Ph.D. Thesis FADI ABDULMOEIN AL SAKKA 2014

HUMAN CAPITAL DEVELOPMENT IN SPECIAL ECONOMIC ZONES: THE CASE OF DUBAI

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Ph.D. Thesis, 2014

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Abstract

The notion of human capital as an economic asset was first emerged in 1961 when Theodore Schultz coined the phrase. In the current most serious economic crisis since the 1930s, strategists and analysts in governments and commercial institutions are turning to people as being the most important asset in regaining economic stability and growth.

This study aims to establish a framework to measure the impact of special economic zones on human capital accumulation within the context of Dubai. This framework will help decision makers to set up effective policies for future economic zones and to focus resources on key factors to accelerate the development of local human capital which is vital for the city's economic growth. The specific research questions were: To what level does human capital accumulation occur within Dubai SEZs? What characterises human capital development in SEZs? What are the drivers of human capital development in Dubai SEZs?

The research was carried out in three phases. The first phase was an exploratory study used to localise the variables, introduce adjustment, validate, verify, discuss variables obtained from the literature review, and to present the conceptual framework. The second phase measured the impact as well as the relationship of each variable on human capital development, to explain how human capital is developed within special economic zone firms, to gather more data and information about the localised variables influencing human capital development, and to collect data to build up a Human Capital Index. The third phase compares the impact of special economic zones on human capital in a cross comparison of firms' development.

An in-depth literature review was conducted on human capital and special economic zones. By focusing on the macro and micro levels, the study shed light on the factors that drive human capital development. The study established a framework to measure the impact of special economic zones on human capital accumulation within the context of Dubai. The proposed framework is characterised by education level, years of experience, the level of continuous knowledge accumulation, employees' ability to build competence, and the application of the learnt education, knowledge and practice. The framwork proposed that human capital development is driven by the firm's type, size, financial performance, free zone level of clustering, culture of avoidance and collectivness, and finally, the level of technical know-how spillover.

The research concludes that human capital development does take place in Dubai special economic zones but at a moderate level. Human capital development is affected by the firm's type, its financial performance, the level of clustering in the free zone, and what level of technical know-how spillover has influenced human capital development within Dubai free zones. In contrast, the culture of collectiveness is realised to have a minor effect on human capital development within free zone firms, while an avoidance culture is recognised to have no impact whatsoever.

Dedication

To God, the Most Merciful, the Most Gracious.

To my parents AbdulMoein & Siham who shaped me the way I am.

To my beloved wife Susie for her patience, kindness, and love.

To the wonderful kids Taleen, Rasil and AbdulMoein for their tolerance.

To my brother-in-law AbdulLatif Joukhadar for his persistent positive encouragement.

Finally, to the most special sister that anyone could find: Foton.

Preface and Acknowledgement

I am grateful to Prof Mustafa Al Shawi, the main supervisor, for his constant support. Prof Mustafa exerted every possible knowledgeable effort he possessed in order to take me through my thesis stages, even though he was occupied with other PhD students. He was there for me whenever I required guidance, direction and advice. Thank you Prof Mustafa for all the patience, kindness, and above all the amicable intellectual manner you showed me.

I am also indebted to Prof Nabil Baydoun, the local supervisor, for his immense assistance. I enjoyed every invaluable discussion with him about each concept investigated within the thesis. Words cannot describe the gratitude that I have for Prof Nabil. Thank you from the bottom of my heart.

I acknowledge Dr Geoffrey Gachino for his vital training in research methodology, sharing templates, samples, articles, and books. Our discussions were exceptional and contributed directly in shaping the research proposal and adding value to my research. I received a massive amount of encouragement from him.

I thank Susan Jalili for her help in providing feedback on important points. Her attention to detail and the ability to link fragments of thoughts into one stream were incredible.

I would like to acknowledge all the firms executives, Government officials, and policy makers for providing me their true opinion when interviewed. Among those who were engaged with the discussions I include Dr Mohamed Zebib who within a short discussion directed me to investigate my study within Dubai free zones. Also my appreciation goes to Nassir Madani, Martin Jalili, Cedric Bachellerie, Khalid Jehjah, Mohammed Bin Mousa, Christine Greaves and Hosam Abdullah.

Special thanks go to the built environment postgraduate research office members. I include Moira Mort, Rachel Lilley, and Cheryl Batley who were my mascots!

Finally, my special thanks to my family members, friends, and to those who directly and indirectly extended their hand to me while establishing this thesis.

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Chapter One : General Introduction

1.1 Introduction

The notion of human capital as an economic asset first emerged in 1961 when Theodore Schultz coined the phrase. Now in the wake of the most serious economic crisis since the 1930s, strategists and analysts in governments and commercial institutions are turning to their people as their most important asset in regaining economic stability and achieving growth.

Human capital may be described as the level of knowledge and skills held by a person that enables them to carry out work so as to produce economic value. Thus the citizen has acquired his own economic value to his country's economy, either as a member of that country's labour force, or as a migrant worker who repatriates his earnings in order to boost his home economy.

Dubai is the second largest of the seven emirates that form the United Arab Emirates, situated on the Arabian Gulf coast adjacent to Saudi Arabia, Oman and Qatar. The federation took place in December 1971 after two centuries of administration by the United Kingdom, and the country initially benefited from its considerable oil and gas reserves. However, by the mid-1980s those resources were in decline in all the emirates except Abu Dhabi, and Dubai began to look for alternative economic opportunities.

It began to seek Foreign Direct Investment (FDI). One major attraction to the granting of FDI was the establishment of Special Economic Zones (SEZ) founded as cluster-specific industries. The potential for most emerging economies such as the United Arab Emirates is predicated on their access to suitably skilled workers, at all levels, as the new foundation for growth and development. Dubai's own population was too small to supply the necessary quantity and quality of workers, and the emirate encouraged an influx of expatriate workers who now outnumber its nationals by five to one.

As the commercial hub in the United Arab Emirates, the Emirate of Dubai demands serious academic enquiry into the effects of its structural changes, exemplified in the

impact of the creation of free zones, on human capital development. This thesis investigates how human capital development in Dubai actually takes place and determines its role in enhancing productivity growth at a company or economy level.

This study aims to propose a framework to measure the impact of special economic zones on human capital accumulation within the context of Dubai. This framework proposes that human capital is an indicator which is characterised by education level, years of experience, the level of continuous knowledge accumulation, employees' ability to build competence, and the application of the learnt education, knowledge and practice. The research submits that human capital development is driven by the firm's type, size, financial performance, free zone level of clustering, culture of avoidance and collectiveness, and finally, the level of technical know-how spillover. This framework will help decision makers to set up effective policies for future economic zones and to focus resources on key factors to accelerate the development of local human capital which is vital for the emirate's economic growth. The questions posed are: To what level does human capital accumulation occur within Dubai SEZs? What characterises human capital development in SEZs? What are the drivers of human capital development in Dubai SEZs?

1.1.1 Human Capital

Human capital is perceived by economists and researchers as a major pillar of a country's economic growth and in turn the base for achieving the targeted level of living standards. Economic growth models regard human capital with different degrees of importance. Classical and conventional growth models look at it as an unexplained factor which happens outside the model, while neoclassical, Schumpeterian, evolutionary and modern growth models consider it the main driver behind sustainable economic development. (Romer, 1990; Freeman and Soete, 1997)

Positive economic growth is enabled by the positive growth of human capital stock which in turn drives a country's ability to innovate. A country's ability to grow its human capital stock is the corner-stone for inclusion among the developed countries which enjoy a high level of productivity, due to their possession of a high level of

human capital stock accumulation. Today, the difference between countries' growth levels is attributed to the difference in the level of human capital they develop and reserve. There is a debate whether education and accumulation of knowledge are behind technological change or vice versa, but either way, the accumulation of human capital is essential for innovation and it drives in turn the countries' technological change level. (Nelson and Phelps, 1966; Romer, 1990).

It is conceived that human capital plays the main role in economic growth, while the accumulated physical capital has the secondary role. Countries accumulate human capital usually through formal training 'schools', research and development institutes, and learning-by-doing (on-the-job training). Most of the Asian developing countries have witnessed a 'miracle' of transformational economic growth. For example, Taiwan, Hong Kong, and Singapore have become key exporters of a sophisticated range of products. This rapid progress is attributed to the fast growth rate of human capital accumulation and the attainment of new capabilities. Mainly this happens through a systematic approach of nurturing the required human capital. In order to climb the quality ladder and improve on product cycle, staff must keep on accepting new challenging tasks and roles as part of their specific on-the-job training aspiration, (Lucas, 1988; Lucas, 1993; Grossman & Helpman, 1991)

The term "human capital" is used in modern economic literature in order to classify expenditure on human capital as investment rather than consumption. In this view human capital is similar to "physical means of production". Investment in human capital means "all activities that influence future real income through the embedding of resources in people". This covers expenditure on education, training, health, information, and labour mobility. Furthermore, investment involves initial costs (direct tuition expenditure, foregone earnings during schooling, and reduced wages during training) in order to gain a return on this investment in the future. (Becker, 1964; Becker, 1992; Mincer; 1958; Schultz; 1961).

The developed countries were the first to focus on human capital development in order to transform their economies from agriculture-dominated economies to industry-dominant economies. Recent research claims that consistent accumulation of human

capital enabled these countries to acquire the necessary capability as well as the required innovative capacity. Consequently, developed countries greatly enhanced their value-added manufacturing activities enabling them to participate competitively in international export markets, (Porter, 1990).

Modern economic growth models witness a major shift in paradigms favouring knowledge economies. Heavy manufacturing, industrialisation, and natural resources are increasingly substituted with human capital and research and development (R&D). Developed countries such as the USA, Germany, China as well as emerging nations progressively place emphasis on the rising demand for human capital. It is considered an important asset that can drive innovation as a result of applied R&D activities. Many programs are adopted by countries in order to enhance this capital to achieve a competitive edge (Sengupta, 2011).

1.1.2 Foreign Direct Investment and Special Economic Zones

Lacking the internal financial resources to build and develop their economies, emerging countries look outside their borders for Foreign Direct Investment (FDI). FDI has become increasingly important for any country, and especially developing countries, to stimulate economic growth. One major vehicle for attracting FDI is the establishment of Special Economic Zones (SEZs) founded under the concept of cluster-specific industries. The prosperity of a location largely depends on the productivity of the firms located there, what they choose to do, and the nature of competition among them. Firms located in the same geographical area and close to the knowledge sources are found to be enjoying considerable growth in production and profitability, much more than those who are located far from it. This is mainly attributed to the high level of clustering that drives knowledge creation through spillovers under the condition that those firms are somehow near to their production frontier. (Porter, 1990; Porter, 1998; Martin & Ottaviano; 1999)

However, there are many factors which act as determinants of FDI inflow: Host country natural resources, the level of connection to the import/export market, and the level of the host country’s human capital stock. Poor countries with poor levels of labour

productivity may fail to attract FDI inflow, while the level of the workforce's skills and education is a major determinant of FDI inflow to the host country. For that reason, worker education and skills can be a serious stimulus to the level of FDI inflow and determines what type of activities can or cannot be undertaken in the host country, (Lucas, 1990; Zhang & Markusen, 1999; Dunning et al, 1998)

The demand for skilled workers increases when firms use superior technology. Upgrading of human capital can occur directly and indirectly: First, multinational enterprises (MNEs) can improve the quality of the local workforce through training and through learning-by-doing. MNEs have generally been found to use more capital-intensive production methods than domestic firms. As the level of human skills required is generally higher in capital intensive production, MNEs will provide more and better training for their staff. MNEs must therefore train their employees and by so-doing they increase average labour productivity. One of the most important outcomes of the positive productivity is the spillover that can occur through movement of highly skilled staff from MNEs to domestic firms, and this is where the need to develop the host country's human capital is one of the main requirements of MNEs within the fence of the free zone. (Gugler & Brunner, 2007).

Firms can be productive in any industry if they employ sophisticated methods, use advanced technology, and supply unique products or services. The sophistication and productivity with which firms compete in a location is strongly influenced by the size of the firm itself in terms of revenue growth, the initial capital invested, technology transfer and the upgrading of human capital. Two important effects of multinational establishments on host country clusters can be distinguished. First, they can trigger the emergence of new clusters, and second, they can stimulate development of existing clusters. Development can be seeded and reinforced by inward FDI where SEZs can serve this purpose very well. (Porter, 1998)

1.1.3 The Emirate of Dubai

As one of the fastest growing economies among the emerging countries, the United Arab Emirates, and Dubai Emirate in particular, have recognised the need for strong

human capital assets to propel and sustain this economic growth. This has been articulated specifically in Dubai's Strategic Plan for the period to 2015. Given the small population, lack of technical know-how and skills generally, Dubai articulates in its Strategic Plan 2015 the need to achieve human capital excellence, by

"……preparing Dubai's workforce for the high-value, knowledge-driven economy. To achieve this objective, Dubai necessitates attracting, developing, retaining highly skilled employees, and improving qualifications and increasing their motivation".

One important aspect of developing Dubai's human capital is the concept of bringing in the free zones economic model. Through this, Dubai intends to build its own economic clusters which will positively result in human capital development, and vice versa. Although critics claim that the zones created have deviated from their core businesses, by turning out to be merely real-estate companies, most still regard them as pillars of building, growing, and sustaining the modern Dubai economy, (Government of Dubai, 2014).

1.2 Research Problem

There are two interrelated aspects to this research: The first is human capital and the second is the special economic zones. Human capital development is considered by both developed and emerging countries to be one of the main drivers of economic growth. Nowadays, it is debated that investment in human capital brings in innovation and technological advancement, leading to increased levels of productivity. Investment in human capital is regarded as the sole recipe for success in an increasingly competitive economic environment, and modern economic models forecast that future growth is based on the level of growth of human capital, therefore human capital development is considered the main pillar for desired economic growth. Empirical research indicates that countries are increasingly paying attention to this factor when establishing future economic growth plans. Natural resources can no longer be considered the main contribution to growth.

Secondly, studies that investigate special economic zones suggest that they raise employability, foster human capital development, and the economic growth of the host

country. Foreign direct investment in the shape of special economic zones attracts multinational enterprises. Firms usually bring in modern technology, management techniques, international standards and high level policies and procedures. In order to operate well within the SEZ fence, firms seek to train and equip the host country's human resources with the required skills. This incurs investment in education, formal training and on-the-job training which in turn raises the human capital.

The research problem is that there is little or even no evidence of SEZ impact on the development of the host country's human capital. Existing studies do not attempt to establish the empirical relationship between SEZs and human capital development. Furthermore, they do not exert efforts to investigate the exact impact of special economic zones on human capital development. A careful examination of the literature indicates that most of the work done on human capital development is related to the developed countries and little exists on SEZs in emerging economies such as the United Arab Emirates. Dubai is renowned in the region for exerting strenuous efforts over the past 20 years to establish many free zones and has become a pioneer of its kind among the Arabian Gulf countries.

This study aims to fill the gap in research, in the context of Dubai, and adds value to the existing literature in exploring the impact of Dubai's special economic zones on human capital development. The relevance of this study is to propose ways to maximize the exploitation of these free zones to reach the desired level of human capital development. Ultimately this will draw the attention of policy makers to concentrate on the appropriate vehicle to achieve the desired economic growth.

The study is important for the following reasons:

- Few studies exist in the region on the broad subject of human capital development. This is critical to the understanding of how human capital development actually takes place and its role in enhancing productivity growth at a firm or economy level.
- The outcome of this study will make recommendations for policy making.

- The study will also generate useful information that can be shared by all stakeholders, including government regulatory bodies, for developmental purposes.
- Dubai is an emerging economy and demands serious academic enquiry into the effects of its structural changes on human capital development.

1.3 Aim and Objectives

1.3.1 Aim

This study aims to establish a framework to measure the impact of special economic zones on human capital accumulation within the context of Dubai. This framework will help decision makers to design effective policies for future economic zones and to focus resources on key factors to accelerate the development of local human capital which is vital for the economic growth of the emirate.

1.3.2 Objectives

In order to achieve the aim, the following objectives are set for the study:

- Undertake a literature review of human capital and special economic zones
- Establish an understanding of human capital characteristics within the context of Dubai SEZs
- Determine the level of human capital accumulation in Dubai SEZs and what shape it takes
- Investigate the drivers of human capital development in the Dubai SEZs
- Develop an understanding of driving forces (independent variables) of human capital accumulation in Dubai SEZs
- Develop a framework to measure the development of human capital within special economic zones
- Validate the above framework

- Propose recommendations to policy makers on the necessary steps for maximum exploitation of free zones as a vehicle for driving human capital development.

1.4 Research Questions

Flowing from the above, this study seeks to examine the contribution of SEZ firms in developing human capital in Dubai. Specific questions to be addressed include the following:

1- To what level does human capital accumulation occur within Dubai SEZs?

2- What characterises human capital development in SEZs?

3- What are the drivers of human capital development in Dubai SEZs?

Other important questions include:

4- Do firms undertake research and development (R&D)?

5- To what extent does the firm's financial performance influence human capital development?

6- To what extent does the firm's size influence human capital development?

7- Does clustering influence human capital development within the zones?

8- Do we have knowledge spillover in the zones? If yes, what influence does it have on human capital development?

9- What is the influence of culture within Dubai special economic zones on human capital development?

1.5 Scope of Study and Limitation

This study investigates the impact of special economic zones on human capital development within the context of Dubai Emirate of the United Arab Emirates. For this purpose, firms within three special economic zones are explored. The three zones are

Jebel Ali Free-zone, Dubai International Financial Centre, and Dubai Multi-Commodity Centre, Jumeirah Lake Towers (JLT).

