage and their nature of communication with their grandparent. Additionally, the grandparents are required to accomplish some specific tasks using video conferencing application. In this study the grandparents will be assisted by other family members. After that the GP and GC will be meet online using video conference. The interaction between grandparents, their helpers, the video conferencing application and the grandchildren will be observed and analysed using content analysis technique.

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# **The Impact of Cultural Experiences on British Chinese Artists' Relationships with the Natural World and Spirituality**

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## **Introduction**

British Chinese artists are influenced by issues of culture, language and arts practice from both Chinese and British cultures. The defining of spiritual and natural world issues in relation to their art practice is therefore complex.

The Chinese population in Britain makes up only 0.42% of the national population according to the 2001 census. Within this minority ethnic population of Chinese there is a community of Artists who operate within the wider context of British Contemporary Arts.

In 1986 the 'Chinese Arts Centre' was set up in Manchester to promote the work of British Chinese Artists who were often not represented in the Black and Asian arts movement in Britain at the time. Since 1999 when Hong Kong returned to be governed by China the world began to open its eyes to China and Chinese culture recognising it as a distinct and unique culture.

Examples of traditional Chinese Art dating back into the dynasties can be seen in exhibitions in London's 'British Museum' ('Gilded Dragons' 1999-2000) with familiar visuals of mountain scapes and ancient artefacts bearing dragons and the realms of mystical worlds depicted. Much of this imagery relates to what can be called 'spiritual' influences such as Taoism.

This paper aims to identify the influences on the British Chinese contemporary art scene with reference to the impact of Global art and the Chinese Artists Diaspora. The influence of family relationships, of 'home country' traditional art, and of local Chinese cultural institutions is part of this research. The British Chinese Artists focused upon in this research are: Fanny Christie, Eric Fong, Panni Poh Yoke Loh, Lesley Sanderson and Pamela So. The Chinese Arts Centre in Manchester also informs this research.

## **Terms used**

The term 'British Chinese Artists' refers to artists that reside in Britain but may have been born in another country e.g. China, Hong Kong, Malaysia. Most British Chinese Artists are English speakers but to unearth the issues concerned with this community of Chinese diaspora it is at times necessary to refer to terms in the Chinese language. There are numerous Chinese languages spoken but they fall into five main groups: Mandarin (the official language), Wu, Min, Hakka and Cantonese. Mostly Mandarin will be referred to. Translation of English into Mandarin Chinese is shown phonetically using the 'pin yin' (used in China since 1956) system's form of romanisation.

The natural world refers to that which is non-human such as earth, water, sun, moon, plants, trees, rocks, animals and changing weather systems.

Spirituality in my use of the term does not necessarily have to be part of a religious path but could be. My use of the term spirituality is:

About energy that has a non-material basis or motivation. Being spiritual is about the energetic connection between people, plants or animals with a 'life force' energy that is invisible but may be manifest in actions and events, and material objects (Loh 2006: 3).

### **The British Chinese**

Britain accepted itself as a multiracial society by various race discrimination legislations since the 1960's when the Commission for Racial Equality (1997) cites the Chinese population as having grown. The recent BBC Radio 4 'Chinese in Britain' (2007) series of programmes edited by Anna Chen maps the emergence of Chinese in Britain as dating back to 1686. Dr. David Helliwell, Oxford University, speaks of Shen Fu Tsung in the court of King James 2<sup>nd</sup>, the son of Jesuit converts and first person to catalogue the Chinese collection in the Bodleian Library. According to Dr. Helliwell Shen Fu Tsong was viewed very much as a curiosity.

The next Chinese came importing popular Chinese commodities such as tea, ceramics and silks also bringing Asian sailors through the English East India Company. This passage of and interest in these goods from China is a focus in the work of Pamela So studied in this paper.

A Chinese man known to historians only as John Anthony took on the lucrative role of being a trustworthy intermediary to arrange their care and lodgings. Dr Michael Fisher, of Oberlin University describes on the 'Chinese in Britain' BBC Radio 4 series that by 1805, Anthony had amassed both fortune and influence therefore becoming the first Chinese man to be naturalised as a British citizen requiring an Act of Parliament as it was so rare.

Many of the contemporary British Chinese Artists studied in this paper, however, arrived in Britain in the 20<sup>th</sup> century. Many British Chinese have parents who arrived into Britain in the 1950's and 1960's many of whom were sea farers.

Lok, British Chinese writer and artist, writes of the contemporary experience for British Chinese within the 'Black' minority ethnic agenda:

If 'Black' can be 'Asian' but 'Asian' is not always 'Asian', 'Chinese'-among others – does a disappearing act. As the third largest 'minority' in Britain, 'Chinese' has often been positioned as the 'unspoken and invisible 'other' of 'Black' as well as 'White' aesthetic discourses (Lok 2003: 65).

There are few noteworthy literary references expanding on the experience of the British Chinese. The populist Chinatown Magazine includes several articles in January 2006 that write about issues of isolation.

Ng (1989), Hong Kong researcher on the British Chinese in respect of library services, writes of the identity issues of British Chinese as being 'desperate' to learn their mother tongue in order to seek their cultural roots.

Becky and Archer write of British Chinese high educational performance (DfEE, 2001a) but receive racial discrimination (Owen 1994) and (Chau and Yu 2001; Cheng and Heath 1993). It suggests that seeing the Chinese in Britain as an economic success story is based on 'ill

conceived stereotypes of the Chinese as collectivist, conformist, entrepreneurial, deferent and conforming to Confucian values’.

They conclude that the Chinese use their educational success to construct a positive sense of identity, to secure income and social mobility, in the face of difficult socio-economic conditions for immigrants in Britain and the ‘diasporic habitus of the Chinese in Britain’. The high educational performance is also attributed to their resolve and determination. However whilst Becky and Archer identify these issues they do not examine the role of spirituality or the natural world in the lives of the British Chinese.

Ng suggests that the British Chinese are complex with identity as key but he makes no reference to the relevance of traditional spiritual values.

First generation Chinese generally have stronger links with their inherited Chinese culture than second or third generation Chinese. The Literary search suggests issues of identity, dislocation from ancestral culture and isolation as key factors in the British Chinese experience. BBC 2 programme ‘Chinatown’ on Tuesday February 7<sup>th</sup> 2006 documents the racial abuse suffered by many British Chinese highlighting the foremost concerns of contemporary survival. It may be that traditional values of the importance of spirituality and the natural world are of less significance to them but this has not been examined and consequently I am researching this.

### **Religion, Spirituality and the natural world**

Prior to examining the role of spirituality and the natural world on British Chinese artists it is important to establish the role of these issues within wider society and then examine how they affect British Chinese Artists. My definition of spirituality is stated in the section ‘Terms Used’. However whilst I consider that spirituality can exist independent of religion, religion is also an organised expression of spirituality. As Ninian Smart, author of *The World’s Religions* considers that it is important to know about the world views that underlie the plural cultures of today’s world. Her preference is to guard against defining religion too narrowly but to recognise secular beliefs and practices. She also makes the distinction: ‘It is artificial to divide them too sharply from religions, partly because the distinction between religious and secular beliefs and practices is a modern Western one and does not represent the way in which other cultures categorize human values’ (Smart 1998: 10).

She also emphasises the importance of understanding the practical meaning of worldviews. In this way she examines a religion and to see if there is a scheme of ideas that flow through different worldviews. It is also important to note that any religious tradition may have many varieties such as Christianity encompasses Baptists, Coptic, Methodists, Disciples of Christ and Calvinists to name a few. Each faith is also found in different countries and is therefore affected by each region. The internet based religious encyclopedia gives the following definition:

Relation of human beings to God or the gods or to whatever they consider sacred or, in some cases, merely supernatural. Archaeological evidence suggests that religious beliefs have existed since the first human communities. They are generally shared by a community, and they express the communal culture and values through myth, doctrine, and ritual. Worship is probably the most basic element of religion, but moral conduct, right belief, and participation in religious institutions also constitute elements of the religious life ([www.religion-encyclopedia.com](http://www.religion-encyclopedia.com)).

Generally religions attempt to answer basic questions intrinsic to the human condition through a relationship to the sacred or supernatural and in this sense may be defined as outwardly focused such as Judaism, Christianity and Islam and others inwardly focused such as Jainism and Buddhism that attempt to understand the true nature of reality. Spiritual paths mostly have a history and are often charted historically as 'BC', once meaning Before Christ's birth but now more commonly used as 'BCE' as meaning 'Before the Common Era' or after Jesus Christ's birth by AD for 'Anno Domini' but more commonly referred to now as 'CE' meaning 'Common Era'. For example it is now 2007 that is 2007 years after Jesus Christ's birth of in the Common Era. For the purposes of this paper I will use the terms 'BCE' and 'CE'.

Some religions and spiritual paths date back to 3000 years BCE such as Hinduism, Jainism, Shintoism (a local nature and ancestor based tradition) plus various traditional shamanic paths.

Anthony Storr, medical doctor and psychiatrist, observes work demonstrating the links between 'spirituality' and the land in the use of rituals in which: '*methetic participation: a rite in which the performer participates in a natural phenomena in such a way that he actually feels he is actually helping it to occur.*' Storr quotes Johan Huizinga: 'according to ancient Chinese lore, the purpose of music and dance is to keep the world in its right course and to force Nature into benevolence towards man' (Storr 1976: 176). 'At the same time, the rituals which he practiced led him to discovery of what we should now call art' (Storr 1976: 177).

Such ancient spiritual paths therefore had a connection with the natural world and art. Ancient shamanism suggests a past fusion between eastern and western spiritual practice and we may, therefore find commonality in present western and eastern spirituality in that both have their roots in shamanism. Rutherford (1996), western writer, states:

Shamanism is the oldest way in which humanity has sought connection with creation. The origins of shamanism go back at least 40, 000-50, 000 years to stone age times. All of us have evolved from shamanic cultures-shamanism is not imported it is our oots wherever we live (Rutherford 1996:1).

Judaism is charted as commencing in 2000 BCE around the time of Daoism whilst in 1000 BCE Zoroastrianism, Buddhism and Confucianism are charted as commencing.

A number of faiths, such as Judaism, Islam, Christianity, Hinduism, Daoism, Confucianism, Sikhism and Zoroastrians, similarly regard that the world was created by a divine being and is continuously sustained by Him, Her or it. However Buddhism and Jainism do not hold this opinion. There are also differences of opinion in the notion of rebirth and reincarnation and whether material representations of the Transcendent are allowed or not.

We can see that different faiths hold common and different beliefs and practices. George Chrystides in his essay 'Britain's changing faiths: Adaptation in a new environment' in the book 'The Growth of Religious Diversity. Britain from 1945', considers that what he calls the 'indigenous' population in Britain are mostly Christians or people whose lifestyle is generally shaped by Christian heritage. Christianity follows many existing religious and spiritual paths that predate it. However Britain increasingly is absorbing a diversity of religions and spiritual paths but it must still be noted that:

When one reflects that the centre of British Life is often the parish church or the local pub, it is obvious that the former does not provide plausible focus for those who do not prescribe to Christianity, and the latter excludes Muslims, Baha'is, and those Hindus who do not drink alcohol (Chryssides 1994: 63).

Post Second World War (1944), religions that have been brought to Britain from people from overseas settling here have also been more attractive to the white British than Christianity with Buddhism the most popular to them. However as George Chryssides (1994) stated Christian heritage shapes life in Britain even though other faiths are increasingly more prominent. Interestingly China also has undergone massive changes in terms of the expression of spirituality Deng Xiaoping (1904-97) encouraged the success of the 'socialist market economy' following the cultural revolution. Whilst the cities economy booms the eight million farmers in rural areas still live in poverty on less than one dollar a day. However Deng's leadership also loosened up the practicing of religion and saw a revival in Buddhism and Islam expressed publicly. The next section 'The multicultural contexts of Britain and China' illustrates the 1990 China census figures on the span of ethnicity and religion as well as the 2001 figures for the British census.

The British Chinese Artists in this study are therefore subject to the Christian heritage within Britain the opportunities of encompassing other religions and spiritual paths that are increasingly coming into Britain as well as familial Chinese heritage that may encompass Buddhism and Daoism but due to colonialism may also encompass Christianity.

Within this backcloth of religion and spirituality the question of the interconnection with the natural world is not yet revealed.

In 1973 Arne Naess, Norwegian philosopher and mountaineer, introduced the phrase 'deep ecology' to environmental literature. On the Deep Ecology website Arne Naess and George Sessions state the first point of the platform upon which their theory is based as: 'The well-being and flourishing of human and nonhuman life on Earth have value in themselves (synonyms: inherent worth; intrinsic value; inherent value). These values are independent of the usefulness of the nonhuman world for human purposes' ([www.deepecology.org](http://www.deepecology.org)).

Whilst there is no direct reference made here to spirituality the deep ecology movement set up by Western philosophers places value on nonhuman as well as human life just as shamanism does.

Colin Campbell's essay 'The easternisation of the west' (1999) like Williams (1976) examines the development of the vocabulary in the English language. He clusters terms such as 'green', 'ecology' and 'conservation' as subsumed under the heading 'environmentalism' in popular use in the 1970's. He clusters 'consciousness' and 'awareness' as cultural developments associated with social movements and writes of them that they: '...clearly embraced the human potential and psycho-therapy movements, as well as the more 'life-affirming' New Religious movements and religions of the self' (Wilson and Cresswell 1999: 35).

Campbell writes of Eastern and Western categories of spiritual thought devised by Max Weber, Krus and Blackman (1980) and Gilgen and Cho (1970's). Eastern thought has basic assumptions common to Buddhism, Taoism, Confucianism and Hinduism with 'man and

nature are one'. Western thought is embodied in the Judeo-Christian religions in which man is set apart from 'nature and the spiritual'. Campbell considers that this Western theodicy over the last 2, 000 years is being replaced by Eastern thought:

In its place has been set the fundamentally Eastern vision of mankind as merely part of the great interconnected web of sentient life..., part of one natural-spiritual system. Its best expression to date has been in the Gaia theory-Earth Mother. The Earth's living things are part of a great living being which regulates its own stability, and its strength is its overarching power-its paradigmatic power-to encompass all themes identified here (Wilson and Cresswell 1999: 47).

This occurring Spiritual ecological Easternisation may therefore affect British Chinese Artists. However their unique experience of living in Britain and having heritage in China is particularly complex and has not been covered in the above work. The expansion of intercultural communications over the last 15 years through the internet and human high speed global travel is also significant in this study.

**The multicultural contexts of Britain and China**

As the British Chinese reside in Britain but their ancestors, or in some cases they themselves have resided in China, it is useful to look at the make up in terms of ethnicity and religion in respect of both countries. Whilst some of the British Chinese artists in this study have also lived in other countries such as Malaysia, Canada and Hong Kong there is inevitably a connection made, by them or the wider society, to China.

China with a land-mass of 9,596,960 sq. km and the United Kingdom with a land-mass of 244,820 sq. km have very different geographies. The Commission for Racial Equality (1997) writes of many countries like Britain experiencing people arriving for many reasons: invitation, as refugees escaping war and famine and some as invaders, the same is true for China.

**U.K. census (2001) on ethnicity and religion percentages in Britain**

Ethnicity	Religion
White British (87% of the population of England and 96% of Wales) 1.2% White Irish	7.7% no answer 7.7 million stated they had no religion.
2% Indian	37.3 million people in England and Wales stated their religion as Christian
1.1%Black Caribbean	3.8% as Muslim
0.9%Black African	1.3% Hindu
0.5% Bangladeshi	0.8 Sikh
0.2% Other Black groups	0.6% Jewish
0.42% Chinese origins	0.5% Buddhist.

48% Chinese stated no religion plus:

- 24% Christians
- 18% Buddhists
- 10% religion unspecified

This last group is of interest as the question was about religion and may not have addressed spirituality.

The proportion of minority ethnic groups in England rose from 6% (Census 1991) to 9% (Census 2001) partly as a result of the addition of mixed ethnic groups in 2001. However it is still a small percentage. The proportion of Chinese rose by only by 0.1% from 0.3% (1991) to 0.4% (2001). The population of Chinese in the UK is therefore a very small percentage.

### **China's fourth national census (1990) on ethnicity and religion**

China is also ethnically diverse with 56 ethnic groups.

The Han people made up 91.96% the other 55 ethnic groups (referred to as the national minorities) make up the other 8.04%. Most of China's cities and county towns are home to two or more ethnic groups. In China the minority ethnic groups often live together in one area and in individual compact communities in special areas. Many different groups and their spiritual or religious beliefs influence the large landmass of China.

China is a country with great diversity of religions, with over 100 million followers of the various faiths. The main religions are Buddhism, Islam, Christianity, China's indigenous Taoism, along with Shamanism, Eastern Orthodox Christianity and the Naxi people's Dongba religion... Religious Han Chinese tend to practice Buddhism, Christianity or Taoism (www.china.org 2005).

British Chinese Artists are influenced by the situation in Britain as well as in China. This is either from their own experience or that of their families. Whilst the censuses of both Britain and China as above document ethnicity and religious data they do not identify the issues that affect British Chinese in their choice of following a spiritual path and do not examine British Chinese Artists. However they provide useful background information for this research.

### **British Chinese Artists in the contemporary arts scene**

Contemporary Chinese artists, globally, face the present role of art in society and the consequent expectations of them in responding to contemporary society.

The open space for artistic expression is expanding. It is increasingly difficult in a more democratic, self-organising, less deferential and more educated society to prescribe any one particular role for art to play...The Art Council's fundamental role...is to promote exploration through art. Art as enquiry (Forester and Lloyd 2002: 7).

Anderson (2001), curator, states that the contemporary role of art is one of: 'interrogating and investigating our immediate environment'. She also writes of science being a dominant role in today's society with art in the position to ask questions. However she makes no mention of the role of spirituality. The Victoria and Albert Museum (2005) write of artists in China responding to the changing urban fabric in terms of large scale migration but again do not write of the role of spirituality in this situation whilst the data in the previous section shows



religions practiced in China. However they do write of 'the disappearance of traditional landscapes and lifestyles' but this is not examined in depth and is not specific to spirituality.

Kuroda Raiji, Chief Curator of Fukuoka 3<sup>rd</sup> Asian Art Triennale 2005 'Paralell Realities: Asian Art Now' on show in the U.K. in 2006 speaks of 'mindsets of Asian-ness'.

Asian artists who established international recognition (from Western art world and the recent international exhibitions in East Asia) since the early 1990's have been welcomed often by turning social matters into their subjects, presenting political and gender issues in recent social changes in Asia with increasing urbanization and the influx of consumer cultures. By assimilating indigenous materials with local subject matters, their works appeared 'Asian' to a foreign audience (Fukuoka Asian Art Museum 2005: 17).

Raiji acknowledges that eastern artists use western art methods to international recognition. The 'Between Past and Future' photography and video exhibition (2005/6) at the V. and A. mirrors this. Hung and Phillips (2005) cite many mainland Chinese Artists in this exhibition as responding to social issues with environmental and ecological concern such as Cao Fei ('Rabid Dogs') and Zhang Huan ('Twelve Square metres'). This is in China, a country who is fast developing to serve the needs of western capitalism.

Colin Campbell argued that an eco spirituality easternisation of the west is occurring but in terms of the contemporary global art world a westernisation of eastern art may be occurring. It is possible for British Chinese Artists to set their eyes on the east just as artist Chi Peng in 'Parallel Realities exhibition' (2005) says China based artists set their eyes on the west. He also suggests disquiet and confusion by this duality.

Artists in China adopt western art practices such as performance art, installation art, video and photography to communicate globally the plight of China accelerating industrial production and its consequent environmental and economic affects. Artists of Chinese descent in Britain are also influenced by similar concerns that may be more pressing than the significance of traditional Chinese Philosophy and art.

British based Chinese Artists have a distinct cultural experience as oppose to Chinese artists based in China. This research aims to identify this unique cultural experience and the links with mainland Chinese culture. In ancient times Chinese culture was like others closely connected with nature and the inter relationship of people with it. Against the backcloth of traditional Chinese culture British Chinese Art practice sits within the contemporary British art scene and the multicultural society.

### **Methods used**

As well as literary review qualitative research took place by video interviewing all of the artists in this study. The video interviews were held to be later used as an aspect of 'creative work' to form part of the PhD thesis requirements. The 'Chinese Arts Centre' as a case study contextualized the art practice of British Chinese Artists and included interviews with Sarah Champion, Chief Executive and Sally Lai former curator for the Chinese Arts Centre. This gave an overview of the British Chinese Arts community and its role within the contemporary British Society and arts movement. The use of myself as a case study enables demonstration through my own art practice as a woman of Chinese ethnicity the links between art, the natural world and spirituality within the multicultural context.

## **The Chinese Arts Centre**

The Chinese Arts Centre is a national organisation located in the North West of England and is part of the region's rich Chinese heritage based in Manchester, a city with the second largest Chinese community in the UK. Manchester is a vibrant artistic city with many artist studios, galleries and performance venues and a busy population of contemporary artists choosing to live and work in Manchester.

The Chinese Arts Centre began in 1986 when Amy Lai, Hong Kong born sculptor and a graduate of Central School of Art, London and Manchester Polytechnic, was working as a Radio Manchester producer. She had the idea of holding a Chinese music event that led to the festival 'Chinese View '86' (November 15<sup>th</sup>-30<sup>th</sup> 1986) that raised government support and donations totalling £18,000 enabling it to expand from the original idea.

The formation of the Commission for Racial Equality in 1976 published a report 'The Arts of Ethnic Minorities' in 1985 recognising the value of ethnic arts organisations. The festival 'Chinese View '86' coincided with the report by the Arts Council of Great Britain: 'The Arts and Ethnic Minorities: Action Plan'. The funding of 'Chinese View '86' therefore gave a convenient opportunity for the Arts Council to demonstrate its support of this minority group of artists. However simply giving funds without supporting the infrastructure placed the Chinese Artists in a position of suddenly being administrators with a centre rather than artists promoting their own work. The Arts Council funding award thus gave them a major opportunity but also landed them with extra problems.

The 'Chinese Arts Centre' was finally opened on October 21<sup>st</sup> 1989, the first in Britain, on Charlotte Street, Manchester in China Town, after the 'Chinese View '88' was held. It was a first floor suite of offices, the main space as a gallery with other rooms for a tea-house, craft shop, administration, workshops and lectures with classes catering for both Chinese and British audiences in traditional Chinese art forms kite-making, calligraphy, painting and Chinese language.

However after the centre had operated for ten years with the aim of providing Chinese arts and culture for Chinese people was in practice preaching to the already converted. The first floor location of the centre did very little for the craft shop and teahouse, and the expected daily visitors did not pay for themselves. Without access for the disabled and the elderly, two groups were immediately denied who could have provided an audience.

In 1997 with Sarah Champion as the new Chief Executive of the Chinese Arts Centre it was decided to move out of Chinatown to Edge Street in the Northern Quarter that was fast becoming the arts and cultural centre for the region. This marked a distinct change as the centre moved from serving the Chinese community with arts and culture to offering it to the artistic audiences of Manchester.

In October 1998 the centre opened the formal debate on the nature of Chinese Artists in the wider Black Arts debate, following the Arts Council's publication of a Cultural Diversity Action Plan, and co-ordinated 'A New Vocabulary for Chinese Arts?' aiding its commitment to acting as an agency for Chinese Arts in Britain and networking Chinese artists from all around Britain following exhibitions such as Links '96 and the network of British Chinese Artists.

Following a 2.5 million pounds Lottery grant the Chinese Arts Centre opened its new building on Thomas Street in Manchester in November 2003 and was awarded a RIBA Architecture award for excellence combining traditional Chinese elements with contemporary design. The sizeable amount of the grant was significant due to British society placing value on finances. It also meant that the Chinese Arts Centre was more clearly defined as a national centre and authority on Chinese Art.

The international nature of the Chinese Arts Centre and its established relationship with artists from main-land China placed it in an ideal situation to be awarded the sizeable lottery grant. This was at a time when Britain as well as the rest of the world was beginning to open its eyes and ears to China following China's 'Open Door Policy' in the late 1990's on global trading after its closed doors for nearly half a century. This strategy brought in funding that in turn assisted British Chinese Artists and enabled further debate on the Chinese Diaspora. This relationship with main-land China Chinese artists developed from 1997 when Champion recalls how China's contemporary art scene could easily be plotted: 'I first went to Beijing in 1997 and was sitting in a room with 200 artists and they were all the visual artists in Beijing. I mean that is just astounding' (Champion, July 20<sup>th</sup> 2006).

In the opinion of Sarah Champion, Chief Executive Officer of the Chinese Arts Centre some contemporary artists draw on the more traditional themes in their work with traditional Chinese artists also referencing classical Chinese arts, brush painting, calligraphy, poetry. These artists tend to be heavily based in the environment and a sense of spirituality. With respect to spirituality she considers that it may take a religious form but may also be a personal sense of self as part of a group rather than an individual, for example she said:

I would be surprised if there was any artist of Chinese descent who didn't have some aspect of more traditional Chinese culture reflecting in their work, it might not be the spiritual aspect it might be the culinary or unity of the family but they tend to have some grounding in those things (Champion, June 17th 2005).

She said she had noticed that the degree to which aspects of traditional Chinese culture were reflected in British Chinese Artists work coincided with stages in their career development. In early career development there was a strong interest in identity issues. They therefore may look at traditional philosophies such as Confucianism, Buddhism and Daoism that are rooted in the sense of the individual within the environment and the sense of responsibility. Sarah acknowledged that her knowledge of traditional spiritual and issues connected with the natural world was drawn from artists at the Chinese Arts Centre who reference classic Chinese arts. In her opinion these are heavily based in the environment and a sense of spirituality which maybe in a religious sense or in a personal sense of self in the wider world.

Champion goes on to pinpoint what she considers to be Chinese culture and how in reality some of these aspects have in fact become very much apart of British culture. This issue of the fusing of cultures is one facing British Chinese Artists and one that also gives choice in terms of which culture one chooses to adhere to.

Traditional Chinese culture has been ingrained in our society and it's as much a part of British culture, I was going to say as tea, that would be the classic example. I think it's really one of the seams that we mine from and have done for the last 500 years (Champion, July 20<sup>th</sup> 2006).

She said she had noticed that the incorporation of traditional spiritual and natural world issues is more obvious in artists' early work and less obvious as their work develops. However Champion also suggested that the Chinese Diaspora Artists including British Chinese have more pressing issues than spirituality to express such as how they are marginalised and not recognised as part of British Culture and considers that whilst the same issue may exist for Chinese Artists in the United States of America and Australian culture that Britain lagged behind more. She also spoke of the need to distance the role of British Chinese Artists from being swept up in the 'exoticism' of the fashion in Britain over the last five years of being spiritual mentors because of the wave of information on Feng Shui, Daoism and Buddhism. She considered that most British Chinese Artists were working from the influence of the experience of the built rather than the natural environment of their locality of where they live within the major urban conurbations of London, Manchester or Birmingham. Champion found it much easier to link artists from Mainland China with environmental issues both of social and natural issues.

### **The artists in this study**

Pamela So and myself, Panni Poh Yoke Loh were both born in Britain, Glasgow, Scotland and London, England respectively. Fanny Christie and Eric Fong were both born in Hong Kong and Lesley Sanderson born in Malaysia moving to Britain during secondary school. Eric Fong also spent a large part of his adult life living in Canada from the age of 18 years old before moving to Britain 6 years ago, being the latest arrival in this study into Britain. Fanny Christie moved to Britain only 7 years ago but prior to this lived solely in the East.

As well as being artists all in this study have additional careers or have had. Eric Fong was formerly a qualified Western Medical practitioner and practiced as General Medical Practitioner for over 20 years; I was formerly a qualified Senior Social worker; Pamela So was a former Librarian; Fanny Christie completed Bachelor and Masters degrees in Business Administration and Lesley Sanderson is currently a Senior Lecturer at Sheffield Hallam University. Apart from Lesley Sanderson who is employed all the artists in this study have to survive on former savings or are dependant on either selling their work. They more often work on government-funded schemes focusing on the needs of communities in urban areas or are about educate the wider community on Chinese culture which they are often expected to be well versed in. The skill therefore is to select schemes to apply for that fit in with the aims of their art practice to avoid being compromised for financial needs.

Like many artists this group therefore brings its wealth of life experience to its art practice. As well as work experience outside of art practice all artists also have distinct upbringings that enrich and influence their work. Myself, and Pamela So both experienced the isolation of being in a minority group and the need as children to develop identities that created a fusion with our Chinese heritage and the surrounding dominant British culture coupled with a strong interest in gardens and visits to the rural areas of Britain. Whilst I was led to take part, as a child in the British Christian heritage, Pamela So's family did not follow a religion. However in my adulthood my spiritual awareness has developed more towards an acceptance and respect for different spiritual paths as part of a wider whole and their connectedness with the natural world and its ebbs and flows.

Lesley Sanderson experienced what she describes as the social warmth of her childhood in Malaysia and her developed sensibility to life around her from growing up on a rubber plantation amongst the life of the jungle areas of Malaysia. Islam is the recognised national faith of Malaysia but there is evidence of Buddhism, Christianity and Hinduism on the streets

of the cities with visible Hindu and Buddhist Temples and Christian Churches as well as Islamic Mosques. However these appear to have little bearing on Lesley Sanderson in terms of developing a spirituality herself which she clearly states is not a term she would normally use.

Eric Fong and Fanny Christie, however, both grew up in crowded urban Hong Kong with only brief encounters with the natural world. They were however exposed to traditional Chinese culture that is underpinned with the interconnection between spirituality and the natural world. Fanny Christie, however, in her interview more readily embraced traditional Chinese culture especially recognising the aspect of humans being a small part of a much greater whole contributing to her being very impressed by the landscape of Scotland and the effects of climate change that she explores in her art practice. Pamela So has like Fanny Christie been impressed by the Scottish landscape. Eric Fong has the knowledge of family rituals that were observed that link with Daoist or Buddhist philosophy but he views them more as habits and societal norms rather than examples of spirituality. In Hong Kong he attended an Anglican School. It is within his residence in Britain that he has recently become interested in unpacking traditional Chinese philosophy as it relates to his former career concern of health. He has in his art practice begun focusing on Traditional Chinese Medicine and Tai Chi that was especially activated by his recent residency in Shanghai, China.

With the exception of Fanny Christie all the artists in this study have in their art practice expressed concerns with the urban living that they are part of. Fanny Christie does express concern in connection with the affect that humans have on the landscape however but her work is not, like the other artists, so concerned with issues of identity, transmigration and exoticism, the duality of experience and the quest to explain their origins. Interestingly both Eric Fong and myself in our former careers focused on human relationships and our art practice brings these learnt skills and sensitivity into play in socially interactive art works. Pamela So also works with people in her art practice on community projects and her archiving abilities from her former career as a Librarian are evident in her use of familial archival materials such as old photographs, artefacts and cine film. She therefore focuses on these objects and uses them to track and expand upon the transmigration of her family from China and Hong Kong to Britain. Lesley Sanderson is able to illustrate the dislocation experienced in being between cultures in her art practice. She thus communicates with her audience the growing human phenomena as we share the issues of global travel and international communications placing us all in situations where traditional points of contact and societal norms are rapidly changing.

In terms of the natural world it plays a strong role in the work of Fanny Christie, Pamela So and my work. Lesley Sanderson sometimes uses it as a metaphor in her work but is not overtly concerned with it in her art practice. For Eric Fong, as yet the natural world as in the Parks has only background relevance, at this point in time, albeit where the Tai Chi that he has recently become interested in is practiced in China. In terms of the role of spirituality it seems to be of little relevance to the work of Lesley Sanderson and Pamela So. However for Eric Fong it may assume a greater significance as he further researches the health benefits of Tai Chi and uncovers the spiritual roots of it. He has already observed the significance of meditation in the health and well being of Tai Chi practitioners that is a spiritual ritual as highlighted earlier in the section on religions. Fanny Christie and myself recognise the significance of spirituality in our art practice but it is explained by visually different means. For Fanny Christie it is by creating art works such as 'Flux' (2005) that show the greater power of the natural world in relation to humans being part of this greater whole but not in

control of it. She does however show concern for humans' lack of care of the natural world. In my work I specifically engage people of diverse spiritual and ethnic backgrounds in socially interactive live art works that promote harmony between people who are different and the natural world by enabling them to positively engage with their chosen spirituality to achieve this such as in 'Peace Servings' (2002-3).

### **Conclusion**

British Chinese Artists face the concerns of the wider grouping of their diaspora in Britain. They therefore encounter being part of a minority grouping and one of a scattered community within Britain. Many of their ancestors may have links with the common employment or educational training reasons of migrating to Britain that often link to the former colonialism of the British Empire. This in itself gives rise to art production in subverting issues of power relations and exoticism as well as the issue of identity as being key.

The experience of British Chinese Artists is one of continually swaying on the axis of agreeing to perform the expected traditional crafts often for financial survival to one of rejecting traditional forms to demonstrate their abilities in the mainstream. Whilst traditional Chinese culture is underlined by the fusion of the natural world and spirituality many British Chinese Artists by virtue of residing in Britain are often dislocated from this experiential knowledge or choose to associate themselves with issues of the urban environment popular within the contemporary British Art world where they seek to gain recognition and position.

From the research undertaken for this study British Chinese artists Lesley Sanderson and Eric Fong are, as Sarah Champion (Chief Executive Chinese Arts Centre), suggested more concerned with urban issues than with the natural world or spirituality. However the natural world plays a strong role in the work of Pamela So, Fanny Christie and my art practice. For Pamela So it is significant in terms of familial history and as a symbol for the situation of the Chinese in Britain today and their former migration to this landmass. Fanny Christie, however, is both concerned with human interaction with the natural world and recalls her knowledge of traditional Chinese philosophy and spirituality. In my art practice both the natural world and spirituality are significant especially in accepting the needs for good human relations in a time when the natural resources that humans depend upon are depleting and changing.

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# Using Personal Development Planning for Career Development with Post-Doctoral Graduates in Sub-Saharan Africa

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## **Introduction**

This paper outlines an in-progress, action research project designed to evaluate the use of Personal Development Planning (PDP) for career development with a group of 27 post-doctoral graduates from 8 sub-Saharan African countries.