While undertaking this study, the following limitations were anticipated:

- Data available in the public domain is extremely limited, and organisations use "confidentiality" as a reason for not providing it.
- The study tests the research questions within three special economic zones in Dubai. The chosen zones are considered to be representative of the current existing 18 zones. The selection is on the basis of cluster-specific industries within these zones, and also on the firms' willingness to provide data and information.
- Dubai is regarded as representative of the United Arab Emirates as a whole, and while it is recognised that differences exist between the Emirates, there are more similarities than differences.

1.6 Structure of the Thesis

a) Chapter One: represents the introduction and the motivation of the research. Briefly introduces research aim, objectives, importance, research questions, study scope and the structure of the thesis.

b) Chapter Two: undertakes the literature review on the importance of human capital in various economic growth models, measurement of human capital, special economic zones, and perceived special economic zones determinants of human capital development.

c) Chapter Three: explains macro and micro facts and figures about Gulf Co-operation Council (GCC) countries cascading down to the United Arab Emirates and ultimately Dubai. This helps to understand the context of Dubai and to investigate extensively the research questions and the strategic challenges confronting Dubai's economic development. The chapter explains the needs and the requirement of Dubai to concentrate on human capital development as the fast track for growth and how special

economic zones can provide the optimum fuel for this specific vehicle. The chapter concludes with the development of the research concept.

d) Chapter Four: presents the research design and methodology and explains the techniques used in order to localise the variables obtained from the literature review, to come up with the proposed research framework, to measure the impact of Dubai special economic zones on human capital development, and to obtain cross-comparison details among the cases studied.

e) Chapter Five: presents the case studies survey of firms within Dubai special economic zones. Three phases are undertaken throughout this chapter. The first phase is commissioned to localise the research concept variables throughout interviewing key policy makers to determine the significance of establishing special economic zones in Dubai. Also to explore the components of a human capital indicator as well as the main driving forces which impact human capital development. The variables composing the research concept are discussed thoroughly in order to conclude with the proposed research framework that will be used throughout the following phase. The second phase is commissioned to verify the proposed research framework. The purpose of this phase is to obtain information and data about each case with regards to determents identified in the proposed research framework. Finally, phase 3 which is commissioned to contrast the variables across the case studies. The case studies are introduced in a structured standard format using a pattern-matching technique and cross-case discussions. Furthermore, this research finds it very important to have a quality check in order to initially test the human capital indicator, present the results to figure heads within the zone, and finally propose an initial first step of validation.

f) Finally Chapter Six: presents a summary and conclusion of the study, highlighting the contribution to academic research, making suggestions to policy makers, and pointing out the limitations and recommendation for future research.

1.7 Summary

Human capital development is considered to be a main pillar of economic growth. Developed as well as emerging countries are establishing various programs to exploit their human capital to achieve the desired growth. Foreign direct investment in the shape of special economic zones is increasingly adopted by countries to speed up this growth.

Special economic zones are seen as a vehicle which drives the human capital development of the host country. This is where Dubai has focused its perception over the last twenty years and has become a pioneer in the area to establish cluster-based economic zones that attract firms who introduce FDI to the country's economy.

The level of impact on human capital development resulting from special economic zones is not established in the previous body of knowledge. This research adds value in investigating this relationship, and in recommending to policy makers how best to exploit the established special economic zones in driving Dubai human capital development, which will lead to the desired economic development.

Chapter Two: Human Capital Development and Special Economic Zones: Theoretical and Empirical Literature Review

2.1 Introduction

Modern economic growth models show a major shift in paradigms favouring knowledge economies, where heavy manufacturing, industrialisation, and natural resources are increasingly substituted by human capital and research and development (R&D). Developed countries as well as emerging countries, progressively place emphasis on the increased demand for human capital. It is considered an important asset that can drive innovation as result of applied R&D activities. Many programs are adopted by countries in order to enhance this capital to achieve a competitive edge (Sengupta, 2011).

Human capital is perceived by economists and researchers as a major pillar of a country's economic growth and in turn the base for achieving the targeted level of living standards. Economic growth models regard human capital with different degrees of importance. Classical and conventional growth models look at it as an unexplained factor which happens outside the model, while neoclassical, Schumpeterian, evolutionary and modern growth models consider it the main driver behind sustainable economic development, (Romer, 1990; Freeman and Soete, 1997).

Foreign direct investment in the shape of special economic zones has a clear impact on the host country's human capital development. Firms bring in modern technology, management techniques, international standards and high level policies and procedures. In order to operate well within the SEZ fence, firms seek to train and equip the host country's human resources with the required skills. This incurs investment in education, formal training and on-the-job training which in turn raises the human capital (Lucas, 1990)

This chapter introduces how the notion of human capital development evolved through modern economic history from being an invisible hand to reaching the status of the driving force of economic development.

Then, the chapter examines how developing countries such as the United Arab Emirates (especially the Emirate of Dubai) use various vehicles to build the nation's skills, one of them being the establishment of special economic zones, and explores the link between establishing free zones and the human capital growth through various channels of knowledge accumulation and putting this knowledge into practice.

2.2 Role of Human Capital Development in Countries' Growth

Human capital development is considered as a main pillar for desired economic growth. Empirical research indicates that countries are increasingly paying attention to this factor while establishing future economic growth plans, (Romer, 1986; Lucas, 1988; Nelson and Phelps, 1966). Natural resources can no longer be considered as the main contribution to growth. Researchers argue that resource-abundant countries usually witness a shift in their economic sectors towards natural resources. This may eventually lead to "Dutch Disease" in which economic growth becomes slower than in countries whose natural resources are limited, resulting in the natural resources being considered more as a curse than a gift, (Sachs and Warner, 1999, 2001)

Endogenous growth theory looks at human capital from a different perspective than previous theories. Both Romer (1986) and Lucas (1988) debate that the accumulation of human capital contributes marvelously to countries' achievement of a higher return of growth through increasing the productivity of workers accompanied by the innovation of new product design. The relationship between accumulating human capital and technological change is discussed thoroughly, starting with Becker (1964), followed by Nelson and Phelps (1966), Lucas (1988), Romer (1986, 1987, 1990, 1994) and Aghion and Hewitt (1992).

Nelson and Phelps (1966) argue that positive growth rate is enforced by a positive growth of human capital stock which drives in turn countries' capabilities to innovate. Countries' ability to acquire human capital stock is the corner-stone for inclusion among the developed countries which enjoy a high level of productivity, as the result of their possession of a high level of human capital stock accumulation. Nelson and Phelps (1966) attribute the difference among countries' growth levels to the difference of the

level of human capital they develop and reserve. There is a debate whether education and accumulation of knowledge are behind technological change or vice versa, but either way, the accumulation of human capital is essential for innovation and it drives in turn the countries' technological change level. (Romer, 1990).

Both Becker (1964) and Lucas (1988) concur that the accumulation of human capital through education, formal and informal training is the main factor behind a country's growth. Lucas (1988) finds that the difference among countries' growth rates is related to the difference in knowledge accumulated through time. Lucas (1988) finds that there is a strong relationship between productivity and human capital accumulation. Productivity growth rate increases with the level of education level attainment especially when countries have a high level of enrolment in secondary and higher education.

Romer (1986) and Lucas (1988) introduce within their model the notion of knowledge spillover of education among individuals. The direct effect of any individual's education is primarily on his own productivity level, while the secondary one is called the demonstration effect on group average level of education within which the individual interacts socially. A group's level of education is positively affected by each and every individual's attainment of new knowledge. This drives the group to learn through interaction with each other and with the higher level of knowledge spillover that happens when discussions occur. Lucas (1988) argues that there are two main ingredients which formulate the country's human capital: Education and learning-by-doing. Workers devote a fraction of their time to work production and the remaining fraction to on-the-job training (learning-by-doing).

Following the same stream of thought, Romer (1990) argues that human capital accumulation and technology are driving countries' growth in the long term rather than the investment in physical capital and the accumulation of more workers. Romer (1990) believes that countries should invest in human capital in terms of research function. Examples of research outcome could be a new product design, better ways to perform operational activities, and newer services. The resulting innovation in terms of ideas generation and new product design drives the country's ability to generate a higher

standard of living and in turn achieve a higher level of return on investment of the human capital.

Aghion and Hewitt (1992) debate in their model that growth rate is the function of the level of innovation, size of skilled labour-force and the volume of research activities. In this stream of thought, labour is classified into three types. First is unskilled labour which is used in the simple line of production. Second is skilled labour used either in the intermediate level of operations or in research activities. The last is specialised labour used mainly in research activities. Aghion and Hewitt (1992) presume that skilled labour is needed for research which would lead to a random sequence of innovations which in turn will drive the economy's intended growth level.

Based on the above arguments, modern economists believe that Human Capital is one of the major pillars to sustainable economic growth. Human capital has a strong link with technological change; although some may assume that human capital drives technological change through the level of research and development and, in turn, innovation. Human capital stock can be illustrated by most or even all of the following components: Education, knowledge accumulation, formal and informal training, learning-by-doing, and skilled labour subject to technological change.

2.3 Economic Growth Model and Human Capital Accumulation

This section will provide insights into how human capital was perceived through various economic models, from the conventional classical to the new modern growth theories.

2.3.1 The Exogenous Economic Model

The corner-stone of the conventional economic growth models is the diminishing return of resources. The idea is that at a specific point of the growth cycle, any increase of any input (labour, machine, land) will result in less output than it did in the last unit of production. Decreasing returns and rising marginal costs are the major assumptions where an economy is assumed to have reached equilibrium. Human capital (knowledge accumulation) and technology are considered as given forces which are intentionally

considered outside the model; therefore, it has limited importance in driving economic growth compared with physical capital, (Smith, 1776; Swan, 1956). Robert Solow, who is known for the exogenous model of growth, addresses this issue by bringing in technology as a third factor in the growth model where capital is subjected to a diminishing return. However, Solow looks at technology and the knowledge behind it as a given force that comes outside the economic growth model. (Solow, 1957)

2.3.2 The Endogenous Growth Model

Unlike the previous model which considers technology and human capital as given forces, the endogenous growth model internalises both knowledge and technology within the model. Both human capital and technology are attributed with increasing returns which drive the economy, compared to the diminishing return of the physical capital in the previous models. This model underlines that policy makers should pay great attention to the creation of knowledge through education, formal and informal training and individual health in order to sustain the planned economic growth (Romer, 1986; Lucas, 1988)

Romer (1994) argues that only value creation will help to increase the living standards of any economy. In his discussion he asserts that stimulation of economic sectors through investment, taxes, spending incentives and other macro-economic fine-tuning cannot contribute to sustainable growth unless they are accompanied by large and numerous discoveries. Compared with the previous model of the diminishing return of capital, once a new discovery sees the light, the additional cost of production will be minimal compared to the first unit produced. Therefore, economic growth will not reach a steady growth state or even a declining one. Knowledge accumulation and technological advancement cannot be left unexplained and outside the model as in the case of the exogenous economic growth model. They are too endogenised within the growth model. Furthermore, they can be as important as any solid pillar to growth sustainability. Business firms compete with each other not on the basis of product or service price, but based on the differentiation of their product or service (Arthur, 1996).

2.3.3 The Evolutionary Growth Theory

Nelson and Winter (1985) interestingly bring the notion of biological evolution to economics. In their debate, both macro-economic behaviour, economic actors (firms, works, and consumers) and the overall path of economic development can be framed within the notion of economic evolution. Firms always seek to maximise profit but are limited by the level of knowledge the firm possesses to achieve this aim. With their limited knowledge they follow various paths of doing their business. Once a path fails, then the business moves to another path in a similar way to the evolution of biological species. Firms seek to develop new products or services mostly looking for something similar to what they adopted before. The most successful practices survive while less successful ones are eliminated automatically. However, change is abrupt rather than a continuous smooth means of development. Development of new technologies, products and services change the way businesses interact within a given market causing some firms to grow and others to shrink and even die. The essence on which this theory is built is that experimental exercises, learning, research and development act as an essential part of economic growth and successful economic evolution.

2.4 Measurement of Human Capital

The purpose of this section is to look at the various attempts to discuss human capital value from different angles. First, this section will explore how human capital is measured through recent literature and what motive lies behind it. Second, it will explore the variables used in quantifying the value of human capital. Third, it will establish the research main indicator which will be used in estimating human capital value in Dubai's special economic zones.

Coff (2002) describes human capital as the set of knowledge, skills and abilities (KSA) in which knowhow can be classified as tacit or explicit. Explicit KSA is the general knowhow which economies and firms can imitate easily - it is affordable and available for all - while tacit knowledge is more specific to the nature of the business that economies and firms pursue. This knowhow cannot be imitated or transferred easily, (Crook, et al 2011). Economics witnesses many attempts to quantify and measure

human capital. Some measurements take place at the macro level, while others are at the firm's level. On the macro level there are two methods used in quantifying human capital: "the cost of production" and the "capitalised earning procedures". The first estimates the cost of producing human beings while the second estimates the present value of the future income of individuals. Many motivations stand behind this attempt, such as establishing the ability to measure the human power of any nation, studying the effect of investment on human capital pillars (for example education, health, training, research and development), to provide empirical suggestions to policy makers and to the public on the importance of investment in those pillars, the probability of levying taxes on individual human capital accumulation considering it as physical capital, and finally to equip the country's legislative system with numerical information when compensation may be awarded in response to injury or loss of life, (Kiker, 1966).

Hull (1899) states that Sir William Petty uses the notion of human capital to explore the power of England, the economic consequences resulting from labour immigration, and money foregone as an effect of death in war. Labourers are considered as the "Father of Wealth" which has to be valued in estimating the country's national wealth. Sir William estimates the value of human capital by calculating wage bills to perpetuity at the market interest rate. However, Sir William does not reflect any cost associated with that, such as the individual maintenance cost for which this calculation can be attributed as insufficient in estimating the human capital value, (Hull, 1899; Kiker, 1966). Similarly and because of his interest in public finance, Farr (1853) looks at human beings as productive individuals who should be taxed as capital. Based on this notion, he estimates the value of a human being by evaluating the net present value of the individual's net future earnings. Although this perception is a unique one, it can be misleading in that it suggests the individual should pay tax on something that he may not hold, own, or sell, (Kiker, 1966).

2.4.1 Cost of Production in Estimating Human Capital

Engel (1883) uses the method of cost of production in estimating human capital value. He debates that a human being's value is to be appreciated as per their contribution to

society. Costs incurred by parents are also to be taken into consideration. The value of human capital can be explained by the following formula:

$$C_z = c_0\{1 + x + k[x(x+1)/2]\}$$

C_z Represents the total cost of producing human beings without taking into consideration maintenance, interest or depreciation through x the age. While c_0 stands for the cost incurred by parents up to the birth date, k is the annual percentage increase in cost, c_0 is a constant which is empirically determined by Engel to be 100, 200 and 300 (lower, middle and upper German social classes). This formula applies however, only when age x is equal to or higher than 26 years old, assuming that an individual is productive only when they reach the age of 26.

2.4.2 Capitalised Earnings in Estimating Human Capital

Wittstein (1867) introduces a formula to compute the human capital in order to be used by courts and other authorities for compensation claims in case of injury or loss of life. He applies both methods of cost of production and capitalised earning, assuming that earning is equal to maintenance cost plus education expenses; this assumption has been criticised as an unjustified assumption. Furthermore, the use of both methods suggests a possibility of values duplication (Kiker, 1966). The following formula provides a better picture of that calculation:

$$C_{(n)} = aR_{(0)} \frac{L_{(0)}}{L_{(n)}} r^n - aR_{(n)},$$

$$C_{(n)} = XR_{(N)} \frac{L_{(N)}}{L_{(n)}} p^{N-n} - aR_{(n)}$$

$C_{(n)}$Is the cost of a male at age n; a represents the annual expenditure of an average German male in a specific position (including education consumption). r is the market interest rate, $(p = 1/r)$. $L_{(n)}$ is the number of men living at age n. $R_{(n)}$ is the value at age n of 1- thaler annuity (thaler was a coin used as the standard against which the various states' currencies could be valued). X is the output value of an average man in a

specific position. N is the age where an individual starts to be productive. (Wittstein, 1867).

Dublin and Lotka (1930) attempt to bring in human value estimation to be used as a guideline for the life insurance business. The method introduced aimed to calculate the difference between individuals' earning minus expenditure incurred (maintenance cost). If a life is lost, then the family can estimate how much monetary value can be claimed using life insurance policies (income minus living expenses). The following formula explains the assumption used by Dublin and Lotka (1930):

$$C_a = V_a - \frac{1}{P_a v^a} V_0$$

The cost C of an individual at age a is the equal to the difference between his value V at age a and value at birth V_0 multiplied by 1/ $(p = 1/r)$, r is the market interest rate.

Schultz (1961) introduced a model where expenditure on human capital is classified as investment rather than consumption. Although knowledge and skills are owned by the individual and cannot be bought, sold or possessed by an institution, yet the accumulation of human capital is considered the main trigger for an institution to come up with products, services or solutions which they can possess or sell to generate higher income. Schultz's (1961) model consists of two main factors, the first is the earnings forgone by students while attending schools and finally the money spent on that purpose as well. The results reached through this model indicate that an individual generates higher earnings and a higher level of productivity in the future compared with the same earnings if he chose not to attend school. Mincer (1974) finds that the rate of earning for an additional one year in school is 11.5%. Becker (1964) estimates the internal rate of return from 13% to 28%.

Becker (1964) within the same stream argues that the embedded resources within an individual as a result of knowledge accumulation can influence positively the future income. Knowledge accumulation by humans happens through three stages: formal schooling, on-the-job training, and off-the-job training. Becker (1964) distinguishes

between two types of human capital: the first is general and any firm can benefit from this type of capital. According to Becker (1992) investing in human capital means "all activities that influence future real income through the embedding of resources in people". Human capital investments are expenditure on education, training, health, information, and labour mobility. These investments involve initial costs (direct tuition expenditure, foregone earnings during schooling, and reduced wages during training) in order to gain a return on this investment in the future. The second is the specific human capital where only the current firm benefits. Lucas (1988) uses also the notion of learning-by-doing. Although formal education is very important, it is similar in some respects to on-the-job training, Becker (1964); yet learning-by-doing is another feature which can be added to human capital measurement.