PDP is a broad concept with a wide range of potential outcomes. It has been (and currently still) used to manage employee career development within organisations, (Higson and Wilson 1992; Tucker and Moravec 1995; Tamkin 1996) and more recently for continuing professional development within professions, (Rughani 2000; Cornford 2001).

But it is within the context of higher education that it has its broadest outcomes – where it is seen as a structured and supported process to help students become independent, effective and confident lifelong learners (Dearing 1997; Quality Assurance Agency for Higher Education [QAA] 2000) – and as a means to manage effective career development learning in order to enhance employability (Watts 2006).

The 27 post-doctoral graduates are a cohort of African scientists who were awarded grants by the Gates Malaria Partnership (GMP), between 2001 and 2005, to undertake doctoral studies in an aspect of malaria control. The GMP is a collaboration formed in 2000 between five African and four European institutions, with specific objectives to promote applied research, develop capacity and build knowledge in malaria.

The students were registered and awarded their doctorates from the UK or Denmark, and in collaboration with their home institutions undertook their field work within their home countries. For most of the students who undertook their doctoral studies in the UK, their learning experiences are prior to 2004, when higher education institutions in the UK, following recommendations from the Roberts report (2002), began to embed skills development (particularly the transferable skills) into research degree programmes. The main aim of this development is to enhance employability and assist career progression for postgraduate research students after completion of their degrees.

This research project aims to redress any gaps in the learning experiences of these post-doctoral graduates, whilst adding to the growing body of literature on PDP for employability; which currently remains at policy level<sup>1</sup>. It also aims to add to the research literature of using PDP as a strategy to support career development at post-doctoral level, and in the context of developing countries in Africa – of which there is no published literature to date.

The paper uses a model, adapted from the Logic Model by Taylor-Powell (2005) to provide a brief overview of the PDP project, then discusses the proposed methodology and multi-method approach to capture the data required to evaluate the use of PDP as a strategy for career development support. It uses an evaluation framework adapted from the work of

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<sup>1</sup> <http://www.heacademy.ac.uk/learningandemployability.htm>



Kirkpatrick (2005) and includes a discussion on the development, implementation, monitoring and support. It also provides some initial observations from the current raw data.

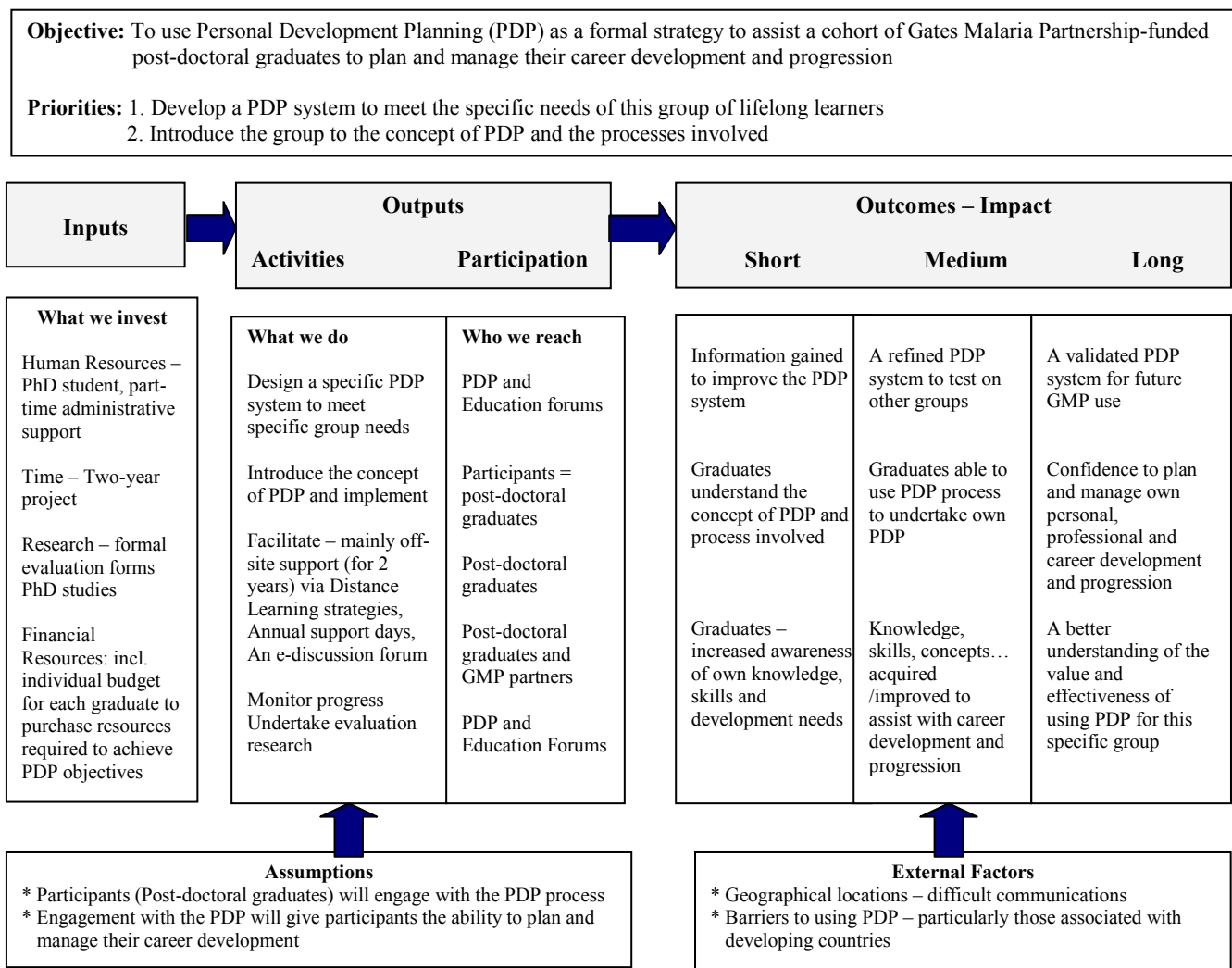
**Background: A brief overview of the project**

This action research project aims to integrate the development of practice with the construction of research knowledge (Noffke and Somekh 2005), and attempts to solve a situational ‘problem’ in a specific context (Cohen and Manion 1995).

The main feature of the project is to develop a PDP system to meet the needs of this specific group, and to implement, monitor, support and evaluate its effectiveness as a strategy to support career development at post-doctoral level, and within developing countries in Africa.

To understand the relationship between the PDP project and the research, figure 1. provides an adaptation of the Logic Model used by Taylor-Powell (2005), to give a brief overview of the PDP project.

Figure 1. An overview of the PDP project (adapted from the Logic Model by Taylor-Powell 2005)



Kirkpatrick, (2001) sees logic models as providing a good road map to project planning, as the logical sequencing clarifies how the individual components, inputs and activities all fit

together to produce the outcomes. In figure 1, the directional arrows help to demonstrate the causal relationship between the elements of the model.

The project emerged as a result of the post-doctoral graduates identifying a need to develop the skills that they did not develop or acquire as a part of their research degrees; and in particular, the skills and knowledge that would help them to progress in their careers in their home countries. This request was conceptualised and formulated into a supported PDP system that could provide the opportunity for the post-doctorates to meet their identified development needs.

The GMP inputs in the project are: human resources in a full-time PhD researcher and some part-time administrative support from the GMP Programme Manager, time and financial investment in supporting a two-year research project. GMP also invests in a budget for monitoring and support visits by the researcher to the post-doctorates' home countries, and an individual budget of £2,000 for each post-doctorate, to help with purchasing the resources required to achieve their PDP objectives.

### ***Proposed evaluation methodology***

Action research stresses the importance of actively engaging participants in a democratizing social inquiry (Whitehead 2005: 523) and this could not be more so in this (action research) project, which involves the use of a change-experiment with real people and their own problems and barriers unique to their own social, political and cultural situations. In this research, a participative approach is vital, not only to refine the PDP tools and processes, in order to improve them for future use, but also for the researcher to gain a more in-depth understanding of the participants' experiences of engaging with PDP, and for the participants to gain a better understanding of the concept and value of PDP.

The 27 participants in this study are a self-selecting group from a cohort of 33. Six of the post-doctorates chose not to take part in the PDP programme. The research will use both qualitative and quantitative methods to collect and analyse the data. The rationale for using a mixed-method approach is to use the combined strengths from both approaches to gain a more rounded and deeper understanding of the value and effectiveness of using PDP for this specific group, and within their specific context.

There is an increasing body of literature on the benefits of using a mixed-method approach, but a rationale is articulated well by Ivankova, Creswell and Stick (2006: 3) who see 'neither quantitative nor qualitative methods as being sufficient, by themselves, to capture the trends and details of the situation'.

In all research inquiry, it is the relationship between the purpose of the research and the nature of the evidence required, that determines the methods employed; and although it could be argued that in certain research inquiry the use of quantitative or qualitative methods on their own might be sufficient to explain the results of the phenomenon being investigated, the benefits of drawing insights from both traditions are outlined by Shah and Corley (2006). Patton-Quinn (1990) also highlights the importance of using a methodological mix as a means of triangulation, in order to strengthen the research design.

Whilst my main aim is to use predominantly qualitative methodology to capture the lived experiences and rich description of the participants' experiences with PDP, I will also need to use some quantitative approaches to capture and record, for example any emergent trends – such as engagement with the PDP process. I also intend to use a phenomenographic

approach, so that I am able to explore the variation in the ways that the post-doctorates have experienced the same phenomenon – the PDP process, (Linder and Marshall 2003).

**Data collection methods**

Bell (2005: 115) notes that, in terms of selecting methods for data collection, no approach depends solely on one method any more than it would exclude another merely because it is labelled, for example qualitative or quantitative. The research will use a wide range of quantitative and qualitative methods to gather data from both primary and secondary sources. The primary data sources will come from the participants and the secondary sources will come from documentary evidence, and in particular the evidence provided by the participants – such as their PDP action plans, progress monitoring, annual reports and any other recorded documentary evidence, such as any email interaction.

In all research, the methods selected for gathering information depend on the nature of the information required, Bell (2005). Because there is no previous research conducted in this area, and with such a specific group, there are no ‘off-the-shelf’ validated data collection tools that could be used to collect the different types of data required. So all the data collection tools for this research will be adapted specifically (from validated tools, such as the tool used to evaluate PDP in the UK, by Peters, 2007); and will go through processes of piloting, testing and refining, in order to improve their validity and reliability, and ensure that they are fit-for-purpose.

Before all the data collection tools could be designed, I needed to look at what exactly was to be evaluated, that is, what objective measures might be used as indicators and what tools might be needed to collect the different types of data required. To do this, I reviewed the literature for theoretical frameworks that could be used or adapted to evaluate the use of PDP with this group.

The framework that I found best suited the needs of this evaluation, and one that is now suggested for evaluating PDP by Peters (2007) for the Centre for Recording Achievement (supported by the Higher Education Academy), is Kirkpatrick’s ‘four levels of evaluation’ (2005). Kirkpatrick’s framework is designed to evaluate training programmes but could work equally well with evaluating an intervention, such as the use of PDP. However, I had to adapt the framework in order for it to meet the exact needs of this evaluation.

Figure 2 provides an outline of how I adapted Kirkpatrick’s framework (2005) to meet the needs of this evaluation. However, it should be noted that while the elements to be evaluated are outlined in the framework, the iterative nature of action research, as it integrates theory with practice, will bring me back to the framework for any modifications, as themes emerge as a result of data analysis.

*Figure 2. The evaluation framework (adapted from Kirkpatrick’s framework of (2005)).*

	<b>Level Description</b>	<b>Elements to be evaluated</b>	<b>Data sources</b>
<b>Level 1 Reaction</b>	How participants react to the training program or initiative  How the postdoctoral graduates react to PDP	Reaction to: <ul style="list-style-type: none"> <li>• PDP documentation and supporting materials</li> <li>• PDP Implementation</li> <li>• Monitoring and Support</li> </ul>	<ul style="list-style-type: none"> <li>• PDP documents</li> <li>• Nominal Group Technique (NGT)</li> <li>• Reaction survey Questionnaire (T1)</li> <li>• Interviews</li> </ul>

Level 2 Learning	<p><i>The extent to which participants change attitudes, improve knowledge and/or increase skills as a result of attending the training program</i></p> <p>The extent to which the postdoctoral graduates change attitudes, improve knowledge and/or increase skills as a result of using PDP</p>	<ul style="list-style-type: none"> <li>The learning that has taken place as a result of engaging with PDP – including the individual skills and knowledge, acquired and/or improved</li> </ul>	<ul style="list-style-type: none"> <li>Individual PDP Action Plans, Annual Reports, Monitoring Schedules</li> <li>Questionnaire (T2)</li> <li>Interviews – for further data and to triangulate the documentary evidence</li> </ul>
Level 3 Behaviour	<p><i>The extent to which change in behavior has occurred as a result of attending the training program</i></p> <p>The extent to which change in behaviour has occurred as a result of using PDP</p>	<ul style="list-style-type: none"> <li>Behaviour that has changed as a result of engaging with PDP – including application of behaviour change in practice</li> </ul>	<ul style="list-style-type: none"> <li>Questionnaire (T2)</li> <li>PDP action plans, annual reports and progress monitoring reports</li> <li>Interviews to triangulate documentary data and obtain further in-depth data</li> </ul>
Level 4 Results	<p><i>The final result(s) that has occurred as a result of the training</i></p> <p>The (final) result(s) that has occurred as a result of implementing and using PDP for career development</p>	<ul style="list-style-type: none"> <li>The overall effect of using PDP – including the long-term outcomes in Figure. 1</li> </ul>	<ul style="list-style-type: none"> <li>Questionnaires (T1) and (T2)</li> <li>PDP action plans and annual reports</li> <li>Interviews</li> </ul>

This adapted evaluation framework (figure 2) aims to take a more holistic approach to the evaluation of this PDP system, and will focus on the processes as well as the skills, knowledge, concepts and attitudes required to assist with ‘career development learning’, as outlined by Watts (2006).

One of the main sources of data generation will be documentary evidence, which will be gained from the participants’ PDP documentation and documented records of all interaction – these will include all the email communication and field notes from the location visits. This documentary data will be used mostly, but not only, as baseline data from which to comparatively assess any change in learning and behaviour.

I will also use Nominal Group Technique (NGT) as part of the formative evaluation, to gather the participants’ initial experiences of using PDP, and their views on how the PDP documentation, supporting materials, implementation and support (to date) might be improved. NGT is an evaluative method used, although not exclusively, to evaluate healthcare education programmes and health service delivery (Perry and Linsley 2006). I decided to use it in this case instead of a Focus Group Discussion (FGD) for two main reasons: (a) it has an advantage of gaining a representation of views from a large group more equitably than FGD, and (b) with a large group of 27 participants and one facilitator, it would be arguably easier to manage more effectively than a FGD.

As a follow up to the NGT, I intend to use a reaction survey questionnaire using a mix of Likert Scaling to generate quantitative statistics and open questions to generate qualitative data. This will help to refine the NGT data further by giving the participants the opportunity to describe personal examples of their experiences of engaging with PDP. One of the things that I am hoping to explore is the difference between the participants’ expectations of engaging with PDP and the reality of engagement once involved – particularly as the need for PDP was identified by them; even though it was not conceptualized as such at the time.

I will repeat the questionnaire a year later to generate the data needed to start assessing the levels of the framework – that is, any learning that has taken place as part of level 2, any behaviour change as part of level 3 and any overall results a part of level 4. I will also conduct interviews at an eighteen-month interval, which will be eighteen months after the

group's initial engagement with the PDP process. This will carry on the theme of exploring the match between expectations and reality – from planning to implementation. One of the challenges of collecting data in this research is the geographical locations of the participants, but annual GMP support days bring the group together, and this is when I am aiming to collect much of the data. However, the timing of the annual support day for next year might be too late in my PhD schedule to collect interview data face-to-face, so this might need to be conducted via telephone. Unfortunately if this needs to happen, it will not allow me to take full advantage of being able to contextualise the data through the picking up of all the non-verbal behaviour and cues; and will impose a new set of limitations in terms of recording the interviews and maintaining the quality of the data recorded (Sarantakos 2005).

### ***Data analysis***

One of the approaches to analysis, that I aim to use in this research, is what Sarantakos (2005: 346) identifies as 'iterative qualitative analysis'; which includes grounded theory and analytical induction. The process of grounded theory, as introduced by Glaser and Strauss (1967) will be used, in order to look at building theory through a 'research-then-theory' approach of analysis. For theory building, (Shah and Corley 2006) suggest that it is the 'soft' qualitative data, with its rich description that is required in order to explain and help build theory. There will be lots of data generated in this research, so for data management, I intend to use data software packages – SPSS to manage the quantitative data and NVIVO to manage the qualitative data. Context will play a major role in the analysis of the data, but in particular, in the analysis of the qualitative data – and this is from the perspectives, of both the researcher in terms of reflexivity and the participants in terms of their differing political, social and cultural situations.

### ***Developments so far***

The project started in August 2006 and to date, an evidence-based PDP system has been developed, piloted and implemented. Initial support to facilitate completion of the PDP action plans was undertaken, and implementation is currently being monitored. An additional peer-support system, in the form of an electronic discussion forum, has also been developed.

### ***Developing a suitable PDP system***

In searching the literature to find evidence-based PDP tools, I found that many of the PDP systems developed within the UK Higher Education system were focused at undergraduate level, and with a fairly strong emphasis on student learning, recording achievement and maintaining Higher Education progress files (QAA 2000).

However, I did find a support system that related more closely to the needs of post-doctoral graduates. This was the career management system that was developed for contract researchers and their managers; and focused on longer-term career planning through the development of personal and professional skills. This project, funded by the Higher Education Funding Council (HEFC) and led by the University of Sheffield, in partnership with the Universities of Manchester, Loughborough and 14 other universities, developed a 'career builder' for contract researchers (CRS, Good Management Practice 2000).

While this 'career builder' was useful, because it focused on career planning and the development of personal and professional skills at postgraduate level, its main focus on career planning for a research career was too narrow for the needs of this PDP post-doctoral group. While many of the post-doctoral graduates in this group were considering careers in research, there were equally as many who wanted to develop their careers in different

directions, so the PDP system had to be designed to meet the needs of the entire group; whilst also encompassing all the PDP elements of planning, doing, recording, reviewing and evaluating, as suggested by Gough, Kirwan, Sutcliffe, Simpson and Houghton (2003:2).

Other literature that I drew on, to gain information on development of the PDP system, was the work of Rughani (2000) on how to develop PDP for General Practitioners, and of Jackson, Gough, Dunne and Shaw (2004) on developing an infrastructure to support an evidence-informed approach to PDP.

### ***Implementation, Monitoring and Support***

Geographical location of the post-doctoral graduates was always going to be one of the challenges in this research. Implementing an intervention was one thing but introducing a new concept and materials using distance learning strategies needed careful handling. I had limited time between developing, testing, refining and implementing the PDP system, so in order for the group to get the optimum time from the project, in terms of support from me with their PDP, I had to implement it using electronic media (email). The limited time also meant that I was unable to investigate and try out alternative means, such as podcasting, to improve implementation. The impact of using this method (email) to implement the PDP system will be reported in the evaluation.

A self progress monitoring system to reflect on their PDP achievements has been set up for the group to use. However, I will also use individual schedules to monitor this system and a formal system of annual reporting to ensure that PDPs are kept on track. This individual monitoring system will be helped by the fact that I am managing a relatively manageable sized group.

An electronic discussion forum has now been set up as a means for the group to come together and provide support for each other in a virtual environment. To date, this is a well-used peer-support resource, which is administered by me (the researcher), but otherwise totally owned and managed by the PDP group, through a system of monthly rotation of moderator responsibilities<sup>2</sup>.

I have also undertaken some, and have planned further, location visits to all of the post-doctorates home countries to meet with their local mentors, and to monitor and provide support in their work place. I will use these visits as data collecting opportunities as well, and will keep extensive field notes to help supplement the data.

### ***Some initial observations***

The documentary data is still in a raw state, but there are some initial observations, that I will use to help guide development of the first data collection tool – in order to gain both quantitative and qualitative data for further exploration. One of the main observations is around the identification of skills. In identifying needs for development, then articulating these in the PDP Action Plan, the group have all included the tangible skills needed (mostly technical and professional) but have omitted the less tangible or ‘softer’ skills such as communication or networking – despite having identified these as a development need in their initial Skills Assessment.

Initial engagement with PDP is also variable. There were distinct early adopters and distinct laggards. Collection of the right type of data is needed to try and understand and explain this

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<sup>2</sup> The GMP PDP discussion forum is located at: <http://www.gmp-pdp.org>

variation. Noted also are varying levels of engagement, with some participants seemingly engaging at a much deeper level than others. This is noted by the level of interaction with me, to seek help, feedback and/or clarification, and also by the amount of interaction with the supporting materials and PDP documentation. This observation has prompted me to include some open questions in the questionnaire around possible barriers, motivation and the effectiveness of the implementation process. I shall also include these questions in the interview schedule, so that this variation might be explored in more depth.

### **Conclusion**

The overall purpose of this research project is to gain a better understanding of the value and effectiveness of using PDP as a support strategy to help post-doctoral graduates stay in their home countries; thereby contributing to capacity development and the reduction of brain drain from developing countries in Africa. It also takes into account all the aspects of using a UK educational policy (PDP for employability) within a sub-Saharan African context. Some of the initial observations shared from the raw data, to date, highlight similar challenges faced by learners engaging with PDP in a UK context. These initial observations have helped frame the development of the data collection tools, so that the right type of data might be generated, in order to facilitate further exploration in terms of understanding and meaning; and to ultimately gain a better understanding of the value and effectiveness of using PDP for this specific group

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# **When a Consumer Chooses a Loan, How Does Information About the Cost of Borrowing Influence Choice?**

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## **Introduction**

In 1991 consumer borrowing in the UK was £2,000 million, and by 2001 it had trebled to more than £7,000 million (Hall 2002). The average level of outstanding consumer credit per household increased from £2,088 in 1995 to £6,464 in 2003 (DTI 2004). The advantages of manageable credit were seen as increasing consumer choice and making a vital contribution to the UK economy (DTI 2004). However, there has also been considerable concern about the levels of personal debt in the UK. In 2000 the Government set up a Task Force on Tackling Overindebtedness (Directorate of Consumers Affairs 2001). This was recognising that for some consumers, the level of debt was the cause of serious financial and personal problems

Research into the causes and extent of debt has been conducted by a range of organisations including CAB, the Consumer Credit Counselling Service, The Office of Fair Trading, DTI and the Credit Services Association (Directorate of Consumer Affairs 2001). This focussed mainly on the socio-economic causes of debt, and the role of government and voluntary agencies. The Task Force looked at what could be done to achieve more responsible lending and borrowing. The DTI set up working groups to consider credit marketing, credit agreements, consumer and industry responsibility (DTI 2002). These provided recommendations to advise on Government action plans to improve the information presented by financial providers to consumers (DTI and DWP 2004). An important element in understanding routes into default and debt is the quality and nature of initial decisions to take credit. The first report of the Government's Task Force stated that many consumers were more preoccupied with decisions on their purchases and gave less consideration to the cost of loans (Directorate of Consumer Affairs). Improved knowledge of the decision process and what influences it, would inform the ongoing debate on credit and debt, and might contribute to more responsible lending and borrowing. However, there have been relatively few studies of the psychology of the decision process itself involving consumer credit. Soman and Cheema (2002) found that credit limits influence the propensity to spend with credit cards, and Chien and DeVaney (2001) found that the borrowing decisions were different with instalment loans than with credit card debt. One of the experiments reported here follows up on an interview study on instalment credit that examined its role in personal budgeting and how credit was evaluated (Ranyard and Craig 1995).

Ranyard and Craig (1993, 1995) developed the mental accounting concepts of Tversky and Kahneman (1981); Kahneman and Tversky, (1984) and Thaler (1985, 1999); Shefrin and Thaler, 1988 and proposed a dual mental account model of how consumers perceive and evaluate instalment credit. This proposed that people may construe instalment credit in terms of two possible representations, the total account and the recurrent budget period account. In a process tracing study, Ranyard, Hinkley, Williamson, and McHugh (2006) found that as well as the total cost of a loan (TC) the Annual Percentage Rate of interest (APR) was an important cost attribute in many of the decision strategies for participants choosing their credit option. It was argued that this was because participants believed APR to be a reliable indicator of the likely total cost, which would be the main concern of those representing the credit decision as a total account. Alternatively, however, people may have adopted the

rational economic perspective with the rate of interest being their main concern with respect to cost. The relative impact of these two key aspects of credit cost information (APR and TC) was further investigated in a follow-up experiment using decision problems in which these aspects of cost may conflict (Ranyard, Hinkley, Williamson, and McHugh (2006). This found that where APR information was provided it did influence choice in the predicted direction, in favour of alternatives with lower APR. However, when total cost was given in addition, this information substantially moderated the influence of APR. Two further experiments were carried out to explore the interaction between APR and TC in detail.

### **Design**

The first study asked participants in a postal questionnaire to imagine they had already decided to take out a loan for £7,500 for a consumer durable or home improvement and were now considering offers from two banks. Nine scenarios were presented and in each case, Bank A and Bank B offered alternative times to repay and monthly repayment amounts. The option with the shorter loan duration had the higher monthly repayment and also the lower TC. In three cases the option with the shorter duration and lower TC also had the lower APR, and in the other 6, the shorter loan had the higher APR. TC and APR information were independently varied in a 2 x 2 factorial design. One dependent variable was the number of choices (out of nine) for the option with the lower loan duration (also the one with the lower TC). If APR were to influence choice, the scores on this measure should be lower when APR was given. Similarly, if TC were to influence choice, scores should be higher when TC was given.

In the second postal questionnaire study, participants were asked in one question to imagine that they had spent £1,500 on their credit card which had an APR of 15.2%. They had to decide on one of 6 different monthly repayment options. In another question respondents were asked to imagine they had renegotiated their mortgage of £40,000 and had to choose one of 7 monthly repayments from £280 over 20 years to £768 over 5 years. TC and loan duration information were independently varied in a 2 x 2 factorial design. If TC were to influence choice, there should be more participants with TC information picking the option with a higher monthly repayment since this reduces the TC of the loan.

### **Results**

In study 1 the basic choice participants were asked to make was between a loan with a shorter duration but a higher monthly repayment, and a longer loan with a lower monthly repayment. In each case, the loan with shorter duration also had the lower TC. A two factor, between participants ANOVA was carried out, with the number of choices for the shorter loan as dependent variable (out of 9 for each person). The independent variables were APR and TC Information. The analysis showed that there was an interaction between these two variables but that it was not quite statistically significant,  $F(1,221) = 3.10, p = 0.08$ .

As APR and TC both have an effect taken over all the nine examples, to ascertain whether this effect was the same in each individual scenario, or whether there were variations, analyses were carried out for each one. A hierarchical log linear analysis was carried out in SPSS for each example. For three of the examples (scenarios 1, 2 and 9) there was a significant 3 way interaction. In 1 and 9 the effect of APR was moderated by TC information, whereas in scenario 2, the effect of APR was enhanced.

Table 1. Scenario 1 APR moderated by TC information.

<i>Option</i>	<b>Time to repay</b>	<b>Monthly repay</b>	<b>Total Cost</b>	<b>APR rate</b>
<i>A</i>	48 months	£179.99	£8639.52	7.3%
<i>B</i>	24 months	£352.73	£8465.52	12.6%

Fig 1. Percentage of participants choosing the shorter loan in scenario 1.

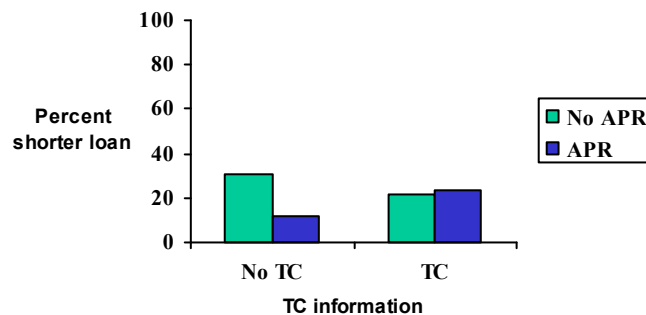
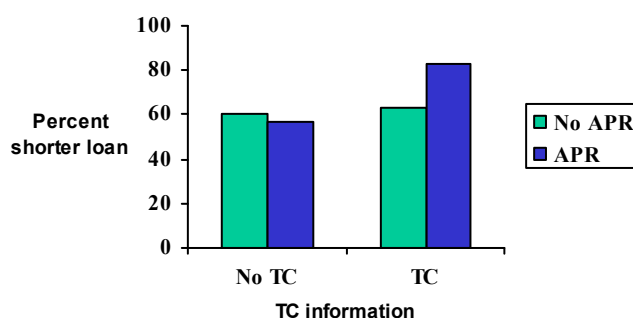


Figure 1 shows the percentage choosing the shorter loan in the four different conditions for scenario 1. Overall, only 22% chose the shorter loan in this case, and the 3-way interaction was significant ( $\chi^2(1) = 3.99, p < .05$ ). Results for scenario 9 (not shown) were similar. In both of these cases, when TC information was not available the frequency of choosing the shorter loan decreased when APR information was given. However, APR did not affect this frequency when TC was given. In these cases then, the effect of APR was moderated by the presence of TC information.

Table 2. Scenario 2 APR enhanced by TC information.

<i>Option</i>	<b>Time to repay</b>	<b>Monthly repay</b>	<b>Total Cost</b>	<b>APR rate</b>
<i>A</i>	24 months	£334.58	£8,029.92	6.8%
<i>B</i>	60 months	£163.34	£9,800.40	11.7%

Fig 2. Percentage of participants choosing the shorter loan in each condition.



The third case in which TC and APR information interacted was scenario 2. Unlike scenario 1 and 9, in this case the option with the shorter time to repay had both the lower APR and the lower TC. This was one of 3 scenarios out of the 9 where APR was lower for the shorter loan. Overall, 66% of respondents across all versions selected the shortest loan, and the 3-way interaction was significant ( $\chi^2(1) = 4.06, p < .05$ ). As Figure 3 shows, without TC information the percentage choosing the shorter loan was just below 60% whether or not APR information was given. Also, when only TC information was given, the percentage choosing the shorter loan was a little above 60%. However, when both APR and TC information were presented, this percentage rose to over 80%. Thus, in this case cost information only had a significant effect when both items of information were provided. The remaining six scenarios can be divided into two groups. In three of them, either APR or TC had a significant effect on choice for the shorter loan, and in the other three neither item of cost information had an effect.

In the credit card question of study 2, participants were asked to choose one of 6 monthly repayment options, ranging from £41.15 to £197.65. The higher the monthly repayment, the quicker the credit card loan would be cleared at the least cost. Nearly 50% of participants in all 4 versions of the questionnaire chose the highest monthly repayments, clearing the loan quicker and more cheaply. The effect of information variation is shown in Figure 3 with more of the group with TC information choosing the shortest loan (60% compared to less than 50% for the other 3 versions).

Fig 3. % of respondents in each version choosing option 6 (shortest).

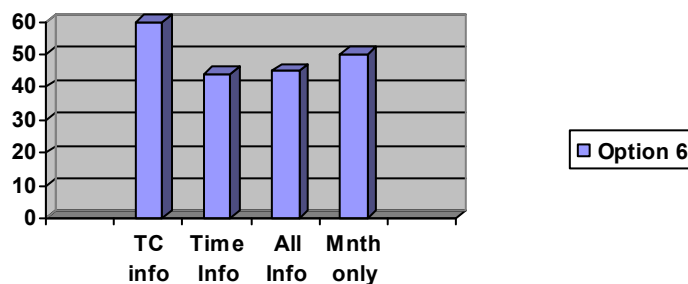
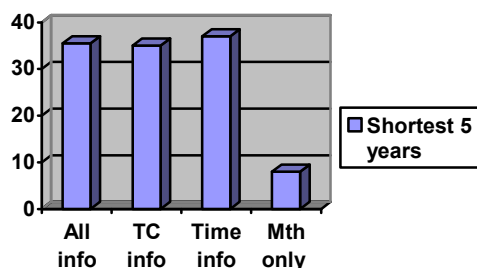


Fig 4. % of respondents in each version choosing to repay mortgage in 5 years.



As figure 4 shows there was little difference between 3 versions of the questionnaire. Where respondents had time and/or TC information they chose to repay the mortgage more quickly. When they were focussed on the amount to pay per month, then lower monthly repayments were far more attractive.

## Conclusions

The results for the first study showed that APR did, as expected from a rational choice model, influence preferences in many cases. However, the individual analyses of each example indicated that its influence on choice was more complex, depending on the specific loan duration and monthly repayment amounts involved. The second study shows that information influences the decision with TC information resulting in more choices for a shorter credit card loan. With the mortgage question no information on time and TC encouraged a strategy for lower monthly repayments. This is consistent with the view that, as we have argued before, people evaluate credit in terms of mental accounts. At the point of purchase they evaluate the whole credit transaction in terms of a total account in which the total cost is important, and a recurrent budget account that is used to evaluate monthly repayments and anticipate future goals and hazards. The credit card question in the second study illustrated the importance of recurrent budget account as respondents with less information focussed on the monthly repayments. An implication of our findings for the marketing of consumer credit is that TC information needs to be presented clearly and explicitly in order that consumers can make informed decisions. Currently cost information is often incomplete, making evaluation more difficult. In conclusion, although APR provides important information for consumer credit decisions, TC is equally important, since consumers often represent specific credit plans in terms of total mental accounts.

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# Virtualised e-infrastructure That Facilitate Collaborative Work among Distributed Communities

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## **Abstract**

Collaborative activities among distributed communities are very much relying on their existing ICT infrastructure. Since different communities inherently use different computer technologies that suit their individual requirements, it is highly possible and most appropriate to utilise virtualised system infrastructures for distributed collaborative work. This is been discussed in detail with providing different virtualisation technologies, strengths and weaknesses of each, practical work performed and expanding to future work and outlook. Virtualisation can provide hardware independence and operational flexibility in such work. This paper also proposes an integrated collaborative workspace environment that employs data centre, collaboration and mobility system infrastructure based on the virtualisation technology. Further, models for applications of virtualisation, virtualisation acceptance roadmap for organisations', higher level benefits, research findings and future work are discussed.

## **1 Introduction**

Collaborative work among distributed teams that does not require use of computer technology is very seldom within professional communities engaged with scientific and engineering activities. These teams are heavily relying on the use of various kinds of software and hardware technologies to perform daily work activities. Partly due to the complex systems and technologies used in order to perform work activities supporting of distance collaboration and knowledge sharing among these groups and providing access to a virtual work environment have been a technologically challenging task. In other words, supporting collaboration between such professional teams or individuals may require compatible data centre services that could be interoperable with collaboration and new generation mobility infrastructures. A system infrastructure with these features could seamlessly accept their daily work to be presented and discussed with other distanced groups in the real time regardless of individual's current location. Due to the fact that different communities inherently use different computer technologies that suit their individual requirements, it is highly possible and more appropriate to utilise a virtualised data centre, collaboration and mobility system infrastructure for the facilitation of distributed collaborative work.

### **1.1 Rationale**

Applications of Virtualisation Technology (VT) has been discussed by many technology developers (e.g. VMware: Infrastructure 3; Microsoft: Virtual Server, Softricity SoftGrid; SWsoft: Virtuozzo and Altiris: SVS) and third-party consultants who provide such services for the industrial, governmental and research organisations as an advancement to the existing technologies. Many such organisations would argue that virtualisation can provide lower cost of infrastructure ownership, improved efficiency and flexibility, enhanced ability to satisfy business requirements, simplified Business Continuity and Disaster Recovery, effective security enforcement, etc. which are very much interconnected with most businesses as high priority requirements. Various costing, benchmarks and measurements of efficiencies (e.g. transaction processing) have been developed to prove these cases (Makhija 2006). However due to the core technological differences of the virtualisation solutions being developed or

promoted by many organisations, quantifying the effectiveness in achieving such business goals and objectives have been difficult to justify without a through analysis of technological differences of widely adapted VT and approaches in solution development. This article presents the technological differences of some products, state of the art of virtualisation, possible future uses of this technology and further research works that could influence distance collaborative working.

## **1.2 Research Methodology**

### **1.2.1 Literature review**

Analysis of existing virtualisation technologies to date was carried out through research publications, white papers, technical reports, textbooks, web search, etc. Core technological differences between different product design approaches were investigated. Literature and information from individual websites of major technology developers and players were scrutinised.

### **1.2.2 Identification of the problem domain**

The effectiveness of virtualisation products within different application domains and ways to quantify the business impact have not been clear between various virtualisation technologies. Although virtualisation has been proposed as a better alternative (i.e. to utilise on top of), to existing technologies (hardware, software, and networking) total business application solutions have not been thoroughly examined by providers to a satisfactory level. It is important to fill these gaps so that the existing and new users of these technologies become aware of the technological differences hence they can quantify ROI and expected performance measurements.

### **1.2.3 Knowledge Acquisition**

Series of practical implementations with different virtualisation products under various business requirements were tested to understand implications of such technologies (Mihindu 2007; Mihindu and Fernando 2007). Robustness, security and BC/DR capabilities were tested within these settings. The ability of providing comprehensive total business solutions to various organisations was investigated. Further research elements were identified through these practical scenarios.

### **1.2.4 Knowledge representation**

This article clarifies differences of various virtualisation technologies available to date and their developments. Possible applications of this technology for supporting future business applications and a framework for distance collaborative work environments were proposed. Further research that needs to be conducted, virtualisation roadmaps and conclusions of this work are stated.

## **1.3 Virtualisation Technology for future workspaces**

Virtualisation facilitates heterogeneous operating systems are to operate on the same physical computer as Virtual Machines (VMs). As in figure 1 each VM consists of an operating system (OS), virtual hardware and application programs (e.g. Collaboration system).

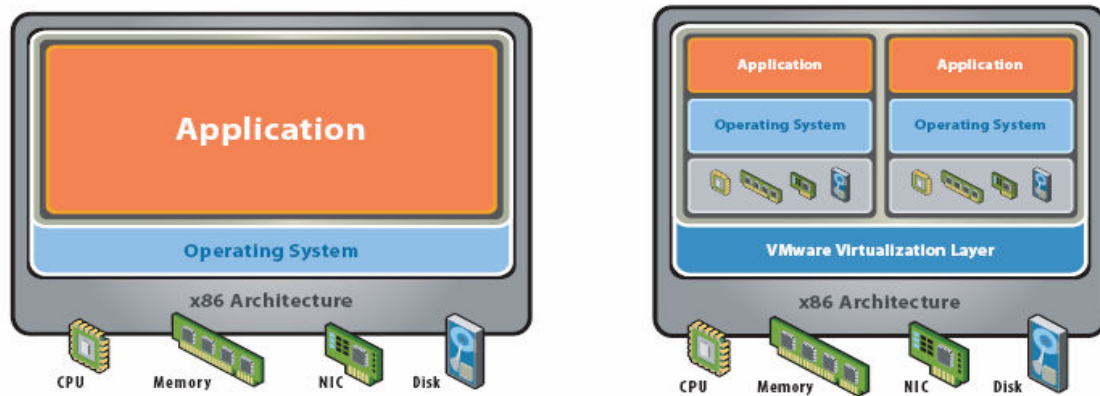


Fig 1: Before and after virtualisation of x86 architecture using VT (Vmware 2006)

The operating system of VM is called the guest OS that works on a consistent, normalised set of virtual hardware devices and components (VMware Inc 2006). VMs are highly portable and deployable in seconds to many distance sites as a condensed file of any filing system format. The application systems configuration and management, networking, data backup, etc. become streamlined and do not require constant attention. Also, server upgrades and maintenance, server moving, and replication could be performed with zero downtime. Hence, virtualisation provides the most efficient and effective deployment strategy for setting up an infrastructure for the Future Workspaces (e-infrastructures for the next generation work environments). The distributed professional teams may avoid the inefficient, time consuming and costly routines for obtaining, managing and maintaining new resources by utilisation of VMs. In previous work, a framework that employs VM infrastructure for supporting context-awareness in collaborative activities has been proposed (Mihindu et al. 2007). Physical installation of technology and associated peripherals within the available space (space design, planning and management) will not be considered in this article although this aspect would highly influence the usability of provided services.

Xen technology based on para-virtualisation offers the ability to run unmodified guest OS kernels with some additional supporting drivers. The best performance in virtualisation incurring between 0.1 to 3.5 percent overhead has been achieved through para-virtualised guest OSs. Other virtualisation technologies could incur 10 percent increase of overheads compared to the above performance of Xen technology. Physical Address Extension (PAE) that supports up to 64GB of memory and up to 32-way SMP (Symmetric MultiProcessing) guests within 32bit OS environment could greatly enhance the performance of processor and memory hungry applications. Seamless application migration from development to data centre servers and between mission critical application servers could be performed well under 100ms within virtual server environment (XenSource 2006). Since none of the other available technologies (non-virtualised) to date can perform to these specifications migrating to virtual server environment will become eminent for business, industry, research and development as well as for facilitating governmental infrastructures. There are thousands of ‘virtualisation success stories’ that one can search and read from the global network. The impact of this technology has pulled Microsoft Corporation to redesign their OSs and applications over recent times (Microsoft 2007).

## 2. History of virtualisation and technology maturity

IBM researchers had the effort to develop a multi-user system providing each user with a virtual machine that could operate a simple single-user system. This VM looked similar to a real IBM 360 and assisted in many ways over time in the development of OSs, system



services and virtualisation of hardware. Systems such as MVS (Multiple Virtual Spaces), VM/370 have provided the fundamental foundation of simulating different hardware environments so that users can operate these medium to large computer systems through PCs operating Linux, etc. (Amdahl et al. [1964] 2000).

User space virtual machine using simulated hardware constructed from services offered through the host kernel has been researched for offering users with virtual desktop workspaces. Most of this initial research was based on Linux OS environment. This User-Mode Virtual Machine (UMVM) was capable of running most of the applications and services available on the host architecture. However these UMVMs are virtual OSs than VMs of today (Jeff Dike 2006). Requirement for operating Linux on Linux, Linux on Windows, Windows on Linux, etc. has influenced the development of hardware and services virtualisation further. Much work and research has been conducted under different OS environments and produced *Xen 3*, *Vmware Infrastructure 3*, *BSD jail*, *Solaris zones*, *chroot*, etc. which are integrated into the host OS or otherwise for supporting some form of virtualised technology. Virtuozzo from SWsoft virtualises the operating environment rather than the hardware. This allows multiple programs or servers to run in isolation from each other under the same OS kernel. The technology maturation to date has provided an extremely favourable environment for next generation computing applications.

## 2.1 Creating virtual infrastructures from the existing technology

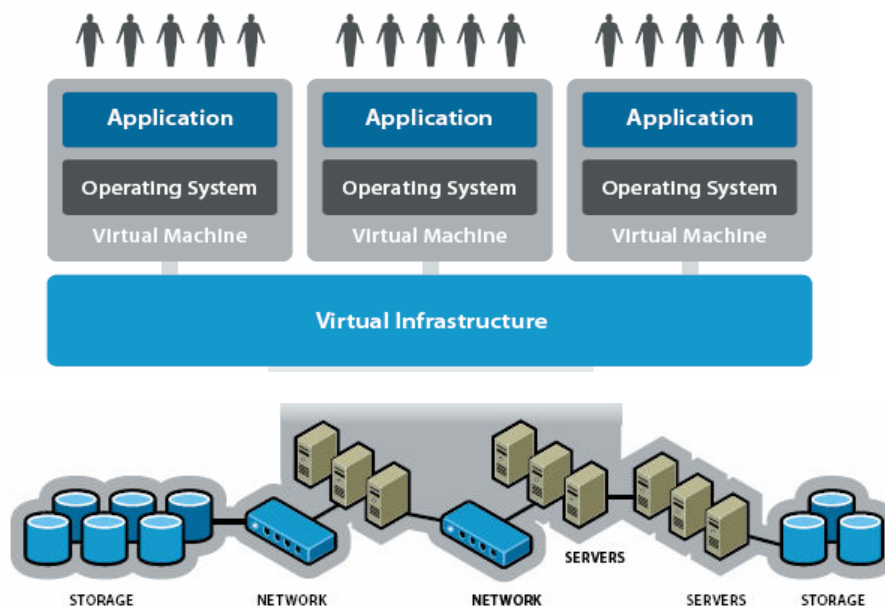


Fig 2. Virtual Infrastructure (Vmware 2006)

Existing computer infrastructure and resources being used by the target communities could be converted into Virtual Infrastructures (VIs) as in figure 2. This type of extension of the technology facilitates transforming farms of individual servers, storage and networks into a pool of resources that could be shared among many VMs to serve different needs of users. The VMs could be networked (virtual networks) into any arrangement as similar to physical networks. Typical VI that consists of many servers could even be geographically dispersed. INSYSTEK has demonstrated through their product ‘Virtualise IT for VMware’ can assist infrastructure administrator(s) easily manage over 6000 VMs from a single console. Administration of physical computers of this magnitude from a single point has not been

recorded or could not provide any satisfactory comprehensible outcome.

## 2.2 Processors level support for virtualisation

The new technology processors (e.g. Intel VT AMD Pacifica) have extended hardware virtualisation capabilities further so that the processor architecture could be able to overcome the OSs inability of supporting resource sharing features. The technologies such as Intel VT and VMware Visualisation provide enterprise grade visualisation mechanisms that are highly suitable for designing virtual infrastructures for the future workspaces (FWSs). The figure 3 describes Intel VT and VM architecture.

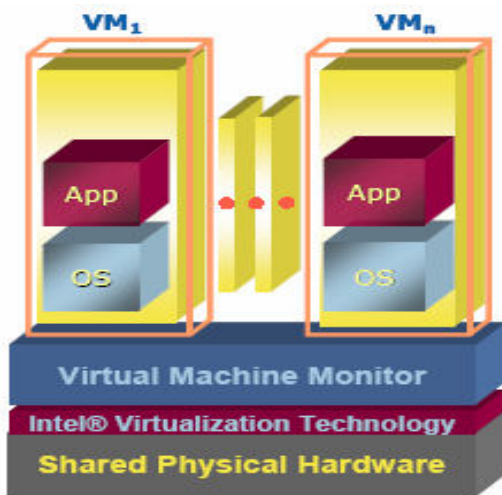


Fig 3. Intel<sup>®</sup> Virtualisation Technology  
(Intel 2006)

Utilisation of multiple virtual machines (VM<sub>1</sub>..VM<sub>n</sub>) could enhance the efficient use of computer resources.

Other uses: The development and testing of applications under different platforms (Hardware environments and various OS) could be facilitated by this technology within a single physical computer. This also provides the ability to test and deploy 32bit and 64bit applications on the same computer with the assumption that the physical hardware and base OS could support 64bit processing.

Industry's first virtualisation software to support Intel VT was Xen 3.0. This allowed virtualised servers to run natively on the processor and to exploit hardware acceleration for CPU and memory virtualisation (XenSource 2006).

## 2.3 Application and Interfaces development with Open Standards

There are only very few open sourced or proprietary application development technologies (e.g. JBoss AS, IBM Websphere and BEA Weblogic) available to date that are highly portable and could be enhanced by operating within a distributed VI. The Java certified open sourced application server, JBoss AS and its enterprise middleware system has a cluster of technologies that adhere to Service Oriented Architecture (SOA) model. Figure 4 describes JBoss AS architecture (Azoff 2005; Jboss 2007).

JBoss AS architecture would be very suitable, given the demonstrated flexibility and adhered strong standards to develop the required middleware system for virtualised infrastructure for the future workspace environments. Other technologies that are matured and widely established provide many tools and applications (e.g. Apache, Ant, Postgresql, etc.) that could be integrated in the middleware development process. Choosing the appropriate Open Sourced Systems (OSSs) and tools it will provide the possible access to relevant knowledge and support from the open sourced community work over time.

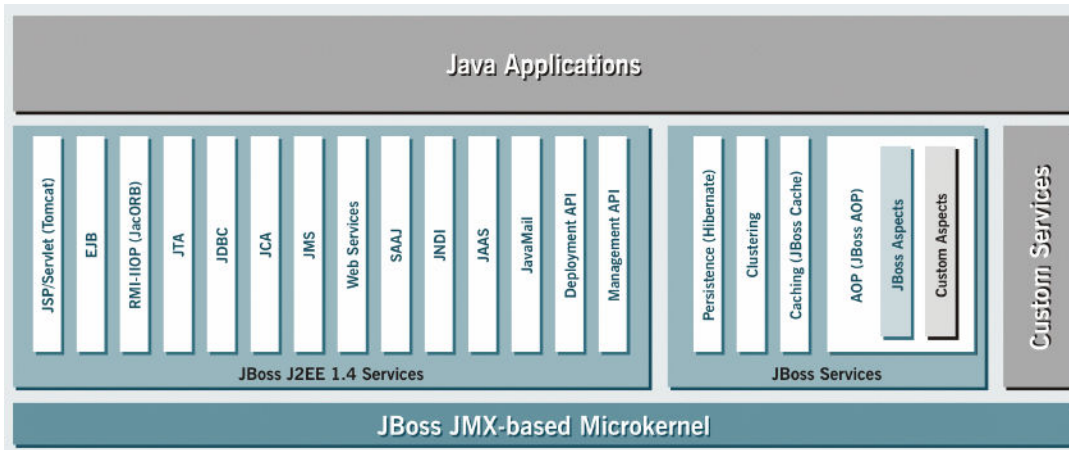


Fig 4. JBoss AS Architecture, Microkernel and Services (Jboss 2007)

### 3. Discussion

Advancement of computer hardware, system services and application development methodologies has incorporated computer system infrastructures in day to day work and social activities so that people have begun to heavily rely on such systems. In order to provide satisfactory level of SLA through SOA it is highly important to find appropriate level of RAS (Reliability, Availability and Security) with improved performance. With no doubt this has been pushing various user communities to utilise VT wherever suitable and possible. Innovative frameworks for such utilisation are still not available widely in many application areas. As a result this research fills the gap in utilisation of VT in facilitating ubiquitous FWS environments. There is much scope in using such frameworks for integrating the appropriate techniques and technologies within this setting. Some strategies and research are discussed in detail here.

#### 3.1 Virtualisation of Networks, Computer Hardware, and Application Servers

Virtualisation of computer hardware, peripherals and networks have provided infrastructure developers with reduced total cost of ownership (TCO) models and strategies for easier management of systems, configurations, backups, deployments and many other operations. Technologies such as Intel Virtualisation and Extended Memory 64, and VMware's VI are providing tools for effective management of servers and desktops virtualisation services with enterprise grade RAS. A single computer with appropriate capabilities could operate multi-server configurations using VM infrastructure effortlessly. A typical infrastructure that consist of many application servers could be replaced with each server operating inside its own VM within the same physical computer to satisfy requirements of most web oriented applications (or SoA) for supporting business, government and research organisations. Infrastructure virtualisation software (e.g. VMware Infrastructure 3) could create and administer complex multi-server configurations in a box from a single point, for example three servers which are web services server (e.g. Apache, Mail), Data centre/Database Server (e.g. Postgres), and Applications Server (e.g. JEMS), each operating within its own VM. Virtualisation of infrastructure provides greater resource (e.g. hardware, software) utilisation and optimisation, system and application availability, capability of operational automation, flexibility (e.g. hardware and OS independence) and cost efficiency through virtualised servers, storage and networks.

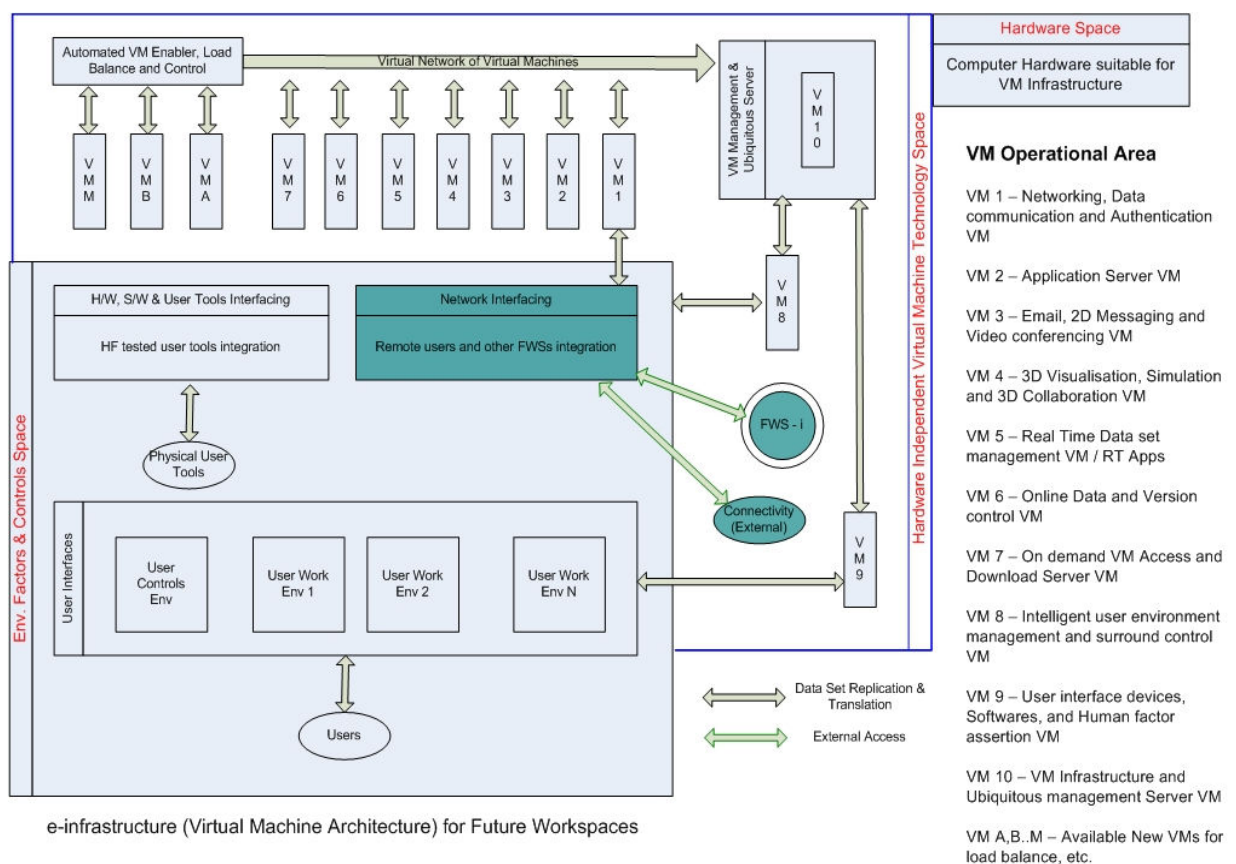
#### 3.2 Virtual e-infrastructure for future workspaces

The proposed e-infrastructure (or VMA) consists of computer hardware, high-speed

networking, virtualisation management ubiquitous server, purpose build virtualised application server farm and human-centric user interfaces' embedded user workspaces. Figure 5 provides a brief architectural overview of the e-infrastructure. The basic three layers explained in the diagram are;

- Environmental factors and control space
- Hardware independent virtual machine technology space
- VM ready computer hardware space.

The services provided by VM technology space are detailed as operational areas in the diagram. Depending on the integration requirements within a specific FWS environment these operational areas are to be defined and finalised on an each case basis. A typical scenario with ten VMs providing a comfortable FWS setting that are highly suitable for scientific and industrial collaborative work is pictured. Further research and details are to be published in the future.



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Fig 5. Architectural overview of the proposed virtualised e-infrastructure

### 3.3 Connectivity between FWS

Fast networking resources that are directly connected between different FWSs may be required in order to facilitate extremely data intense applications. Internet2, vBNS (very-high-performance Backbone Network Service), TeraGrid, etc. networks are now connecting various organisations that requires such efficiencies for business or research work. VMs that reside in side one physical computer can communicate or transfer data at very high speeds so that various servers operating within VMs may be seen as an effective solution to achieve high speed data rates between servers and to minimise external traffic between computers

within a centre.

### 3.3.1 Design considerations

Figure 6 describes design consideration of virtualised e-infrastructure for FWS in brief and how the design, development and implementation of such ubiquitous technology are achieved. Due to the complexity of the technologies behind such workspaces human-factor focus is to be considered where possible for achieving satisfactory user interfaces and mental models.

### 3.3.2 Connectivity considerations

The *Interface Cloud* connects the *Technology Interfaces* of many FWSs together for collaborative activities or for other tasks. Multi-location connectivity of H-C FWS (Human-Centric FWS) environments that are based on ubiquitous technology is shown in figure 7.

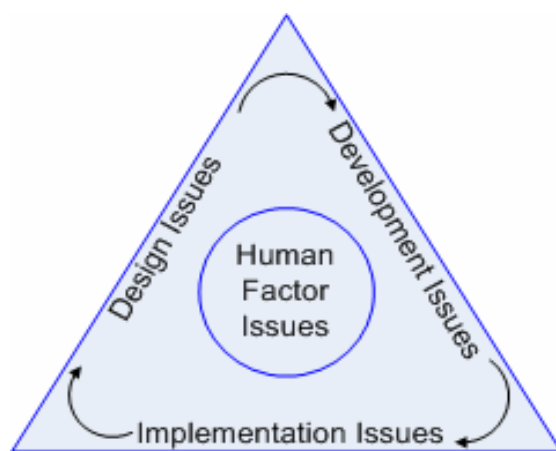


Fig 6. Foundation of *Ubiquitous Technology* (*Ubi Tec*)

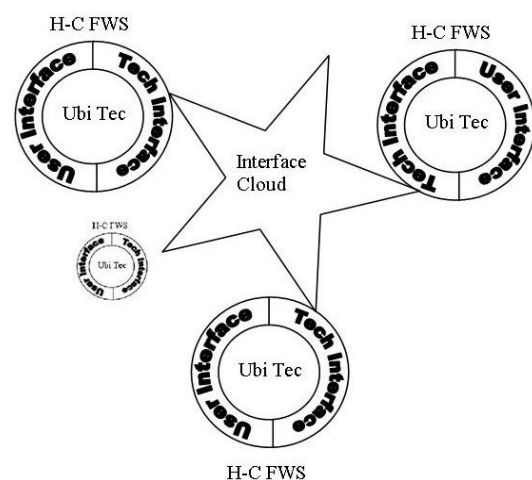


Fig 7. *FWSs connectivity through Interface cloud*

## 4. Future work, research and development

Setting up of an e-infrastructure for eProcurement and supply chain management as a typical integration scenario is to be setup utilising the VM infrastructure. This test bed will be used for gathering and capturing Business Intelligence (BI), dissemination of knowledge, project and job management, etc. operations within an engineering firm in the construction industry. The effectiveness of integrated approach of delivering such applications for business or industry will be evaluated and findings will be published.

### 4.1. Strategic implementation of data centre, collaboration and mobility infrastructure

In a different setting virtualised distributed computing infrastructure is to be setup at the initial stage of a project to support large scale data collections, data analysis, dissemination and mobile access to virtualised workspaces for the intended audience. It is also envisaged to develop more simplified human centric interfaces to promote the facilities among a wider range of audience at a later stage. This facility involves constructing an advanced ICT infrastructure and interfaces that support data centre operations with high speed networking to facilitate collaborative work among dispersed communities and to provide comprehensive virtual access to individual's working environments globally. In general, this e-infrastructure for future workspaces will also support collaborative activities of virtual communities and



virtualisation of personal mobility for the next generation.

#### **4.2 Distributed community involvement**

To capitalise on the best practices of the e-infrastructure development to date, the proposed virtual data centre services are based on the current technologies that are at enterprise grade. For example Jboss JEMS, Infrastructure 3, Internet2, etc, e-science core programme associated services and the latest research (e.g. EU and international developments) to be combined to provide an enhanced and consolidated infrastructure for promoting the outlook for future standardisation of workspaces. FWRC's current engagement of virtual communities through FP6 and FP7 projects provides the community base and the requirement for this technology infrastructure, which will become the initial test bed immediately providing direct involvement with hundreds of organisations (more based in the EU). While this infrastructure provides an essential solution to existing as well as future needs and requirements of these networks of communities the establishment of infrastructure sustainability becomes extremely promising.

#### **4.3 Expected higher level benefits of the proposed infrastructure**

The utilisation of VT within day to day applications can provide many benefits as discussed earlier in the article. This section describes very high-level goals of proposed infrastructure as applicable to collaborative work environments (e.g. Knowledge management within EU funded Projects). While section 1 and 2 are more generic the section 3 and 4 provide specific details.

##### **(1) Creating highly flexible work environment that could support innovation**

- Improved efficiency, productivity, team working and collaboration
- Immediate access to needed knowledge and possible expression of innovative ideas
- Reliable, secure and prompt use of virtual workplaces and knowledge pools
- Healthier, happier, co-existing motivated virtual teams

##### **(2) Possibility of exploiting technology as an agent of change**

- Effectiveness and efficiency improvements through mobile (location-independent) working environments
- Better, productive research, development and services delivery through close association with users (individuals, industrial bodies, governments, etc.) and their requirements
- Improved output quality of deliverables based on the best knowledge/practices
- Efficiency awareness and monitoring the sustainability of research and developments

##### **(3) Shared facilities, resources and knowledge (a virtualised team-based approach to virtual workspaces, support services and knowledge codifying systems)**

- Better workspace utilisation
- Reduced document and artefact storage
- Improved access to information, knowledge and virtual workspaces
- Reduced vulnerability to loss or abuse of knowledge
- Improved quality of services as knowledge is shared

(4) Ability of producing a more flexible work setting – enabling and supporting working away from the desk (traditional setting) as needed through virtualised access to workspaces globally

- Reduced demand for permanent desk and office space assigned to a specific person
- On demand virtual workspaces for supporting extended mobility
- Reduced travel time and cost
- More flexibility to respond to work demands
- Staff can achieve a better work/life balance
- Attract, motivate and retain the best people for the job globally
- Enhanced trust, relations and empowerment of people
- Better and improved service delivery

#### 4.4 Roadmap and path to standardisation of virtualisation

Virtualisation could become a catalyst for application integration. Different applications operating inside the same physical machine but within its own VM allow developers to move data or information between VM efficiently with required security and integrity. Each VM can run different OSs and include multiple of server/client products. This will enhance possible interoperability of services provided by multiple applications. Development platforms such as Chainbuilder ESB (Bostech 2007) and Open ESB 2 (CollabNet 2007; Sun 2007) are providing strong environments to fertile integration.

##### 4.4.1. Evolving from ITC to VT

Many OSs are committed to incorporate VT embedded in the future releases. Leading technology companies are agreeing on supporting each other’s products to be compatible as guest or enlightened OSs (e.g. Microsoft Longhorn server will support Novell Linux OS). Enhanced software for management, discovery, audit, load balance, fine tuning, etc. of virtual infrastructures and for managing physical to virtual relationship are in development (e.g. INSYTEK). These and similar developments will influence the user communities to adhere on emerging standards by moving from ICT to VT.

ICT to VT roadmap: Organisations who include IT within their strategic business planning process should evolve through the ICT to VT roadmap as given below.

ICT-Generic	ICT-Specific	VT-Generic	VT-Specific
Standardisation of physical computer hardware and networking operations	Modularised SOA for consolidation of resources and services	Virtualised infrastructure for strategic ICT deployment	Automated virtualised infrastructure for guaranteed business continuity and hands off operations

*Table 1. Organisation’s evolvment from ICT to VT*

##### 4.4.2 Time implication and standardisation of application integration

While the described virtualisation solutions for the future workspaces are highly suitable for the development of an appropriate collaboration, communication, knowledge management (data centre), and mobilisation system infrastructure the integration, development and the initial implementation could possibly take a lengthy duration. One would also take account of the delay of communities who are comfortable within ‘ICT-Specific’ stage of the above roadmap (Table 1) that require enough momentum (it may take a considerable time to make these strategic decisions) to move into ‘VT-Generic’ stage. Considering on a different point,

it is also highly likely that a development of a possible virtualisation ready stand-alone OS (further development of Xen technology, etc.) in the near future that could facilitate on multi-core processor technology and the best practices of current implementations of virtualisation technologies. Similar development provides efficient standardisation of technologies within e-infrastructures and but not limited to.

## Conclusion

Application of VT infrastructures to assist with virtual working environments of distributed communities has been analysed. Overwhelming benefits of virtualisation, variety of available products and technological consultants (e.g. BPR) have persuading communities to enter into the world of technology virtualisation. Analysis of virtualisation technology, state of the art, application and implementation frameworks, and generic roadmap of ICT to VT are discussed. Further research programmes focussing on performance measurements and implementation methodologies are detailed. VT should be considered as the next generation of ICT infrastructures that requires every community's concerted attention.

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# **Data Collection for Research in Applications of Information Technology**

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## **Introduction**

Data collection is an integral part of verifying concepts in any research. It is at this stage that the researcher's aim is to have primary source of data relating to a particular theory or framework under investigation. Data collection is related to the epistemological stance that influences the researcher's approach. Epistemological stance can either be that of positivism used in natural or pure scientific research where it is possible to control variables or interpretivism, where knowledge is constructed through social interaction. However, in social research such as the impact of information technology on people it is not possible to apply scientific methods of collecting data. This paper discusses challenges faced in collecting data about people as they use information technology. Some of the challenges that can be encountered are also presented along with possible solutions. In this paper the challenges posed by researchers collaborating in different parts of the world are also discussed. This will add to the understanding of collaborative research work by researchers in different institutions across the world, a phenomena that is on the increase as a result of internet growth. This work has demonstrated that data collection in organisation requires utmost care in negotiation skills. The researcher is marketing an idea to people who may not be interested in the issue under investigation and yet have relevant information to be collected.

## **Data Collection in Research**

Research can be defined as '...the creation of new knowledge using appropriate process, to the satisfaction of the users of the research' (Oates 2006: 7). Data collection is one of the stages in carrying out any research. However there are various types of data collection, for example, market research, opinion poll survey etc. These other types of data collection do not fall under research as often they lack systematic approach to how they are conducted. As Saunders et al. (2003: 3) pointed out data collection for research is done in a systematic and logical manner. Data collection is a fundamental stage at which a researcher collects data to verify concepts, test theory or model. It is from this data that new knowledge or answer to a problem under investigation will hopefully emerge.

The approach to data collection is related to the epistemological stance that the researcher adopts. Hence there is a clear distinction in the instrument and methods used to collect data. For scientific research which takes the objectivism stance, there are procedures to be followed in collecting data. This is because the objects of study in most cases involve inanimate objects that can be controlled for example, a laboratory experiment. However where these experiments may involve people and animals there are strict ethical consideration to adhere to (ESRC 2006), (Harris 1985). For non-scientific research or that which takes the interpretivism stance, it is very difficult to have control over objects of study. This is because these objects under investigation are living objects and have certain rights that must be respected, for example, people and animals. This research takes the interpretivism stance as it looks at human factors that may hinder exploitation of information technology.

For this research data, was collected from a sample of the population of Gaborone in Botswana as well as from employees of two Botswana government departments. The two

departments selected for the study have information systems in place; hence their employees have had exposure to use of computers. Data collection for this research was done in order to determine the following in Botswana government departments:

- Public perception on status of productivity.
- Status of employee relations among employees.
- User satisfaction with available information technology.
- Level of use of information technology.

### **Ethics in Research**

Research ethics is a set of principles that are meant to protect research objects be it human beings or any living object (ESRC 2006), (NAS 1995). In Botswana a research permit is required for any type of research. Research permit were obtained from two of the three departments contacted. Botswana research permit cover numerous issues such as funding, dissemination of publication of research results etc. The most important issue in the permit issued is that for any publication resulting from the research, a copy must be given to main research institution such as University of Botswana and Botswana National Library Services. This provides reference material for future researchers.