2.4.3 United Nations Development Program Method of Estimating Human Capital

The United Nations Development Program (UNDP), which is concerned with building people a better life, has been releasing an annual report since 1990. This report is the Human Development Report (HDR) where human development is measured by an indicator. This indicator consists of three main components: the first measures the life expectancy level which is a gauge of health; the second measures the level of education which is a gauge of opportunities, and finally the third one measures income per capita. This indicator is meant to be simple and is based on the most used economic variables in measuring human development where those variables are available in countries' historical data. Although this indicator receives many criticisms and should not be used as the sole indicator of measurement, it is widely used by government policy makers to build their strategic human development plans. (Morse, 2004).

2.4.4 Human Capital Measurement methods on Micro and Firm Level

At the micro level, the difference in financial performance among firms is attributed to each firm's possession of scarce resources. If the resources are hard to imitate then firms can generate valuable substantial earnings compared with others who possess resources which are available to everyone. Human capital being the major resource that firms can develop can be classified into two groups, public human capital available for

all, and property of the firm where it is created, developed and used. This portion of knowledge is called the tacit knowledge which refers to the human capital ability to accumulate knowledge through formal schooling and learning-by-doing, and practice the learnt skills, which in turn will affect the firm's ability to compete using these intangible assets. However the type of knowledge, whether it is available to the public or proprietary to the firm, stimulates the firm's competitive advantage (Hatch and Dyer, 2004)

Bassi & McMurrer (2007) devised a core set of human capital management (HCM) drivers that predict performance across a broad array of organisations. They found that a higher HCM score predicts stock returns for financial firms, sales income growth, and enhanced safety by reducing accident rates. With the exception of training expenses per employee, traditional measurements do not provide solid evidence that those factors measured drive the firms' performance (example: turnover rate, time to fill position, training hours). Empirical research by Bassi & McMurrer (2007) relates five driving forces to a firm's financial performance which constitute the HCM numerical indicator. The five driving forces are: leadership practices, employee engagement level, knowledge accessibility, workforce optimisation, and finally learning capacity. The indicator is coded within five levels of HCM performance on which firms can benchmark against each other.

2.5 Special Economic Zones: Vehicle for Economic Growth

Most developing countries have incentives to establish free zones to achieve the desired economic growth. This happens as follows: when free zones are established, the main purpose is to attract foreign direct investment (FDI) through multinational firms. The multinational firms are usually characterised by ownership advantages such as skills and knowledge in management and production. At the same time these firms are endowed with resources that enable them to spread the cost of foreign acquisition of machinery and equipment. All these will establish a solid platform to the host countries in order to learn, imitate, and accumulate human capital. The accumulated human capital therefore has a direct positive impact on economic growth (Romer, 1986).

FDI is generally considered as a source of modern technology, in a broad sense. This includes product, process and distribution expertise, as well as management and marketing skills; technology transfer may occur directly or through spillovers. Special economic zones most of the time attract FDI through multinational firms. Foreign firms as compared to local ones may directly affect the average productivity level of the host economy by importing capital, advanced and proprietary technology. Therefore, multinational firms may directly transfer technology through licensing, supplier networks or subcontracting arrangements for example, and such relationships seem to be positively related to the level of autonomy of the subsidiaries (Gugler and Brunner, 2007).

Foreign direct investment becomes increasingly important for any country and especially developing countries such as the United Arab Emirates to stimulate economic growth. However, there are many factors which act as determinants of FDI inflow: Host country natural resources, the level of connection to the import/export market, and the level of the host country's human capital stock. Lucas (1990) argues that poor countries with poor levels of labour productivity deter FDI inflows. Zhang and Markusen (1999) debate that the level of the workforce's skills and education is a major determinant of FDI inflow to the host country. Dunning et al (1998) argue that worker education and skills can be a serious stimulus to the level of FDI inflow and determines what type of activities can or cannot be undertaken in the host country.

Although there are many varieties of zones (Free Trade Zones, Export Processing Zones, Enterprise Zones, Free Ports, Single Factor Export Processing Zones, Specialised Zones), this research will use the terminology "Special Economic Zones" (SEZ) in reference to all of them. This is based on the rationale that they share in common the basis of existence while they are different in the way they perform their functions. SEZs are generally defined as "geographically delimited areas administered by a single body, offering certain incentives (generally duty-free importing and streamlined Customs procedures, for instance) to businesses which physically locate within the zone".

Special Economic Zones (SEZs) are traditionally considered by developing countries for both policy and infrastructure development reasons; governments may diversify and develop exports while maintaining a protection barrier. On one hand, developing countries adopt SEZs in order to test economic policies to introduce reform to the domestic economy at a later stage. SEZs are considered as one important vehicle for attracting foreign direct investment, boosting exports, and creating jobs. On the other hand, developing countries exploit SEZs to improve backward supply chain linkage with the domestic country's economic relevant clusters. Besides, SEZs require modern infrastructure and utilities in order to operate well and attract the required multinational firms. (Madani, 1999; Fias, 2008)

Special Economic Zones date back to the middle ages where cities in the Mediterranean trading countries used them to re-export goods. Since then SEZs have been used by many countries around the world as one of the main attractions for foreign direct investment (FDI) and transfer of technology. As a result they can stimulate national human capital formation particularly through transfer of technology and systems to the recipient economies. This helps improve the overall economic strategy through enhancing competitiveness and diversification of the economy (Ibrahim, 1994; Fias, 2008).

It is argued that SEZs attract new ideas, technology and working practices which are diffused through dealings with domestic suppliers, demonstration, and through the movement of skilled staff. Case studies have shown that foreign subsidiaries within SEZs might introduce new know-how, stimulate competition, and transfer production techniques and management skills. Policy-makers are, therefore, beginning to see multi-national enterprises (MNEs) as a practical and efficient method of promoting economic development, as their ownership advantages are believed not only to affect the nation's productivity directly, but also indirectly through spillovers. As a result, it is witnessed that more countries, in their attempt to attract FDI, are adopted the SEZ model to bring in the MNEs and in turn foreign direct investment, (Gugler and Brunner, 2007).

2.5.1 Special Economic Zones and Host Country Human Capital

One of the main expected contributions of the special economic zones is to equip the human resources of the host country with technology, knowledge and skills. However the extent to which this actually takes place has not been established (Madani, 1999). Also, empirical studies have shown that the impact of multi-national enterprises on the creation of cluster-specific industries is not evident, although clusters can generate significant productivity spillovers from foreign direct investment. This occurs mainly in pre-existing clusters, and in some cases where MNEs bring in R&D to the host country and have played a major role in creation and innovation. At a later stage the novelty will be transferred to the host country, in such a manner that would build the human capital capability of the country to innovate, create, and build its own competitive edge (Gugler and Brunner, 2007).

Ding et al (1997) discussed that before China's economic reform in 1978 human resources practices were characterised by planned job allocation, guaranteed life time jobs and an unrestricted pay system. Job allocation was based on political consideration rather than on merit. Employees could not move from one job to another, or even advance through their career ladder based on suitability. The centrally planned pay system was based on equality so that differences among employees were hard to find regardless of the variances in the weight of their assignments or roles.

In this stream of thought, human resources management (HRM) practices including recruiting methods, compensation levels and programmes, performance appraisal, promotion criteria and training and development were investigated in foreign-invested enterprises in Shenzhen special economic zone. Having multinational firms within special economic zones played an important role in improving human resources management practices. The empirical results showed that human resources management was showing an inclination to adopt some western-style practices while maintaining other existing ones; job allocation tended to be de-centralised following free market rule; job movement occurred very often, and pay tended to be based on merit rather than political decision. Interestingly, the empirical research presented that foreign-invested

enterprises brought in their modern management techniques and eventually influenced the host country's human resources management practices, (Ding et al,1997).

2.5.2 Firm Size, Type and Performance Impact on Human Capital Development

The demand for skilled workers increases when firms use superior technology. Upgrading of human capital can occur directly and indirectly: First, MNEs can improve the quality of the local workforce through training and learning-by-doing. MNEs have generally been found to use more capital-intensive production methods than domestic firms. As the level of human skills required is generally higher in capital-intensive production, MNEs will provide more and better training for their staff. MNEs must therefore train their employees and by so doing they increase average labour productivity. One of the most important outcomes of the positive productivity is the spillover that can occur through movement of highly skilled staff from MNEs to domestic firms, and this is where the need to develop the host country's human capital is one of the main requirements of MNEs within the fence of the free zone. (Gugler and Brunner, 2007).

Porter (1990) argues that multinational establishments have a positive impact on human capital development. It is seen as an important variable in determining the Human Capital Indicator. Also the volume of the capital invested (FDI) would be another variable to explain positively how firms are willing to invest in their people to maintain a considerable amount of return on their capital invested. Patibandla and Petersen (2002) debate that multinational firms possess contemporary machinery, international standards and modern management techniques, and since they exploit state of the art technologies, then they are more likely to invest in training their staff more than the domestic firms. This constitutes a potential human capital asset to be spilled over when those staff move to another firm or even establish their own start-up firm based on the knowledge and skills they retain.

Firms' performance in terms of revenue generated per employee is argued here to be another variable that would impact positively the HCI. The debate is that firms, in order to generate a considerable amount of revenue, need to have high calibre employees to

raise the productivity rate better than using the same resources and machinery, (Engman et al, 2007). Crook, et al (2011) discuss the relationship between human capital and firm performance measures using a meta-analysis technique to analyse 66 studies with 68 samples involving 12,163 observations. The results of the analysis leave "little doubt" of the human capital significance to firms' positive financial growth. In this stream of thought, firms should develop, retain, and hunt for the business-specific knowhow which has an invaluable role in firms' performance as well as the targeted competitive edge. Human capital is essential to firms in order to surpass others and achieve success.

2.5.3 Research and Development Impact on Human Capital Development

Un, Annique and Cuervo-Cazurra, (2008) argue that foreign multinational establishments (MNE) compete against each other by the level of the R&D they undertake. However MNE's subsidiaries differ from the local firms in terms of investment because of their access to other countries due to the established link with the mother company and other international subsidiaries. MNEs in their endeavour to expand tend to establish subsidiaries in important countries to expand and achieve higher international marginal gains. These established subsidiaries behave differently with regards to R&D activities. Some choose to invest in R&D much more than the domestic firms driven by the better access to capital for investment benefiting from the formal link with the mother firm as well as the sister subsidiaries existed in other countries. The subsidiary then does not face capital limitation since the parent firm and the sister subsidiaries offer capital for investment in R&D where all may benefit from it.

Others may choose to invest less in R&D than the domestic firms because they can easily get the new technologies from the mother firm. This happens usually when knowledge is considered as a scarce resource to be managed. MNE subsidiaries differ mainly from domestic firms by their ability to utilise the parent company technology and access to knowledge and resources of other subsidiaries in other countries, (Doz et al., 2001).

Technological advancement and infrastructure differs from one country to another. Government policies, domestic firms, trade associations, and human resources

infrastructure have an extremely important role to decide on the adoption of technology advancement and investment in R&D. Such economic set-up and readiness to embrace technological infrastructure advancement encourage MNEs to enter such countries and to pursue R&D activities, (Freeman, 1987; Lundvall, 1992; Nelson, 1993)

Tariffs and trade barriers put little pressure on firms to innovate through adopting R&D programs. Other firms who work solely in a traditional economic environment sometimes prefer to import technology and consume it rather than investing in R&D to come up with innovative products or services, (Maloney, 2001); while firms in cluster specific industries respond prohibitively to any technology advancement. They look for better ways to stimulate the industries more than the traditional way which may fail to create competitive industries because of strict government policy tools, (Nauwelaers and Wintjes, 2002; Mattsson, 2007)

Firms are commercially incentivised to invest in R&D in order to build strategic and technological capabilities. These capabilities enable firms to gain premium advantages which can be commercialised by means of innovative product or service development, (Pisano, 1990). Romer (1990) argues that firms have an incentive to invest in R&D activities to continually introduce new creative and sophisticated products that will sustain or generate a greater profit, and if firms have chosen to do that, then employees are trained to use the new sophisticated machinery that will produce the new product, therefore it can be argued that the level of R&D undertaken by firms positively influences human capital development.

2.5.4 Cluster-Specific Industries

Porter (1990) used the term cluster to describe group of interconnected firms' decision to operate within a geographic area:

"A cluster is a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities. The geographic scope of clusters ranges from a region, a state, or even a single city to span nearby or neighbouring countries (e.g. southern Germany and German-speaking Switzerland). The geographic scope of a cluster relates to the distance

over which informational, transactional, incentive, and other efficiencies occur." (Porter, 1998)

Marshal (1890) debates that the main causes of emergence of clustering or industrial districts are to favour local conditions, natural resources, special laws from authorities, linkage to supply chain, or altogether. Firms' decision to operate within a certain district, where other similar firms exist, is driven by the anticipation that cost of production may be minimal compared with being scattered, and that firms benefit each other by being in the same area, (Weber; 1909, 1929). Firms with related activities gain advantage for being close to each other. Larger economies of scale, access to skilled workforce, sharing a common culture and business practices, and having a unique brand of localisation specialties are some of many gains, (Hoover, 1970; Storper, 1999). For example, Italy is reputed in the international market for having solid clusters of traditional products such as tiles, shoes, furniture etc, without compromising on quality or competing with low salaries. Italian cluster-specific industries are branded to produce a large volume of specialised products maintaining higher quality standards, (Piore and Sabel, 1984). Individual specialisation of similar industry, firms can collaborate more effectively to respond to market demands, reduce risk, and increase efficiency, (Humphrey and Schmitz, 1995; Schmitz, 1997)

Firms achieve a competitive edge by nurturing and exploiting knowledge in innovative products or services. Such knowledge is usually embedded within people and is very difficult to imitate or transfer. However, it is much easier to grow industry specific knowledge among firms that are located within a short distance from each other, (Pinch and Henry, 1999; Keeble et al., 1999; Malmberg and Maskell, 1999, 2006)

Michael Porter (1990, 1998, and 2000) debates that a nation's competitive advantage is driven by the ability of its firms to advance and compete on sophisticated production or services. Firms existing in specific locations with access to specialised competitive resources enjoy economic capabilities which are hard for others to copy. Organisations within clusters compete and collaborate at the same time. Firms benefit from the existence of vertical linkage to supply chains which are buying and selling. Also, they benefit from horizontal linkage of complementary products, or similar firms using alike

resources and input such as capital, technology and labour. Three main advantages firms gain from operating within clusters: a. Increase of static productivity; b. increase of innovation and growth; and c. stimulation of new business that supports innovation. Firms operating within clusters also enjoy better access to specialised input and labour, access to information, beneficial complementarities in one place, access to important institutions and public good, better access to government incentives, better conditions for start-ups, and better perception of technology, (Porter, 2000). Cluster-specific industries influence knowledge throughout the diffusion of many externalities. Firms operating near each other require specialised workforce skills to operate on particular product/service lines (Bergman and Feser, 1999).

The United Arab Emirates carried out many initiatives to upgrade the business environment, foster cluster development, develop an economy strategy at the emirate level (Dubai is an example), create a regional strategy for the Gulf States, and finally shift the roles of government and the private sector in economic policy. Following that direction, Dubai established Jebel Ali Free Zone in 1985 which has been a key element of economic transformation for the emirate of Dubai. Many cluster-specific zones were established after that such as Dubai Internet City with $250m investment, Dubai Financial Market etc, (Porter, 2003).

Special economic zones perform better when they are established to attracted clusters. This can be used as a method to attract foreign direct investment devoted to specialised industries, and involves companies to attract further specialised buyers and sellers. Special economic zones drive countries' competitiveness if they "trigger economy-wide" changes in the business environment. This may involve change in rules and regulations which may impact the labour market. Also improve government services such as municipality, Customs, chambers of commerce etc, (Porter, 2003).

2.5.5 Special Economic Zones: Knowledge Spillover

Another important variable in how the spillover is manifested is the labour movement and mobility level among sectors. It is argued that the level of labour turnover facilitates such spillovers and results in spillover of skills into the rest of the economy (Aggarwal,

2007). As an outcome of the clustered industry-specific firms working inside the zones, this flow or leakage of information will be from one firm to another within the fence of the zones, or outside the fence, and such leakage is to impact positively the human capital development indicator (HCI).

Marshal (1980) explains knowledge spillover as follows:

"So great are the advantages which people following the same skilled trade get from near neighbourhood to one another. The mysteries of the trade become no mysteries; but are as it were in the air, and children learn many of them unconsciously. Good work is rightly appreciated, inventions and improvements in machinery, in processes and the general organization of the business have their merits promptly discussed: if one man starts a new idea, it is taken up by others and combined with suggestions of their own; and thus it becomes the source of further new ideas. And presently subsidiary trades grow up in the neighbourhood, supplying it with implements and materials, organizing its traffic, and in many ways conducing to the economy of its material."

Blomstrom, and Kokko (1998) classify spillover into two types: product and market. Product spillover happens when domestic firms enhance productivity by the regular connection with backwards or forwards supply economic chain. The interaction between firms and suppliers, clients, and buyers trigger knowledge spillover among them through imitating the utilised technologies and hiring from each from each other. Competition happens when foreign firms enter the market where domestic firms have to either work harder or to consider introducing new technologies. Market spillovers happen as a result of the multinational firms' export activities. This puts pressure on the domestic firms to enter the same export markets. For that reason, domestic firms begin to learn about the international markets' information emulating the foreign entrants. Multinational firms possess usually high international standards, modern management techniques, and knowledge of international marketing and may lobby power in their home countries. On the other side, Griliches (1979) classifies spillover in two categories: rent and pure spillover. Rent spillovers happen when "bilateral" international trade flows among countries and spillover occurs as a result of exchanging goods. While pure spillovers happen through a complicated mechanism which includes exchange of

information, skills, ideas in events or conferences, pure spillovers arise from imitation, reverse engineering and labour mobility of mainly research and development staff.

Increased rivalry forces domestic firms to take action and to innovate. As competition becomes more intense, domestic (and foreign) firms have an incentive to differentiate their products. This effect is likely to be enhanced by the fact that foreign firms are organised and managed in a different manner. In other words, FDI and firms' volume of export activities enlarges the pool of available management best practices and approaches and international quality standards, and requires interlinking to domestic suppliers of raw materials or various services needed, while the enhanced rivalry, quality standards, and firms' labour quality ensure that only the fittest and most appropriate management practices survive. Some authors, however, argue that this competition outcome is not a spillover effect, as there is no evidence in the literature of this claimed technology flow (Gugler and Brunner, 2007). There is little research conducted on technology transfers and technological activities of firms operating within the zones' fence. The implicit assumption seems to be that such activities are either not taking place in SEZs or are negligible at best. Some researchers argue explicitly that SEZ investment does not bring the same technology as investment in the rest of the economy, since the low skilled assembly-type operations in the SEZs leave little scope for technology transfers (Aggarwal, 2007).

Porter (2000) debates that similar firms compete usually on products, services, quality, or price. In clusters, such as specific economic zones, competition among firms is intense due to the rivalry for what is called "local social standing". Innovation, skills enhancement, and knowledge may emerge from strong competition where firms strive to build strategic capabilities surpassing competitors. Depending on their business model, firms within clusters seek out specialised niches. With many similar industries within the zone's fence, firms strive to build the competitive advantages. Firms compete to acquire new customers, raise quality, and reduce the cost of production or in entering new market. Porter (2000) argues that for economies to be advanced, competition among firms should be on the basis of raising quality, reducing the cost of production but not the expenses of labour wages.

The spillover within clusters happens through many channels which can be called a spillover vehicle. The informal event, ties, relationship among firms is one important channel. (Granovetter, 1973) argues that in clusters firms interact informally through weak relations. During informal meetings or events innovative ideas revolving around the daily work are shared. Knowledge is spread through informal relations (Schmitz, 1997). People who are living within a close distance unintentionally exchange ideas and knowledge where the interaction among them is more frequent, (Storper and Venables, 2003). Firms within the same clusters understand the same business language in a meaningful and useful way because they are using similar technologies, having access to the same suppliers, providers and customers. (Malmberg and Maskell, 2006).

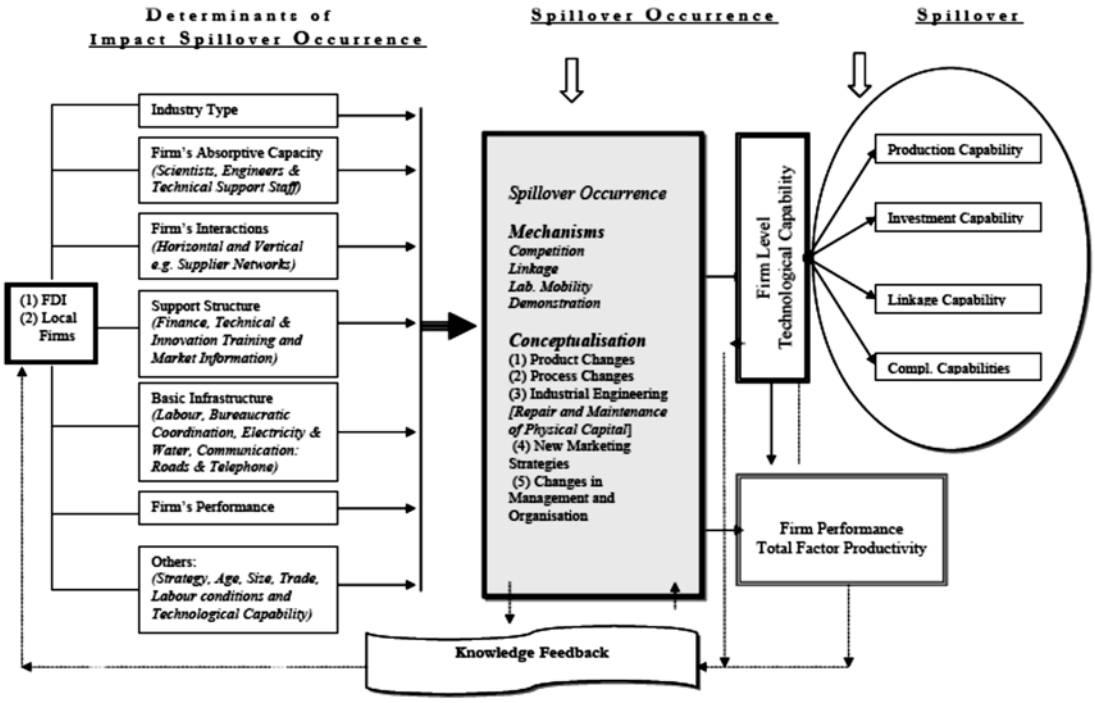
Another channel of spillover within cluster-specific industries is the relationship with suppliers, customers, clients or providers, (Morgan, 1997). The formal connection between firms and horizontal or vertical chain is a strong way to diffuse knowledge, skills, and best practices which are a great source of innovation or even an imitation, (Von Hippel, 1998). On the other hand firms within clusters use the same input source such as labourers. To operate within clusters, start-up firms benefit from access to specialised skills, capabilities, knowledge, suppliers, buyers, and linkage to the economic chain, (Porter, 2000). The relationship among labourers or the better access of firms to specialised skilled labour drives spillover as well. Labourers exchange knowledge and ideas through formal or informal ties. On the other hand, they may change firms looking for a better opportunity and move to a similar firm within the cluster carrying with them knowledge heritage about specific industries. (Angel, 1989; Capello and Faggian, 2005; Feldman and Francis, 2004)

Specialised suppliers, vendors and buyers tend to emerge within cluster-specific industries to integrate with the whole supply chain. Thus there is a great opportunity for labourers to be qualified in specific related skills or knowledge. Although there is always a risk that these specific skills are linked only to the cluster-specific industry that may not be utilised elsewhere, considerable rewards can be gained because of that. Specialties in products or services drive the emergence of similar firms, vocational training institutes, universities with relevant special curriculum, standards agencies, and trade associations, (North, 2005). Specialisation creates room for innovation where

similar firms work on new products or services to achieve their competitive edge accordingly. The existence of linked suppliers, buyers, institutes, universities and trade associations contributes immensely to build special knowledge and skills, in the long run driving knowledge spillover within the clustered firms, (Giuliani and Bella, 2005). Over time this specialised knowledge is embedded within the cluster-specific industries and becomes solid and hard to be imitated by others which builds eventually the nation's overall competitive edge (Porter, 1998)

In his published thesis, Gachino (2006) discusses technological spillover demonstration through a "mechanism" of four main channels which are: competition among firms, linkage to supply chain, labour mobility, and finally demonstration effect. Those four channels constitute a sort of vehicle of the technological spillover occurrence. For each spillover channel, he recognises five types of technological change linked with capability building. In his thesis, Gachino (2006) focuses mainly on production capability where he argues that five main technological changes are considered as a result of the spillover occurrence: production changes, process changes, industrial engineering, new marketing strategies, and management and organisation changes.

Figure (2.1) A Framework model for spillover analysis: determinants, mechanism and effect on technological learning capability building. Source: (Gachino, 2006)



2.5.6 Host Country National Culture

Looking at the sociological angle and international business impact on the national culture, special economic zones usually attract MNEs. Those establishments bring with them their national culture when conducting their business. When countries do have many MNEs within the same area, culture may or may not hinder the economic growth of the host country. Hofstede (1980) introduced a model of national culture that has since become the most widely used framework in cross-cultural awareness. Hofstede defines culture as

> "The collective programming of the mind that distinguishes the members of one group or category of people from another".

He identified initially four dimensions of culture that differentiated people from various countries in terms of their predominant values. Yet empirical studies of cultural effects on human capital development within the zones are limited.

Franke, Hofstede, and Bond, (1991) debate that differences in culture among countries become much more important as many researchers start to investigate why countries with similar access to economic resources perform differently. Empirical research which explores the tangible resource differences among countries such as education, health, nutrition, capital investment and technological innovation fail to explain the difference in economic growth. Comparable cultural variations among nations seem to play a role in countries' economic growth. Although Porter (1991) pioneered the perception of nations' competitive advantage, he does not explain why some nations develop their competitive advantage and others do not. Differences in culture and values play an important role in economic growth and nations' readiness to establish their competitive edge rather than the tangible resources. While international business is growing across the past year, nations' culture and the host country value play a significant role in firms' decision to operate abroad since it has an impact on overall firms' performance.

In clusters there are specific types of culture, habits, management practices, and agreed standards which are shared and learned together though collaboration. Cooperation

happens usually at the firm's level as well as on the individual level where culture is learned and practised accordingly (Storper, 1995, 1999). This is called social capital which refers to the social network or web of relations among individuals where practices are shared, (Coleman, 1988). Firms within clusters learn and practice not only the culture of the firms within the fence but also the regional culture in which they are operating closely. It is a factor that reflects the adoption of shared practices, habits and routine due to a "cognitive proximity", (Boshma, 2005). Firms working within the same geographic proximity develop collaborative ways to adopt similar practices influenced by the regional habits. Firms tend to facilitate informal exchange and accumulation of knowledge, (Saxenian, 1991). Individuals living within the same close area and working within the same industry exchange practices through informal or formal trusted communication channels, (Morgan, 1997)

Hofstede's (1980) original study included 53 countries and regions and more than 116,000 observations obtained from IBM employees from 1967 to 1973. This study focuses on two dimensions - uncertainty avoidance, individualism/collectivism - based on a comparison with the overall mean of the 53 countries and regions surveyed. Arab countries were characterised as collectivist as well as high on uncertainty avoidance. Hofstede (1980) argues that societies which rank high in those two dimensions, usually do not accept change easily, and are very risk averse. Decisions are not reached quickly; accountabilities are distributed to more than one person, so that no one takes the blame if anything goes wrong. People are not willing to take risks and move into the future on their own. They prefer that others such as regulatory bodies lead them and secure the future. Human capital development requires moderate to high risk individuals who are willing to learn, upgrade their skills, and take risky decisions; these are the characteristics of individualistic societies. Two such significant cultural variations may affect negatively the development of human capital within any country which scores high on both of them. On the other side learners' culture may conflict with the national culture if they are different. Either the learner tries to adopt the system, change it, or simply withdraws, Economides, (2008). If this happens then it may affect the human capital development adversely because of the strong possibility of losing talented workforce in cosmopolitan states such as Dubai where national cultures differ.

2.6 Special Economic Zones Cost Benefits Analysis

Warr (1989) analysed the cost versus the expected benefits of the zones measuring the net benefit that could occur if the resources (invested by the government to build the zones), were used elsewhere in the economy. He calculated a benefit and cost stream for several years and discounted this using an estimated social discount rate. The benefits that he considered included, net foreign exchange earnings, employment generation, revenue raised from renting or selling factory space, and domestic material sold and taxes raised. While the main costs considered were infrastructure expenses, public services provided, and access to preferential financing and administrative costs, in his study Warr (1989) concluded that foreign exchange and employment generation were the most important sources of benefit to the economy while infrastructure costs were the main cost factor (Engman et al, 2007). However, Warr (1989) did not analyse the effects of the firms within the special economic zones on developing the human resources of the host county, a factor that is so important to build and grow a solid competitive economy.

Those who favour the SEZ notion criticised earlier researchers' method of analysing the SEZs' benefits. The claim was that they did not take into account the zone's foreign exchange earnings as one of the main benefits expected from special economic zones. Such a criterion is an incomplete measure of the success or failure of a zone or a firm active within it. Nonetheless, it is argued that SEZs provide foreign exchange earnings that allow low income economies to slacken the foreign exchange constraints regarding their import needs for the rest of the economy and provides the government with development funds (Madani, 1999).

Researchers argue that SEZs have a negative welfare effect on the country. They claim that the creation of zones increases inefficiency by distorting production away from its comparative advantage. The establishment of SEZs seems to be synonymous with the country providing a multitude of tax breaks and tax holidays to attract foreign direct investment to their zones, some argue that potential tax revenue losses are outweighed by gains accrued in terms of employment creation and provision of foreign exchange earnings (Madani, 1999).

On the other hand, many firms have been criticised within the zones as hindering human capital development through violation of workers' rights by such practices as compulsory overtime, job insecurity, poor working conditions, and use of pressure tactics to meet deadlines. According to an International Labour Organisation study (2009), zone workers were working in 10 to 12 hour shifts that could go up to 16 hours during peak periods. A number of the working practices in SEZs have the effect of prolonging the working shift. Some plants use a quota system, which workers have to meet in order to receive their day's pay. In some cases the workers are obliged to work beyond the normal shift in order to fulfill the quota (Aggarwal, 2007).

2.7 Summary

Special economic zones are established by the emirate of Dubai predominantly to attract foreign direct investment, to act as a learning stage to introduce economic development and growth, and by turn to equip people with new learning outcomes to establish a new economic cluster that does not yet exist. This is driven by the emirate's desire to achieve economic growth based on human capital development. Human capital development is characterised by a set of components consisting of: education level, training, and ability to apply the learnt skills. Therefore, the link between special economic zones and the emirate's ambition to build a skilled workforce in order to achieve the targeted development is very evident.

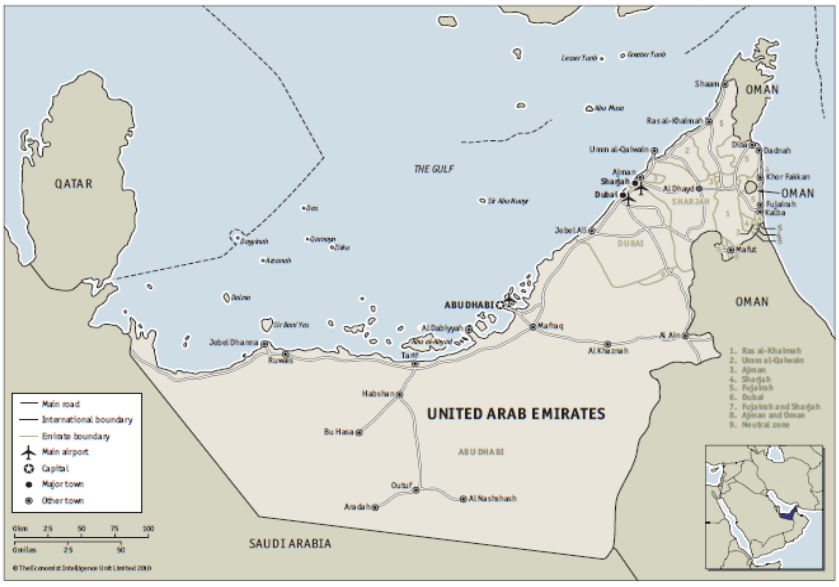
Special economic zones impact human capital development. This is theorised mainly by two sets of variables. The first set is firm specific which are: type, size, performance and the firm's level of research and development. The second set of variables is zone specific which are: the level of clustering within the zone, knowledge spillover, and the culture of avoidance and collectivism. Most of the variables are hypothesised to drive human capital development positively except the culture of avoidance and collectivism.

Chapter Three: Dubai Economic Scene: Human Capital and Dubai Special Economic Zones

3.1 Introduction

The United Arab Emirates (UAE) stretches from the base of Qatar's projection into the Arabian Gulf along the coastal area of the Arabian Peninsula to Oman, occupying a total surface area of about 83,600 sq. km. It has a population approaching 7.5 million of which about 12.5% are UAE nationals (Emiratis), the remainder being expatriate workers from more than 120 countries worldwide. The seven Trucial States of Abu Dhabi, Dubai, Sharjah, Ajman, Umm al Quwain, Ras al Khaimah and Fujairah united as a federation in December 1971 to become the United Arab Emirates, in response to the withdrawal of British military protection from the region. (United Arab Emirates National Bureau of Statistics, 2011).

Figure (3.1) United Arab Emirates Map Source: Economic Intelligence Unit (EIU), (2011)



This chapter presents an overview of the role of Dubai's special economic zones in driving human capital development. The chapter begins with a brief discussion of the UAE economy which is a country abundant in oil as a natural resource. Then the chapter moves its attention to Dubai as a standalone case which has a limited natural supply of oil. This explains why Dubai realised the necessity for economic development through diverse channels and its policy over the last 30 years of establishing strategic cluster-specific free zones. Establishing free zones requires inflow capital characterised by Dubai's various programs to attract foreign direct investment (FDI) as well as building the nation's skilled workforce. For that reason the chapter then embarks on providing a review of the human capital development efforts which are taking place.

The information presented sheds light on characteristics of the education system, followed by an explanation of the workforce structure, status in the International Innovation Index, and the country's Knowledge Economy Index. The chapter concludes that Dubai exploits the free zone notion as one of the significant channels in building a non-oil dependent economy.