### **Research Themes**

The research variables were obtained from literature review on factors that affect use of information technology (DeLone and McLean 2003). The main research themes covered user satisfaction, employee satisfaction, contribution of information technology and level of use of information technology resources in a department. The other theme covered customer satisfaction with quality of service received from government departments. Customer satisfaction was the most important variable that gave rise to this research. Poor quality of service is often reported in the local media as observed by (Chakalisa 2006). There are no detailed studies to substantiate problems of poor service delivery in Botswana (Icegate 2006: 8). Poor quality of service in Botswana is interesting especially due to the fact that most of the government departments have developed information technology infrastructure (Duncombe and Heeks 2002) (Moore 2000) as compared to majority of African countries.

### **Questionnaire Development**

A set of questionnaires were developed for each of the research themes. Table 1 shows the main research variables for each theme. The main reason for using survey questionnaire was the nature of the research question being investigated as well as the time available. The research question is looking at social issues on the use of information technology. In order to address this, people's views and perceptions are required. While other methods would have been more appropriate for example observation, this would have taken long to get approval as a researcher would have been looked at as a time waster. It was difficult to get adequate time of participants for research purposes. Survey questionnaire were adopted as they can capture data quickly as participants response to pre defined options. The power of using survey questionnaire has also been observed by Foddy (1993) who wrote ' Asking questions is widely accepted as a cost-efficient (and sometimes the only) way, of gathering information about past behaviour and experiences, private actions and motives, and beliefs, values and attitudes (i.e. subjective variables that cannot be measured directly)' (Foddy 1993: 1). The main problem is that their number must be limited (Reid and Boore 1987: 40), (Saunders et al. 2003: 92). The research variables covered in the data collection instrument are as shown in Table 1.

Satisfaction				
Customer	Employee	User	Computer Status	Computer Functionality
Gender	Gender	Gender	Staff:Computer Ratio	Time Frame
Education	Education	Education	Cost	Computer Specification
employment	Fair Treatment	Computer Use Experience	Skill Development	Disk Space
government employees	Reward	Rate of Computer Use	Use	Internet Access
queuing	Direct Participation	Computer Training		
complain	Trust and Fairness	Computer Skills		
information technology	Commitment to Department	Computer Use		
Age	Employee Relations	Reliability		
internet	Motivation	Responsiveness		
	Citizenship Behaviour	Assurance		
	Age	Empathy		
		Age		
		Home Computer		
		Home Internet connection		
		Low home internet connection		

*Table 1. Research Themes and Variables for Data Collection*

Questionnaires were developed to cover all the satisfaction themes while semi-structured interview was used to cover the remaining themes of status of computing facilities and functionality. The development of questionnaire was an iterative process as it involved working with supervisor to check validity of the questions. Final questions were arrived at after several iterations feedback from supervisor. The only method of communication with supervisor was through email. Since email communication is not verbal there were times where it was clear that verbal communication remains the most effective means of communication. Also there is a time delay in sending and getting feedback which at times was lengthy. These are very interesting concerns which society has to face as the world becomes more and more a virtual world (Chidambaram and Zigurs 2001: 2). As the developer of the questionnaire, it is easy to fail to detect your own typing errors. A third party view is necessary to check for simple errors. The questionnaire was given to a group for testing and this resulted in further modifications. Paper-based questionnaire were developed. This required further time to arrange for their production. At the administration stage a repetitive question was discovered in one of the set of questionnaires.

### **Questionnaire Administration**

Questionnaires were administered in three main areas. For customer satisfaction the questionnaires were administered to selected areas of Gaborone. For employee and user satisfaction the questionnaires were administered to the head office of two government departments based in Gaborone.

### **Customer Satisfaction**

The administration of questionnaire took place at three locations, for customer satisfaction, the administration was among members of the public living in Gaborone. Gaborone is the

capital city of Botswana and had a population of 186007. The population is also fairly balanced in terms of gender with male being 91,823 and female being 94,184. according to (CSO 2001). Gaborone was selected as a case study because it has the best information technology infrastructure in the whole country, a phenomenon which is common in many African countries (Petrazzini and Kibati 1999: 36). A sample of the population of Gaborone was selected based on the localities of the town as were defined by the last population and housing census. The areas which were excluded were military locations, locations with less than 100 people and those outside the greater Gaborone area for example Phakalane suburb. This resulted with 90 localities to be covered. Using (Genesee 2006) the sample size of the population at 95% confidence level and marginal error of  $\pm 3$  was calculated to be 892. Using this sample size, the sample size for each of the 90 localities was determined to be 10. This means that in each locality only 10 people were asked to complete the questionnaire.

To cover the various localities of Gaborone in order to get the required sample size of 892 two research assistants were employed. The research assistant went on a two day training session to gain an understanding of what the survey was about as well as how to approach any difficulty they may meet during the house to house collection of data. The most important point that was emphasised to the research assistants was to respect participants and their property and that participants have the right to refuse to take part. The research assistants had to negotiate access and sell the idea of the survey.

A field training exercise was arranged where the researchers observed how the principal researcher conducted the survey. Each participant was also given the chance to practice. Corrections were made on the spot to help the research assistant. It also emerged during the practical exercise that the employment variable options did not cater for students. Gaborone has a fairly large number of students at tertiary institutions staying in private accommodation. As the questionnaires have already been copied, the way out was to request those who indicate to be student to write so under employment. This also had similarly effect on internet access as where a respondent was a student; their internet access was mainly at college. Where a respondent had no internet access was also missing. This was solved by requesting respondents to write these down. From the results of practical exercise it was apparent that the maximum number of people to be covered in a day was 40. This figure was arrived at by discussing it with the research assistants based on their experience during the practical day. This was also to allow for movement from one location to another. Where geographical areas were a distance apart, the principal researcher transported the research assistants to reduce travelling time. Research assistant worked week days Monday to Friday for a total of 10 days and had a fixed pay rate of P55 (about £5) per day. This rate is provided by the University of Botswana which funded the data collection exercise.

To monitor progress and detect any errors, brief meetings were held at the beginning of each day to plan for the work of the day and also discuss problems encountered and how to tackle them. At the end of each working day, principal researcher collected responses for that day and quickly looked through them to detect any immediate problems. Also random visit to the researchers were made to check their progress. Through this arrangement the principal researcher was able to monitor progress and maintain a certain degree of control. The biggest problem with the use of research assistants is that their involvement is for a short period of time and they are not accountable to the whole project. This was borne in mind when choosing research assistants to employ. The selection was based on reference received from their last place of employment.

## **Employee and User Satisfaction**

For employee and user satisfaction survey, although initially the plan was to choose three departments as case studies, research approval was only granted from two departments. The two departments which issued research permit were Department of Road, Transport and Safety (DTRS) and Department of Civil and National Registration (DCNR). Employee satisfaction covered all the employees in a department while user satisfaction involved only those who use computers. As almost every employee has access to a computer, the majority of employees were to complete both. However there were still some who do not use computers at all like registry sections. To reduce time spent completing the questionnaire by the employees, the two survey forms were issued on different dates.

Department of Road, Transport and Safety (DTRS) is under the Ministry of Works and Transport. It is responsible for registration and licensing of vehicles, issuing of drivers licences as well as safety and other transport related services. According to (DTRS 2007), in May 2007 there were 275 818 vehicle registered in Botswana. With a population of about 1.8million, this gives Botswana per capita of one vehicle for every six people. This far exceeds the figure for developing countries of 1 vehicle to 700 and is similar to that of developed countries (Swira 2006: 1). The high number of vehicles poses a lot of administration challenges and this lead to the development of the computer based information system. The department uses a computer based system called Vehicle Licensing and Registration system. This system has been in use for sometime and covers the entire country. The department has 25 offices and 4 agencies with postal services offices across the country. The department has its own website which is probably among the best among other Botswana government departmental websites. DTRS website goes beyond providing vital information and other descriptive statement of the department. It is possible to generate statistics from the website as well as download some information from it. For example it provides latest transport cost and routes for majority of areas in the whole country. The website is almost capable of providing forms to download or complete online, why this is not done is mainly due to political and administrative reasons and not for lack of technical expertise.

DTRS has about 269 computers installed among the 25 offices across the whole country. The head office in Gaborone has about 70 of the 269 computers. Each of the 25 offices has internet access and email facilities. All the computers can be remotely accessed from the head office in Gaborone for system maintenance and user support. Email is used as the main form of inter-departmental communication. The total number of employees in the whole country is about 450, of this figure about 120 work at the head office in Gaborone and the nearby three stations located within the Gaborone area to reduce congestion at head office.

Department of Civil and National Registration (DCNR) is under the Ministry of Labour and Home Affairs. The department is responsible for, among others things, registering all Botswana citizens aged 16 years and above. Registration of citizens uses a computer system called the National Registration System (Omang). This system has been in operation since 1998. The department also register births and deaths and produce birth and death certificates. This also uses a computer based system. Currently the department does not have its own website as compared to DTRS.

DCNR has 90 offices covering the whole country. There are about 200 computers distributed among the 90 offices. Head office in Gaborone has a total of 60 computers. The 60 computers at head office are distributed in such a way that 30 computers are in offices and the remaining 30 are in two data entry computer laboratories.

The two departments were selected as cases because they have had computer systems in place for a fairly long time. This offers the opportunity to find out their employees perceptions and views on the effect of such systems in their working lives. Other government departments are gradually implementing computer based systems as can be observed from tender jobs being advertised on Botswana government website (Botswana 2007).

Questionnaire administration in the two departments was done using two approaches namely, complete on the spot and deliver/collect later. Questionnaire administration in the two departments was done by the principal researcher as this required extra care and also the population of the sample was not very large.

For DTRS the method of complete on the spot was used. This approach has two major advantages. It offered the opportunity to check for incomplete sections. It also enabled face to face communication where the researcher was able to negotiate for time to be spent in completing the questionnaire. The main disadvantage with this approach is that it takes time, moving from office to office and also people feel pressurised to complete the questionnaire.

The second approach of deliver and then collect questionnaire later was used in DCNR. The main advantage with this method is that it gives participant time to think over their responses. However its main disadvantage is that very few people will have completed the questionnaire by the collection date. In most cases questionnaire were misplaced or people were not in the office at the collection date. Spare questionnaire must always be handy during collection time so that any misplaced ones can be replaced. Few questionnaires were completed on the completion date; hence the method does not have a very good response rate.

## **Results**

The response rate for the various questionnaires differs as shown in Table 2. Customer satisfaction was the best as it was possible to get the required number of the sample size. A system of forced sample size was used where a specific figure had to be achieved per location. Under this approach a researcher approaches participants to reach a particular target number, in this case 10 completed questionnaires per location. By nature people of Botswana are open and cooperative, it is considered rude to turn someone away from your house without talking to them. This cultural value facilitated access to private homes to have questionnaire completed. Each questionnaire was completed on the spot to avoid return journey. Also people had time to respond to questionnaire as they were under a free environment that they can control as compared to work. Another major factor is that English is an official language and is taught from primary school level; hence majority of the population can read and write in English. This has a significant factor as there was no need to translate questionnaire to native language, as meaning can be lost in translation. The problems associated with translation of survey questionnaire has also been observed by Behling and Law (2000: v) Botswana's literacy rate of about 81% according to (UNICEF 2006?), was illustrated by majority of participants being able to complete the questionnaire by themselves.

		No. of Responses			
		Employee Satisfaction		User Satisfaction	
Department	No. of Employees	No	Response Rate %	No	Response Rate %
DTRS	120	40	33	56	47
DCNR	70	24	34	25	36

Table 2. Response Rate for Employee and User Satisfaction

An open ended question was given to a sample of employees at various level of management for each department. This targeted 5, 10 and 25 people at senior, middle and below respectively. These figures were determined arbitrarily based on small population in each department of not more than 120 and also on the fact that it forms the pyramid structure of a typical government department. The response for these were very low compared to the survey responses; they were 7 and 9 for DTRS and DCNR respectively. The responses for these were low probably because this required participants to think instead of choosing and ticking boxes as in the survey, which can take time.

### Discussion

Numerous lessons have been learnt during this exercise of data collection. Questionnaire surveys although popular in social research, are not so popular with participants (Reid and Boore 1987: 40). It is probably their intensive use for various purposes that raise objection from participants as many people receive them in post, email and other places and are often asked to complete them (Gray 2004: 189). Customer satisfaction response was good as the intended sample size was achieved. This was made possible through the help of two research assistants and also they were distributed at homes where people were not often under pressure like in offices.

Employee and user satisfaction had low response rate of about 35%. It was difficult for participants, although willing to find time to complete the survey questionnaire. Botswana public service sector has currently introduced performance based reward system to encourage people to work productively. Hence every employee has target to meet. But of major concern was the time spent in meetings by employees at middle management and above. These meetings take time, and therefore participants were unavailable.

### Conclusions

Data collection in social research relating to information system requires patience and good communication skill. It requires diplomatic approach to negotiate difficult situations that may be encountered. Besides the number of questions in a questionnaire, the structure also counts. Where responses of questions are in tabular form, it is common to have double selection instead of single selection especially if the tick boxes are small. Also a survey question printed on both sides often lead to the underneath pages being missed by mistake. Where a double tick was encountered instead of a single tick, this was treated as no response as it is only the participant who can make the decision about this. Computer system are fairly new to majority of people especially in African countries hence further research is required to find out their diffusion into society.

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# **Industrialising the Construction Industry- A Collaborative Training and Education Model: Research Methodology**

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## **Abstract**

The UK construction industry has been the centre of criticism and debate for its poor performance since the early 1900's. Post-war regeneration and fragmented planning policies together with skills shortages exacerbated this situation.

Recently, the UK Government has embarked on 'construction manufacturing' initiative which aims among others to address and alleviate the construction industry skills shortage vis-à-vis capability and current and future skills requirements. However, although 'construction manufacturing' may (arguably) reduce the dependence on skilled labour it will still require other types of skills which need to be addressed and provided. Cognisant of this it is important to factor into this equation the collaboration between the construction industry and the UK's Higher Education establishments regarding addressing the 'apparent' skills gap/shortage.

This paper investigates an outline research methodology to facilitate the provision of professional skills for 'construction manufacturing' through the provision of a conceptual multi-disciplinary training and education model. This model will form the rubrics for collaboration between the construction industry and academia.

A triangulated exploratory research approach is suggested for this study. The research problem, research question, the selection of the target population, sampling and data analysis techniques will be addressed and investigated as part of this paper.

## **1. Background**

This section highlights the problematic characteristics of the construction industry, the strategic importance in respect of economy, political and social profile, and structure of the industry. This background sets the scene for the research methodology in the following section.

### **The Characteristics of the Construction Industry**

The construction industry has been criticised for its high levels of wastage and fragmentation; lack of value and investment in research and development (RandD); and poor information flow. This has been evidenced by several researchers; not least Emmerson (1962), Banwell (1964), Latham (1994), Evbuomwan and Anumba, 1998, Gonsález (1999), Koskela (2000), and Morton (2002); who reinforce these issues and cite these concerns as primary factors which adversely affect performance and productivity.

### **1.2 The Strategic Importance of the Construction Industry**

The construction industry is not only one of the oldest industries in human history, but also one that marks the history of nations. Over time, construction practices, methods and materials have evolved to fulfil nations' needs (Ngowi et al. 2005). The amount of raw material used in construction for creating and operating the built environment is argued to be

more than any other sector which accounts for an important consumption of natural resources (European Commission 2006).

In modern history, construction industry has been accounted for its contribution to nations' Gross Domestic Product (GDP) and its role in the development of the economy and nation wealth in general (Crosthwaite 2000; Pearce 2003; IRC 2003). Furthermore, the construction industry accounts for a high political and social profile, which is attributed to its key role in providing housing, its impact on environment, as well as being a major employer. According to Construction Industry Market Review (2006), UK construction output in 2005 was £107.01bn representing a rise of 4.5% from 2004. Construction Skills Network expects UK construction output to rise by 12.7% by 2010 (SSDA 2006).

There were an estimated 4.3 million businesses in the UK at the start of 2004; the majority of which (99.3%) had less than 50 employees; 26,000 (0.6%) were medium sized and 6,000 (0.1%) large. The size of firms across the UK is usually measured by the number of full-time employees or their equivalent (DTI 2005; SBS; 2006). The Companies Act of 1985, furthermore, defined the size of firms in respect of turnover and balance sheet (Table 1):

<b>Firm size</b>	<b>Turnover (mill.)</b>	<b>Balance sheet (mill.)</b>	<b>No. of employees</b>
Small	≥ £5.6	≥ £2.8	≥ 50
Medium	≥ £22.8	≥ £11.4	≥ 250

*Table 1. Firm's size band definition (SBS 2006).*

Cognisant to the different firms' size classifications, the UK construction industry in general is characterised as being 'heavily' skewed towards small firms. Nevertheless, in terms of value of work done, the industry is dominated by a small number of large companies (KN 2001; DTI 2004; Business Watch 2005). Pearce (2003) splits the construction industry into two 'strategic groups': a large number of small firms with little ability to influence the industry or invest in Research and Development (RandD); and a small number of large firms with increasing power and influence in the industry.

The UK construction industry is expected to have 2.8 million workers by 2010 with an average of 87,000 new recruits per year. A high demand for managers, clerical staff, architects, engineers, and other design and technical professionals is expected to rise. In this regard, the total number of 'white collar' workers needed by 2010 is forecast to be over 36,000 per year which accounts for almost 50% of the annual workforce requirement (SSDA 2006).

### **The Role of Training and Education in the Construction Industry**

Over more than 50 years research has been carried out and conclusions have been made identifying the means to improve the construction industry; nevertheless, little has been achieved (Koskela 2000). This may be, to a large extent, attributed to skills shortage as well as to the need for culture change to enable change and improvement to take place.

'Rethinking Construction' highlighted a 'crisis' in training, as the proportion of trainees in the workforce appeared to have declined by half since the 70s, which resulted in increased

concern about skills shortages in the industry. The poor image of the construction industry contributed to the difficulty to attract workers to replace the ageing skilled workforce and, furthermore, perplexes efforts to fill the gap of technical and managerial skills required to get full value from new techniques and technologies (Egan 1998). This is also evidenced in the construction skills council concerns regarding the shortfall in the number of professionally qualified workers in the construction industry. Criticism was that graduates are not prepared and have little understanding of how industry works in practice (Construction Skills 2006; Olcayto 2006).

Training and Education have been widely acknowledged for their crucial role to effect change in the construction industry. In this context, many initiatives have been launched recently e.g. NWDA (2004) and Accelerating Change in the Built Environment Education (ACBEE 2007) aim to encourage universities, industry and professional institutions to work together to improve dialogue and provide more relevant training and education for the future (CEBE 2007). In this respect, Wood (1999) reported on the 'considerable' scope for greater commonality in the education and training of the construction professions, and hence, introducing interdisciplinary training and education to the construction industry to enable greater collaboration amongst professions. Furthermore, Campbell (2001) stressed on the importance of combining technical skills with both business and personal skills to enable collaborative working environments. In the same context, Williamson III and Bilbo (1999) placed emphasis on administrating the construction technologies and the design/construct/manage interface than performing them, indicating that graduates are gaining acceptance in the industry as professional managers rather than skilled technologists.

### **Research Methodology**

This section addresses the research methodology that will be adopted to achieve the research aim and objectives. Furthermore, it elicits the importance of the research in addressing an under-researched area in respect of a collaborative training and education model to support the adoption and technology transfer of 'construction manufacturing' based on the required skills identified by the industry. The research strategy will be laid down through the identification of the problem, the research type, and methods of data collection and data analysis techniques (Figure 1). The targeted audience for the current research is also identified.

### **2.1 Context and Contribution to Knowledge**

Literature has attributed the problems of the construction industry to be mainly product and/or process related. Hence, research has been carried out to either address the quality, time, and cost of the product; and/or to improve the business process (e.g. Goulding and Alshawi 2002; Kagioglou et al. 1998). Other initiatives placed emphasis on the development of IT tools to integrate the supply chain, which are mainly to support the (new) business process. Although these initiatives and research projects have been acknowledged for achieving high quality results; Rezgui and Zarli (2006) questioned their impact and adoption by the industry.

Since the early 1900s debate has been and still is about skills shortages and skills gap in the construction industry along the different organisational levels (Morton 2002; CIOB 2006). Hence, firms are argued to, often, pass up opportunities in new markets due to lack of relevant skills. Consequently, the construction industry tends to lag behind other industries in taking advantage of new technologies and innovative practices. In this context, Wysocki (2004) and Aouad (2007) emphasise the importance of balancing between people, technology

and process for improvement to take place. This notion calls for the provision of adequate and relevant training and education to enable 'people' to adopt the new way of working and thinking.

Currently, the UK Government is embarking on Modern Methods of Construction (MMC) initiative to: alleviate the skills shortage, to meet the increasing demand of future housing, and to improve performance of the industry in general. 'Off-site Manufacturing' (OSM) (Goodier and Gibb 2005), 'prefabrication', 'construction manufacturing' are considered MMC. However, although MMC may (arguably) reduce the dependence on skilled labour, it will (undoubtedly) still require other and/or new types of skills which need to be addressed and delivered.

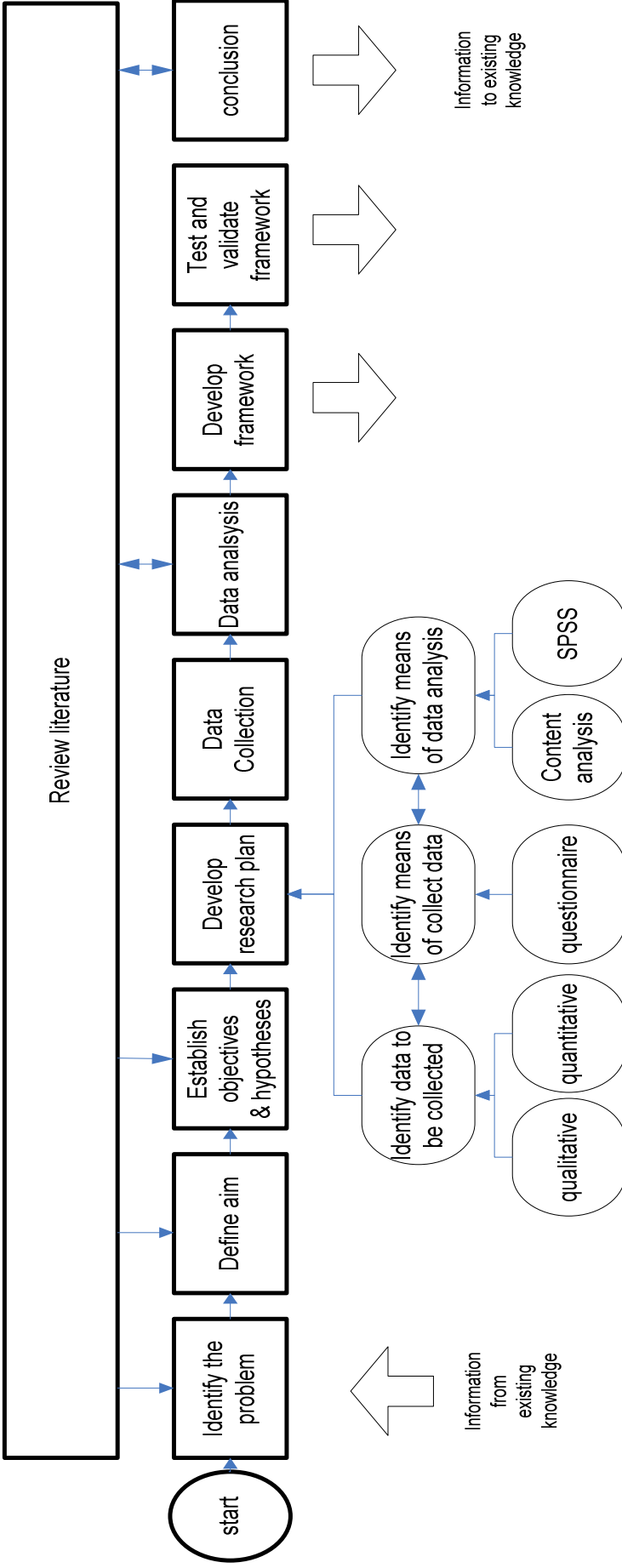


Figure 1. Research Process.

### **2.1.1 Contribution to Knowledge**

Modern Methods of Construction (BRE 2007; Gilkinson 2006) have been subject to numerous recent research initiatives. These initiatives were mainly concerned with benefits and barriers to the wider use of MMC by the construction industry in respect of time, cost, quality, sustainability, durability, finance, etc. (CABE 2004, NAO 2005). However, no previous research could be noted that addressed the delivery of skills required for a wider use of MMC. Hence, this research, by investigating the collaborative delivery of required skills for the wider uptake of ‘construction manufacturing’, is addressing an under-researched but of utmost importance to complement other studies in this field.

### **2.2 The Problem**

The construction industry’s poor performance may be argued to be, to a large extent, attributed to the lack of relevant and adequate skills. This shortage of skills inhibits the industry from adapting to the changing environment; is adversely affecting productivity; and is furthermore stifling innovation in respect of technology adoption in general and MMC in specific. Cognisant of this, it is important to factor into the equation the collaboration between the construction industry and the UK’s Higher Education (HE) establishments in respect of bridging the gap between current skills gap/shortages and future skills required for adopting construction manufacturing.

### **2.3 Research Aim and Objectives**

This research attempts to provide a common ‘language’ between academia and industry in respect of collaborative delivery of education and training for professionals to enable the adoption of construction manufacturing. This calls for identifying the type of skills required for construction manufacturing; bridging the gap and shortages of skills; and finally identifying features for effective industry-academia collaboration. The findings will inform the development of a collaborative training and education model.

#### **2.3.1 Research Aim**

The aim of this research is to develop a conceptual training and education model to facilitate the provision of multi-disciplinary skills to enable and support the wider use of construction manufacturing and, furthermore, to maintain a collaborative working environment between industry and academic institutions.

#### **2.3.2 The Research Questions**

In order to address the research problem and subsequently fulfil the research aim, two research questions have been identified to investigate the required skills as well as to explore the features that have the potentials to maintain successful and efficient collaboration between industry and academia.

Q1- What type of (professional) skills does the construction industry require throughout its supply chain that would support technology transfer of construction manufacturing?

Q2- What are the main features for an effective collaborative training and education model to support construction manufacturing?

The current research is addressing professional skills as opposed to operative skills. Drawing on from literature on skills shortages (CIOB 2006), the study is assuming that the professional skills required do not differ by discipline (are not discipline-specific); and that

these skills are crucial for supporting the adoption of construction manufacturing. Hence, the following hypotheses are constructed:

H1-The provision of professional (managerial/executive) skills along the supply chain, irrespective of discipline, is imperative for supporting technology transfer of construction manufacturing.

H2-HE institutions do not respond timely to construction industry skills needs in respect of construction manufacturing

These hypotheses will need to be tested later on in the study to provide evidence to support or reject the hypotheses at an appropriate level of confidence. The results of hypotheses testing aim at justifying the conceptual training and education model to be developed. The benefits of constructing hypotheses will be discussed in the section 'Hypotheses'.

### **2.3.3 Research Objectives**

In order to answer the research questions and consequently fulfil the research aim, it is essential to identify measurable objectives that the research will need to achieve. These objectives are regarded as milestones on the research journey.

- a. Analyse the need for change in the construction industry
- b. Examine the strategic importance of construction manufacturing as a potential competitive advantage
- c. Identify the skills required for adopting construction manufacturing
- d. Analyse the skills gap/shortages
- e. Investigate the role of training and education in the construction industry
- f. Investigate current and previous collaborative initiatives
- g. Develop a conceptual collaborative training and education model
- h. Test and validate the model with domain experts

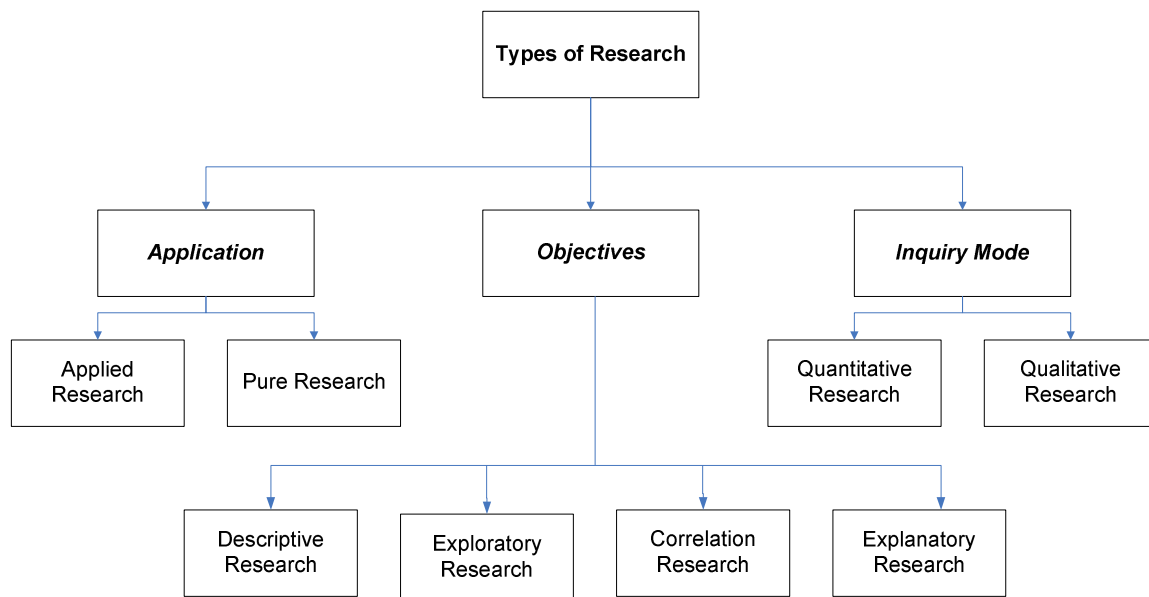
### **2.4 Research Strategy**

This section investigates the different research types, approaches, and styles to justify the chosen research strategy/style for this particular study.

#### **2.4.1 Research Type**

There is an agreement in literature about the different classifications of research: pure and applied research; quantitative and qualitative; instrumental, descriptive, exploratory, explanatory, and interpretive (Fellows and Liu 2003). Kumar (2005) further classifies research from three not mutually exclusive perspectives: application of the research study, the objectives in understanding the research, and the inquiry mode employed (Figure 2).





*Figure 2. Types of Research*  
(Kumar 2005).

Pure research (Figure 2) as explained by Kumar (2005) involves the development, examination, verification and refinement of research methods, procedures, techniques and tools that form the body of research methodology. Most research in the social science is argued to be applied, i.e. research techniques, procedures and methods that form the body of research methodology are applied to the collection of information so that information gathered can be used in other ways - such as for policy formulation, administration and the enhancement of understanding of a phenomenon.

From the view point of the objectives of research (Figure 2), a research can be descriptive, exploratory, correlation or exploratory. A descriptive research is describing a situation, problem, phenomenon, service or program, or describes an attitude towards an issue. Explanatory research, on the other hand, attempts to clarify why and how there is a relationship between two aspects of a situation or phenomenon. Correlation research is aimed at discovering or establishing the existence of a relationship/association/interdependence between two or more aspects of a situation. Exploratory research is undertaken with the objectives either to explore an area where little is known or to investigate the possibilities of undertaking a particular research study (Kumar 2005).

In respect of the inquiry mode of research (Figure 2), the choice of quantitative or qualitative mode of inquiry is depended on the aim of the inquiry i.e. exploration, confirmation or quantification, as well as the use of findings i.e. policy formulation or process understanding (Kumar 2005). Denzin and Lincoln (1994) distinguish between qualitative and quantitative research in that the former implies emphasis on processes and meanings that are not rigorously examined or measured, whereas the latter emphasise the measurement and analysis of causal relationships between variables within value-free context. Nevertheless, there is increasing recognition that both types of approaches are important for a good research study (Kumar 2005; McNeill and Chapman 2005).

The combination of quantitative and qualitative approaches in research is called 'triangulation'. The term 'triangulation' is borrowed from land surveying which is explained

as getting a better view of things by looking at them from more than one direction. McNeill and Chapman (2005) define triangulation as the use of multiple methods to cross-check and verify the reliability of the research tool and the validity of data collected. This involves the combination of qualitative and quantitative methods in the research.

The nature of this study, which encompasses the development of a training and education model, will require the identification of skills and needs of the different stakeholders across the supply chain; as well as the identification of main features for effective collaborative delivery of skills. The nature of the current research calls for a triangulated study. The quantitative approach will adopt a ‘scientific method’ for identifying the most required and common skills/needs for adopting ‘construction manufacturing’ across the supply chain. This is an attempt to draw inference between the independent variable ‘profession/discipline’ and dependent variable ‘skill’.

The qualitative approach, on the other hand will be employed for exploring the subject matter in order to gain understanding and collect information to inform the quantitative approach for inference and conclusion.

#### 2.4.2 Methods of Data Collection

The logic that links the data collection and analysis to yield results, and hence conclusions to research question(s) must be given critical consideration. According to Yin (1994) determination of the most appropriate research style for data collection is depended on the type of research question, the degree of control that the researcher can exercise over the variables involved and whether the focus of the research is on past or current events (Table 2). This argument is in agreement with Kumar (2005), who asserts that the determination of research style is dependent on the research purpose.

Style/strategy	Research question	Control of independent variable	Focus on events
Survey	Who, what, where, how many, how much?	Not required	Contemporary
Experiment/quasi-experiment	How, why?	Required	Contemporary
Archival analysis	Who, what, where, how many, how much?	Not required	Contemporary/past
History	How, why?	Not required	Past
Case study	How, why?	Not required	Contemporary

*Table 2. Requirements of different research styles/strategies (Fellows and Liu 2003).*

In order to identify the most appropriate style for the current research, consideration is given to the different research styles (Table 2) and the current research purpose. The current research is not concerned with carrying out experiments; and will not depend on archival analysis, as the archives may be developed for other purposes not necessarily related to current research objectives. Although it is important to investigate the history of the research subject matter i.e. construction manufacturing, in order to inform the current research, it is not the end goal of the current research. Furthermore, the current research does neither aim at understanding the uniqueness and peculiarities of a particular case in all its complexity, nor is searching for solution to the problem situation; hence, case study and action research (Welman et al. 2005) are not valid for the current research purpose.