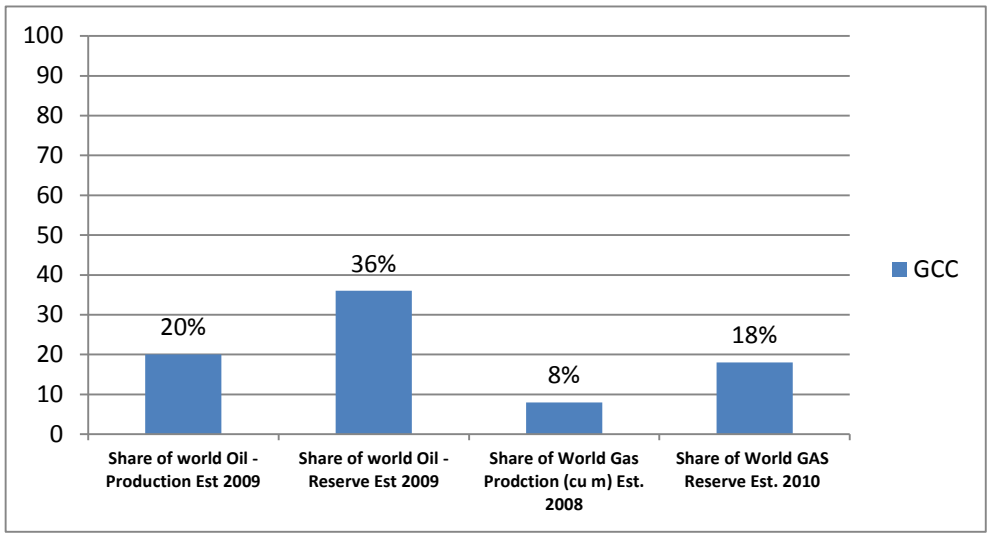
Lacking skilled workers, Dubai focuses its efforts on attracting multinational enterprises (MNEs). FDI in the shape of MNEs is perceived as a vehicle to build the future skilled workforce through various methods of interaction. However, the question remains: to what extent do firms within the special economic zone fence contribute to human capital development?

3.2 United Arab Emirates Economic Setting: Oil and the Need for Skilled Workforce.

By holding 36% of the world's oil reserves and 18% of the world's gas reserves, the Gulf Cooperation Council (GCC) countries play an important role in the global economy. The GCC countries are responsible for 20% of the world's oil production and 8% of global gas production (Figure 3.2). Most of the GCC countries generate high revenue from exporting oil and gas reflected in a considerable growth in GDP for the past three decades (except Bahrain which diversified its economy to become an important financial centre attracting the region's petro-dollar income). It is perceived

though that fossil energy is not a sustainable resource, which creates a challenge to oil-dominated economies. Therefore, the GCC countries began to look for progressive ways to build their economic development to move away from an oil- controlled economy. (Economic Intelligence Unit, 2011)

Figure (3.2) GCC Energy Outlook, Source: Economic Intelligence Unit, (2011)



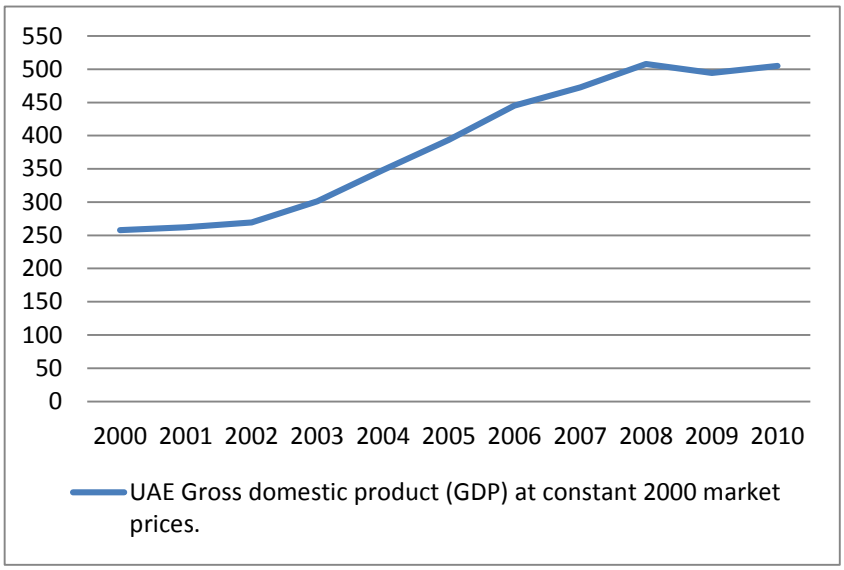
The United Arab Emirates is a major player in the GCC, due to its abundance of natural resources. Oil revenue plays an important role as the most substantial vehicle of growth for the last three decades. Surprisingly, debates are rising about the UAE's exploitation of oil revenue in long term investment rather than short term spending. Sachs and Warner (1999, 2001) attempt to address the question of whether countries achieve or fail to receive economic gains from their natural resources to cover the high cost of industrial advancement. By means of the regression estimation technique, Sachs and Warner (2001) find proof of inverse relationships between countries with rich natural resources and economic growth over the period 1970-1990.

Empirical evidence from selected Latin American countries that are abundant in natural resources shows non primary export is proven to be a failure in those countries, (Sachs and Warner, 1999). On the contrary, for a period of 20 years after the discovery of a resource, these countries witness a shift in the original economic sector demand focusing primarily on exporting those resources to the interracial market. Sachs and Warner (1999, 2001) regard this behaviour as a curse rather than a gift and it has been

called the Dutch Disease. Countries with the Dutch Disease tend to grow slower than poorly resourced countries. This can be attributed to the low level of backward and forward linkage of natural resources to various existing economic chains. Other reasons include the common observation that countries spend the revenue generated on infrastructure and the service sector rather than investing in long term sectors such as manufacturing. This induces also the low concentration on domestic human capital development since there is no need for technical know-how required for creativity and innovation (Research and Development). Although data is not available, but based on observation and common ground, Sachs and Warner (1999) cluster the GCC countries under the same group as Latin American countries which are highly dependent on natural resources, concentrate on the service sector rather than manufacturing, are dependent on imported technology and sophisticated products, and whose policy makers give low priority to domestic human capital development.

The UAE's gross domestic product (GDP) climbed to AED 992.805 billion in 2009 (AED is pegged to US$ at a rate of US$ 1= AED 3.68). Table 3.1 shows that non-financial corporations played an important role by contributing 92.22% to the total GDP and 63.29% excluding crude oil and natural gas revenue. This is followed by the financial corporations and government services sectors contributing 7.24% and 4.82% respectively. Oil and gas obviously stays at the top of the economic sector with its share of 28.93% followed by wholesale, retail trade and repairing at 13.45%, construction 11.81%, real estate 10.75% and manufacturing 10.11%.. Abu Dhabi and Dubai are the two main emirates, Abu Dhabi the heavily oil dependent emirate contributed 60.08% in 2009 with almost half of its domestic GDP (48.74%) generated from fossil energy. Although Dubai was the second major contributor to the national GDP in 2009 at 29.63%, most of its domestic GDP comes from the wholesale and retail trade and repairing services at 32.48%, (UAE National Bureau of Statistics, 2011).

Figure (3.3) United Arab Emirates Gross Domestic Product (GDP) in AED billions, Source: United Arab Emirates National Bureau of Statistics, (2011)



As a GCC member country, the UAE employs every effort in establishing various economic sectors to support the economy. Economic data indicates that the UAE achieved substantial growth in GDP between 2000 and 2010. GDP increases on average 7.73% from AED 257.979 billion in 2000 to an estimated AED 504.788 billion in 2010. The UAE attempts to afford its population a social welfare structure which is not only the best in the region but is also comparable to many developed countries in the world. GDP per capita has increased from USD 21,680 in 2000 to an estimated USD 39,980 in 2010. The UAE population having a high GDP per capita enjoys a variety of products and services imported from all over the world. This issue creates substantial challenges to the UAE as highly dependent on imported products and technologies and spending a significant portion of its national income on them, (Economic Intelligence Unit, 2011).

Table (3.1): Gross Domestic Product by Economic Activity and Emirate, 2009 (Million AED),

Source : United Arab Emirates National Bureau of Statistics, (2011)

Sectors	Emirate							Total	Sector Contribution to GDP
	Abu Dhabi	Dubai	Sharjah	Ajman	Umm Al - Quwain	Ras Al - Khaimah	Fujairah		
Non-Financial Corporations Sector	**563,156**	**264,489**	**53,479**	**12,425**	**1,838**	**12,344**	**7,880**	**915,611**	**92.22%**
- Agriculture, Livestock and Fishing	5,953	435	1,145	200	206	1,032	610	9,581	**0.97%**
- Mining and Quarrying:	274,494	5,422	6,608	0	0	973	1,086	288,583	**29.07%**
* Crude Oil and Natural Gas	274,494	5,422	6,605	0	0	685	0	287,206	**28.93%**
* Quarrying	0	0	3	0	0	288	1,086	1,377	**0.14%**
- Manufacturing Industries	42,359	35,494	11,867	5,490	208	3,436	1,491	100,345	**10.11%**
- Electricity, Gas and Water	15,877	4,575	1,980	317	120	696	253	23,818	**2.40%**
- Construction	76,333	32,501	5,034	2,009	107	461	825	117,270	**11.81%**
- Wholesale & Retail Trade and Repairing Services	34,212	85,916	8,340	1,605	260	2,018	1,204	133,555	**13.45%**
- Restaurants and Hotels	7,838	10,184	1,800	280	85	258	257	20,702	**2.09%**
- Transport, Storage and Communication	43,208	41,807	4,052	776	290	1,241	1,108	92,482	**9.32%**
- Real Estate and Business Services	49,888	41,741	10,558	1,390	449	1,893	766	106,685	**10.75%**
- Social and Personal Services	12,991	6,414	2,095	358	113	336	280	22,587	**2.28%**
Financial Corporations Sector	**30,665**	**33,839**	**4,350**	**510**	**34**	**1,688**	**756**	**71,842**	**7.24%**
Government Services Sector	**23,130**	**16,744**	**3,689**	**862**	**410**	**1,986**	**988**	**47,809**	**4.82%**
- Domestic Services of Households	1,503	1,209	798	210	106	280	160	4,266	**0.43%**
(Less : Imputed Bank Services)	22,019	22,123	1,370	122	74	560	454	46,722	**4.71%**
Emirate Contribution to GDP	**60.08%**	**29.63%**	**6.14%**	**1.40%**	**0.23%**	**1.59%**	**0.94%**		
Total	**596,434**	**294,158**	**60,946**	**13,885**	**2,314**	**15,738**	**9,330**	**992,805**	**100%**

Dubai, the second major emirate in the UAE, realises that a manufacturing sector is important for any economy to achieve growth. It is argued that industrialisation creates job opportunities and stimulates forward and backward linkage to other sectors. Nevertheless Dubai's main concentration on the service sector which is far larger than other sectors, implies that the UAE suffers to a degree from the "Dutch Disease". The inadequate raw material, tiny population, lack of skills, and small size of domestic market create significant challenges in fostering development in sectors that are highly dependent on them. For that reason, the idea of establishing economic free zones to attract multinational enterprises (MNEs) rises to the surface as a proper solution to many of those challenges facing the UAE in its diversification journey. By setting up free zones and attracting cluster-specific industries, it is believed that economic growth and diversification are to be achieved as the result of externalities initiated from the zone establishments, (Sachs and Warner; 1999, 2001).

3.3 Perceptions of Skills Development Efforts in the UAE

This section sheds light on the UAE education system, national innovation, knowledge economy efforts and workforce structure which constitute a country's human capital.

Dubai's Strategic Plan 2015 is institutionalised to sustain economic growth through many initiatives but mostly through building a knowledge economy. Education, knowledge, and skills enhancement characterises the plan in order to enable the UAE nationals towards acquiring the required abilities to take over building the aimed diversified economy. In terms of economic development, Dubai strategises to sustain 11% GDP growth per annum, to increase real GDP per capital to AED 162,000 by 2015, "to increase productivity by 4% per annum, to create new sectors of strength with sustainable competitive advantage, and to promote innovation to develop new sectors and increase productivity. To excel in human capital is an essential strategic thrust in order to prepare the workforce for the high-value, knowledge-driven economy which requires attracting and retaining highly skilled employees as well as improving UAE nationals' qualifications", Government of Dubai (2014).

3.3.1 Characteristics of the UAE Education System

Countries pay close attention to production factors for any future economic growth. Thanks to its oil, the UAE prospers in building a considerable sovereign wealth accumulated since oil extraction began in 1937. Surprisingly, the UAE's performance stays modest in the other two production factors - technology and human capital. Expenditure on tertiary education per student is considered extremely low, compared to other similar developing countries in the region such as Singapore. For example, UAE public spending on education is estimated to be 0.9% of total GDP in 2008 compared to Singapore's 2.8% for the same year, (World Bank, 2011). The inadequate investment in education in the UAE compared to other similar countries indicates a lack of interest both by Government and citizens.

Muysken and Nour, (2006) debate that in order to achieve economic growth, GCC countries are building their strategy to revolve around three components: economic diversification, technological development, and labour market reform. Interestingly, most GCC countries share in common their dependence on imported technology, a basic education system, and exhaustive dependence on unskilled expatriate labourers with severe skills mismatch. Although the UAE enjoys a substantial income, the proportion of GDP expenditure on education, investment in research and development and application for patents remain the lowest among similar countries. Muysken and Nour, (2006) discovered that the education system fails to provide sufficient learning. This is in line with the excessive proportion of unskilled workers mainly in the private sector. The study results indicate serious barriers that should be overcome by the GCC in order to diversify economic sectors and position themselves among the developing countries in the near future.

The UAE education system comprises two groups: public and private. A significant amount of UAE nationals attend public education institutes which use the Arabic language as the main medium of teaching, with a strong emphasis on Islamic studies. On the other hand, most of the expatriates attend private schools relevant to their religion, language, cultural and educational needs. Gaad, Arif and Scott (2006) used a systems framework approach to

examine the UAE education system, components, goals and effectiveness. Interviews were held with three significant groups - teachers, supervisors who evaluate the curriculum delivery, and the undersecretary who oversees the development of text books. The research results indicated a lack of alignment between education system development, delivery and evaluation. There is a clear disconnection between the development and delivery of the education system in the UAE. Teachers do not realise the national goals of the system and the subjects they are teaching. Also it was found that there were no indicators that proper evaluation was taking place.

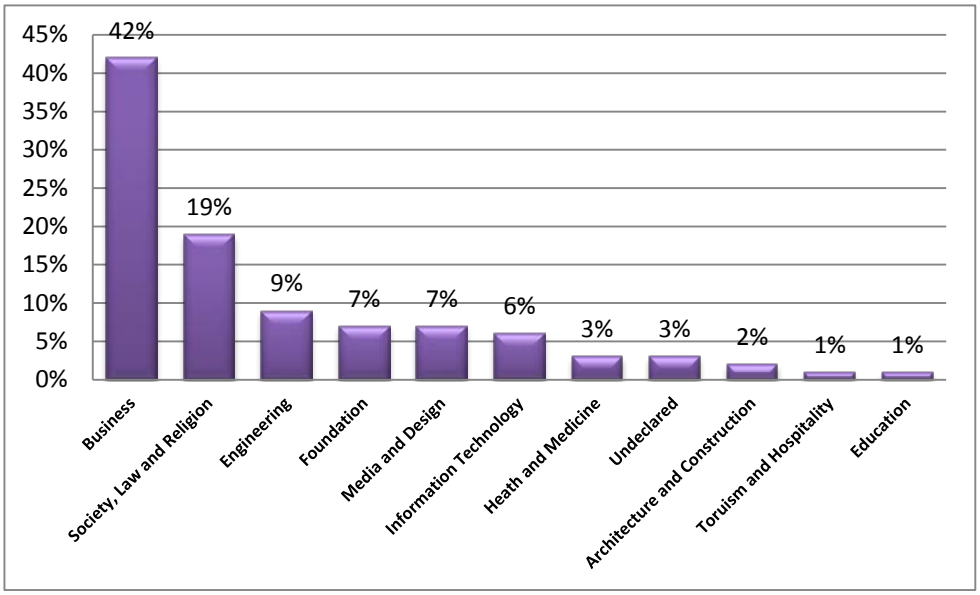
Coincidental with the publication of this paper, the Ruler of Dubai, HE Sheikh Mohammed bin Rashid Al Maktoum decreed in 2006 the creation of the Knowledge and Human Development Authority (KHDA) to oversee the private education sector in Dubai, including early childhood education centres, schools, higher education providers and training institutes, with the aim of developing the education and human resource sectors in the Dubai emirate to the level of international standards and best practice.

Private schools offer learning opportunities using various curricula to match the multinational demands of the Dubai workforce. The majority of secondary schools (51) follow the British teaching system followed by USA based system (31 schools). Twenty-one schools follow the Indian curriculum, 51 fall under the UAE Ministry of Education syllabus, and 6 schools teach the International Baccalaureate (IB). There are 12 schools teaching other curricula such as French, Pakistani, Filipino, Japanese, Russian, and German. The report published in 2011 by the KHDA ranks Dubai's private schools on the basis of various criteria (KHDA, 2011). This report indicates that out of 136 private schools 16 are rated unsatisfactory, 65 are acceptable, 49 are good and only 6 are outstanding. Only 3% (6,177 students) attend outstanding schools, 41 % (76,183 students) attend good ones compared to 51% (95,562 students) and 5% (9,983 students) who attend acceptable and unsatisfactory schools respectively. (KHDA, 2011) It is interesting that half of current students are attending acceptable and unsatisfactory schools. This may be due to the high fees imposed by good and outstanding schools.

When it comes to higher education (HE), Dubai differentiates itself from other emirates and countries in terms of quantity and type of higher education institutes. Dubai has witnessed an interesting growth in higher education, reaching 52 different institutes with almost 40,000 students in 2010. The majority of HE institutes are the hosted branch campuses of various international providers. The Dubai education model evolved around student demand due to the transitional secondary education with 220,000 students and 13 different curricula in 2010. The Dubai model is built around the notion that there is no need to travel abroad to seek higher education while it is possible to bring branches of world universities under the same roof. As a result, five different free zones in Dubai contain higher education institutes to meet that demand. These are: Dubai International Financial Centre, Dubai Healthcare City, Dubai Knowledge Village and Dubai International Academic City, and Dubai Silicon Oasis. Enrolled students in free zone higher education institutes reached 38% of total students in 2010 while 43% are studying outside the zone, and 13% attend the Federal universities. (KHDA, 2010)

Remarkably, in 2010, 42% of the 394 programs offered by higher education institutes were business, followed by 19% society, law and religious studies. Figure (3.4) shows that business programs are the most popular among the other academic fields. Engineering (9%), information technology (6%), health and medicine (3%), architecture and construction (2%) are the other major subjects. What is more surprising is in 2010 only 1% of students were enrolled in tourism and hospitality, in a country where the major non-oil GDP is derived from tourism and hospitality. Both the courses offered and the choices made by students demonstrate a modest interest in fields that require technical knowledge and numerical abilities. Also the policy makers show a significant decrease in their attention to education, which results in this mismatch between education outcome and economic demand, in agreement with the findings of Muysken and Nour, (2006).

Figure (3.4): Fields of Study in Dubai Higher Education Institutes 2010, Source: (KHDA, 2010)



3.3.2 The UAE Innovation Index

The UAE lags behind many countries in the Innovation Index calculated by The Economist Intelligence Unit (2011). This index distinguishes between the country's output in terms of patents granted, and input in terms of direct and indirect drivers of innovation. According to this index, the direct drivers of innovation are research and development expenditure, quality of research, workforce education and skills, and ICT infrastructure, while the indirect drivers are the political environment, market opportunities, economic policy environment and regulatory environment. If the UAE is willing to invest in human capital, then it is a major concern that policy makers should pay attention to whilst thinking of building a future competitive economy.

Table (3.2): GCC Ranking in Innovation Index among 82 Countries. Source: The Economist Intelligence Unit Limited, 2009; Dutta, S. and Lanvin, B, 2013)

Country	2002-2006	2004-2008	2013
Bahrain	50	60	67
Kuwait	35	37	50
Oman	N/A	N/A	80
Qatar	57	51	43
Saudi Arabia	41	42	42
United Arab of Emirates	43	40	38

3.3.3 United Arab Emirates situation in World Knowledge Economy index.

Recent research shows a strong link between economic growth and knowledge. According to the World Bank calculated Knowledge Economy Index (KEI) and Knowledge Index (KI), the UAE achieved a modest rank compared to 146 countries across the world. The KEI encompasses the four pillars whilst the KI comprises only pillars 2 and 4. The first pillar is the 'economic and institutional regime' which is the country's ability to afford incentives for the use of existing and new knowledge and support for entrepreneurship. The second pillar is 'education and skills' that indicates people's need for knowledge and skills to share and practice. The third is 'ICT infrastructure' that shows the country's ability to keep abreast of current technology. The fourth is 'innovation system' which refers to the country's ability to come up with new technological research and development, availability of think tanks, universities, consultants and other development organisations. Although the UAE enjoys high revenue from exporting fossil energy, it is an interesting finding that the UAE ranks moderately in this index. This interesting result indicates the UAE's moderate level to build human capital which is a necessary recipe for any future required economic growth, (The World Bank Institute, 2009).

Table (3.3): The Knowledge Economy Index and Knowledge Index: GCC Ranking Among 146 Countries, Source: (The World Bank Institute, 2009)

Country	Knowledge Economy Index (KEI)	Knowledge Index (KI)	Pillar 1: Economic Incentive Regime	Pillar 2: Education	Pillar 3 : ICT	Pillar 4: Innovation
Bahrain	49	56	48	60	40	80
Kuwait	52	59	51	76	46	70
Oman	66	79	40	86	76	71
Qatar	44	45	42	67	27	48
Saudi Arabia	68	73	58	80	52	86
United Arab Emirates	45	44	47	79	21	46

3.3.4 UAE Workforce Structures

Like most of the GCC countries, the UAE has unique characteristics in terms of being highly dependent on immigrant expatriate labour. Government bodies exert efforts to support the UAE nationals through various nationalisation programs termed "Emiratisation". Private firms that show interest in recruiting, developing and retaining UAE nationals (Emiratis) usually get special treatment. However most of those efforts do not succeed in attracting Emiratis to work in private firms. Instead most, if not all, prefer to work in government and semi-government entities because of the attractive salaries, incentives, working hours and flexible environment. (Forstenlechner, 2010)

Emiratis are in the minority both in the total workforce as well as in population (Government of Dubai, 2011; UAE Ministry of Economy, 2011). The private sector offers the majority of jobs; 63% of the total workforce is in private organisations compared to 8% in Federal government, 11% in local government, and 4% in joint local-Federal organisations. The percentage of Emiratis is estimated to be 12.5% of the total population, while the remainder consists of expatriates who live under residency visas mainly attained through employment sponsorship. The share of expatriate workers is estimated to be 90% of the total workforce. Expatriate workers are attracted to the country by the development plans aimed to turn it into the business hub of the Middle East. Most expatriate workers are considered as having limited skills and a low level of education. Workers who are educated to secondary school level or equivalent formed 78.9% of the workforce in 2005 compared

with 21% who hold a university degree or equivalent. Immigrant workers travel to the UAE mainly from basic economic conditions countries; therefore they accept relatively low pay, long working hours, and hardships in terms of labour legislation. However, Emiratis cannot compete with the low paid expatriates, and they prefer to look for job opportunities in the public sector where employment conditions are better, (Forstenlechner, 2010).

Table (3.4): UAE Population and Workforce Structure, Source: (UAE Ministry of Economy, 2011)

Year	Population	Total workforce	Employed	Unemployed	Unemployment Rate
2005	3,305,849	2,559,668	2,479,880	79,788	3.1%
2009	5,066,000	3,263,000	3,137,000	126,000	3.8%

Table (3.5): Employed Population (15 Years and Over) by Age Group, Educational Status and Sex, Census Dec. 2005, Source: UAE Ministry of Economy, 2011)

Below and Above University Ratio	Percentage	Total	Educational Status
78.92%	10.18%	252512	Illiterate
	15.31%	379750	Read and Write
	12.77%	316714	Primary
	16.71%	414367	Preparatory
	23.94%	593790	Secondary and Equivalent
21.04%	4.62%	114460	Above Secondary and below University
	14.58%	361610	First University Degree and Equivalent
	1.84%	45704	Postgraduate Degree
	10.18%	973	Not Stated
		2479880	Total

Table (3.6): Percentage Distribution of Population (15 Years and Over) by Activity Status, Age Groups, Employment, Source: UAE Ministry of Economy, (2011)

Total Employed	65+ years (Not Working)	Total Unemployed	Groups
10.2	0.0	89.8	15 - 19
67.9	0.0	32.1	20 - 24
83.6	0.0	16.4	25 - 34
82.9	0.0	17.1	35 - 44
76.7	0.0	23.3	45 - 54
64.0	0.0	36.0	55 - 64
14.9	76.7	85.1	65 +
45.6	3.8	54.4	Citizen
79.2	0.3	20.8	Non-Citizen
72.6	1.0	27.4	Total of Citizen and Non-Citizen

3.4 Dubai Special Economic Zones: The Journey to Drive a Cluster –Specific Economy

With limited oil reserves, low skilled labour and an inadequate education system, the Government of Dubai realises that human capital development is an essential ingredient to achieve economic growth. Attracting foreign direct investment (FDI) is perceived to be an important stage to progress in achieving that goal. Nevertheless, Dubai comprehends that FDI needs to be poured in the right strategic cluster-specific industries and this is where the notion of cluster-specific free zones becomes dominant in each strategic move to transform the economy. Industry skills, technical know-how, process innovation and modern technologies are believed to be transferred to the domestic market by means of various channels of interaction with multinational companies. (Muysken, Nour, 2006; Government of Dubai, 2011; Porter, 1998)

3.4.1 Dubai: Foreign Direct Investment Role in Driving Economic Activities

Oil has been the main driver for economic activities in the UAE for the past 30 years, mainly in Abu Dhabi. However, Dubai has a limited oil supply and takes continual measures to drive economic activities by establishing modern infrastructure, road and transportation, communication, and quality services offered by government bodies. Dubai understands that attracting foreign direct investment (FDI) can be beneficial and is a good solution to drive non-oil economic activities and to instill the right skills and technical know-how within its currently low skilled workforce. Dubai adopts the school of thought that favours FDI and believes that it can enhance access to modern technologies, adoption of innovation in production processes and therefore efficiency in productivity. For that reason, Dubai takes measures to align all efforts which entail trade openness, infrastructure development and institutional quality to encourage FDI inflows, (Government of Dubai, 2011; Porter, 1998).

Table (3.7): Dubai, FDI per Economic Activity. Source: Dubai Statistics Centre, 2011

	2007 Value in AED million		**2008** Value in AED million		**Growth**
Economic Activity	**FDI Value**	**FDI Share %**	**FDI Value**	**FDI Share%**	Percentage
Financial Services	20,615	32.7	28,994	38.2	40.6
Real Estate and Business Services	12,056	19.1	18,698	24.6	55.1
Wholesale and Retail Trade	11,248	17.8	13,835	18.2	23.0
Construction	12,138	19.2	12,194	16.1	0.5
Manufacturing	1,729	2.7	1,823	2.4	5.4
Mining and Quarrying	1,275	2.0	1,275	1.7	0.0
Transport, Storage, and Communication	847	1.3	1,257	1.7	48.4
Restaurants and Hotels	1,275	2.0	1,029	1.4	-19.3
Social and Personal Services	384	0.6	399	0.5	4.1
Total	61,566	100	79,503	100	29.1

3.4.2 Dubai Free Zones and Economic Transformation

Dubai's oil reserves constitute only 1/20th that of Abu Dhabi's reserves, and the emirate underwent a major makeover in its economic structure during the past three decades, moving from fishing and pearling to tourism, and shipping, financial and service sectors.

Dubai succeeded in planting the image of a relaxed free city with multi-billion dollar luxury projects, although it was historically famous as the trading hub for pearls and textiles. Dubai's economic transformation may be attributed to many ambitious initiatives such as the dredging and refurbishment of the Creek, establishing Jebel Ali Port the biggest man-made dock in the Middle East, and laying the foundation of 24 various cluster-specific free zones. The notion of free zones developed following the successful launch of Jebel Ali Free Zone in 1985. (Matly and Dillon, 2007).

The introduction of special economic zones in Dubai contributed significantly to a fundamental leap in economic growth. Jebel Ali was the pioneer zone established in Dubai 1985 with a considerable doubt that such an initiative might not succeed. Now almost every Emirate in the UAE has one special economic zone at least following Dubai free zones business model. For example:

- **Dubai**: Jebel Ali Free Zone, Dubai International Financial Center, Dubai Metals and Commodities Centre, Gold & Diamond Park, DUCAMZ, Dubai Aid City, Dubai Auto Parts City, Heavy Equipment & Trucks FZ, Mohammad bin Rashid FZ, Dubai Internet City, Dubai Media City, Knowledge Village, Dubai Outsourcing Zone, International Media Production Zone, Dubai Health Care City, Dubai Humanitarian City, Dubai Airport FZ, Dubai Silicon Oasis, Dubai Carpet FZ, Dubai Flower Centre FZ, and Dubai Textile Village.
- **Abu Dhabi** : Abu Dhabi Free Zone, Masdar, TwoFour54
- **Sharjah**: Airport Free Zone, and Hamriyah Free Zone;
- **Ajman**: Ajman Free Zone
- **Ras Al Khaimah**: Ras Al Khaimah Free Zone
- **Umm Al Quwain**: Umm Al Quwain Free Zone
- **Fujairah**: Fujairah Free Zone.

> The introduction of special economic zones in the UAE and especially Dubai has a unique impact on the economy and incentives compared with other existing free zones. In order to establish a firm in the UAE, the commercial law mandates that it should have a local sponsor with an ownership comprising 51Emirati versus 49 foreigners. Foreign direct investment is hesitant to flow to any country with such a commercial law. The formation of special economic zones in Dubai helps to attract FDI in form of Multinational establishments who are willing to inject funds with a piloted law which provides firms the right to 100% ownership. (Hejmadi, 2004).

All Dubai free zones in common offer relaxed immigration rules, labour regulations, 100 percent tax holiday, and free repatriation of capital and revenue. Free zones offer different types of license, each according to the zone planned sectors. Only companies with a trade license can operate inside the zones and outside with the domestic market. Currently there are 32 free zones in the UAE of which 24 are located in Dubai. This indicates their importance to Dubai, and its Government's devotion to such a perception as the vehicle for economic transformation toward a cluster-specific economy. (Government of the UAE, 2011). The following tables reveal that in 2010 Dubai zones accounted for 33% of total imports and 68% of total exports compared with 23% of total exports and 68% of total import activities in 2009. Jebel Ali Free Zone's share was 71% and 74% of total free zones imports and exports respectively followed by Dubai Airport Free Zone's shares at 16% and 15% of total free zone imports and exports. (Dubai Customs, 2011).

Table (3.8): Dubai Total Trade 2009 and 2010. Source: Dubai Customs, (2011)

	2009			2010			
	Value (AED)	**% By Value**	**Share of Total Trade**	**Value (AED)**	**% By Value**	**Share of Total Trade**	**Growth 09 VS 10**
DIRECT TRADE							
IMPORTS	318,519,560,891	65%	68%	363,671,228,260	63 %	67%	14%
EXPORTS	52,420,103,151	11%	31.8%	67,961,631,664	12%	32 %	30%
RE-EXPORTS	117,558,829,670	24%		144,023,303,311	25 %		23%
TOTAL DIRECT TRADE	**488,498,493,713**	**100%**	**65%**	**575,656,163,235**	**100.0%**	**63.8%**	**18%**
FREE ZONE TRADE							
IMPORTS	152,097,978,034	58%	32%	180,447,338,207	56%	33%	19%
EXPORTS	112,041,165,273	42%	68%	142,671,707,350	44%	68%	27%
TOTAL FREE ZONE TRADE	**264,139,143,307**	**100%**	**35%**	**323,119,045,557**	**100%**	**36%**	**22%**
CUSTOMS WAREHOUSE TRADE							
IMPORTS	940,622,328	63%	0.2%	2,716,676,585	80%	0.5%	189%
EXPORTS	565,373,339	38%	0.3%	690,594,305	20%	0.3%	22%
TOTAL CUSTOMS WAREHOUSE TRADE	**1,505,995,668**	**100%**	**0.2%**	**3,407,270,890**	**100.0%**	**0.4%**	**126%**
TOTAL TRADE	**754,143,632,687**			**902,182,479,681**			**20%**

Table (3.9): Dubai Free Zone Trade by Location during 2010.
Source: Dubai Customs, (2011)

	Import	Export
Location	**Value (AED)**	**Value (AED)**
Dubai Airport Free Zone	30,643,609,113	21,652,724,235
Dubai Multi Commodity Center (DMCC)	14,793,298,236	11,103,335,481
Dubai Healthcare City	55,016,791	22,392,632
Dubai Internet City	389,183,721	41,227,292
Dubai Logistic City	442,409,785	225,734,972
Dubai Media City	648,096,805	92,114,156
Dubai Silicon Oasis	113,401,423	26,786,986
Dubai Cars And Automotive Zone (DUCAZ)	962,287,209	788,252,675
Dubai International Financial Centre	3,943,694,868	3,898,977,082
Jebel Ali Free Zone	128,456,340,254	104,820,161,838
Grand Total	180,447,338,207	142,671,707,350

3.5 Research Concept

During the literature review, it was found that many issues related to human capital development remained largely unexplored. For instance, very few studies provided a systematic examination of either the extent of human capital development determinants, or their impact on firms operating within special economic performance.

In this section, an initial research concept, which is intended to guide this study, is presented in (Figure 3.5). This research concept will be discussed in two stages. The first stage will involve the development of a human capital indicator (HCI), while the second stage will involve the determination of the drivers of human capital.

Understandably, given the crucial role played by human capital, it is therefore imperative to have greater scrutiny of it. This study proposes to do that using an indicator as a proxy for human capital development.

3.5.1 Human Capital Development Indicator "HCI"

This research will exploit commonly used variables in measuring the human capital indicator within the context of Dubai's special economic zones. The variables to be used are: the education level, training (public and proprietary skills), on-the-job training (learning-by-doing), and finally the ability to apply the learnt skills (bridging the know-do gap). These variables are be used in the research concept to measure the level of human capital within SEZ firms; they will be validated later, through the first phase within the case studies chapter, in order localise the research concept and hence producing the proposed research framework.

3.5.2 Perceived Determinants of Human Capital Indicator in Dubai's Special Economic Zones

This section introduces the discussion on the perceived determinants of the human capital development in Dubai's special economic zones. Determinants are classified into two: A. Firm Specific and B. Free Zone Specific

I. Firm Specific Determinants

These are the determinants which are related directly to the firms operating within the special economic zones fence.

a) Firm's Specification (Type and Size)

Porter (1990) argues that multi-national establishments have a positive impact on human capital development. It is seen as an important variable in determining the Human Capital Indicator. Also the volume of the capital invested (FDI) would be another variable to

explain positively how firms are willing to invest in their people to maintain a considerable amount of return on their capital invested.

b) Firm's Performance

Firms' performance in terms of revenue generated per employee is argued here to be another variable that would impact positively the HCI. The debate is that firms, in order to generate a considerable amount of revenue, need to have high calibre employees to raise the productivity rate better than using the same resources and machinery. (Engman et al, 2007). Crook, et al (2011) discuss the relationship between human capital and firm performance measures using a meta-analysis technique to analyse 66 studies with 68 samples involving 12,163 observations. The results of the analysis leave "little doubt" of the human capital significance to firms' positive financial growth. In this stream of thought, firms should develop, retain, and hunt for the business-specific knowhow which has invaluable role in firms' performance as well as the targeted competitive edge. Human capital is essential to firms in order surpass others and achieve success.

c) Firm's Level of Research and Development

Romer (1990) argues that firms have an incentive to invest in research and development (R&D) activities to continually introduce new creative and sophisticated products that will sustain or generate a greater profit, and if firms have chosen to do that, then employees are trained to use the new sophisticated machinery that will produce the new product, therefore it can be argued that the level of R&D undertaken by firms positively influences human capital development.