Drawing on the research questions ‘what’ and the aim of the study; the current research will be focusing on contemporary events and requires a representative sample to be able to draw inferences. In addition, the current study does not require control of the independent variable, and does not require personal involvement of the researcher (Table 2, Figure 3). Hence, the most suitable research style for the current research would be ‘Survey’.

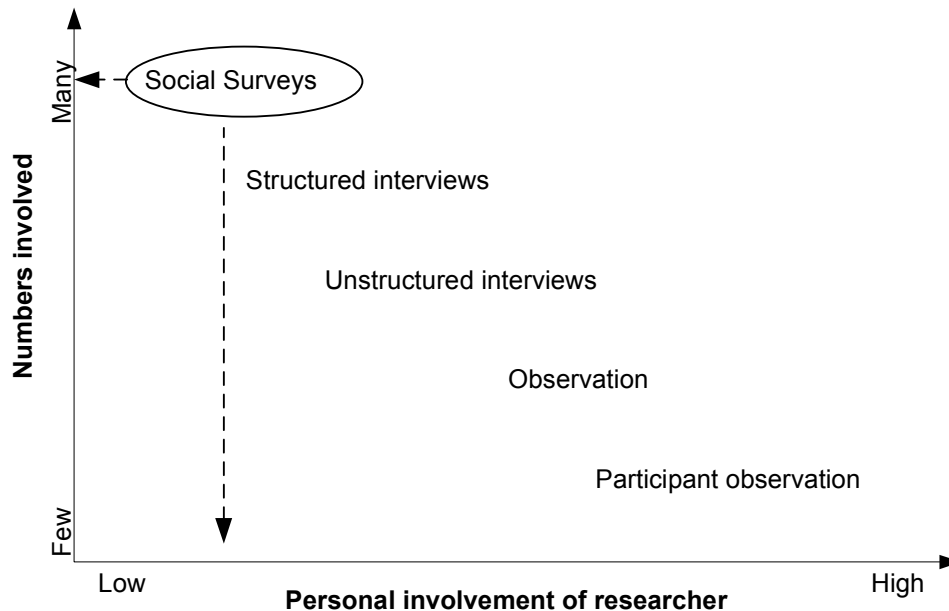


Figure 3. Methods of Data Collection (Worsley 1977).

#### 2.4.2.1 Positivism and Interpretivism Paradigm

Sexton (2003) differentiates between the different research styles according to two dimensions, namely epistemology and ontology (Figure 4). Epistemology as defined by Buckingham and Saunders (2004), is that branch of philosophy which is concerned with claims to knowledge i.e. epistemology asks the question: ‘How can we claim to know that something is true or false?’ Two paradigms have been identified on the epistemology axis: positivism and interpretivism. On the ontology dimension, realism and idealism paradigms have been identified.

The positivists define their approach as the study of observable human behaviour to uncover general laws of relationships and/or causality. Interpretivists, however, focus their research on the experiencing of human behaviour from the perspectives of people involved (Welman et al. 2005).

By locating the current research style on the positivism-interpretivism scale (Figure 4), it can be concluded that the current research style ‘survey’, is lending itself to the positivism-realism as opposed to interpretivism-idealism approach.

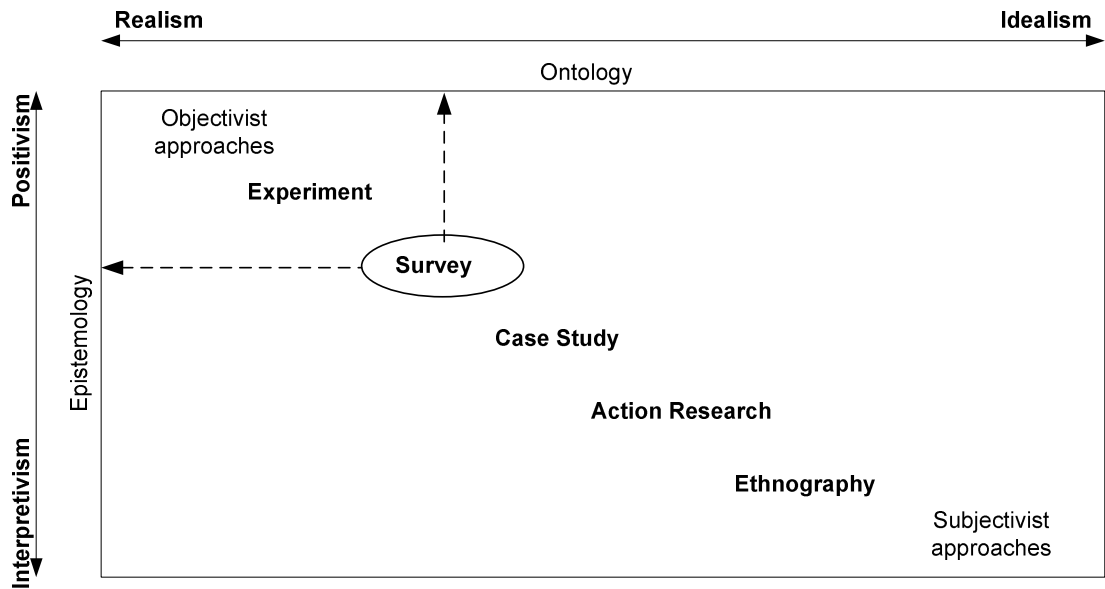


Figure 4. Dimensions of research styles (Sexton 2003).

#### 2.4.2.2 Hypotheses

Miller et al. (2002) depicted the positivist paradigm to start with a general theory or set of abstract concepts which can be applied to a specific situation in order to ‘deduce’ a likely relationship or a set of concrete phenomena in the real world through a process called ‘operationalisation’. Hence, a hypothesis is constructed and tested in the real world to see whether the expected association or difference actually occurs as expected. If the hypothesis is considered to have been supported, through a process called generalisation, it is induced that the general theory seems to have been confirmed in the real world (Figure 5).

Welman et al. (2005) define ‘hypotheses’ as tentative assumptions or preliminary statement about the relationship between two or more things that needs to be examined. According to Fellows and Liu (2003), it is important to draw on theory and literature to formulate hypotheses to be tested.

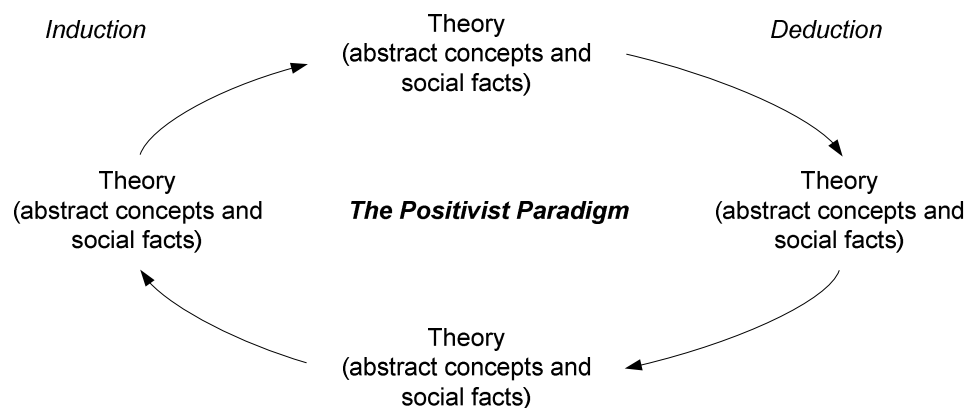


Figure 5. The Positivist Paradigm (Miller et al. 2002).

The hypothesis is argued to act as the focus for the work and one which helps identify the boundaries also. Although not agreeing that hypotheses are essential for conducting a research, Kumar (2005) acknowledged that hypotheses (Figure 6) bring clarity, specificity and focus to a research problem. Fellows and Liu (2003) emphasise the importance of testing the hypothesis as rigorously as possible. In testing hypotheses, evidence should be provided through results of the testing to support or reject the hypothesis at an appropriate level of confidence. The level of confidence is advised to be specified in the results to aid the appreciation of the conclusions and their validity.

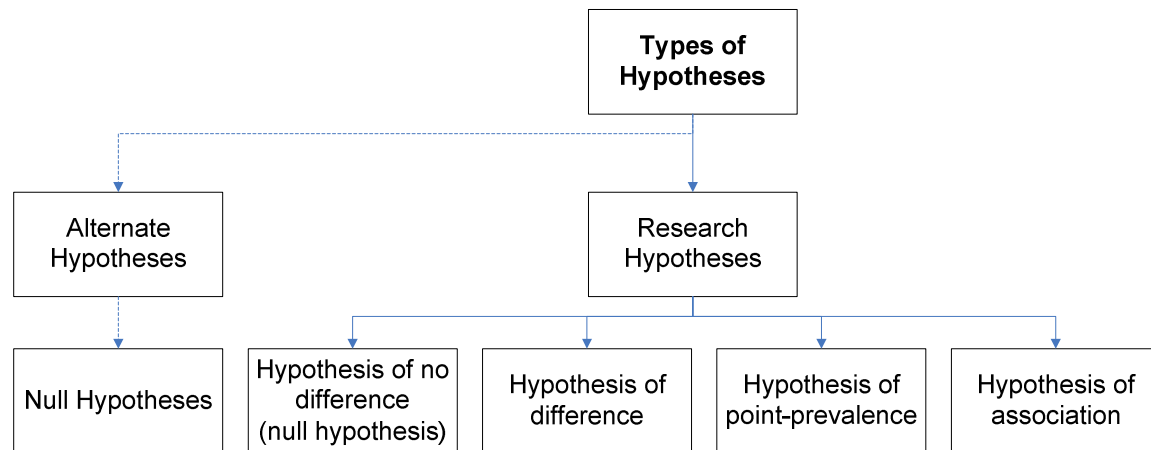


Figure 6. Types of Hypotheses (Kumar 2005).

In general, there is an agreement that hypotheses should be simple, specific and conceptually clear; capable of verification; related to the existing body of knowledge; and should be operationalisable i.e. can be expressed in terms that can be measured (Fellows and Liu 2003; Kumar 2005).

### 2.4.3 Surveys

Survey is a research method for obtaining large amounts of data from a large number of people using statistical techniques. It usually takes the form of self-completion questionnaire. Surveys are characterised as being ‘value-free’ as they are organised in a logical and systematic fashion via questionnaire design. If surveys are carried out properly, it is argued that the personal influence of researcher (Figure 3) would be minimal (McNeill and Chapman 2005; Fellows and Liu 2003).

Thomas (1996) resembled surveys with laboratory experiments in that they aim to collect data in a systematic way to make inferences from the results. This is in agreement with McNeill and Chapman’s (2005) argument that ‘surveys’ are highly reliable because of ease of replication and verification of data. Moreover, the survey produces large amounts of statistical information relatively quickly and cheaply and enables comparisons to be made. Notwithstanding these issues, surveys are aimed at large groups of people thus making them more representative of wider community/population (Figure 3).

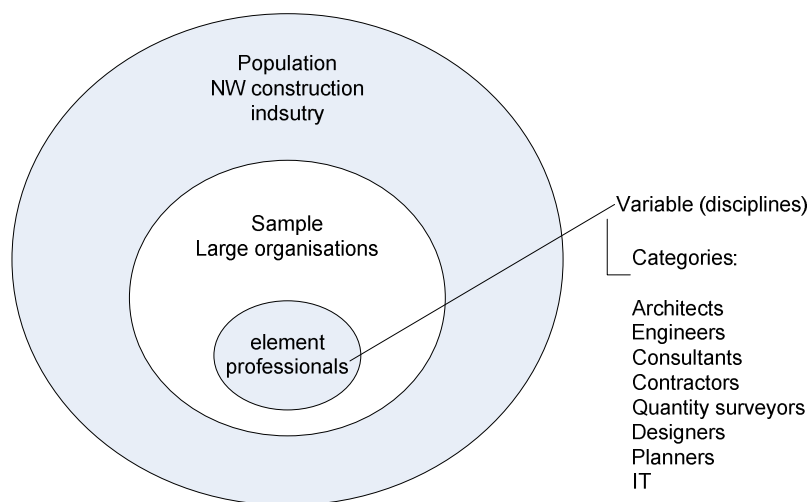
Surveys, however, are criticised for its low response rate (25-35% useable response rates), and hence not producing data from which results can be relied upon to support or reject

hypotheses and/or to draw conclusions. Furthermore, it is argued that self-completed responses are prone to bias and distortion, as respondents give answers which they believe ‘should’ be given rather than providing their ‘true’ answers (Fellows and Liu 2003; Buckingham and Saunders 2004; McNeill and Chapman 2005).

#### 2.4.4 Research Population

According to Welman et al. (2005), the ‘population’ is the study object. It may consist of individuals, organisations, human products and events, or the conditions to which they are exposed to. Hence, the term ‘population’ refers to all those who could be included in the survey. Decisions may be required to be made about who will be included and who will be excluded from the population. Furthermore, a population is likely to encompass a very large number of people which necessitate samples to be drawn (McNeill and Chapman 2005).

The current research question is concerned with the identification of the skills required by the construction industry supply chain stakeholders as well as the features for a successful collaboration between industry and academia. Hence, the targeted population encompasses both the UK construction industry and HE academic institutions. There are, however, regional differences in respect of the adoption and needs for construction manufacturing within the UK (Plus Group and Riverside 2005). Hence, conducting the research aiming at a target population of all UK regions will not be: first representative due to regional differences, and second will not be feasible taking into account time, resource and cost constraints of the current research. Hence the current research will be targeting the North West (NW) construction industry supply chain and NW academic institutions (Figure 7, Figure 8).



*Figure 7. NW Construction Industry Target Population*  
(adapted from Kendrick 2005).

Identifying the target population requires establishing clear and definite eligibility criteria. Eligibility or inclusion criteria are those characteristics that determine the eligibility for participation in the survey. By applying the inclusion and exclusion criteria to the target population i.e. removing those who fail to meet the inclusion criteria and those who meet the

exclusion criteria; the remaining represents a study population consisting of those who are eligible to participate in the survey (Fink 2003).

Applying the inclusion and exclusion criteria for the current research target population (Figure 8):

- Target population: NW construction industry supply chain
- Inclusion criteria: Large organisation (i.e. < 250) using OSM
- Exclusion criteria: Operatives

A list of large organisations using OSM in the NW region will be populated. This list will cover the different supply chain stakeholders/professionals (Figure 7), and then a representative sample will be drawn (see sampling techniques).

As for the NW target academic institutions (universities) a list of academic institutions has been populated from the North West Universities Association nwUa ([www.nwua.ac.uk](http://www.nwua.ac.uk)). Applying the inclusion and exclusion criteria (Fink 2003) for the current research population (Figure 8):

- Target population: NW academic institutions
- Inclusion criteria: relevant construction/built environment programmes
- Exclusion criteria: discipline-specific programmes (engineering, architecture, etc.)

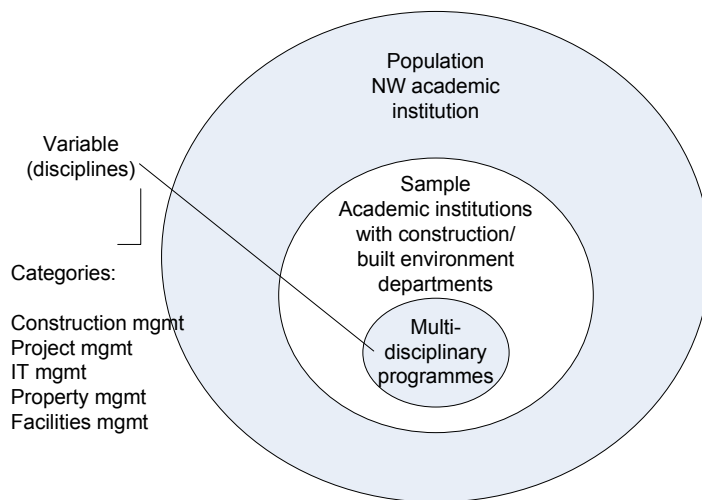


Figure 8. NW Academic Institutions Target Population (adapted from Kendrick 2005).

### 2.4.5 Sampling

Unlike quantitative research, in qualitative research it is argued that the process of sampling is of little significance as the main aim would be exploration or description of diversity in a situation, phenomenon, or issue; and not an attempt to either quantify or determine the extent of this diversity (Kumar 2005).

The objective of sampling is argued to provide a practical means of enabling data collection and processing components of research to be carried out, given an extremely large population. Nevertheless, consideration must be given to ensure that the sample provides a

good representation of the population. A ‘representative’ sample implies that the sample has the exact properties in the exact same proportions as the population from which it was drawn, but in smaller number (Welman et al. 2005). It may be necessary to constrain the sampling by e.g. considering one section of the population. This is called ‘structured’ sampling and requires a sample frame to be explicitly established; within which the sampling techniques will be applied (Fink 2003; McNeill and Chapman 2005; Kumar 2005).

### 2.4.5.1 Sampling Techniques

Kumar (2005) classifies sampling types as random/probability sampling, non-random/probability sampling, and mixed sampling (Figure 9). The current research will be investigating stratified and systematic sampling techniques. The size of the size of the population will determine the most suitable technique for the study. For more information about the different sampling types refer to (Kumar 2005; Fink 2003; Fellows and Liu 2003; Welman et al. 2005; Kendrick 2005).

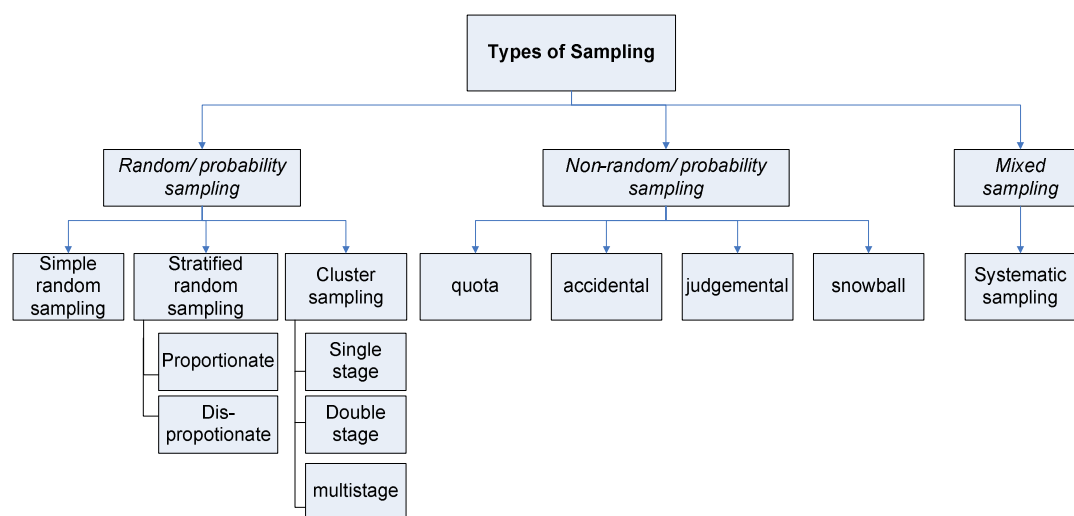


Figure 9. Types of sampling (Kumar 2005).

#### -Simple random sampling:

In simple random sampling, every subject or unit has an equal chance of being selected from the sampling frame. This type provides an unbiased sample. However, simple random sampling may not pick up all the elements in a population that are of interest.

#### -Stratified random sampling:

Stratified random sampling ensures getting adequate proportions of people with certain characteristics. Hence, the population is divided into subgroups, or strata and a random sample is then selected from each sub-group. Justification for the selection of particular strata can be derived from literature and/or from expert opinions.

#### -Systematic Sampling

To obtain a sample of  $n$  members from a population of  $N$  elements (that are numbered from 1 to  $N$ ) using systematic sampling, every  $N/n^{\text{th}}$  element is chosen for the sample (see e.g. Welman et al.2005; Kumar 2005).



#### **2.4.5.2 Sampling Units and the Unit of Analysis**

Welman et al. (2005) refer to the members or elements of the population as the ‘units of analysis’. These ‘units of analysis’ may refer to: humans, groups, organisations or institutions, products or outputs, and events which survey data are examined statistically (Fink 2003).

Cognisant to using ‘survey’ as the current research style (Section 2.4.3), the targeted population (Section 2.4.4), and sampling techniques and units of analysis (Section 2.4.5); the following can be summarised for the current research:

- Survey objective:
- identify the required skills for enabling technology transfer of ‘construction manufacturing’ across construction industry supply chain
  - identify features of effective collaborative training and education initiatives
- Sampling method:
- mixed sampling techniques
- Survey method:
- self-completed questionnaires
- Statistical analysis:
- to test whether the skills required for the uptake of construction manufacturing are common among the different disciplines/professions
  - to test whether HE address skills that may be relevant to construction manufacturing
- Sampling Unit:
- NW construction industry supply chain large organisations (<250 employees)
  - NW HE academic institutions
- Unit of analysis:
- professionals
  - Built environment programmes

#### **2.4.6 Data Collection**

Data collection is argued to represent a major milestone for any study which extends beyond a review of literature. The aim of data collection is to obtain an appropriate set of data which will enable the research to proceed with outputs reasonably close to the original intentions. Fellows and Liu (2003) describe a research project as a form of an information system encompassing inputs, conversion and outputs (Figure 10). Research outputs must be considered in terms of the aim, objectives and hypotheses, where relevant. So, whilst the outputs in terms of results, findings and conclusions are unknown, the issues which they concern have been determined to a large extent. Such information is argued to be available irrespective of the nature of the research project; whether it is a qualitative or quantitative study (Fellows and Liu 2003). Furthermore, Buckingham and Saunders (2004) emphasise the importance of justifying each item included for the data collection against the theoretical purpose of the research, regardless of research being primary descriptive or analytical.

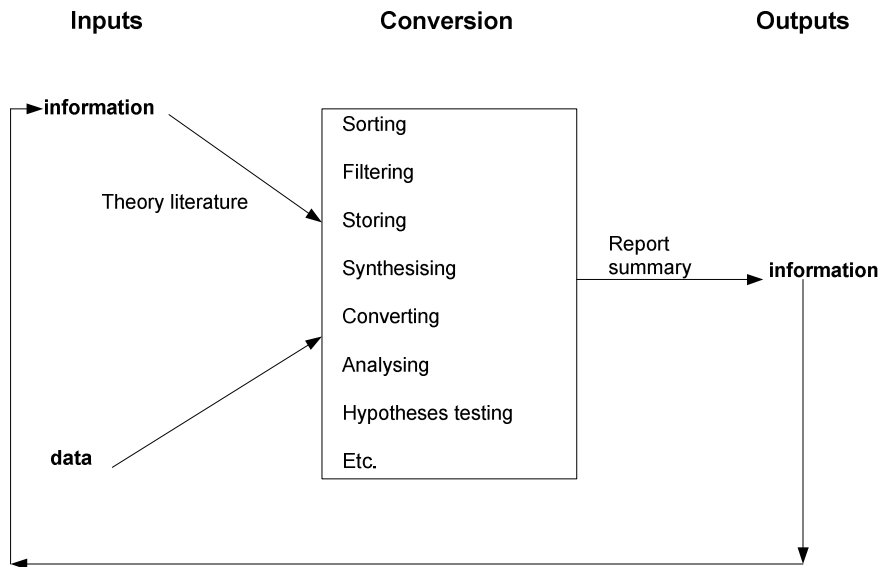


Figure 10. A Simple model of an Information System (Fellows and Liu 2003).

### 2.4.6.1 Methods of Data Collection

Kumar (2005) illustrates two major approaches for data collection, namely: secondary and primary data collection (Figure 11). Whereas information gathered using the former approaches is said to be collected from ‘secondary data’, whilst the sources for the latter approach are called ‘primary sources’.

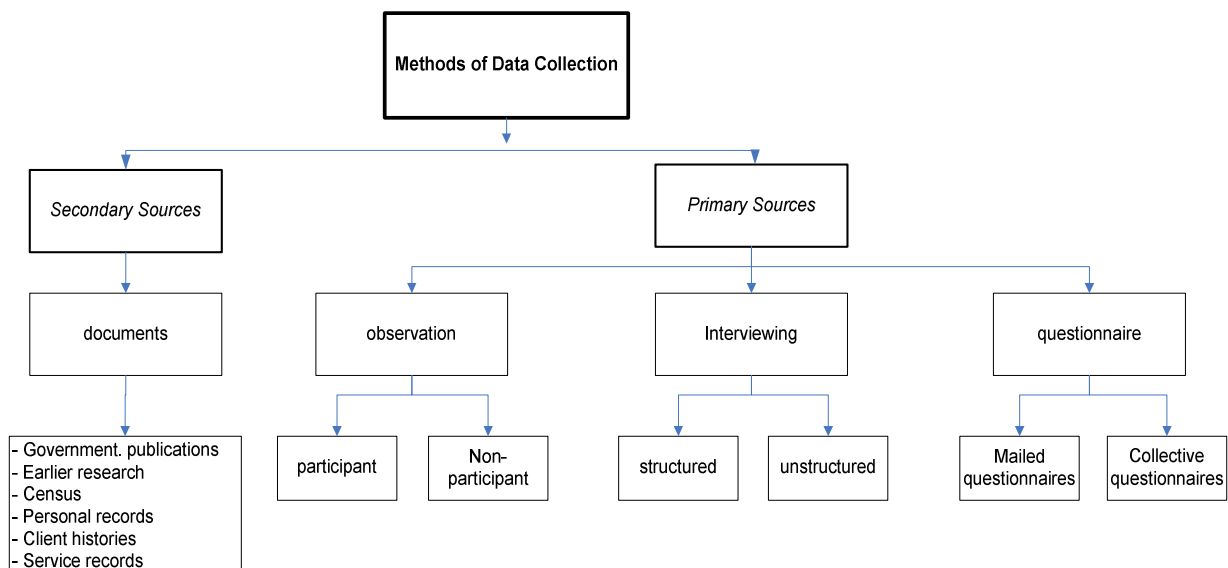


Figure 11. Methods of Data Collection (Kumar 2005).

Secondary data sources encompass collecting data from various documents: e.g. Government publications, earlier research, records, etc. As for primary sources for data collection, data may be collected through observation, interviewing, and/or questionnaires (Figure 11).

The current research will employ both secondary and primary data collection approaches. Secondary resources will include previous research done in respect of OSM, reports and surveys carried out by NWDA (2004), CITB (2005), CIOB (2006), *ManuBuild* research project (<http://www.manubuild.net>) etc. The primary sources for data collection will mainly be data collected through mailed questionnaires, but unstructured interviewing may be considered. The inclusion of both approaches for data collection minimises the risk of low response rate of questionnaires and enables data triangulation (Denzin 1989) and reduces threat to validity (Padgett 1998).

#### **2.4.6.2 Validity**

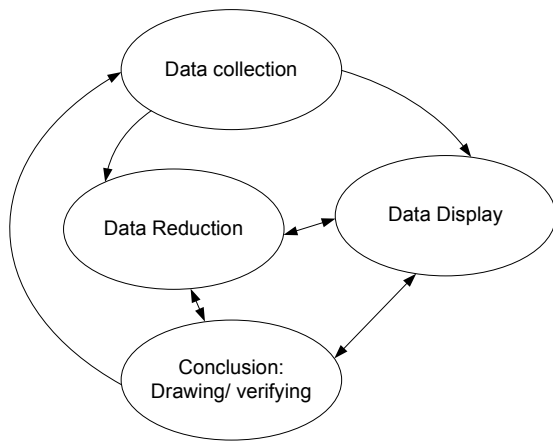
According to McNeill and Chapman (2005), validity refers to whether the data collected is a true picture of what is being studied. Validity is also defined as the ability of an instrument to measure what it is designed to measure; hence, evidence needs to be established for the validity of a research instrument. Establishing validity may occur through logic evidence, which implies justification of each question in relation to the objectives of the study. Furthermore, statistical evidence may be established by calculating the co-efficient of correlations between the questions and the outcome variables (Fellows and Liu 2003; Kumar 2005; Welman et al. 2005).

#### **2.4.6.3 Reliability**

The method of collecting evidence is reliable, when anyone else using the same method, would come up with the same results. Any method in a situation that cannot be repeated is argued to be in danger of being thought unreliable (McNeill and Chapman 2005). In the same context, Welman et al. (2005) relate reliability to the credibility of findings. Furthermore, Fellows and Liu (2003) differentiate between external reliability and internal reliability. External reliability is concerned with the consistency of a measure over time, while internal reliability demonstrates whether each scale is measuring a single variable. Yin (1994) emphasise the importance of making all research steps as operational as possible as if someone is auditing the study.

#### **2.4.7 Data Analysis**

Huberman and Miles (1998) define 'data analysis' as a combination of three linked sub-processes: data reduction, data display, and conclusion drawing/verification (Figure 12). Where 'data reduction' involves data summaries, coding, finding themes, clustering, and writing stories are all instances of further data selection and condensation; while 'data display' involves organisation, assembling of information to permit conclusion drawing/and/or action taking; and 'conclusion drawing and verification' involve interpretation by drawing meaning from displayed data.



*Figure 12. Components of Data Analysis* (Huberman and Miles 1998).

Fellows and Liu (2003) argue that data analysis involves searching the data collected to confirm themes and categories found in the theory and literature, furthermore, discovering differences in the data from what theory and previous findings suggest.

Due to the current research nature encompassing both qualitative and quantitative data, qualitative and quantitative data analysis techniques will be employed. Content analysis will be employed for the qualitative data analysis, while SPSS will be employed for quantitative analysis. The results from the qualitative analysis will be compared with those from the quantitative analysis to draw conclusions.

The quantitative analysis aims at:

- testing the hypotheses identified
- identifying common skills requirements
- identifying the main features for effective industry-academia training and education collaboration in respect of construction manufacturing

The results of the analysis will inform the development of the collaborative training and education model.

#### **2.4.8 Target Audience**

The current research is expected to yield a comprehensive common language for discussion and examination in respect of ‘construction manufacturing’ provision of crucial skills. It is anticipated that the results will be of considerable interest to policy makers, practitioners, and trainers/educators in both the construction industry and academia. The expected results will enable the establishment of priorities for actions and resource allocation. It is also envisaged that the expected results will inform the development of training/education plans and workforce development initiatives.

In UK considerable regional and local variation exist in many dimensions of the demand for and supply of skills as well as in the extent and nature of skills shortages/gaps. While this research is concentrating on the NW construction industry, the approach for skills assessment and training and education model development can be adopted by regional and local agencies who undertake their own skills assessment.

The results of the current research, may furthermore, be considered as a benchmark against which the results from other local and regional assessments can be made in respect of skills demand and supply for construction manufacturing. Notwithstanding these issues, the results may act as a catalyst for regional skills supply collaborations.

### **Conclusion**

The construction industry is of strategic importance to the UK. Nevertheless, the industry is criticised for its poor performance and its inability to adapt to the changing environment in general and to adopt technology in specific.

Literature attributed the problems of the construction industry to be, mainly, product and/or process related. Hence, research has been carried out to either address the quality, time, and cost of the product; and/or to improve the business process (e.g. Goulding and Alshawi 2002; Kagioglou et al. 1998). Other initiatives placed emphasis on the development of IT tools to integrate the supply chain, which are mainly to support the (new) business process.

Although, the different initiatives and research projects to improve the construction industry have been acknowledged for achieving high quality results, their impact and adoption by the industry remains questionable (Rezgui and Zarli 2006; Koskela 2000).

Drawing on Literature (e.g. Egan 1998; Construction Skills 2006; Olcayto 2006; Wysocki 2004; Aouad 2007; NWDA 2004; Morton 2002); the current research is arguing that skills shortages/gaps evidenced in the construction industry represent a key barrier for improvements to take place in the construction industry.

Currently, the UK Government is embarking on Modern Methods of Construction (MMC) initiative to: alleviate the skills shortages, to meet the increasing demand of future housing; and to improve performance of the industry in general. However, although MMC may (arguably) reduce the dependence on skilled labour, it will (undoubtedly) still require other and/or new types of skills which need to be addressed and delivered.

MMC have been subject to numerous recent research initiatives. However, no previous research could be noted that addressed the delivery of skills required for a wider uptake of MMC in the UK construction industry. The current research aims at developing a collaborative training and education conceptual model for delivering construction-manufacturing-as an MMC-required skills. Hence, this research is addressing an under-researched but of utmost importance to complement other studies in this field.

The current research will attempt to answer the following two questions:

Q1- What type of (professional) skills does the construction industry require throughout its supply chain that would support technology transfer of construction manufacturing?

Q2- What are the main features for an effective collaborative training and education model to support construction manufacturing?

The two questions will be addressed and answered in light of two hypotheses:

H1- The provision of professional (managerial/executive) skills along the supply chain, irrespective of discipline, is imperative for supporting technology transfer of construction manufacturing.

H2-HE institutions do not respond timely to construction industry skills needs in respect of construction manufacturing.

A triangulated approach is suggested for the current study. The qualitative approach will be employed for exploring the subject matter in order to gain understanding and collect information to inform the quantitative approach for inference and conclusions.

The current research will be focusing on contemporary events and requires a representative sample to be able to draw inference. Furthermore, the study does not require control of the independent variable (profession), and does not require personal involvement of researcher. Hence, the most suitable research style was found to be 'survey'.

'Survey' is a research method for obtaining large amount of data from a large number of 'people' using statistical techniques. It usually takes the form of self-completed questionnaires. Surveys are characterised as being 'value-free' as they are organised in a logical and systematic fashion via questionnaire design. Nevertheless, surveys are criticised for its low response rate, and hence not producing data from which results can be relied upon to support or reject hypotheses and/or draw conclusions. Furthermore, it is argued that self-completed responses are prone to bias and distortion.

The triangulated approach in respect of data collection and analysis is aimed to alleviate the effect of the low response rate and bias that may occur during the study. The results of the analysis will enable answering the research questions; will enable the support or rejection of hypotheses, and will help justify the conceptual training and education model.

The targeted population encompasses the UK construction industry and HE institutions. However, due to regional differences in respect of the adoption and needs for construction manufacturing; time, resource and cost constraints, the research will be targeting the NW construction industry and NW HE institutions. Stratified and systematic sampling techniques will be investigated for adoption in the current study. The size and nature of the population will determine the most suitable sampling technique.

The expected results will be of considerable interest to policy makers, practitioners and trainers/educators in both the construction industry and academia. The results will enable establishment of priorities for actions and resource allocation.

It is also envisaged that the expected results will inform the development of training/education plans and workforce development initiatives.

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# **Merging Sexes: Gender Differences in Work-Family Conflict Considering Time Pressure and Structural Working Conditions**

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## **Abstract**

This paper analysed the impact of working conditions on work and family interface among 167 workers from two big public companies dealing with national civil defence (n=67) and higher education (n=100). Specifically, we have considered the additive influence towards incrementing work-family conflict (WFC) of a number of structural working conditions. Working conditions were clustered in two big groups of work-family demands, that is, (1) time-pressure (frequent trips, working days/hours per week, home-work distance, flexible work schedule, work turnover, and having to work on weekends), and (2) hierarchical pressure (labour promotion, moonlighting, organizational position, experience, money income, and type of contract). We resumed data obtained using self-report measurements on personal and organizational status and WFC based on Carlson, Kacmar and William (2000). As the literature has been confuse on these relationships (White 1999; Brannen and Nilsen 2001; Barnett and Gareis 2002; Rau and Hyland 2002) the mediated influence of employee sex and the work-family balance phase are also analysed. Because the gender role socialization in women is said to be inadequate for work performance (Dexter 1985; Babin and Boles 1998) we expected clearer and stronger relationships between structural working conditions and WFC among women rather than men. Even more, sex differences in the emergence of WFC through various working conditions is understood at the light of multiple role literature (Gutter, Repetti and Silver 1988; Barnett 1999; Wethington, Moen, Glasgow and Pillemer 2000). Therefore, our latest results indicate that women suffer higher WFC than men when working conditions are related to time rather than hierarchical pressures.

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## **1. Introduction**

The emergence of dual-income couples on recent post-industrial scenarios is forcing new relationships among family and organizational members. The fact for men and women of getting in charge of duties and responsibilities from both work and family domains should motivate us to distribute time, effort, and energy with equilibrium by changing values and personal interests throughout negotiation processes. In order to do so, we must identify working conditions and understand their demanding nature as they are considered important antecedents of work-family conflict (WFC) and other stressful outcomes (such as spillover or crossover effects).

Traditionally, work antecedents have been divided into structural and psychosocial variables (Peiró, Prieto and Roe 1996). Structural work-variables antecedents deal with relatively static, most quantitative demands in work-family domains such us number of working hours of a worker or number of children in a family. On the contrary, psychosocial work-variables antecedents depict more dynamic, qualitative demands normally related with social interactions (e.g. supervisor's style, organizational climate, autonomy at work). This division should be perceived inside a continuum dimension of static-dynamic demands. Nevertheless,

both set of factors are said to affect individual's well-being and emotional states (Hughes, Galinsky and Morris 1992).

For instance, Jones and Butler (1980) once found that employees with monotonous tasks suffered from more stress and WFC. On the contrary, there seem to be higher empirical evidence on the fact that complex, highly demanding positions would be positively related to WFC (Jones and Butler 1980; Pleck, Staines and Lang 1980; Greenhaus et al. 1989). Individual differences among reacting to stressful working conditions such as resistance or intelligence may be explaining these facts together with the known curvilinear association between level of stress and productivity. In general, as working demands appear to increase for the employee then the more difficult it seems to achieve them together with family demands. Consequently, we would expect higher WFC or lower work-life well-being as much upper position we achieve at organizations.

Working demands assigned to a job position may also vary in relation to the nature of its content and working processes. The complexity of this nature is normally ascribes through the temporal aspects of the work. Time is a crucial factor at work as it is used to rationally organise our work by giving a sense of advance to our tasks. Following a dimensional approach to temporal working aspects (Staines and Pleck 1983), the impact of time in working setting is usually analysed in three dimensions: amount of time, scheduling, and flexibility. It is broadly accepted that higher amount of time (days per week or hours per day) will contribute to interfere with other domains because time is a limited resource (Young and Willmot 1975; Sorensen, Pirie, Folsom, Luepker, Jacobs and Gillium 1985; Almeida, Maggs and Galambos 1993; Bruck et al. 2002). That is, the time that we dedicate to work is time not devoted to family duties. However, the literature shows unclear relationships between work-time and satisfaction or well-being (Hughes, Galinsky and Morris 1992). The impact of time on these variables may be mediated by gender and family negotiation among members.

Due to gender role definitions, working women may be stressed when they have to spend more hours at work, specially when they are young children at home, but they may maintain well-being feelings if they choose socially accepted strategies to attend family duties (babysitters, partner's contributions, and so on). This is true only taking for granted that increases in time devoted to work is associated with economical rises.

The impact of time aspects at work also depends on the type of working hours/days distribution. According to the deprivation framework (Barling 1990), the longer a worker (especially female) is away from home, the greater the negative effect of WFC. Therefore, turnover, night-jobs, time-stressful activities, moonlighting, and having to work on weekends may increase WFC and affect worker's well-being (Shamir 1983; Kelly and Voydanoff 1985; Voydanoff 1988). On the contrary, there is evidence of lower satisfaction at work and higher stress among women with part-time jobs (Hall 1986; Backer 1993) or even among teleworkers. Temporal or psychological proximity of work and family demands may cause individual problems to concentrate on each of them properly. Nevertheless, the perception of a flexible worktime seems to mediate between the working scheduling and WFC. In this sense, when a worker is able to control and organise his working activities he/she is prepare to prioritize and delegate according to his/her needs (Christensen and Staines 1990; Adams and Jex 1999).

Finally, spatial demands of work may also be perceived as stressful sources for workers. Labour mobility is a special worry for dual-income couples as they are sometimes forced to

choose between their respective jobs in order to avoid separation. If the couple accept a new emplacement for one of the members it may cause problems to re-start work for the other one. Frequent travels or work-home distance may also be related to WFC because family duties are exclusively assigned to one member (Greenhaus and Kopellman 1981; Gracia, Gonzalez and Peiró 1996).

The general purpose of this study is to acquire more insight into the predictive value of certain work-related variables on to work-family interface in order to redesign working conditions or modify member's attitudes towards work-family interface. We have adopted a quantitative approach to the analysis of work antecedents which places interest on objective features of working conditions rather than on worker's perceptions and subjective reactions towards them. Gender and work/family centrality will be considered as important mediated variables on this study.

## **2. Method**

### **2.1. Sample**

In accordance with most of work-family research we have obtained a sample of 167 participants sending surveys to the whole staff belonging to (a) a national civil defence department (39.5%) and (b) to a high educational faculty from the University of Sevilla (60.5%). The original response rate was 26% and 45%, respectively. However, the final sample only included individuals that fulfilled the common requirements in this matters; (1) Be 18 years old or over, (2) Work at least 20 hours per week, and (3) Be living with a partner who also works 20 hours/week or more-dual-income couple (Greenhaus et al. 1989). The sample had 79% men most of which were religiously married (74.4%). The average age of the participants were 38.8 (SD= 7.89) similar to their partners, 36.9 (SD= 9.11). The children rate per family was 1.3 (SD.94). Respondents occupied high (9%), middle (15.6%) and low (73.7%) organizational positions.

### **2.2. Measures**

Socio-demographic variables were obtained using multiple-choice questions that referred to work antecedents (time-related, emotion-related and space-related variables among others), and family antecedents (marital status, family size, years of common life and family stage).

Work-family centrality was measured using Lobel and St. Clair (1992) mono-item scale of work-family salience. Respondents had to define themselves choosing from a graduated 5 point answer from 'I primarily consider myself as a family person' up to 'I primarily consider myself as a working person'.

Work-family conflict (WFC) was measured using Carlson, Kacmar, and Williams (2000) scale consisted in 9 items that rated along a five-point frequency scale from 1 (=never) to 5 (=always). The item contents include perceptions of work-family incompatibilities due to time (3 items), strain (3 items), and behaviour (3 items) matters. Internal scale consistency obtained in the present study accounted for a coefficient alpha of .83.

### **2.3. Procedure**

The representativeness of the samples was not considered because attention was paid to internal variable relationships with little intention to generalised results. Therefore, accidental mailing or hand-out of the selected questionnaires was done to those workers that matched mentioned criteria. The average response feedback was of 43% after a 2-week period delay.

### 3. Results

Table 1 provides summary measures for variables in the analysis comparing between men and women. We show weighted percentages or means of the variables with standard deviations in parentheses. According to our sample, men compared to women seems to attend higher organizational positions, with better working contracts the majority of which were inside a tenure track post. Men also appeared to travel for business more often and perceived near promotion opportunities at a greater extent than women. However, women showed higher educational level than men although this fact was not reflected on salary differences.

VARIABLE (value)	MEN	WOMEN
<i>Age (mean)</i>	38.01 (7.51)	39.02 (8.51)
<b><i>Organisational position (Managerial)</i></b>	67%	33%
<b><i>Study level (1-4)</i></b>	1.7 (.90)	2.32 (.85)**
<b><i>Income (1-4)</i></b>	1.54 (.83)	1.64 (.73)
<b><i>Permanent contract (4-1)</i></b>	1.53 (.88)	2.01 (.99)**
<b><i>Work experience (years)</i></b>	12.5 (7.75)	14.16 (7.42)
<b><i>Work days per week</i></b>	5.31 (.77)	5.29 (.64)
<b><i>Number of working-hours per week</i></b>	39.0 (8.57)	37.31 (6.87)
<b><i>Work-home distance (in km)</i></b>	13.07 (25.21)	8.27 (15.2)
<b><i>Moonlighting</i></b>	.98 (2.81)	.93 (3.4)
<b><i>Business traveling</i></b>	1.68 (4.9)	.34 (.89)*
<b><i>Time devoted to work</i></b>	53.5 %	52.2 %
<b><i>Flexitime Option</i></b>	26.7 %	16.4%
<b><i>Oblige to Turnover</i></b>	18.7 %	12.7%
<b><i>Oblige to Work on weekends</i></b>	33 %	30%
<b><i>Chance of near promotion</i></b>	27.9 %	10.3 % **

Table 1. Descriptive statistics for variables in analysis.

Note: Contrary to ‘Permanent contract’, for variables with 1 to 4 values, the higher number, the greater the analysed concept. Results of correlations and contingency analysis between the study variables and WFC considering for sex are shown in Table 2 (below). As far as WFC concerns, its level decreases as women grow up and gain work experience but it arises as they attend high organizational positions or work more hours. In the case of men, they suffer from higher WFC as they struggle with long working hours, higher positions, demanding contracts, moonlighting, turnovers, and near promotions.

Multiple regressions were used to assess the potential relationships between the predictor’s variables and WFC criterion variable, for men and women separately. As shown in Table 3a, flexitime, turnover, moonlighting, organizational position, and type of contract were the unique statistically significant variables to explained WFC levels in men ( $F=3.78$ ,  $p<.01$ ). No other variable was found important in this first equation whose variables explained 75.2% of

total variance. Therefore, men's WFC perception seem to deal with strain-related working conditions that weaken men's energy and effort to tackle both work and family demands. On the other hand, women's WFC levels were explained by the presence of working-hours per day, work on weekends, and the salary. These variables that accounted for the 25.5% of the total variance had more to do with time-related variables (see Table 3b).

<b>VARIABLE (range)</b>	<b>MEN</b>	<b>WOMEN</b>
<i>Age</i>	-.005	-.296*
<i>Org. Position</i>	6.1%**	3%
<i>Study level (1-4)</i>	.033	-.286
<i>Income (1.4)</i>	.142	-.180
<i>Type contract (4-1)</i>	70.6% *	42.0 %*
<i>Work experience</i>	.070	-.264*
<i>Work days p.w.</i>	.435**	.226
<i>W-hours p.w.</i>	.547**	.452**
<i>W-H distance</i>	.024	.193
<i>Moonlighting</i>	.263*	.013
<b><i>Business traveling</i></b>	.106	.013
<i>Flexitime (1-2)</i>	47.3 %	36.2 %
<i>Turnover (1-2)</i>	33 % **	30.4 %
<i>Work on weekends (1-3)</i>	58.5 %	53.6 %
<i>Chance of near promotion</i>	50% *	23.2 %

Table 2. Correlations and contingency analysis between variables and WFC, considering for sex.

These initial results encouraged us to consider a dual approach in the study of WFC, considering both quantitative and qualitative variables. Consequently, two work-family fit variables were created to analyse the psychological consistency of the respondents both alone and in their relationships.

Variable	Beta	B	t	p
Flexitime	-.777	-.450	-3.04	.006
Turnover	-1.60	-.423	-2.56	.018
Moonlighting	.152	.067	2.271	.033
Organizational position	-4.06	-1.86	-4.22	.000
Type of contract	-3.25	-2.2	-4.59	.000

Table 3a. Regression analysis for predictive variables and WFC, men cases (n=94).

Firstly, we classified cases of work-family centrality (family, work, and both domains) and dedication devoted to work (work-biased and family-biased) variables clustering the conditions (6) in two groups: personal coherency (e.g. family centrality and time devoted to family) or personal incoherency. Results showed that respondents inside personal incoherency conditions suffered from higher WFC ( $F=11.38, p<.01$ ).

Variable	Beta	B	t	p
W-Hours/day	-.777	-.450	-3.04	.006
Salary	-1.60	-.423	-2.56	.018
Work on weekends	-4.06	-1.86	-4.22	.000

Table 3b. Regression analysis for predictive variables and WFC, women cases (n=73).

Secondly, we crossed work-family centrality variable of both respondents and those of their partners and made 3 groups out of 9 conditions referring to (1) totally balanced couple (e.g. both members stated work and family salience), (2) partially balanced couple (e.g. only one expressed work-family salience), and (3), no balanced couple (e.g. both members stated work centrality). As it was expected, those cases in the totally balanced couple showed lower WFC levels ( $F=9.18, p<.01$ ).

#### 4. Discussion

The present research has tried to analyse the impact of certain working conditions on WFC. We can conclude that this influence must consider sex variables. Therefore, men seem to be more affected by strain-related variables such as organizational position, moonlighting, and near promotions rather than time-related variables. For women, WFC is primarily a perception of not having time to achieve demands from both domains. These concepts may be related to the 'male culture' of time according to which no time concessions must be allowed towards any sphere rather than work (Lewis 1997). What we found is in line of White (1999) who stated that WFC were perceived by men sequentially rather than in parallel

as it seem to be in women. Consequently, women tend to look for available time to attend responsibilities from both domains while men would spread their effort throughout time along their duties. This fact is also stated by Comas D'Argemir (1995) as she distinguished between two different ways of time perception among men and women. Therefore, men would have a segmented perception of time that allows them to separate work from family duties while women would use a continuous perception of time as a process of their role socialization.

Another important reminder in this study is associated to the concept of work-family fit referred by others as perception of role balance (Marks and McDermid 1996, Voydanoff 2004). We have then found support for the need to get involved working conditions that allow us to develop our work/family centrality in quantity and quality. This is a matter of having the chance to choose the type of working conditions one would prefer most something that for the vast majority is just a luxury. Even more, this work-family fit operates within the worker and within the couple in the sense that both members have got to coordinate themselves to balance their mutual lives. These couples, called acrobats by Hall and Hall (1980), have appeared in this research as the ideal one to lower WFC levels.

Nevertheless, the overwhelming confusion in relation to these antecedent variables may be explained as an effect of certain mediated variables. Among these, gender is probably the most commonly referred by researchers. Androcentric cultures have traditionally forced women to attend non-paid roles and therefore being considered as 'second category' citizens. Access to complete education and total freedom was something frequently denied for women forty or fifty years ago. Although this situation has changed drastically men are still looking for and developing themselves in tenure track positions with higher working demands. They seem to be engaged in careers rather than jobs. Contrary to Wallace (1997), and Bielby and Bielby (1989), no differences were obtained in relation to working-hours (around 40 per week) neither to time devoted to work between sexes (both men and women are said to balance their time among work-family duties).

At the light of these results, we must admit that social desirability may be influencing these outcomes as a mean to protect self-esteem or to shelter (normally, men's) informal economy. In this sense, we encourage different methodology in future WFC studies that could avoid self-report measures in order to better describe the complexity of work and family interface context.

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# **A Fuzzy Logic Approach to Property Searching in a Property Database**

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## **Abstract**

Finding a place to live is an important event for everyone. There are many options the buyer has to go through. There are many estate agencies with huge amounts of properties for sale or rent. To find the right one becomes complicated, time consuming and is often frustrating. Common methods for searching based on price are not enough. They produce results that may fit a user's criteria, but tell nothing about the suitability of a particular result. The aim of this paper is to show an application of fuzzy logic theory to searching for properties. The comparison between commonly used pricing methods of contemporary property portals and the fuzzy method will be discussed. The fuzzy approach will be presented in which the search portal could mark every available result with a score based on all of the requirements the user has and then sort the results according to that score.

## **Introduction**

Having shelter is the oldest need of people from prehistory. People build houses to protect themselves against weather dispositions like rain, wind, cold etc. But having a place that could be called 'home' is a psychological thing too. Everyone needs to return to somewhere where they feel comfortable and safe. It may appear that to get a home is easy, but it's not. In fact getting the right home is very difficult and it requires many things to be done before successful moving in could be performed.

Seeking a new property starts with specifying requirements for that property. There are many attributes of property that could be specified. It includes a price, area, number of bedrooms etc. Every person has different needs and resources. The second step in obtaining the new property is to search for it. There are many possibilities of how to do the search. First is to go to the estate agent and specify the requirements and ideas. They will then try to find suitable properties for the client and offer them. Then the client will view the particulars of the properties and could visit them and if the property is satisfactory they could start to negotiate about the price and attributes of a contract. The second choice the client has is to search for the property by themselves. There are many internet portals which offer a large number of properties from all around the country. The client enters criteria and portals gives results that fulfil them. But there are two things that the client must go through. First the results can be sorted only by one of the property attributes (price, area, number of bedrooms, etc.) and not by suitability for the client and the second is that the search engine is not weighting the preference of some attribute above others. This approach is sufficient for those clients who know exactly what they need and no variations are possible. Those are able to find suitable properties quickly and then evaluate them one by one to find the right one. For others, which is the majority, this approach means a lot of time spent going through results and evaluating them manually. The search cannot be narrowed without the loss of possible good matches, because all of the listed results meet the specified search criteria and if it's narrowed by including another criterion it will cut out those that don't meet it.

A way to solve this problem is to create a semi-intelligent search engine, which is able to search a database of properties and sort results by suitability for the individual client. This could be met by using fuzzy logic algorithms in searching. The client will assign a weight to every criterion, which means assigning it priority (e.g. ‘three bedrooms are the most preferred, but two will be fine too’). This approach is able to mark every property according to the client’s criteria and as a result there is a list of properties sorted by overall suitability, which is the most important feature for the client.

### Overview of the Property Market

Property markets differ from one country to another. Some countries don’t separate public properties and commercial properties, others do. Some prefer personal selling over impersonal approaches. Instead of all these differences at the heart of the property markets are properties. Taking Europe as an area of interest there are very similar types of properties in most countries, and because of that they have the same attributes. The significant attributes of properties for the property market are:

- Type of offer (to sell, to rent)
- Type of property (house, flat, etc.)
- Style of property (detached, semi-detached, etc.)
- Price
- Area (London, Prague, Munich, etc.)
- New or resale
- Number of rooms (all types or bedrooms only)
- Area (165 sq m)
- Periphery (garden, garage, etc.)

In every country in a selected region these attributes count. The only thing that differs is the relevance of each property attribute to the people of the target country. To represent these differences two different property markets have been selected: England and the Czech Republic and the differences in relevance attributes of the properties in each country are shown. The attributes in Table 1 are sorted by relevance from the most important for the local people to less in descending order.

English property	Czech property
Location	Type of property
Number of bedrooms	Price
Price	Area/Location
Type of property	Number of rooms (all of them)
New or resale property	Price
	Area (Sq m)

*Table 1. Main attributes of properties.*

Attributes shown in Table 1 are the main attributes by which available property is being searched. It shows that there isn’t the same number of attributes for the selected countries. This is correct, because in England people don’t care about the overall area in sqm, but in the Czech Republic this attribute is significant. There are a few attributes like that, but not as many as could be expected. This preliminary investigation shows that in both countries (and many others) it is possible to use a search tool based on the same set of attributes, but with the possibility of specifying its preference of each attribute to suit particular needs and local habits.

### The Need for a Good Search Tool

There are a lot of properties on the market today. It means many options for a potential buyer. However finding the right one is difficult and requires a good method for searching. To be possible to search through all properties there is the necessity to look deeper at the property details and analyze possibilities of how they can be searched more effectively.

Every property has defined attributes. The potential buyer has requirements for a property specified as a list of attributes, so there is a match between input units and the units used for searching. But specifying just the attributes is not enough. The buyer has a list of attributes the property should have, but there are many properties that will suit these requirements. Something is still needed to narrow the search. The current approach is sorting the results by one of their attributes. This is not narrowing of results, because there is still the same number, but it gives them priority. The buyer may prefer a low price against the number of bedrooms etc. But this is still not a good approach. This gives priority to one attribute only. The others are still counted as the same lower priority. Moreover it doesn't tell anything about the global suitability of the first listed property in the sorted list of results.

What it is needed is to weight every attribute the buyer cares about and based on them mark the results with a score and then sort them by it. This approach accommodates every requirement the buyer has and is able to produce much more suitable results. Schema of this approach is shown on the Figure 1.

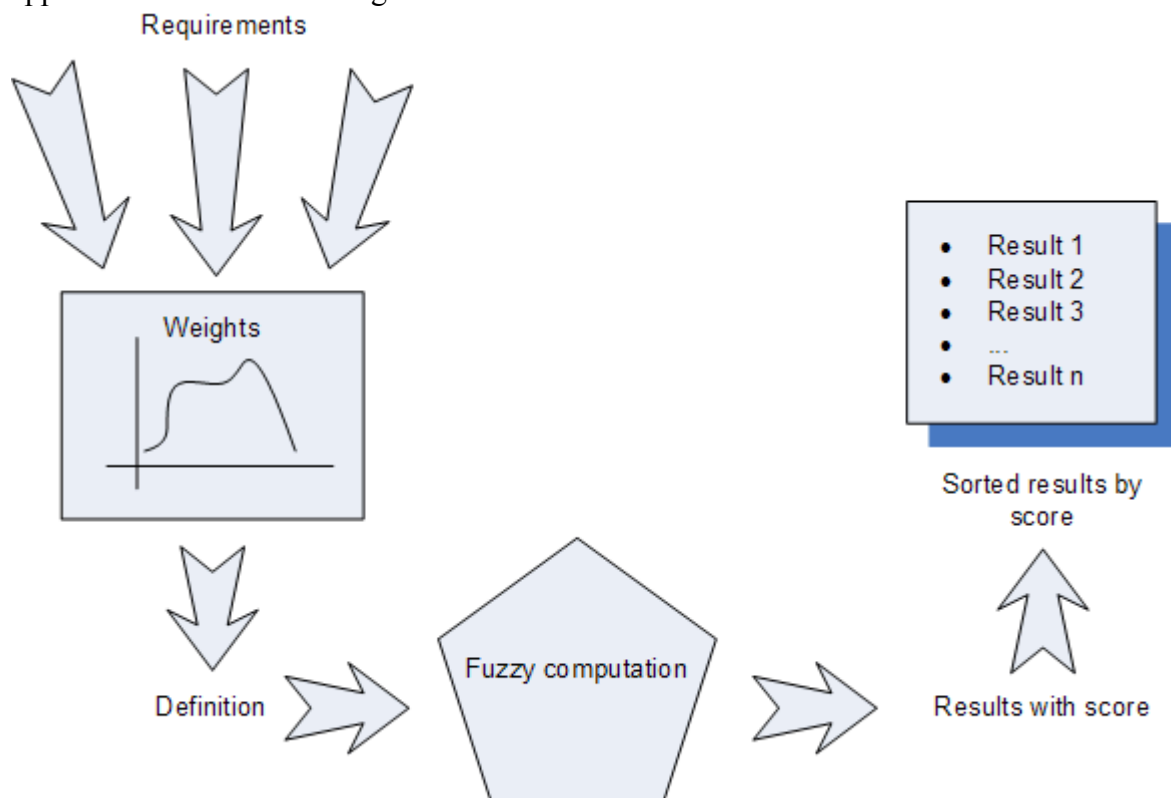


Figure 1. Projected approach.

### Disadvantages of the Currently Used Approach

The contemporary approach to searching is based on hard criteria selection and then ranking by one of those criteria. This gives results that suit the hard criteria the user set, but nothing more. The user must still go through the results one by one and do comparisons. Every good

search engine has this feature. But they are only able to sort the results by one criterion only. It means the user can only give preference to one criterion over the rest. But real life is more difficult than this. The user has a whole set of preferences and another set of criteria, which doesn't matter (e.g. 'I want three bedrooms no matter what, but there needn't be a garage and garden'). Those requirements cannot be taken into account in contemporary properties search engines.

Figure 2 shows that the most used approach enables the client to find the right property, but it is a matter of time, a lot of separate calculations and decisions.

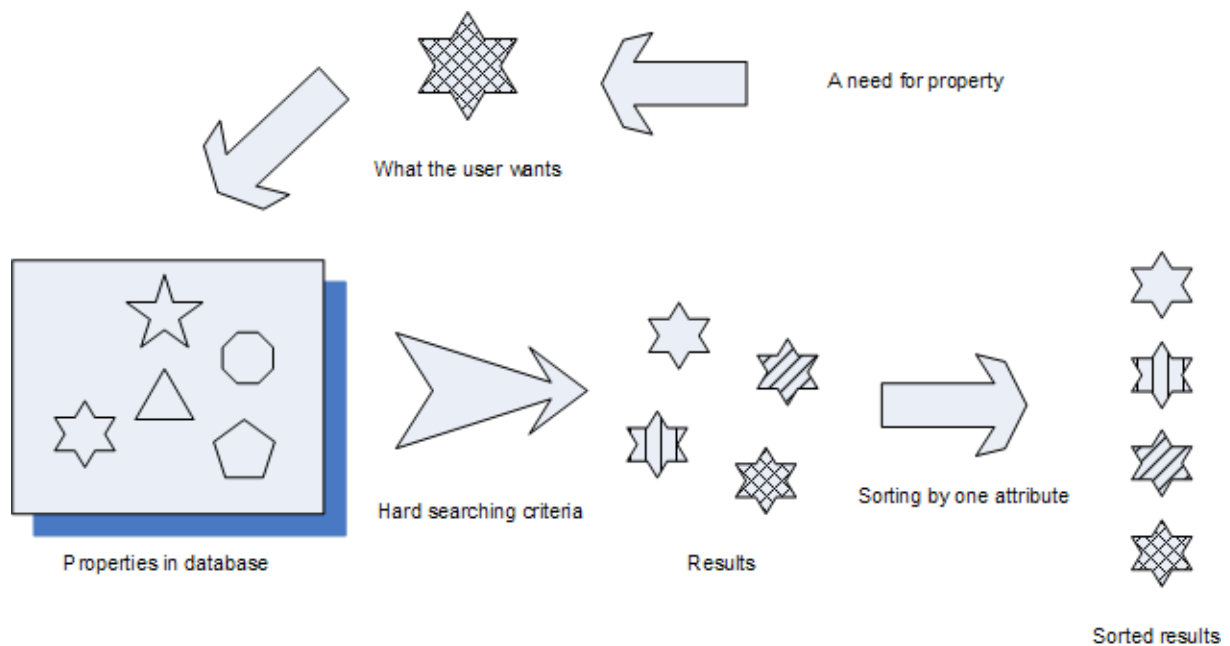


Figure 2. Contemporary approach to property searching.

### Advantages of the Fuzzy Approach

To be able to establish if the proposed approach is effective and has any advantages there is the necessity to know what the target state should be. The ideal process of searching for the new property must be defined. The client has a need of a new property. This starts by putting together requirements for it. Some want a small detached house; others prefer a flat in a busy city quarter. The client then will seek out estate agencies and their stock. The most common and the fastest method of offering products these days is over the Internet. The client starts using property portals. Criteria and requirements for property are defined to the portal and in about a second one property, which is perfect for him, is presented.

The projected fuzzy logic approach is half way between the current approach and the described idealised one. It's able to sort the results in a way that the user should see the most suitable property in the first position and not as a 'one of many' hidden somewhere between others. In this case the probability that the client misses an ideal property is very low (it depends on how accurately the users of the search engine specify their conditions and preferences). Figure 3 present this approach.

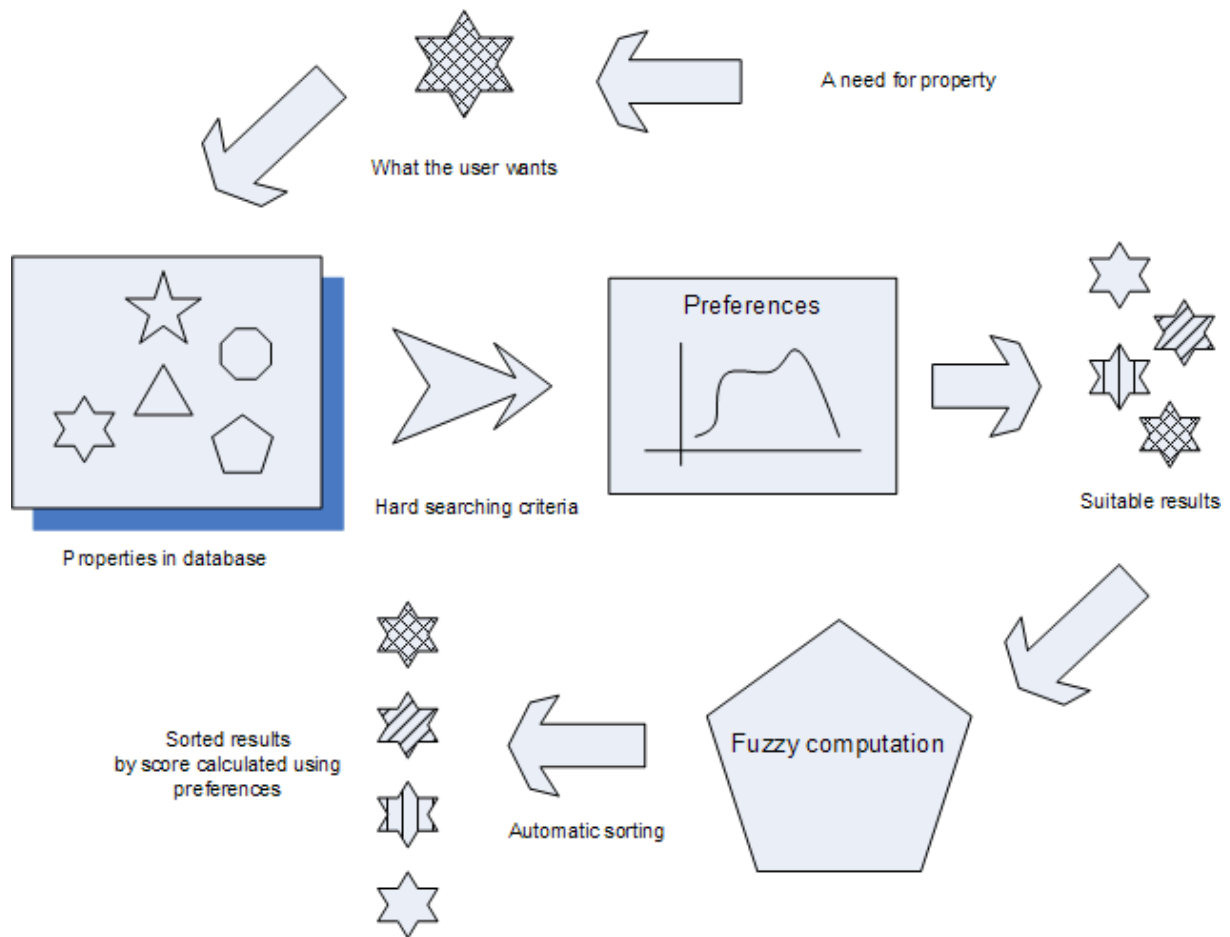


Figure 3. Fuzzy approach to property searching.

### Test Methodology

Theory is always good but the practical application is the real test that would help in solving a particular problem. To show an advantage of the outlined approach the comparison between it and the current ordinary approach has to be done. As a criterion for comparison the time needed to find a specific property will be taken. There will be a limited number of properties inputted into the test database and requirements for the property will be set so that only one property will be ideally suitable, but several properties will suit the basic hard requirements in order that there is a possibility to choose from them. The sequence of the test will be:

- Assemble the list of requirements for the property. The list will be ‘soft’ specified as linguistic variable;
- Transform that list to attributes. Calculate value and weight for each of the requirements;
- Put the requirements to the system as an input;
- Let the system search the database and show results;
- Go through the results and evaluate each of the properties in the order they are sorted;
- Confirm the time at which the user selects the property that suits him the best.

This test should give realistic conclusions if the fuzzy logic approach is the right way and is usable to enhance and speed up finding a suitable property.

To evaluate the suitability of using fuzzy logic to empower the search engine the MathWorks MATLAB will be used. MATLAB is a tool of MathWorks Inc. to quickly build and test mathematical algorithms and models. It’s a hi-level programming language with a graphic user interface. It contains many prebuilt functions for specific problems called Toolboxes.

There is a Fuzzy Logic Toolbox to aid evaluating fuzzy problems. This toolbox will be used as a test environment. It contains the necessary functions to operate with fuzzy logic problems.

### Conclusions

To find the right property is essential. The majority of people can afford only one property in their lifetime which points out the significance of having a good search tool for that task. The contemporary approach to searching through property database is not enough. To find good results the client has to spend a lot of time evaluating results one by one, which is frustrating and time consuming. Contemporary search systems are capable of sorting the results by only one attribute. This requires further manual evaluation by other attributes and client's preferences.