II Special Economic Zones Specific Determinants

These are the determinants related directly to the special economic zones themselves.

a) Special Economic Zones: Level of Clustering

The level of clustering within the zones is to have a positive impact in determining the human capital indicator (HCI). We have seen it mentioned in the previous section and addressed by Porter (1990) in the literature review section, who argues that clustering in any economy would impact its human assets growth and development.

b) Special Economic Zones: Culture

Hofstede (1980) argues that societies which rank high in those two dimensions, usually do not accept change easily, and are very risk averse. Decisions are not reached quickly; accountabilities are distributed to more than one person, so that no one takes the blame if anything goes wrong. People are not willing to take risks and move into the future on their own. They prefer that others such as regulatory bodies lead them and secure the future. Human capital development requires moderate to high risk individuals who are willing to learn, upgrade their skills, and take risky decisions; these are the characteristics of individualistic societies. This study hypothesises that high scores on those two national cultural dimensions negatively influence the human capital development indicator.

c) Special Economic Zones: Knowledge Spillover

The SEZ's platform induced knowledge spills over, bringing technological improvements and skills development to the domestic market. Most SEZs were found to be economically efficient and generating returns well above the estimated level. SEZs were a significant source of employment in the observed countries and in some cases zones were also able to promote local entrepreneurship. Conversely, as countries further develop their industrial

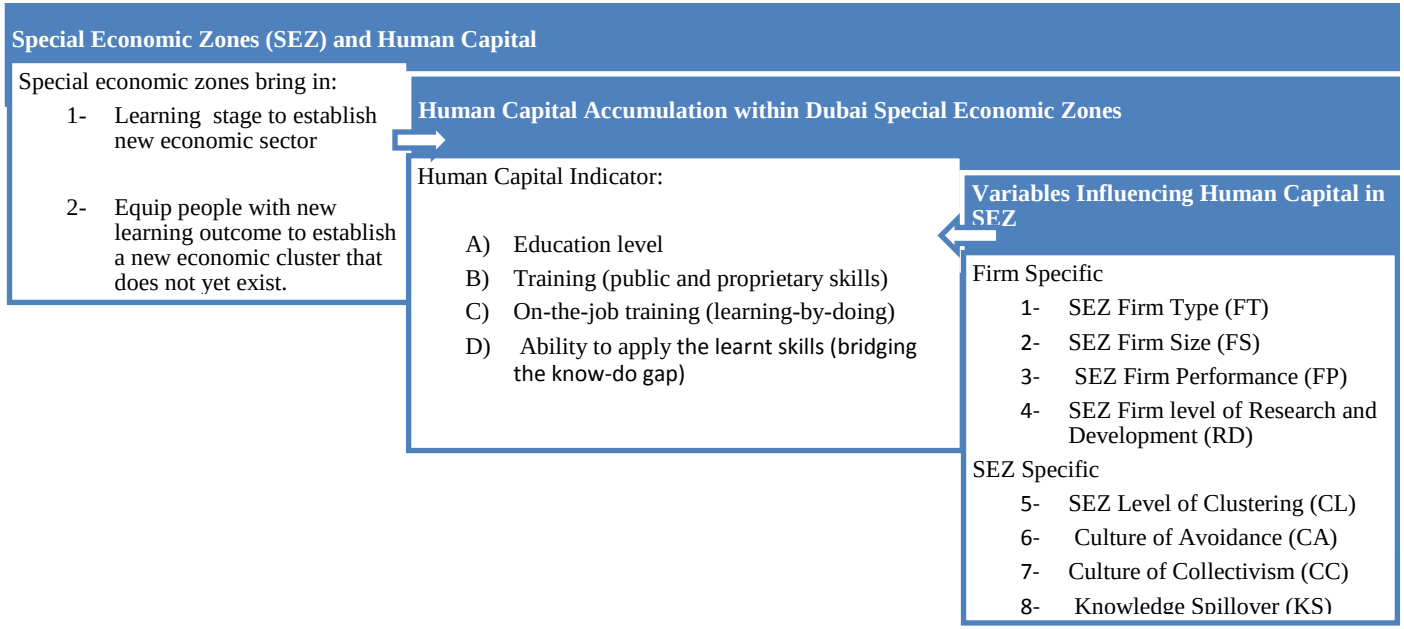
capacity, market advantages given by zone programs as well as the opportunity costs of labour in SEZs tend to shrink. Without effective long-term linkages with the domestic economy through profit generation for local shareholders, continued national interest in zone programs is considered likely to be lost (Engman et al, 2007).

3.6 Summary

This chapter described Dubai's position in human capital development and the role of special economic zones in attracting foreign direct investment. Having a limited oil supply, Dubai is taking serious measures to diversify its economy by building cluster-specific economic sectors. The major challenges faced by Dubai are the small population, high dependence on low skilled labour, an inefficient education system, and the mismatch between education outcome and strategic economic sector needs. In order to overcome these challenges, Dubai has adopted the notion of special economic zones to attract multinational companies and accelerate domestic human capital development through the spillover effect. With almost 32 current special economic zones, it is believed that human capital has been developed throughout the last 3 decades of operations. However, there is a strong need to measure the extent of human capital development as a result of Dubai's investment in special economic zones.

The following research concept summarises the outcome of the literature review on how special economic zones impact human capital development. This is theorised mainly by two sets of variables. The first set is firm specific which are: type, size, performance and the firm's level of research and development. The second set of variables is: zone specific which are the level of clustering within the zone, knowledge spillover, and the culture of avoidance and collectivism. Most of the variables are hypothesised to drive human capital development positively except the culture of avoidance and collectivism.

Figure (3.5): Research Concept



Chapter Four : Research Methodology

4.1 Introduction

This chapter presents the research methodology used for this study. It opens by defining the relevant types of methods of research. Then it explains the research methods used for this study.

Research is a process of investigation, providing a solution to a problem, or increasing the body of knowledge. It is characterised by a systematic approach or methodology which complies with research ethical standards. Furthermore, research aims to explain new phenomena, review existing knowledge, explore, and analyse more general issues. (Collis & Hussey, 2003).

4.2 Research Types, Approaches and Methodology

Research has different types which can be summarised as follows:

i- Exploratory

This is used usually when few studies exist on the research problem or even no studies at all. Exploratory research is used then in order to investigate the patterns and look for hypotheses or ideas that can be tested and form the basis of the research. The usual techniques used for this type are case studies, observations, and review of related studies. (Collis & Hussey, 2003; Saunders, Lewis & Thornhill, 2007).

ii- Descriptive

This type is used to classify, categorise, and identify elements or characters of an issue. Mostly numerical data is used to collect, analyse and summarise the findings, (Collis & Hussey, 2003; Saunders, Lewis & Thornhill, 2007).

iii- Analytical

This type is used as an extension to descriptive research. It goes further to identify the relationship or causality among variables, (Collis & Hussey, 2003; Saunders, Lewis & Thornhill, 2007).

iv- Predictive

This type is used to speculate, forecast and 'predict' the future. It uses the existing evidence and analyses the future possibilities based on close analysis of cause and effect variables.

4.3 Research Design

Designing the research is an important step in order to identify the purpose of the study, the type of the data and information required, sampling and how data is analysed (Sekaran, 1992)

The main research design can be grouped into three main types as follows:

a. Historical Research Design

This is where the researcher investigates events or conditions that occurred in the past, attempting to establish the facts in order to draw conclusions about past events or predicting future outcomes. This method aims to shed light on the relevant theories, and analyse the data. Evidence is gathered from data, documents, observations, books, and statistics in order to draw conclusions on the solutions proposed by the research. (Sproull, 1995)

b. Experimental Design

This is when the research requires the control or manipulation of independent variables and observation of the consequences on the dependent variable. This type is based on the cause and effect method in order to generate the proposed understanding and in turn

the strength and results of variable relationships or causality (Balian, 1982; Sekaran, 1992; Sproull, 1995)

c. Non-Experimental Design

This design is used mainly when control over the variables is not required by the researcher. Variables sometimes do not have relational or causal effect. This is when other multiple factors exist frequently and affect themselves rather than the variables influencing each other. (Sekaran, 1992; Sproull, 1995).

Research can be approached in either of the following ways or a combination of them wherever required:

4.3.1 Quantitative Versus Qualitative

These are the two main approaches followed by researchers when undertaking non-experimental research designs. The quantitative approach looks for numerical data providing different types of measurement. Variables are classified, scaled, and tested in order to provide evidence of causality or correlation. This is used usually to test a specific set of hypotheses and establish the relationship among the variables. The principal forms of data collection used in this type of approach are survey methods such as questionnaires, structured interviews, or statistical data. Variables are characterised mostly by numerical value in order to apply statistical tests on them, eventually to establish the understanding of interrelationship or causality among variables. (Collis & Hussey, 2003; Saunders, Lewis & Thornhill, 2007; Balian, 1982).

- *Survey Method*

Data can be collected in various ways. The choice depends on factors such as the time span and the cost associated with each way. The survey method is proven to be a practical approach for collecting data and to be used for cross comparison whenever required. For example survey questionnaires are widely used and are considered to be the most cost effective way to capture data.

The questionnaire comprises predesigned questions structured around the research variables on which respondents provide their input. It is meant to capture specific data and information across the research sample. There are different ways to administer the questionnaire. This can be personally, by mail, email, or by web enabled software. Each has its own pros and cons in terms of convenience and accuracy (Sekaran, 1992; Sproull, 1995)

- *Structured Interview*

This tool is used when the researcher conducts an interview following a set of prewritten questions. The aim is to make sure that the respondent fully understands the questions in order to provide accurate responses. Also, this way can be efficiently exercised when conducting research across countries. Language can be a challenge and subject to deviation from its main understanding when questions are translated. This way can be costly, time consuming and hard to apply when the research sample is large (Balian, 1982; Sekaran, 1992; Sproull, 1995),while the qualitative approach is devised to look at a stream of subjective perceptions, attitudes and opinions, (Collis & Hussey, 2003, and Saunders, Lewis & Thornhill, 2007).

On the other hand, qualitative research is used mainly when the situation requires more in depth information. Information is obtained in the form of respondents' words, opinions, and views extracted through unstructured interviews and observations, (Sproull, 1995)

- *Unstructured Interview*

This is an interview where the researcher does not follow a rigid framework of questions. It starts with open ended questions or broader opinions touching upon the surface of the research variables followed by in-depth and more focused questions investigating the research theme, (Balian, 1982; Sekaran, 1992; Sproull, 1995).

- *Case Studies*

This method is considered the most widely-established one used in management research. It exploits many types of data collection over a period of time such as interviews, historical records, documents, and observations. It is used mainly to provide a generalisation to a theoretical proposition. It is used purposely to investigate research problems which are predefined in literature review and explored throughout case studies, (Cohen, Manion & Morrison, 2003; Yin, 1994)

- *Triangulation*

This is when the researcher obtains data and information via both qualitative and quantitative methods within a single framework. This is used mainly when the researcher introduces various types of measures for the required variables. Consequently, this requires both ways in order to provide a complete picture of the problem statement and in turn the proposed outcome, (Sekaran, 1992).

4.3.2 Basic Versus Applied

Basic research is used to add to the body of knowledge without looking at the applicability of such knowledge. While applied research takes those findings and tries to apply them to particular situations or order to model the applications of the outcome, (Collis & Hussey, 2003: Saunders, Lewis & Thornhill, 2007).

4.3.3 Deductive Versus Inductive

Deductive research moves from a general stream of thoughts, ideas, and theories towards a particular and specific situation. While inductive research moves from the particular to infer or introduce broader ideas or theories, (Collis & Hussey, 2003: Saunders, Lewis & Thornhill, 2007).

4.4 Sampling

Two main sampling types are known and used for research. Probability and non-probability sampling techniques. Probability is highly dependent on the chance of selection and is used mainly when the research aim is to generalise on a specific concept. On the contrary, non-probability sampling technique does not require chance for sample selection. Time, availability of the information, and the aim to generalise or not are the main determinants of the selection of the relevant sampling type.

4.5 Choice of Research Method

This research uses case study methodology as an empirical inquiry that investigates the contribution of Dubai special economic zones to human capital development where the boundaries are not clearly evident, (Yin, 1984). The study employs triangulation exploiting a multiple case design where each case (a firm within one of the zones) is different in its strategy and practice of human capital development. Also, human capital development occurrence is not limited to one firm within the zone but rather to all of them. A semi-semi-structured questionnaire technique is used and constructed around the research questions to serve as a direct observation of the main data and information resources. A pattern-matching technique has been exercised thoroughly to link several types of information from each case to the research questions. Three phases of case study were used to fulfill the research aim and objectives: Phase 1: Exploratory, localisation of variables, Phase 2: Case Studies: Validation of Research Proposed Framework, and Phase 3: Cross Cases Contrast.

4.6 Justification of Using Case Studies Method

This method was chosen purposely to:

- Gain a better understanding and observation of how special free zones contribute to human capital development within the environment of Dubai and what are the main drivers of such development, (Yin, 1984).

- Allow for both qualitative and quantitative analysis of data by seeking evidence from categorical responses of individual firms, (Block, 1986; Hosenfeld, 1984)

- Explore and explain the complexities of the human capital development process in Dubai free zones which may not be captured through experimental or survey research methods

- Have access not only to numerical data but also to relevant strategies, plans and functionalities, and to link them with each other under the umbrella of research questions, (Yin, 1994; Tellis, 1997).

- Overcome the nature of confidentiality within the region and the sensitivity to offering data and relevant specific information. Firms in Dubai are reluctant to declare information to the public. It is likely that firms will not participate in filling out semi-structured surveys. Usually, there is a tendency among people to approach such research with a high level of skepticism. Therefore, the method of case studies is a better option which enables the researcher to interview many people from the same case to get a clear picture.

4.7 Research Protocol

This section explains the procedures and general rules which are followed throughout the research. This protocol is used as a tactic to increase the reliability as well to offer guidance in carrying out the case study. (Yin, 1994)

a. Purpose

The purpose of this study is to investigate the influence of Dubai special economic zones on human capital development. The aim of the research is to be achieved by developing a model (Research Concept) from the literature to understand what variables within the special economic zones are meant to influence shaping the human capital development. Then the research concept is to be validated through an exploratory study and case studies to come up with the research framework. The outcome of this research is to be used by policy makers in Dubai on how best they can exploit the special economic zones in developing the human capital.

Research Statement

A procedural element about the research was presented to the policy makers, firms, and figureheads and sent by email. The objective of this statement was to provide information about the research to anyone who might want to know about the research, its purpose, and the people who were involved in conducting the research, (Please see the research statement in Appendix 4)

b. Procedures

In this stage a field procedure was undertaken with regard to credentials, access to case study sites, and general sources of information

i. An Initial Scheduling of Field Visit

- ***Firms' preliminary information*** is essential step to be regarded while initially scheduling the field visit. This is done through accessing the firms' website and official public documents. Details are looked at in order to culturally structure the questions in the most convenient way
- ***Verification of Access Procedures*** was done for each firm. An email was sent to the interviewees, firms' official receptionist, or security section to obtain details of the location map and official access ways. Whenever required, a permit was requested to be provided to the researcher. For that reason the researcher details were provided in terms of car registration plate also, time, date, duration, and purpose of the visit
- ***Special Documents were extracted*** from the official firms' resources such as published annual reports, published news, and articles. This was basically done in order to enrich the research with the contextual information of each and every firm in order to direct the questions and to align them with the research objectives.

ii. Determination of Persons to be interviewed

Upon getting the details through the initial scheduling of the field visit, persons are determined based on the level of authority as well as on the person's perceived entitlement to furnish the researcher with the required information following the ethical understanding from both sides of the University and the firm's contextual regulation as

well. In a few cases, the researcher managed to have two decision makers to be interviewed in the same meeting setting which made it much more convenient in extracting the required information.

Interviewees were first contacted through both telephone and formal emails to introduce the subject and obtain their consent. Then appointments were set for face to face meetings. Most of the meetings purposely took place at the interviewees' workplace in order to acquire a better understanding of the firm as well as to obtain a thorough view of any additional documents they were willing to share. About one hour and 15 minutes was the average duration of the meetings. The meeting introduced the research aim, objectives, the meeting purpose, and reconfirmed their consent for offering the required data and information. Then, the discussion was commenced based on the relevant questionnaire developed for each phase or stage. In conclusion, the meeting ended by appreciating the offered time, efforts, and by extending other required details such as the University's address along with supervisor's name, address and email for them to contact if needed.

c. Training

The researcher received one to one coaching from both the local and university supervisor. Five sessions, one hour each, were spent in order to coach the researcher on how best to obtain the answers.

Topics of the training were:

- Skills of conducting semi structured interviews
- Understanding the context and culture of each firm
- How to be quick and efficient in getting information
- How to reach decision makers in the organisation
- How to get information needed through other means

d. Case Study Questions

Data and information were collected through intensive interviews using a semi-structured questionnaire. The University of Salford's ethical procedures were followed

for this purpose. The source of data was mainly from government official bureaux, people who were considered close to high-ranking officials, and finally from firms (case studies) operating in different free zones in Dubai.

There were many advantages in conducting semi-structured interviews as a method of data collection. Mainly this was to obtain specific and constructive suggestions as well as detailed information when the researcher had direct contact with decision makers. Also, few firms were needed to gather rich and detailed data.

Development of Questions

Three questionnaires were developed and used for this study. The first was development for the first exploratory phase (localisation of variables). It was used primarily to explore the research concept's variables that were extracted from the literature review. It started with open-ended questions and narrowed down to obtain measures on a Likert scale. The outcome of this questionnaire was used in order to localise the variables and resulted in the proposed research framework.