The semi-intelligent search system with the use of fuzzy logic has been presented. It is capable of giving a list of properties sorted by suitability based on the totality of the client's preferences. The client sets attributes that they require and then set preferences for them. The system will calculate a score for every property that suits the basic hard requirements and will then sort the results by that score. The score means suitability for the individual client. The client will get the list of the best options from available stock. The lower the position the property is on the list the less suitable. This approach is timesaving and moreover it eliminates the possibility that the client misses a good deal, which is very possible in the contemporary approach.

It is the intention of the author to use this idea for further research and testing in his doctoral thesis.

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# The Madness of Love in Edmund Spenser's *Amoretti*

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In 1595, the poet Edmund Spenser published his sonnet sequence or love poem entitled *Amoretti*. As the title implies, the poem is influenced by the Medieval courtly love tradition which articulates idealised love in the form of a knight who desires a Lady of nobility. It will be argued, however, that the Lady obstructs the true nature of the Lover's desire. This notion that the Lady obstructs the Lover's desire modifies Denis de Rougemont's (1963) argument that within an ideal of courtly love 'the passion of the two lovers *creates obstruction*, [and] we see that this obstruction is what passion really *wants* – its true object' (De Rougemont 42). I propose that in the sonnet sequence, Spenser's Lover attempts to redefine the courtly love code of conduct, so that the Lady is no longer the object of the Lover's desire. The endpoint for this passion is not fulfilment but arguably death (De Rougemont 1963: 44). Passion denotes the suffering required by the courtly love ideal that is relieved by the Lovers' desire for death. Maurice Valency (1982) states that in Dante Alighieri's *Vita Nuova* the new life represents death as it frees the Lover from sexual desire (Valency 266-267). Through his sublimated love for Beatrice, the Lover becomes closer to God, so that eventually Beatrice becomes superfluous to the Lover's spiritual needs.

In order to identify this psychological pattern in more detail, Jacques Lacan's psychoanalytic concept of *jouissance* will be applied to the first quatrain of *Amoretti*. According to Lacan, *jouissance* is structured by language and recalls a transcendental trauma in the subject's development. This trauma is mythical because *jouissance* exists in order to be refuted, as its denial also gives the subject pleasure. The subject's recognition of *jouissance* is accompanied by the associable perverted or masochistic phantasies. It arguably can be described as being madly in love with oneself, or the limit at which pain and joy converge. In other words, to be in love is a traumatic experience embedded in the subject's psyche that has associations with the Renaissance notion of love-melancholy.

The Renaissance concept of love-melancholy is derived from Hippocratic medical thought. This proposes that a subject's health is maintained by the equal balance of the four humours – yellow bile, phlegm, blood and black bile. Also, each of these humours is associated with a seasonal element in which the body produces more of the humour. An excess of yellow bile is linked to a hot humid summer, blood to a warm dry spring, black bile to a cold dry autumn and phlegm to a cold wet winter. Aristotle (2 B.C.E.) expands this theory to argue that black bile, the humour associated with melancholy, can become 'both very hot and very cold' (Aristotle cited Radden 2000: 58). This leads Robert Burton (1621) to write in *The Anatomy of Melancholy*, indebted to Classical and Renaissance thought on melancholy, that 'burning lust' causes love-melancholy (Burton 52). It excites a carnal passion within noble men and women that causes irrational behaviour. However, love-melancholy is considered as a psychological illness with side effects like sleeplessness and loss of appetite, and stems from an absence of passion. It will be argued in *Amoretti* that the presence of passion in poetic language is too much for the Lover. He has to deny himself his *jouissance*. This reveals a psychological discourse within the late 16<sup>th</sup> Century, I will term Spenserian madness.

In *The Allegory of Love*, a famous study of the medieval poetic tradition, C.S. Lewis (1959) associates courtly love with adultery. He argues marriage is seen at the time as a businesslike arrangement. The married woman is owned by the feudal Lord like property, and if her value decreases (such as losing her youthful beauty) she is replaced. Lewis writes that 'any idealization of sexual love, in a society where marriage is purely utilitarian, must begin by being an idealization of adultery' (Lewis 13). He argues that the brave knight's reward is the feudal Lord's Lady. Even though Lewis' argument is simplistic, his identification of courtly love with adultery signifies a breakdown of social norms. This is an illusion fostered by the businesslike marriage arrangement in which the feudal Lord's reputation is augmented by his Lady's idealised beauty.

David Burnley (1998) acknowledges that the Lady's physical 'beauty has become a social benefit, a quality which enriches the life of all who are privileged to witness it' (Burnley 47). The feudal Lord's house or court is the main focus of social life. Courtly virtues involve self-discipline, compassion and social behaviour that is not overly self-indulgent. Burnley refutes Lewis' association of love with adultery as a total misconception. However, Lewis' comment is useful for identifying that the emergence of courtly love involves, for the Knight/Lover, the fantasy of breaking social norms that, conversely, serves to uphold social order. The vicarious pleasure of the Knight and the Lord's Lady exchanging adulterous language establishes physical restraint. The language of courtly love makes possible the sexual passions that social norms declare are taboo. Adultery becomes a figurative term that defines courtly love as an artificial practice, which addresses but does not fulfil sexual desire.

This conflict between maintaining moral standards and fulfilling sexual desire results in the condition of lovesickness or love-melancholy. Mary Frances Wack (1990) argues that 'at the root of lovesickness lies an unfulfilled, sometimes unspeakable desire that may be incestuous or otherwise socially unacceptable' (Wack 5). This 'socially unacceptable' desire recalls Lewis' recognition that courtly love is adulterous, yet love-melancholy is perceived as necessary suffering for the courtly lover, and is incorporated into their lyrical discourse of love. The mania associated with love-melancholy forms part of the Lover's complaint. Wack (1990) perceives 'the conventions of courtliness as ideals for controlling erotic and aggressive behaviour' (Wack 30). She argues that the practice of courtly love serves to distance itself from this type of behaviour, but it is also implicit in the Lover's desire for the Lady. The idealization of the Lady reveals the Lover's hidden appetite for carnal lust.

One strategy of negotiating the bestial desire of earthly love is to posit courtly love as Platonic heavenly love. Roswitha Mayr (1978) argues that 'the central article of Platonism is that heavenly love is a form of knowledge, and that by contemplating beauty one may aspire to an understanding of its ideal form' (Mayr 7). The desired Lady becomes the image of perfect beauty, and is idealised within a spiritual context. Earthly love, in a Platonic context, is perceived as 'a kind of madness and disease' (Mayr 1978: 7). This is because the Lover desires a Lady who is unattainable. As Lacan (1992) argues '[i]t is impossible to serenade one's Lady in her poetic role in the absence of the given that she is surrounded and isolated by a barrier' (Lacan 149). Within Lacan's understanding, the Lady represents a metaphoric mirror onto which the Lover projects an idealised version of himself. The mirror image represents the morals and virtues the Lover wishes to identify with. The Lover's Lady is therefore a reflection of the Lover's desire for himself. The barrier to the Lover's narcissistic passion is not having the approval from the 'Other', or the projection of himself into a representation of the external world that articulates the Lover's fears and desires. In the context of courtly love, the Lacanian 'Other' is Love that is personified in Medieval and

Renaissance thought by Cupid. Cupid's arrow *instigates* the Lover's desire through pain and suffering. It does not represent approval from Cupid himself who, as the 'Other', should speak back to the Lover. Approval of the 'Other' constitutes the end to the Lover's agony through death.

However, the desired Lady has little substance. She is perceived in terms of representing a concept of love rather than an actual person. The Lady is part of what Bernard O'Donoghue (1982) terms a 'social drama', where as 'the God of Love' she attacks 'the heart of the poet' (O'Donoghue 7). The sublimation of the Lady into a heavenly body isolates her as an idealised image in the Lover's mind. Through the denial of base human longing, the Lover accepts love in its pure spiritual form. This is what Patricia Berrahou Phillippy (1995) identifies as the tradition of the palinode in courtly love poetry. She argues the 'shift from 'false' to 'true' perspective...by appropriating for the poet the duality, or rather capacity for doubleness, [is] associated with the female figure' (Phillippy 1995: 15). The Lady is essentially split into two different types of love reflected in the opposing environments of Earth and Heaven. In Dante Alighieri's (1292-1294) *Vita Nuova*, the Lover envies death:

This is because the pleasure of her beauty,  
having removed itself from mortal sight,  
was transformed into beauty of the soul  
spreading throughout the heavens (XXXIII, lines 20-23).

The death of the Lover's lady, Beatrice, has sublimated her pleasurable earthly beauty with its connotations of carnal lust, into a spiritually refined beauty that is closer to true love. In other words, 'it is death which rescues him [the Lover] from the folly of sensual desire' (Valency 1982: 266-267). Death is more perfect than lusting for natural beauty. It mirrors the Lover's desire for the perfect feminine image, which is a reflection of himself. The scope of the Lover's desire is evoked by Beatrice's image 'spreading throughout the heavens'. The Lover must exceed the boundaries of mortality to be united with his desire. The impossibility of this conceit is negotiated through dreams of longing for this *Vita Nuova* or new life with Beatrice. The implication is that this new life in heaven is more morally refined than the earthly one associated with the mortal sin of the Fall.

The idealization of the Lady provides the male Lover with a morally superior identity. This focus on 'heterosexual men as the desiring, speaking, and most visible subjects of amorous exchange' is challenged by E. Jane Burns (Burns 2001: 25), however, she perceives the courtly love relation as a more complex interaction between the male Lover and his desired Lady. In Burns' opinion, the twelfth-century texts that form 'the standard courtly paradigm' of evoking the male Lover's desire towards a passive female object has been interpreted too literary (Burns 2001: 32). Burns argues that the strict gender divide between the sexes is more fluid. The knight's idealisation of the Lady could represent a displacement of the Lord's authority on to the Lady. Through courtly love, the Lady arguably has greater power over the Lord's subjects. Also, the critical focusing on a few 12<sup>th</sup> Century texts as being indicative of the entire courtly love tradition, such as Andreas Capellanus' (1184-1186) *Art of Courtly Love* and Arthurian romance, leads to a misrepresentation of the Lover's Lady. The Lady has more autonomy and control within a feminist reading of courtly love poetry, rather than simply being an object of male desire enabling social control and morality through being unattainable.

In *Vita Nuova* (1292-1294), the male Lover is humbled by Beatrice's death. He literally becomes the Lady's servant, as 'he would raise his eyes toward heaven/where that sweet soul already had its seat' (VIII, lines 12-13). Beatrice is elevated from her earthly role where she 'had worn enchanted flesh' (VIII, line 15) to one of sovereign power implied by the synecdoche 'seat'. She is not simply idealised but is posited in what Burns would argue as a position of power over the male Lover. This feminine power stems from Beatrice representing a pure love that the Lover lacks. His desire is to unify spiritually with Beatrice but he is barred by death. Death isolates Beatrice in the Lover's poetic phantasy. His continual desire for Beatrice is based on her superior spirituality, which fuels the poetic phantasy of the Lover becoming Beatrice. The Lover centres himself not only as the desiring subject, but also as the object of desire. Beatrice's power is therefore a projection of the Lover's desire for power. The Lover's jealousy of people whose corporeal bodies have died is that, through their spiritual progression, they will witness Beatrice's transformed beauty and, as a result, become transformed themselves.

The manner in which the courtier is both humbled and exalted by his love for the Lady, and how the Lady is perceived as an object or a goddess serving as a source of spiritual guidance indicates a contradictory pattern. Sarah Kay (2001) argues that 'courtly texts exhibit a particular pleasure in contradiction' (Kay 2). She analyses the use of contradiction in Medieval courtly literature through Lacan's psychoanalytical concepts. This is not viewed as anachronistic, because Kay (2001) argues that 'Lacan sees modern subjectivity as deriving from the erotic configurations of medieval courtly love poetry' (Kay 26). The contradictory relationship between the courtier and Lady realises a psychological agency indicative of modern subjectivity. This agency or impulse is determined by the concept of courtly love. However, the sublimation of lustful desire into an appreciation of spiritual beauty is investigated by Kay through Slavoj Žižek's interpretation of Lacanian courtly love as indicative of masochistic perversion.

She argues that the pervert perceives their actions as being for the victim's pleasure. The pervert is a slave to the Lacanian 'Other'. The pervert accepts death by indulging his phantasy fears and desires through derogatory sexual acts with the 'Other'. As Lacan (1981) argues, 'what defines perversion is precisely the way in which the subject is placed in it' (Lacan 182). Perversion creates a cycle of sexual phantasies where the pervert is under the gaze of the 'Other'. The gaze of the 'Other' is not a literal gaze but a self-gratifying acknowledgement that represents the pervert's mastery of being both the desiring subject and the suffering object. The pervert's sexual phantasies are fuelled by trying to catch the victim's pain, which displaces the victim's experience of sexual pleasure. This constitutes the 'Other' speaking back, or signifies the 'Other's' approval as the pervert's sexual phantasies become part of the victim's pain. The victim is an anaclitic object, or a prop the pervert relies on to add more sexual excitement to his phantasies.

Kay (2001) argues that sublimation and perversion are a similar process. In both cases, the subject acts upon the fears and desires of the 'Other'. Kay notes that 'the difference between sublime and perverse is not a moral one; it is simply the formal one of the location of the subject' (Kay 265). In Chretien DeTroyes *Le Chevalier au Lion*, Kay argues that the sublimation of the Lady's unattainable beauty 'is causally connected with...violence' (267). Yvain's longing for the Lady is transposed on to a masochistic desire of self-harm. Similarly, in *Vita Nuova*, the Lover's jealousy of people dying is not simply a wish to join his beloved in Heaven, but is a perversion stemming from the Lover's belief that Beatrice wishes him dead. This desire is displaced on to other people as an unconscious wish.

Courtly love provides a unique social and psychological perspective, through the Lover professing his undying love for the Lady. Lacan describes this perspective as ‘a way of playing with a number of conventional, idealizing themes, which couldn’t have any real concrete equivalent’ (Lacan 1999: 148). The endeavour of courtly love to flatter the Lady reveals emptiness in the male Lover for which his use of poetic language attempts to compensate. The use of figurative language in courtly love poetry enables the Lover to articulate the true nature of his desires. The Lover’s expressive language to the Lady transforms social taboos such as adultery and carnal lust into a sanitised discourse. It is in this manner that Lacan perceives courtly love as anamorphosis. He explains anamorphosis by referring to Hans Holbein’s painting of 1533 called *The Ambassadors*. This painting shows two scholarly men framing the scientific achievements of their time. At the bottom is a skewed image that when looked at from another angle reveals the anamorphic skull. The skull highlights the Ambassadors’ mortality, and the fragility of all the scientific achievements they represent. Lacan describes this process in more detail:

...the interest of anamorphosis is described as a turning point when the artist completely reverses the use of that illusion of space, when he forces it to enter into the original goal that is to transform it into the support of the hidden reality (Lacan 1999: 141).

The illusion of space the artist creates on the canvas is itself transformed by a ‘hidden reality’. This ‘hidden reality’ exposes space as both an illusion and a mapped area of contradiction. The significance of the original image is changed by the discovery of the ‘hidden reality’. However, there is a bar between the original image and the ‘hidden reality’ that resists signification. This is because they are on different spatial axes. With *The Ambassadors*, the skull and the original image cannot be seen simultaneously. Either image dominates the painting’s meaning, except when they are mapped together in the viewer’s psyche. Similarly, the idealization of the Lady’s perfect beauty maintains the Lover’s values of dignity and self-discipline that enforce social order. Like the anamorphic skull, the idealized Lady also allegorically signifies a forbidden reality. She bars access to sexual gratification so that she is the boundary in the poetic field that cannot be transgressed. As a result, the Lady becomes the object the Lover’s aggression and destructive impulses are vented against.

However, the idea of the desirable unobtainable Lady fashioning wholesome qualities in the male Lover is an appropriate role model for the Elizabethan courtier. Daniel Javitch (1978) observes that ‘the rhetorical compatibility of poetry and courtliness can indicate how the court, when imposing its values on Tudor society, could stimulate poetic modes of expression’ (Javitch 13). These ‘poetic modes of expression’ professing love for a Lady or Queen Elizabeth I instil in the courtier codes of conduct. Javitch (1978) terms this ‘the civilizing influence of women’ (Javitch 27). The courtier, however, must be consummate in disguising the masquerade of the courtly practice. In order to survive in the cutthroat world of the Tudor court, the courtier must be able to practice deceit through the use of allegory. Javitch notes that ‘the courtly practice of hiding a disagreeable sense under an agreeable expression warrants the need for the poet to command this figure [allegory]’ (Javitch 63). The implication is that allegorical deceit hides the courtier’s real motives for adopting the courtly love code. As well as allegorically castigating social ills, by openly flattering Queen Elizabeth the courtier hopes to be rewarded through monetary and hierarchal gain.

A psychoanalytical reading of Spenser's *Amoretti* will follow. In the first sonnet, Spenser evokes the courtly love tradition with the opening quatrain:

Happy ye leaves when as those lilly hands,  
which hold my life in their dead doing might  
shall handle you and hold in loves soft bands,  
lyke captives trembling at the victors sight (I. lines 1-4).

The alliterative 'Happy' with 'hands' initialises the trope of the Lover's willing submission to the desired Lady. The adjective 'Happy' has connotations of sexual desire through a reference to the Lady's 'lilly hands', which are associated with the pale attractiveness of the Lady's skin. Also, the hands that are cupped like the bell-shaped flower as indicated by the verb 'hold', reveals the absence of the Lady's breasts. This absence is verified by the adjective 'lilly' that is used in sonnet 64 through the following simile, 'her brest lyke lillyes, ere theyr leaves be shed,' (LXIII, line 11). The association of the 'lilly hands' with the Lady's lily breasts through colour and shape is a psychological dialectic similar to the Freudian pleasure principle. In Freudian terms, pleasure is a psychic phenomenon concerned with 'the expulsion of excitation' (Cousins 2005: xi). Pleasure gives the subject satisfaction through this impulse that is associated with a positive experience. An unpleasant experience can give a similar satisfaction through being displaced by a more joyful impulse. The displeasure of a subject cutting his or her finger is displaced by the more pleasant action of covering the cut with a plaster so that it can heal. The pleasure associated with the displacement of an unpleasant experience is often synonymous with the subject having control over what is unpleasant.

The hands holding 'my life in their dead doing might' reveal, through the adjective 'dead', the hyperbolic impulse of a Lover's complaint. It also signifies a melancholy that is linked to the Renaissance notion of love-melancholy. This is a sickness causing psychological disturbance through the physical presence of black bile, a bodily humour associated with melancholy. The Neo-Platonist Marsilio Ficino (1469) associates this type of psychological disturbance with bestial love (Ficino 158). The quatrain's imagery of captivity, 'trembling', binding and being victorious testify to the melancholy associated with bestial love-melancholy. It also reads like the Lover's last corporeal breath, a dying wish that momentarily succumbs to madness. The cupped hands are metaphorically a mirror reflecting the Lover's sorrow. This metaphoric mirror-image is transformed to joy through the Lover's anticipation of 'handling' the Lady. The cupped shape of the twinned hands imply they belong on the Lady's breasts, the part of the Lady the hands can 'handle' before embracing her 'in loves soft bands'. This image is further enhanced through the Petrarchan conceit of 'lyke captives trembling at the victors sight'. Rather than directly capturing the breasts with the cupped hands, the simile skews the image as being a submissive gesture of courtly love. The excitement of the Lover's hands 'trembling at the victors sight' evokes the release of increased stimulus caused by sexual desire (Freud 2005: 5).

From the anamorphic perspective the simile creates, the 'trembling' cupped hands that cannot bear to touch the breasts evoke the tradition of courtly love in that the Lady is unattainable. The cupped hands acting as a mirror that also connects the Lover and Lady (presupposed as a future event by the auxiliary verb 'shall') realises 'the inaccessibility of the object' (Lacan 1999: 151). The phantasy of 'handling' the Lady is articulated as a mythical event projected into the near future. It is an event that is beyond the quatrain's scope, and can only be predicated within the subject's narcissistic withdrawal from external reality. The Lady

represents a reality beyond the scope of language as an impossible and unknowable object. In this sense, the Lady's breasts cannot be touched in the immediate present. This would mean an unthinkable transgression of the courtly love paradigm that would result in the Lover's instant destruction.

This psychological reading conforms to the courtly love tradition, but it does not reflect the full complexity of the Lover's psyche. It will now be argued that the Lover is attempting to repeat a past traumatic event, which uses the courtly love tradition as a rationalising discourse to disguise the madness of love.

The Lover's action of cupping his hands seeks to alter external reality as his ego attempts to make 'the transition from the pleasure principle to the reality principle' (Freud 2005: 5). The initial negation of desire compels the Lover to take concrete action and actually fantasize about touching the object of his desire. As Lacan argues, 'the pleasure principle is inseparable from the reality principle' because 'it is [involved] in a dialectical relationship with it' (Lacan 1999: 222). The cupped hands establish for the Lover an environment of subjective interaction, which is related to an unconscious need recalling an infantile satisfaction with the mother's breast. This primordial need is reiterated through the Lover's desire to 'handle' the Lady's breasts, and reveals the drive (trieb) impulse within the Lover that seeks to re-experience an original satisfaction connected to the reality principle. In other words, the Lover's satisfaction is not derived from reality itself, but from his perception of an external reality. The primordial pleasure he associates with the mother's breast represents the Lover's reality. He will seek out this pleasurable object in order to reaffirm its historic significance. It is in this respect that Lacan states that 'the core of the pleasure principle is situated at the level of subjectivity' (Lacan 1999: 222). This perception is problematic because, although the Lover's pain affirms the courtly tradition of the Lover's suffering for his Lady, it does not fully explain how this suffering is linked specifically to *Amoretti's* Lover. What makes the suffering the Lover evokes different from any other lover's?

The Lover's suffering is subjective at the level of language. Rather than simply being a variation of the courtly love tradition, Spenser's sonnet is related to a more fundamental suffering. This psychoanalytical reading that involves a consideration of the psychoses or (in Renaissance thinking) the madness of love, can be understood through Lacan's notion of jouissance. Néstor A. Braunstein (2003) describes Lacanian jouissance as a drive (trieb):

...not because it has a calming effect, not because it achieves satisfaction or satiety, but because it builds the historical, it establishes the memorable in an act that is inscribed, in relation to the order of the signifying chain, as a deviation or even a transgression...which is essential to the psychoanalytic act and to the ethical acts that define, in a different way, the place of the subject (Braunstein 105).

Whatever is memorable in the subject's development, whether painful, joyful or more appropriately a conflation of the two, is inscribed within jouissance. In Spenser's sonnet, the historical is composed through the adjective 'Happy'. By relating it to jouissance as a signifier within language, 'Happy' becomes connected to an event so memorable, it is traumatizing. It is no surprise, then, that *Amoretti* begins with this signifier, because 'Happy' is the trigger that activates the presence of the sexual object within the Lover's psyche. In other words, it is the very beginning of the signifying chain that constitutes the formulation of the Lover's identity through his perception of external reality.

This perception is mirrored in the cupped hands that reflect narcissistic images of pain and joy conflated in the signifier 'Happy'. Rather than denoting satisfaction, 'Happy' posits a sense of inadequacy because it sparks a negation in the Lover. Freud describes negation as 'a kind of intellectual recognition of the repressed while the essential element of the repression remains in place' (Freud 2001: 90). With Spenser's Lover the negation is a reminder of desire that can be described as love. Lacan states 'love is impotent...because it is not aware that it is but the desire to be One' (Lacan 1975: 6). This is illustrated in Sonnet 1 as the Lover's love is metaphorically displaced on to the sonnet itself. The alliterative 'leaves' (a metonym for the sonnet) with 'lilly' directly associates the sonnet with the Lady's hands. The 'lilly hands' are like the Lover's sonnet reflecting the courtly love ideal in that they compose the 'dead doing might' or destruction of the Lover's life, but are also used to bind the Lady with love. William C. Johnson (1990) argues that 'the lover takes the lady by [her] hand and ties her with her own 'goodwill'' (Johnson 66). However, the Lover associates the Lady's hand with himself. The personification of the cupped hands being in 'victors sight' betrays the narcissism of the Lover's desire. This aggression is reflected by the barrier the Lady signifies to the Lover's desire, which is transformed into a plea. His hands that are 'lyke captives' represent an invitation to the Lady to free the Lover from his binding desire, so that he can bind her in 'loves soft bands'. The metonym 'loves' indicates how the Lover and the Lady can be joined together, in the Platonic sense that "'Love' is the name for our pursuit of wholeness, for our desire to be complete' (Plato 360 B.C.E: 50). The implication is that the Lover proposes to the Lady an escape from his own narcissistic suffering.

However, the Lady is nothing but an object emptied of all significance. In Spenser's sonnet, she is a future event linked to the signifier 'Happy', indicating the lack in desire. This desire is displaced on to the 'lilly hands' that act like a mirror. They enable the Lover to begin a narcissistic dialectic of sorrow and joy, which can be described as love. In both instances the 'lilly hands' constitute a love-object that is a residue of the 'lack of satisfaction' or even the impossibility of fulfilling desire (Lacan 1975: 6). Through love, the Lover feels sorrow for himself, then joy as he recognises himself as the pronoun 'you'. This archaic moment of identification recalls 'the transformation that takes place in the subject when he assumes an image' (Lacan 1977: 2). This primal euphoric self-identification can never be repeated, as all other attempts at self-identification are a misrecognition. The Lover's fascination with his own image is a 'knot of [I]maginary servitude that love must always undo again, or sever' (Lacan 1977: 8). Love is a semblance that can never exceed or fulfil the initial jubilation when the subject first recognises their image. By mimicking the action of cupping the Lady's breasts, the hands recall the pain and initial satisfaction the subject experiences when they first discover the mother's breast. As a child, the subject's discomfort and hunger is signified by crying that has the response of the subject being sated by the mother's breast. However, when the breast is removed the child perceives this as an act symbolising castration. It begins a repetition of pain (through crying) and joy (receiving the mother's breast) that instils in the subject the compulsion to repeat, even if the experience is not pleasurable. Freud writes:

It is plain that most of what the compulsion to repeat makes the patient relive necessarily causes the ego unpleasure, since it brings out into the open the workings of repressed drive-impulses; but, as we have already seen, this is unpleasure of a kind that does not conflict with the pleasure principle, for though it constitutes unpleasure for the one system, it simultaneously constitutes gratification for the other (Freud 1920: 58).



In the quatrain, the repetition of the adjective 'hold' constitutes the unpleasure-pleasure association Freud describes. The signifier 'hold' indicates the 'unpleasure' the Lover associates with his inner torment, and also the pleasure of embracing his beloved. There is also an excitement that is never fully realised, which leads to anxiety in the Lover. The hands 'trembling at victors sight' is a hesitation associated with the anguish of the hands holding the Lover's life in a murderous manner. This is also linked to the notion that if the Lover touched the Lady then this would have a similar effect on his life.

The compulsion to relive pain is in anticipation of realising a mythical happiness. Love is created through a desire that can never be satisfied, while *jouissance* is formed through a mythical need that is essential for the subject's moral development. The subject's primordial experience of unpleasure acts as a moral gauge. It is a repressed pain triggered by the extremity of self-gratification. The corruptive temptation of the Lover's desire to handle the Lady's breasts points to a definition of *jouissance*. As Lacan writes, 'perhaps *jouissance* shows that in itself it is deficient' as language is 'posited as the apparatus of *jouissance*' (Lacan 1977: 55). *Jouissance* exists in order to be refuted, because to deny it also gives the subject pleasure. Language motivates the subject towards rediscovering the existence of *jouissance*. This is a transcendental moment designed to recover, through language, what is deficient in *jouissance*. In other words, it serves to remove temptation through a moralising process. As a result, the signifier 'Happy' situates the gap in the Lover's desire (whereas the Lover's hands attempt to satisfy him through the narcissistic love-object) as the *objet a*. This process is illustrated by Richard Boothby who argues that:

The *objet a* harkens back to the primordial object of satisfaction, that original object in relation to which every subsequent attempt at satisfaction must be deemed a *re-finding* of the object: the mother (Boothby 1991: 165-166).

This is applicable to the sonnet because 'Happy' not only begins the sonnet sequence, but it is also the Lover's muse, as it emboldens the 'leaves' that symbolise the sonnet itself. The signifier 'Happy', therefore, is 'the primordial object of satisfaction' which the Lover attempts to reconstruct through the sonnet sequence. To elaborate further, 'satisfaction' is not simply a process of being sated, but relates to the memorable act when the Lover experienced the traumatic conflation of pain and joy. As *objet a* the signifier 'Happy' symbolises the mother's breast, which the Lover identifies as being part of himself. As Braunstein observes, '*jouissance* is the dimension that opens beyond satisfaction' (Braunstein 2003: 106). What the Lover finds pleasurable or desirable inhibits *jouissance*. Within the opening sonnet of *Amoretti*, the signifying chain structured through the Lover's 'lilly hands' serves to relocate this moment of transgression. Initially, the cupped hands are empty in order to situate the Lover within his external reality or environment. The hands are then filled with the Lover's life 'in their dead doing might' (I. line 2). The signifier 'dead' evokes the moment of transgression in which the Lover conversely formulates his subjectivity. It is the traumatic moment the Lover anticipates with the joy of 'handling' the Lady's breasts, which unconsciously recalls the mother-object. The Lover re-enacts the moment when the subject (as a child) out of hunger and helplessness cries out, and is sated by the mother's breast or the synecdoche of the Other (the love-object). In *Amoretti*, the initial emptiness of the cupped hands inscribed by the signifier 'Happy', through the use of the conjunction 'when', relates to the deficiency of *jouissance*. This is the transcendental moment at the juncture of helplessness and joy. *Jouissance* is therefore an empty, unknowable impulse the Lover attempts to re-enact for his own satisfaction. The Lover's psyche is in the process of transference from a past to a

future jouissance, which has mythical status in the Lover's development. In other words, it is the anxiety the Lover experiences in anticipation of embracing the object of his desire.

The Lover's continual anticipation of sexual contact with his beloved within a poetic phantasy is motivated by the Lady's jouissance. This is illustrated in the second quatrain of the first sonnet, as the signifier 'happy' continues to evoke the pain connected to jouissance:

And happy lines, on which with starry light,  
those laming eyes will deigne sometimes to look  
and reade the sorrowes of my dying spright,  
written with teares in harts close bleeding book (I. lines 5-8).

The phrase 'happy lines' accentuates the lines of the sonnet, and the Petrarchan conceit that the 'sorrowes' of the Lover's 'dying spright' can be read. It enables the Lady to perceive the Lover's jouissance in what constitutes a narcissistic dialectic with the Other. The association of 'starry light' with 'laming eyes' signifies the desire of the Other, which relieves the Lover's suffering like a crying child being offered the mother's breast. The contrast of light with the darkness of the Lover's 'dying spright' invokes the jouissance/desire dichotomy. The Lover's desire of looking and being looked at through the desire of the Other tempers the trauma envisaged by the Lover's dying spirit, which is literally illuminated by the 'laming eyes'. The Lady's jouissance, symbolised by the 'beaming eyes' that travel from Heaven to earth, give the Lover's suffering not only meaning but joy. The Lover's perverse desires are enhanced as the Lady's 'beaming eyes' penetrate his sexual phantasy. Although his spirit is dying, the Lover feels liberated through the madness of love predicated by his 'irrational corporeal body'. Again, the signifier 'happy' appears at this juncture of pain and joy as the vestige of jouissance. The Lover attempts to merge with the Lady's transgressional act or jouissance symbolised in the sonnet by 'the rational incorporeal soul [that] connects man with higher angelic orders of being' (Dunlop 1989: 600). Through jouissance the Lady is sublimated into an angel as part of the courtly love tradition. Like Dante's Lover in *Vita Nuova*, Spenser's Lover must transgress life itself in order to be with his beloved. Death is sublimated into a rational spiritual love. However, the association of love and death is also a symptom of love-melancholy. The Lover's morbidity, disguised as spiritual love, indicates what Freud describes as the subject's fear of a wish to break a taboo (Freud 1940: 36). The Lover's obsession with death, verified by his cupped hands containing his life's destruction and then followed by the complaint of his dying spirit, betrays an unconscious fear that these acts will exceed the courtly love tradition. This constitutes a type of madness that retreats from the prospect of jouissance.

To conclude, the signifier 'Happy' is the residue of the Lover's jouissance symbolised by the cupped hands. The hands, therefore, link a past and future jouissance. The future jouissance is paradoxically related to the Lover's anticipation of a pleasurable death at the Lady's hands. The past jouissance (from an anamorphic perspective) symbolises 'death' through an erotic phantasy that transgresses the courtly love paradigm. This is linked to the pain and joy of the child's discovery of the mother's breast. As Braunstein (2003) argues 'the subject finds himself split by the polarity jouissance/desire' (Braunstein 106-107). In other words, the recognised desire for the unattainable Lady is forfeited by Spenser's Lover for the myth of jouissance initially posited by the phantasy of the sexual act, which is signified through the act of handling the Lady. However, the Lover's refusal to actually handle the Lady typifies another type of madness. This is not simply through the fear of breaking the courtly love taboo of physical contact, but because the Lady is an authoritative voice. As Donna Gibbs

(1990) argues, the Lady in *Amoretti* is ‘found to be of unusually independent spirit and character’ (Gibbs viii). In other words, the Lady becomes a figure of the law. The ‘lamping eyes’ that ‘will deigne sometimes to look’ becomes a form of censorship. This reading is verified by the adverb ‘sometimes’ that implies the Lover is under the Lady’s surveillance. This is not simply through the perverted phantasy of acknowledging that the Lover is in a perpetual state of suffering, but it is to safeguard that the ‘happy lines’ do not exceed the poetic boundaries between the dying flesh and pure spirit. In other words, Spenserian madness relates to the tension between the Lover’s refusal to sexually handle the Lady and also, conversely, through his anxiety of not suffering enough for her.

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## Higher College Students' Perception of Vocational Education and Training Programmes in Libya

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### Abstract

*Libya has traditionally suffered from a shortage of skilled manpower. In the 1990s, a network of Public Higher Vocational Education and Training Colleges (PHVETCs) was introduced for the purpose of enhancing the supply of skilled manpower needed for the socio-economic development plans. In 2000 there were 85 PHVETCs across the country.*

*Interest in students' perception of their college experience has received increasing attention over years. A students' reflection of their experiences of the learning environment is of particular importance to those engaged in education planning.*

*This paper presents initial results from a survey of students of PHVETCs. It investigates their perception regarding VET programmes as well as work-related issues in Libya. The study data has been collected using a questionnaire distributed among sample of final-year students of nine PHVETCs in the Sha'biyat (Governorate) of Benghazi, Libya. The major findings of the research suggest that most of PHVETCs students came from disadvantaged backgrounds. While higher proportion of students included in the survey were satisfied with the course of study they remain extremely pessimistic over probability of employment opportunities available to them after graduation. This negative attitude occurred mainly as a result of the unavailability of career counselling services for PHVETCs students. Following discussion of the results recommendation are suggested.*

**Keywords:** Higher education, vocational education, student experience, Libya

### 1. Introduction and Background

As in many other countries, higher education (HE) in Libya has experienced massive expansion in the past 10 years or so (Alawar, 2006; Gannous & Aljoroushi, 2004). However, despite significant and positive impacts of this expansion on the entire society, a number of analysts argue that higher education institutions (HEIs) have increased in number at the expense of qualitative aspects. They have further argued that the HE in general suffers from a lack of appropriate planning mechanisms and procedures (Albadri, 2006; Gannous & Aljoroushi, 2004; Al-Hawat, 2003; Alfaidy & Ibrahim, 1997). In this context, Al-Hawat (2003, p. 397) has made the following comment:

*Such institutions are normally established at a quick pace and under social pressure without consideration for the basic requirements of university work.... These universities and colleges tend to produce graduates whose education is*

*mostly inadequate, inflicting negative results on society rather than bringing positive results.*

Libya has traditionally suffered from a shortage of skilled manpower (Gummed, 1979; Dughri, 1980). This problem has become more pronounced during the past few decades, as the country attempted to keep pace with technological changes affecting many developing countries (TFHES, 2000; Eltaif, 1999). To address this critical issue, a network of Public Higher Vocational Education and Training Colleges (PHVETCs) was introduced, in the 1990s to enhance the supply of necessary highly qualified manpower needed for the national socio-economic development plans. The PHVETCs are post-secondary institutions and offer theoretical and practical based curriculum (GDHVECs 2000). In 2000, there were 85 PHVETCs across the country [according to Gannous & Aljoroushi (2004, p. 4) estimates, there were more than 120 public and private higher colleges in 2004].

Interest in students' perception of their college experience has received considerable attention over the past few decades (Velde & Cooper, 2000; Haselgrove, 1994; Astin, 1993; Pascarella & Terenzini, 1991; Lewis, 1984). A students' reflection of their experiences of the learning environment is of particular importance to those involved in education planning. With this connection Astin (1993: 273) wisely points out:

*Given the considerable investment of time and energy that most students make in attending college, the student's perception of value should be given substantial weight. Indeed, it is difficult to argue that student satisfaction can be legitimately subordinated to any other education outcome.*

The focus of the present paper is to determine the perception of final-year students regarding PHVETCs and work related issues in Libya. The rest of the paper is organised as follows. The next section briefly described the methodology used in this study. Section 3 presents the results of the empirical analysis. Section 4 discusses the main findings of the study. Section 5 concludes the paper.

## **2. Methodology**

This study is exploratory and descriptive in nature and the main research methods adopted were literature review and questionnaire survey. The literature review provided a useful overview about the development and current statues of the PHVETCs in Libya. It also, assisted in developing a general theoretical framework for the study and guided data analysis.

In order to fulfil the objectives of this study, a questionnaire was designed to obtain information to examine some aspects of the study under investigation. The questionnaire consisted of 41 mostly closed-ended questions. These questions were designed to obtain information on the following:

- The socio-demographic and educational characteristics of the students.
- Accessibility factors of home/college travel.
- Teaching/training programmes and courses offered by colleges.
- Employment opportunities after graduation,
- Levels of coordination between governmental administrations and the colleges.

The reliability and validity of the questionnaire were obtained by requesting three professors in the Faculty of Arts and Education, the University of Garyounis, Libya, who are experts in the field to review and comment on the questionnaire. Then, it was also pre-tested in a pilot study to identify unclear and ambiguous questions.

The population from which the subjects were selected was 1,308 final-year students at 9 PHVETCs registered for the academic year of 2003-04 in the Sha'biyat of Benghazi, Libya. To ensure sufficient representative from the target population, proportional stratified sampling was employed (Lohr, 1999). The total sample size of students was determined

based on the table developed by Krejcie & Morgan (1970). The table gives a sample size of 303. After the questionnaire was piloted the interview process was carried out with the help of faculty members of the colleges, all whom were familiar with survey research. The researcher communicated directly with the respondents. At each stage prior to the questionnaire being administered, the researcher introduced himself and explained the nature of the research project, and explained the procedures to be followed by the targeted population in completing the questionnaire. Each attendee was then given a copy of the questionnaire and requested to complete it anonymously to protect their privacy. A total of 303 questionnaires were distributed and 272 (89%) returned and analysed overall.

### **3. Results and Analysis**

#### **3.1 Socioeconomic characteristics**

Of the 272 in the students' sample, 71.3% were female and 28.7% were males. The vast majority (87%) 21-25 years old and the remaining were 26 years old or over. To assess the socioeconomic status of PHVETCs students, the respondents were requested to provide information about: 1) the highest level of education attained by their parents, 2) the average monthly income of the family and 3) the family size. According the results, about one-third of the respondents' fathers and two-third the respondents' mother have no formal education. About 70% of the total respondents belonged to families with 10 members or more. A significant proportion (62.5%) of respondents' family income level was found to be below 300 Dinars (UK£1= 2.4 Libyan Dinars). Greater majority of the respondents were supported by and financially dependent on their parents during their course of study, 10.3% self-sponsored and only 1.8% received sponsorship.

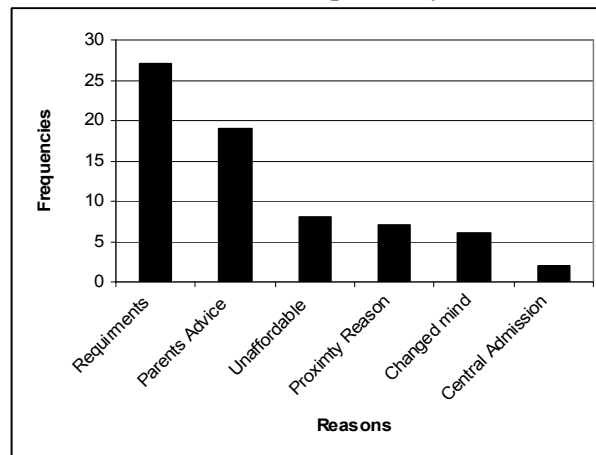
In respect of place of residence, the greater majority of respondents (85.3%) were born in Benghazi City or other towns but still within the Sha'biyat of Benghazi. Libyan nationals dominated the overwhelming majority of the respondents (97.4%). Most of the respondents lived with their parents or relatives during their college education (87.5%) and only 12.5% were lived at college accommodation.

#### **3.2 Educational background**

The respondents were asked to provide information about their educational background. Those who had academic education were the highest at 89.7%, whilst those with specialisation education and vocational education were only 9.6% and 0.7% respectively. Concerning the location of secondary school, the majority of respondents (83.8%) came from schools either in the City of Benghazi or in adjacent towns within the Sha'biyat of Benghazi while remainder came from schools located in other Sha'biyats. In connection to this point, respondents were asked to note whether there is linkage or not between their past education and current course of study. Those who responded in the affirmative were 45.6% of the total population sample, however, about and equivalent number of the participant (43.8%) answered in the negative. The remainder (10.3%) did not know or not sure.

In responding to whether the present course of study was compatible with the desired profession, almost 60% of the respondents stated that the present course of the study is compatible with their desired profession. However, about a quarter of the total respondent reported the present course incompatible with their desired profession and the rest (14%) were did not know or not sure. Those who reported incompatibility of the current course of study with their desired profession were requested to give reasons for their reposes. As shown the figure 1, students expressed a variety of reasons; however, a specific emphasis has been placed on two reasons: 1) they did not meet the preferred course requirements, as a result of their lower grades during their final year in secondary school and 2) course selection was a result of parents' advice. These tow reasons accounted 39.1% and 27.5% respectively.

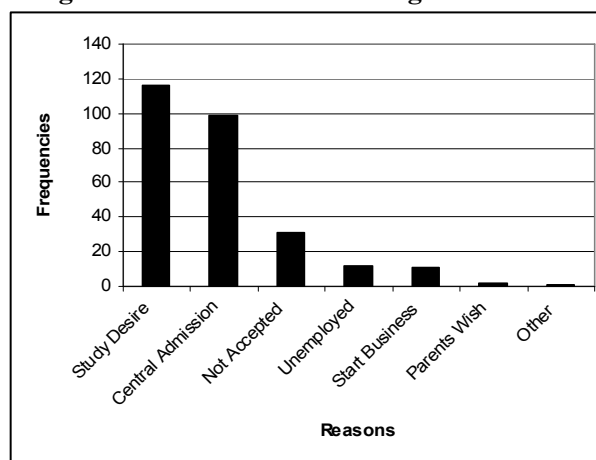
**Figure 1: Reasons for the Incompatibility with desired course**



Source: Appendix 1.

Similarly, Students were asked to articulate their motivations for enrolling in the course. Again respondents gave various reasons as to why chose to enrol the course. Two reasons have been considered most important and accounted for about four-fifth of the total responses. These are: desire for more study (42.6%) and the choice has been made through Central Admission of the Secretariat of Education (39.1%). Other reasons for enrolling are shown in Figure 2.

**Figure 2: Reasons for enrolling in the course**



Source: Appendix 1.

### 3.3 Locational accessibility

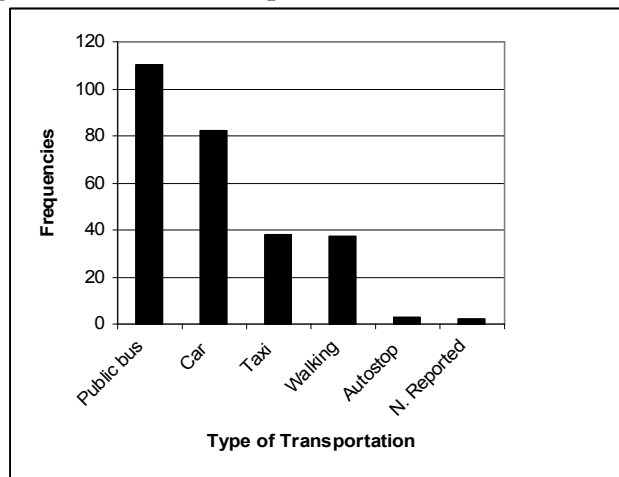
According to Stanilove (2003: 784), “Accessibility describes the ease of access to a particular location.” Locational accessibility can be tested or measured in time, distance, cost and mode of travel used to arrive at service facility (Weber 2003; León, 1998; White 1997). To measure the physical accessibility of the location of the PHVETCs to beneficiaries, respondents were asked to provide answers on the following: 1) type to transportation used to travel between college and home, 2) average travel time, 3) how easy/difficult is the daily journey and 4) physical constraints that affect their daily journey. As shown in Figure 3, the mode of transport most frequently used by the respondents to arrive at college was public bus. This type was used by 40.4% of the total population sample, followed by private vehicle (either as a passenger or a driver) which accounted for 30.1%. Other motor commuting means used by respondents were Taxi service 14% and hitch-hiking 1.1%. These four types jointly were



accounting for 85.6% of the total responses. However, only 13.6% of the total respondents were walking between home and college.

In response to the inquiry of the average daily travel time between home and college, more than three-quarters of the sample persons (76.1%) reported that their daily travel usually takes less than 30 minutes and 21.7% stated their daily journey usually takes more 30 minutes. Related to this factor, the respondents were asked to describe how easy or difficult their daily travel between college and home was. This daily travel routine had been described as easy or very easy by about three-fifth of the total respondents. On the other hand however, around two-fifth had described their daily travel as difficult or very difficult. Heavy traffic on road found to be major deterrent by over a third of the total sample population followed by long distance (26.1%), traffic lights (9.2%) and road work (4.8%). At the other end of the table, 25.7% reported they had not experienced any type of constraints during their daily travel routine.

**Figure 3: Mode of transportation used to come to college**



Source: Appendix 1.

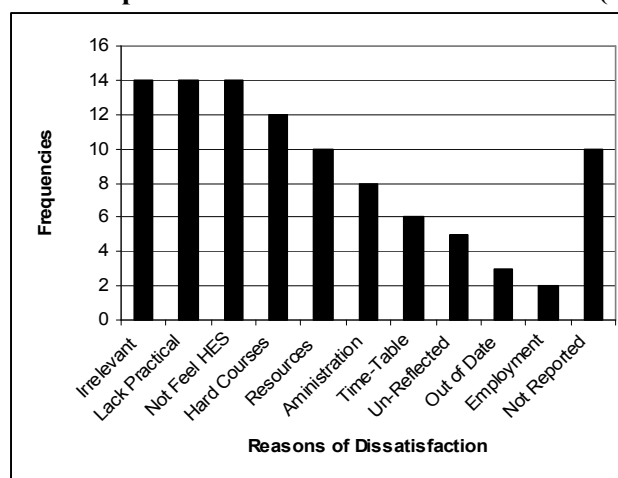
### 3.4 Views on PHVETCs' programmes

Respondents were asked to describe their overall satisfaction with PHVETCs' programme. In this regard, the majority of respondents were in the affirmative and stated that course programme meet their needs and expectations (70.2%) while 29.4 of the sample were in the negative and stated that the programmes do not meet their needs and expectations. The main reasons provided by the respondents who answered in negative were: "courses don't reflect profession or irrelevant (17.5%), courses are hard (15%) and courses are below standards (12.5%).

Likewise, respondents were asked to report the level of their satisfaction of education and training programme provided at the PHVETCs. The majority of the respondents (63.6%) were satisfied with the level of programme. However, there was 36% who expressed their dissatisfaction. Those who reported dissatisfaction were requested to give reasons for the dissatisfaction. The main reasons for dissatisfaction were: 14.3% stated programme comprised too many irrelevant courses. Equivalent number (14.3%) also mentioned lack of practical courses and they do not feel like higher education student. 12.2% reported that the courses are too hard for them. Inadequate staff and facilities, as well as insufficient administration have been reported by 10.2% and 8.2 percent respectively (Figure 4).

Respondents were asked to evaluate the nature of the courses provided by the PHVETCs from theoretically and practicality point of view. More than half of the total respondents have described courses as less practical in nature and little proportion of the total respondents (8.1%) has described provided courses as more practical. However, 37.1% indicated that the courses are well-balanced in terms of theoretical and practical considerations. Concerning the venue where practical applications are administered, 47% of respondents reported that all practical applications take place within the college campus. On the other hand half of the total sample responded that most of the practical applications were delivered at locations other than college campus. The overwhelming majority among those who said practical application are given outside the college campus (93.4%), also reported that these application are provided with cooperation between the college and public sector partners. However, very few (5.1%) stated that the application is delivered in cooperation with private sector partners.

**Figure 4: Respondents' Reasons for Dissatisfaction (No 98)**



Source: Appendix 1.

Respondents were asked to determine areas that urgently need improvement and amelioration which would consequently improve the internal efficiency of the PHVETCs. According to the respondents answers the different areas that need to be improved are as follows:

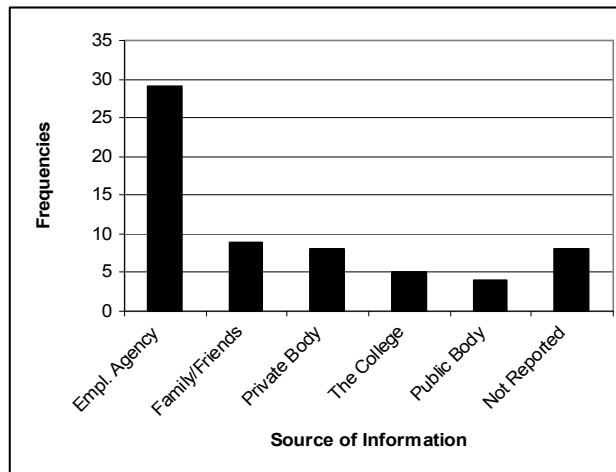
- There is a need to raise courses standard (25%),
- Improve facilities (laboratories, libraries, workshops, and equipments) (23.2%),
- Improve buildings (19.5%),
- provide better guidance (16.9%), and
- Other areas (15.4%).

### 3.5 Employment and Career

Transition from college to the world of work has been considered one of the major challenges for graduates (Graham & McKenzie 1995). To view the related aspects of this issue within the PHVETCs, respondents were asked to provide responses regarding this matter. Traditionally, the Libyan Government had been the main employer of graduates of higher education. However, as a result of the budgetary constraints during the last decade, the Government is no longer able to guarantee employment to graduates (Keibah 1998; Sharif 2002). In this connection, the vast majority of the respondents (85.7%) perceived that providing graduates with work places should be the government responsibility. In other words, work opportunities for graduate must be the government main concern. Related to

this factor, respondents were asked about the availability of employment information to students, more than three-fourth of the total sample reported they had not received any information in relation to employment opportunities available to them. However, respondents who obtained information or advices about employment opportunities (23.2%) have mentioned different sources as shown in Figure 5. Large proportion (46%) of those obtained information through a first hand contact with employment agencies and 14.3% from relatives and friends. However, just 7.9% reported that they got information through the colleges.

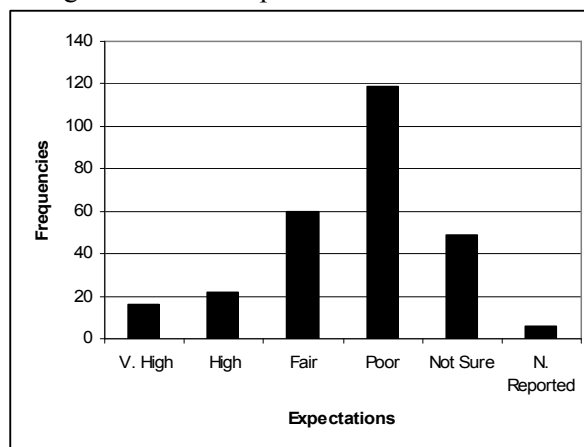
**Figure 5: Source of Employment Information (no 63)**



Source: Appendix 1.

Regarding previous work experience, the vast majority of the respondents (84.2%) stated that they had no previous work experience. Only 13.6% of the total respondents had some kind of work experience through part time work. Almost half of those who had work experience (48.9%) have had worked within the city of Benghazi. Concerning employment possibilities after graduation, respondents were asked about their expectations of future employment opportunities. Almost 43.8% of the respondents reported that employment prospects following graduation would be poor while 22.1% observed it would be fair. However, only 14% had high or very high expectation for employment after graduating (Figure 6).

**Figure 6: Work Expectation after Graduation**



Source: Appendix 1.

In responding to prospected employment location after graduation, more than two-third observed they intend to seek work opportunities within the city of Benghazi. Those who stated that they intended to seek work opportunity outside the city of Benghazi were 5.2% within the Sha'biyat of Benghazi and 21.3% within other Sha'biyats. The remainder (1.5%) intended to seek work opportunity outside the country.

#### **4. Discussion**

A total of 272 final-year students at nine PHVETCs in the Sha'biyat of Benghazi, Libya have been requested to answer a self-administer questionnaire. Their responding provides sufficient data-set regarding their socioeconomic characteristics, experience at the PHVETCs, employment expectations and other pertaining aspects. On the bases of the above mentioned results, specific points can be distinguished and discussed in the following paragraphs.

Interestingly, the majority of the participants were females (71.3%). The preponderance of females over males however, does not reflect the sex ratio of the total population at national level as according to GDHVECs (2000) sex ratio was 47% for females and 53% for males in 2000. Also, higher percentage of the total participants was of traditional student aged 25 years or younger. these however, suggests two explanations: the popularity of PHVETCs among female students in one hand and the extent to which PHVETCs contribute to local labour market with younger skilled manpower on the other.

In general, higher proportion of the respondents belonged to large families of low socio-economic status, and in particular, mothers lacked formal education. In literature, however, a number of related studies indicate that there is a relationship between the education level of parents and the field of study chosen by students. Students whose parents lack higher education attainment are more likely to enrol to non-university programmes (Knighton & Mirza, 2002; Corak et al, 2003). Furthermore, in Libya as well as in many Arab countries there is a general attitude that students originate from less educated and less socio-economically established families tend to go to higher colleges rather than university. Add to this, college attendees also, considered students of lower academic ability (Alsaid 1990 and Qubain1966).

As far as previous educational background of student is concerned, the majority of respondents came from academic secondary schools whereas very few came from VET secondary schools. This tendency can possibly be explained by that VET secondary graduates go straight to labour market following graduation rather than going to higher education institutions.

According to Brabyn & Skelly (2002: 2), "locational accessibility refers to physical proximity of a service facility," and considered an important determinant effecting utilisation of a service. Related to this matter, physical access to PHVETCs had been described as easy or very easy by three-fifth of the respondents and the daily travel takes less than 30 minutes, the vast majority of the respondents (86%) relied on motor vehicle modes to travel to and from the college. Furthermore, about three-fifth of the respondents reported that heavy traffic and long distance found to be the main deterrent during their daily travel. However, this situation of long distance and using motor vehicle modes could be major constraint to students belong to lower income families.

According to article 14 Law 114 (1994) which covers regulations of PHVETCs, 60% of curriculum instruction time should focus on practical training and 40% for the theoretical knowledge (Ajarida Arasmia, 1994, p. 14). However, it is clear from the findings that instruction in PHVETCs is tend to emphasise theoretical issues rather than practical applications. Similar findings have been previously reported by Arrabei (2004) and Aldhaif et al (2001). With this connection Arrabei (2004: 2) points out:

*Graduates of applied and technical fields are often facing challenges in securing placement in the labour market, particularly in private sector. This is primarily because of the lack of work experience and insufficiency in areas related to specialisation and occupation during their college study. This also, is a result of the dominance of theoretical subjects in the expense of practical ones because of lack and/or non-existence of workshops, laboratories and equipments which are badly needed for practical applications.*

Although higher proportions of students included in the survey were apparently satisfied with courses, they thought PHVETCs' programmes need more improvement. This improvement covering: better guidance, physical facilities, human resources and increase practical courses. Along with these findings, previous study conducted by Aldhaif et al (2001) has mentioned that most of PHVETCs are suffered lack of physical and human resources which resulting inappropriate functioning as higher education institutions.

In spite of the importance of career counselling services for students as potential employees (Oliver, undated; Mau & Fernandes, 2001; OECD, 2000), the study findings revealed that most of the respondents have not obtained any information about work opportunities available to them after graduation they also have not had any work experience as part of their college training. According to a number of related studies, obtaining a place for employment has become an increasing challenge and often "stressful process" for new graduates (Chao, 2005; Polach, 2004; Lairio & Penttinen, 2006; Graham & McKenzie, 1995). This situation of lack of information work opportunities associated with the lack of previous work experience, almost certainly led them to be extremely pessimistic over probability of employment opportunities available to them after graduation.

Regarding the location of prospective work, most of the respondents reported that after graduation they will seek employment within the city of Benghazi. This tendency can possibly be attributed to two factors firstly; the city of Benghazi is considered the largest local labour market in the Sha'biyat of Benghazi and secondly it gives an indication of the limitation of geographical mobility of PHVETCs students who prefer to seek work near to where they domiciled. This lack of geographical mobility of graduates of higher education can possibly be explained as result of insufficient information about the world of work and work opportunities available to students after graduation. This lack of geographical mobility, however, contradicts completely the wide employment mobility experienced by people with higher education (Belfield & Morris, 1999).

## **5. Conclusions**

Based on the above findings and discussion, it can be concluded that while significant proportion of the students included in the survey were generally satisfied with the study programme, they remain excessively concerned about the nature of instruction offered which is more theoretical as well as the insufficient human and physical facilities. They also, seemed more pessimistic over employment opportunities available to them after graduation. These negative attitudes can perhaps be linked to the unavailability of career counselling services for PHVETCs students and lack of work experience during college training. Therefore, authorities should equally be concerned about provide PHVETCs with sufficient physical and human resources (buildings, labs, workshops, instructors... etc.) to enhance instruction delivery, practical programmes, and consequently enhancing the outputs in accordance with the needs of the local industrial, economic and social structure. More importantly, PHVETCs should offer students career counselling services as an important tool in providing students with the needed information about career and work opportunities. In addition, PHVETCs should establish links with local businesses and find ways of coordination between the provided programmes and employers needs. These consequently,

will enhance future employment opportunities for students enrolled in PHVETCs and bridge the gap between supply and demand of local labour market

This study is part of an on-going PhD research entitled “Equity, Accessibility, and Efficiency of Public Higher Vocational Education and Training Colleges in Libya: An Empirical Investigation,” by Saad Elzalitni in cooperation with and supervision of Prof. Mel Less, School of the Built Environment, University of Salford, Salford, UK.

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#### Appendix 1: Summary of Student questionnaire results

Characteristics	Frequencies	Percentage
<b>1. Age</b>		
21-25	237	87.1
26-30	29	10.7
31-35	3	1.1
36-40	2	0.7
No response	1	0.4
<b>2. Place of birth</b>		
Benghazi City	216	79.4
Benghazi Sha'biyat (excluded Benghazi city )	16	5.9
Other Sha'biyat	34	12.5
Outside Libya	4	1.5
No response	2	0.7
<b>3. Gender</b>		
Female	194	71.3
Male	78	28.7
<b>4. Nationality</b>		
Libyan	262	96.3
Non-Libyan	7	2.6
No response	3	1.1
<b>5. Type of Accommodation</b>		
Dormitory	34	12.5
Private	238	87.5
<b>6. Permanent address</b>		
Benghazi City	209	78.8
Benghazi Sha'biyat (excluded city )	25	9.2
Other Sha'biyat	35	12.9
No response	3	1.1
<b>7. No. of family's members</b>		
1-4 persons	7	2.6
5-9 persons	98	36.0
10-14 persons	136	50.0
15+ persons	24	8.8
Not reported	7	2.6
<b>8. Parents' level of education</b>		
Father		
No formal education	82	30.1
Primary	48	17.6
Preparatory	38	14.0
Secondary	37	13.6
Higher education	63	32.2
Unknown to student	4	1.5
Mother		
No formal education	153	56.3
Primary Education	36	13.2
Preparatory	37	13.6
Secondary	25	9.2



Higher Education	19	7.0
Unknown to student	2	0.7
<b>9. Family's total income</b>		
100-150	50	18.4
151-300	120	44.1
301-450	50	18.4
451-600	14	5.1
601-750	5	1.8
750+	7	2.6
Unknown to the student	26	9.6
<b>10. Who pays college tuitions fees?</b>		
Student	28	10.3
Family	239	87.9
Sponsorship	5	1.8
<b>11. Previous schooling</b>		
Academic	244	89.7
Specialised	26	9.6
Vocational	2	0.7
<b>12. Location of secondary school</b>		
Benghazi City	204	75.0
Benghazi Sha'biyat (excluded Benghazi city)	24	8.8
Other Sha'biyat	41	15.1
No Response	3	1.1
<b>13. Year of school graduation</b>		
Prior 1990	6	2.2
1991-1995	7	2.6
1996-2000	237	87.1
No response	22	8.1
<b>14. Connection between past and current course of study</b>		
Yes, there's connection	124	45.6
No there's no connection	119	43.8
Don't know/Not sure	28	10.3
No response	1	0.4
<b>15. Is the current course compatible with the desired profession?</b>		
Yes, there's connection	163	59.9
Yes, there's connection	69	25.4
No there's no connection	38	14.0
Don't know/Not sure	2	0.7
No response		
<b>16. Reasons for incompatible with the desired profession (no. 69)</b>		
I didn't meet the requirements	27	39.1
I didn't meet the requirements	19	27.5
Parent advise otherwise	8	11.6
Preferred was too unaffordable	7	10.2
Preferred unavailable nearby	6	8.7
Changed mind after received other options	2	2.9
Through Central Admission		
<b>17. Reasons for enrolling in the course</b>		
Desire for more study	116	42.6
Through Central Admission	99	36.4
Not accepted in the preferred course	31	11.4
Unemployed/ a school leaver and want to improve work prospect	12	4.4
Unemployed/ a school leaver and want to improve work prospect	11	4.0
To start own business	2	0.7

Parent wish	1	0.4
Other		
<b>18. Mode of transport used to come to college</b>		
Public bus	110	40.4
Private vehicle	82	30.1
Taxi	38	14.0
Walking	37	13.6
Hitch-hiking	3	1.1
No response	2	0.7
<b>19. Home/College travel time</b>		
Less than 15 minutes	105	38.6
15-30 minutes	102	37.5
More than 30 minutes	59	21.7
No response	6	2.2
<b>20. Home/College daily journey</b>		
Very easy	40	14.7
Easy	121	44.5
Difficult	86	31.6
Very difficult	23	8.5
No response	2	0.7
<b>21. Home/College constrains</b>		
Heavy traffic	92	33.8
Long distance	71	26.1
Traffic lights	25	9.2
Road work	13	4.8
None	70	25.7
No response	1	0.4
<b>22. Opinion about the course compared with expectations</b>		
Meets needs and expectations	191	70.2
Doesn't meet needs and expectations	80	29.4
Not reported	1	0.4
<b>23. Reasons for not meeting needs and expectations (no. 80)</b>		
Courses don't reflect profession or irrelevant	14	17.5
Courses are too hard	12	15.0
Courses bellow standards	10	12.5
Don't feel as a higher education student	5	6.3
Parent's wish and personal reasons	5	6.3
Lack of practical courses	4	5.0
Central Admission	4	5.0
Wasn't preferred course	4	5.0
Courses' time-table difficulties	3	3.7
Insufficient staff and facilities	2	2.5
Employment difficulties	2	2.5
Not reported	15	18.7
<b>24. Satisfaction with education/training programmes</b>		
Very satisfied	19	7.0
Satisfied	154	56.6
Unsatisfied	98	36.0
Not reported	1	0.4
<b>25. Dissatisfaction reasons (no. 98)</b>		
Too many irrelevant courses	14	14.3
Lack of practical courses	14	14.3
Don't feel like a higher education student	14	14.3
Courses are too hard	12	12.2

Inadequate staff and facilities	10	10.2
Inadequate administration	8	8.2
Courses time-table are inappropriate	6	6.1
Courses don't reflect profession	5	5.1
Out of date courses	3	3.1
Lack of employment possibilities	2	2.0
Not reported	10	10.2
<b>26. Nature of courses</b>		
Too practical	147	54.0
Too theoretical	22	8.1
Well-balanced	101	37.2
No reported	2	0.7
<b>27. Where practical applications take place?</b>		
Within the college	128	47.0
Within another venue	137	50.4
Not reported	7	2.6
<b>28. Venues of practical applications outside the college (no. 137)</b>		
Within a public body venue	128	93
Within a private body venue	7	5.1
Not reported	2	1.5
<b>29. Actions would improve education/practical courses</b>		
Raise standards of courses	68	25.0
Improve labs, workshops, and equipments	63	23.2
Improve buildings	53	19.5
Provide better guidance	46	16.9
Improve and tighten disciplines	27	9.9
Increase practical/training programmes	12	4.4
Other	1	0.4
Not reported	2	0.7
<b>30. Seeking employment in the major field of study</b>		
Yes	227	83.5
No	19	7.0
Don't know/Not sure	26	9.5
<b>31. Reasons for not seeking employment in the field of study (no. 19)</b>		
Too late to change field of study	7	36.8
No alternative	7	36.8
No alternative	2	10.5
Not clear at the beginning	2	10.5
Parents' desire	1	5.3
Intended to do postgraduate studies		
<b>32. Should authorities provide employment opportunities to graduates?</b>		
Yes	233	85.7
No	21	7.7
Don't know/No sure	18	6.6
<b>33. Employment possibilities information provided for students</b>		
Yes	63	23.2
No	206	75.7
Don't know/Not sure	3	1.1
<b>34. Bodies provided employment information for students (no. 63)</b>		
An employment agency	29	46.0
	9	14.3

Relative/Friends	8	12.7
Private employer	5	7.9
The College	4	6.3
Public body	8	12.8
No response		
<b>35. Work experience</b>		
Yes	37	13.6
No	229	84.2
Don't know/No sure	6	2.2
<b>36. Type of job (no. 37)</b>		
Private body	16	43.2
Public body	15	40.5
Taxi driver	1	2.7
Farming	1	2.7
No response	4	10.9
<b>37. Job location</b>		
Benghazi City	18	48.9
Other Sha'biyat	11	31.1
Benghazi Sha'biyat (excluded Benghazi City)	5	13.5
Not reported	3	8.2
<b>38. Employment opportunities after graduation</b>		
Very high	16	5.9
High	22	8.1
Fair	60	22.1
Poor	119	43.8
Don't know/Not sure	49	18.0
Nor response	6	2.2
<b>39. Prospected employment location</b>		
Benghazi City	180	66.2
Other Sha'biyat	58	21.3
Benghazi Sha'biyat (excluded Benghazi City)	14	5.2
Outside the country	4	1.5
No response	21	7.7
<b>40. Encouraging other to enrol at PHVETCs</b>		
Yes	80	29.4
No	47	17.3
Don't know/Not sure	142	52.2
No response	3	1.1
<b>40. Reasons for not encouraging other to enrol (47)</b>		
Don't feel at higher education institution	27	57.4
Lack of practical applications	7	14.9
Inadequate staff and facilities	9	19.2
No response	4	8.5

**Source:** Field study conducted by the author in 2004.