The second questionnaire was developed during the second phase of the study (case studies: validation of the proposed research framework) in order to validate the proposed research framework itself within the firms interviewed. The outcomes then were used for contrast during the third phase (contrasting the variables against the case studies).

Human capital indicator emerged during the study. It was found to be an important step to establish an initial validation of the indicator. The third questionnaire consists of open-ended questions. A slide presentation was performed before the questionnaire in order to make sure that the respondents were fully aware of the proposed indicator, its purpose, and usage.

Sampling Technique

Although many sampling techniques exist, this study chooses carefully selected policy makers and firms to interview throughout the exploratory stage only (Phase 1: localisation of variables). For the first phase of the study (localisation of variables), the

selection of policy makers, persons in charge in firms, is on the basis that they have access to facts and figures at both macro and micro level. The carefully selected policy makers have various channels and formal networks in either Dubai special economic zones' and/or human capital development policy decision makers.

In contrast, five firms were randomly selected for the following phase (Case Studies: Validation of the proposed research framework). An email was sent to the list of companies within the zones, and the research took the first five firms responding positively. The firms responding were from Jebel Ali Free Zone, Dubai International Financial Centre, and Dubai Multi Commodity Centre. The five firms were characterised by different type, size and activities.

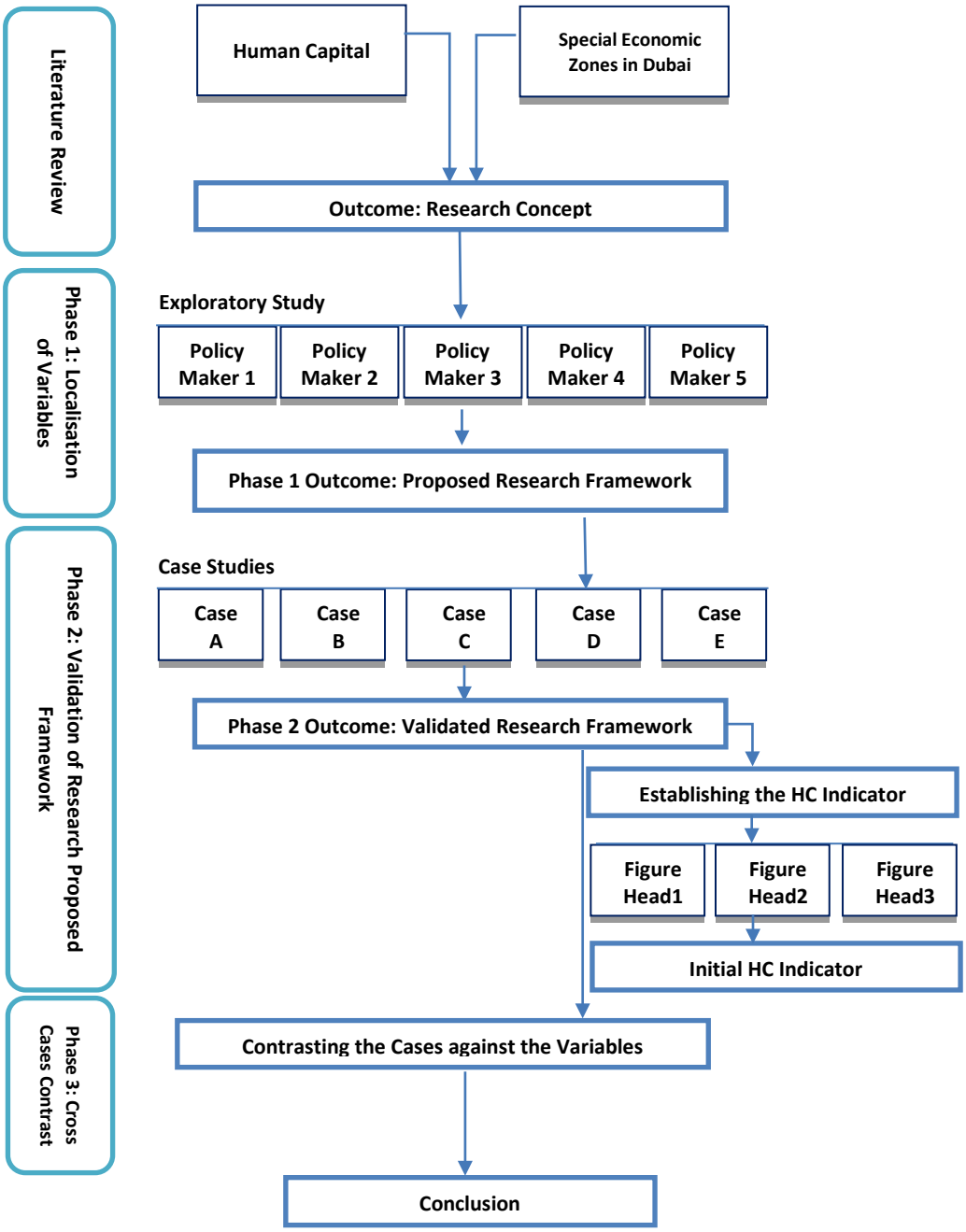
e. Case Study Reports

- The case studies report, collected documents, and completed questionnaires are filed and itemised according to the document type which gave the researcher ease of access whenever required.
- It was important not to ignore this documentation because it might contain critical information to support the research at a later stage
- This documentation also helped the researcher to contrast the cases against the variables as information and data were quickly accessed and extracted

4.8 Research Structure

The following figure (4.1) explains how this study was structured in order to answer the research questions:

Figure (4.1) Research Structure



a. Literature Review: Development of the Research Concept

The literature review was undertaken to understand human capital development, what shape does human capital take in articles, why, and how. Then the literature review looked at the free zones to understand what characterises this development. Cluster specific industries as well as the knowledge spillover are the main two drivers found to impact positively human capital development in free zones. Then the literature investigates how firms can impact this development. The main drivers found are firm type, financial performance and the level of Research and Development (R&D). Then the literature review turns to Dubai as the context in which free zones are researched specifically in this study. Cultural aspects are considered in the research concept to impact negatively human capital development.

The main purpose of the literature review was to come up with the research concept which was to reveal the main components of human capital as well as the main drivers within the special economic zones which influenced the development of human capital

b. Phase 1 Exploratory Study: Localisation of Variables

This phase is an exploratory stage used in order to explore, localise, introduce adjustments, validate, and verify variables identified in the research concept and obtained from the literature review. The outcome of this phase presents amendments of the research concept. In order to achieve that, interviews with policy makers, senior managers, or persons in charges in free zone firms, (five in total), were held to discuss the proposed research framework introduced in the previous section. Discussions were entailed to discover what factors compose human capital indicators in Dubai zones and what are the main forces that drive human capital development. Five policy makers and firms were interviewed in order to localise the variables identified within the research concept.

Phase 1 is commissioned to come up with the Proposed Research Framework with localised variables. The proposed research framework is developed during the first phase of the research. Policy makers and firms' opinions within Dubai free zones are sought on the importance of the variables.

c. Phase 2: Case Studies, Validation of Research Proposed Framework

After discussing the variables obtained from the literature review in the previous phase, this phase is used as the second stage to validate the proposed research framework. Also to explain how human capital is developed within Dubai special economic zones, and finally, to collect data to build up the human capital indicator.

Based on the Phase 1 discussions, five firms (case studies) were identified randomly. A semi-structured questionnaire was developed and used extensively throughout an interview process to obtain data and information about each interviewed firm's practice, channeled through research questions; also to describe the level of the contribution of the carefully selected firms (cases) to human capital development individually. The main purpose and outcome of this phase would be the Validated Research Framework.

On the side of the research, it was interesting to perform a further secondary stage of interviews with three key decision makers (figureheads) in order to establish the initial human capital indicator which was emerging through the research. The three figure heads were presented to the proposed human capital indicator in order to obtain useful feedback. During this stage the initial human capital indicator was established.

d. Phase 3: Cross Case Contrast

This final phase was used to contrast the cases against the research variables. In addition, this phase explains how firms perform with regard to the driving forces that have a major influence on such development. This was followed by an aggregate level of contrast and explanation of the variables of the five cases interviewed in Phase 2. The outcome of this phase presents how cases individually and collectively impact and contribute to human capital development within the context of Dubai special economic zones.

The main purpose of Phase 3 was to come up with an understanding of the contrasted cases against the variables. The five major variables were compared across all the firms interviewed in order to observe the pattern and initial observations about the main contributors to human capital development in the Dubai free zones.

e. Research Conclusion

The research concludes on the research outcome, main and general findings, and research's contribution to knowledge, its limitations, and recommendations for future research

4.9 Summary

This chapter presents the research methodology used for this research. It explains the various methods available and concentrates on those relevant to this research. Then the chapter considers the various types of design, sampling and techniques.

This specific study employs triangulation method, where a combination of qualitative and quantitative analyses are used. This has been used in the context of a case study methodology where three phases were undertaken: Phase 1 Exploratory Study: Localisation of variables, Phase 2 Case Studies, Validation of Research Proposed Framework, and finally Phase 3 Cross case contrast. The following table summarises the skeleton of the three phases of case studies chapter.

Table (4.1): Skeleton of the Three Phases of Case Studies Chapter

Technique	Phases	Objectives	Plan	Method	Outcome
Semi-structured Interview in addition to Data and Information gathered on each Variable (triangulation)	Phase 1: Exploratory Study Localisa-tion of Variables	Exploratory study to localise the variables and introduce adjustment Validate, verify and discuss variables obtained from literature review Present amendment of the research concept	Three policy makers and two senior managers from free zone firms were selected carefully and interviewed on the following axis : A. Background to Dubai SEZ B. Components of human capital indicator in Dubai SEZ C. Free zones firms' impact on HCD	Semi-structured Interview using Semi structured Questionnaire	Proposed Research framework with localised variables.
	Phase 2: Case Studies: Validation of the Human Capital Index	To obtain data and information on each and every variable discussed in the literature review during Phase 1.	Interview five firms to get data and information about the proposed research framework variables within each firm. Collect data to build up Human Capital Index. In order to do that, interview 3 figure heads within Dubai SEZ's firms in order to get the following answers Is The Human Capital Index useful Validation of the proposed index composed variables Validate the Numerical Value	Interview five firms to get data and information about the proposed research framework variables within each firm. Collect data to build up Human Capital Index. In order to do that interview 3 figure heads within Dubai SEZ's firms in order to get the following answers Is The Human Capital Index useful Validation of the proposed index composed variables Validate the Numerical Value	Data and information about each variable within the five cases. Validated the Human Capital indicator and proposed this indicator for further specific research in the future
	Phase 3: Cross Cases Contrast	To compare the impact of special economic zones on human capital development Link the aggregate information and data to perform cross analysis with cases studies to reach the final results	Cross comparison among the five firms	Tabulation	Provide comments and analytical observations on what variables usually impact the human capital development with Dubai Special Economic Zones

Chapter Five: Case Studies: Dubai Special Economic Zones Contribution to Human Capital Development

5.1 Introduction

This section introduces the field work carried out in support of this research. The section explores, describes and explains in detail how firms in some of the free zones contribute to human capital development within the context of Dubai, and finally to identify the level of driving forces for such development.

This chapter is comprised of three phases: Phase 1 Exploratory study : localisation the variables used to determine the significance of establishing special economic zones in Dubai. Also to explore the components of a human capital indicator as well as the main driving forces which impact human capital development; Phase 2 Case Studies: Validation of Research Proposed Framework used to obtain information and data about each case with regard to determinants in order to validate the proposed research framework. Five different types of firms operating in different types of free zones are explored during this phase. Also this phase aims to validate the human capital indicator used in this study; and finally Phase 3: Cross Cases Contrast used to investigate the aggregate information data and to explain how the firms discussed during Phase 2 contribute collectively to human capital development.

5.2 Phase 1 Exploratory Study: Localisation of Variables

Three quasi-government Policy Makers and two company Senior Managers were interviewed during this phase. The aim was to determine the significance of establishing special economic zones in Dubai. Also to explore the components of a human capital indicator as well as the main driving forces which impact human capital development. In view of that, the variables composing the research concept will be discussed thoroughly in order to conclude with a proposed research framework that will be used throughout the following phase (Case Studies: Validation of Research Proposed Framework). As indicated in Table (5.1), the five interviewees are from various entities. They were carefully selected on the basis that they have access to information and data

on strategic policies and procedures related to Dubai special economic zones or on human capital development within the free zones. The first three Policy Makers are persons in charge in a government authority or members of government entities, while the other two are Senior Managers in semi government and a group for human resources professional development in Dubai.

Table (5.1) Details of Interviewed Policy Makers in Phase 1

s.	Code	Type	Location
1	PM1	Policy Maker	Dubai Airport Free Zone Authority
2	PM2	Policy Maker	Dubai Free Zone Council
3	PM3	Policy Maker	Dubai International Financial Centre
4	SM1	Firm Senior Manager- Human Resources Services	Knowledge Village - Dubai Human Resources Forum
5	SM2	Firm Senior Manager, Semi Government-Financial Services	Dubai International Financial Centre

Policy Makers and Senior Managers were interviewed by means of a formal structure applied to all. The cases are presented in an almost identical structure as outlined in Figure (5.1). Each interviewee provides information on the background to Dubai Special Economic Zones, such as reasons for establishment, clustering within the zones, core business, location, etc. The study then explores the components of a human capital indicator in Dubai free zones, such as formal and informal education, level of experience, knowledge accumulation, competence, and employees' ability to apply the learnt skills.

Figure (5.1): Skeleton of Phase 1

1. Background to Dubai Special Economic Zones
2. Components of Human Capital Indicator in Dubai Special Economic Zones
3. Free Zone Firms' Impact on Human Capital Development
4. Summary and Findings

5.2.1 Establishment of Dubai Special Economic Zones

The three Policy Makers and two firms' Senior Managers interviewed during this part of the study explained that Dubai as one of the seven emirates of the United Arab Emirates was the first to introduce the business model of special economic zones. The first to be created was Jebel Ali Free Zone in 1985 followed by an approximate 32 other special economic zones of which nearly 16 are considered to be active. Policy Maker 1 said that Dubai had anticipated the need for economic sector diversification when fossil fuel, the main source of income, started to decline dramatically. Policy Maker 2 debated that there were many reasons behind such a decision, mainly to entice multinational firms who were expected to bring in their modern technology, to attract foreign direct investment, establish new economic clusters, and introduce a new platform to practice economic policy reform. Policy Maker 3 indicated that by having the special economic zones in place, domestic infrastructure also witnessed a radical upgrade in terms of roads, transport, facilities, end user technologies, water, and electrical energy. At the same time Dubai was driving through to establish and by turn to strengthen the tourism sector which has turned out to be one of the most significant economic sectors contributing significantly to Dubai's total income. Hence, Dubai's infrastructure started to observe an interesting boom in real estate and hospitality establishments. The modern infrastructure of Dubai with its focus on tourism, mixed nationalities life style, and the establishment of relaxed and tax-free special economic zones, acted as important factors in attracting both international firms and talented employees from all over the world.

Most special economic zones were established to bring in specific industry-clusters. Dubai Media City for instance was established to attract firms which deal with broadcasting, news and all types of media. It succeeded at the beginning in attracting well-known media corporations such as Reuters, CNN, CNMB, NBC, Sony, MBC, Showtime and Bertelsmann. Another example is Dubai Knowledge Village which was founded to attract firms which were to provide education, continuous learning and training services. Many educational establishments were attracted such as the Canadian University, Wollongong University, and Middlesex University etc.

Another interesting example was Dubai Silicon Oasis (DSO) which was established to imitate similar high technology free zones that would attract semi-conductor industries. For that, DSO launched a branch of Rochester Institute of Technology (RIT Dubai) which was aimed at equipping students with relevant technical know-how required by the semi-conductor firms assumed to operate within the DSO zone. The notion of cluster-specific industries was prevalent in establishing free zones in Dubai which were obviously shown by the brand names of those free zones (Dubai Financial Centre, Dubai Flowers Centre, Dubai Multi Commodities Centre, Dubai Internet City, Dubai Outsource Zone, Dubai Auto Zone, Gold and Diamond Park, Dubai Logistics City, Dubai Healthcare City, Dubai Maritime City, International Humanitarian City, etc.)

Senior Manager 1 said that in order to attract those clusters, the human factor was very important for firms to operate efficiently. The skills required for those clusters were obviously not available in Dubai. Therefore it was an important success factor to attract employees who possessed relevant technical know-how and stimulate knowledge spillover-over to the host economy. Senior Manager 2 thought that at a later stage, knowledge would be transferred to citizens who in turn would establish new entrepreneurial economic industries and services. It was important to link the cluster-specific industries with vocational institutes to supply them with the necessary calibre and this was the aim when Rochester Institute of Technology was established within Dubai Silicon Oasis. It was always conceived that firms within the zones would have a major impact on human capital development.

Senior Manager 2 felt that major hurdles were faced by the free zones which caused most of them to deviate from achieving their ultimate goals. The tiny population, the lack of the required calibre, and the substantial linkage to supply chain were some of the factors which acted as obligatory stimulants for many free zones to observe a shift in their economical clustering aim. Many turned to concentrate on real estate development rather than attracting the cluster-specific industries as in the case of Dubai Silicon Oasis, and Jumeirah Lake Towers. Policy Makers as well as Senior Managers interviewed believed that it was a decision taken under those circumstances in order to keep attracting foreign direct investment as a preliminary stage prior to the intended cluster-specific industries aim which might happen eventually.

5.2.2 Components of the Human Capital Indicator

Almost all interviewees debated that if human capital (HC) is considered to be a basket of variables, then the components were unique when it comes to Dubai special economic zones. The variables obtained from the literature review constituting the initial HCI within the research concept were presented to them in a structured manner. The variables discussed previously were the education level, training (public and proprietary skills), on-the-job training (learning-by-doing), and finally the ability to apply the learnt skills (bridging the know-do gap). Interviewees had interesting views and comments which helped in shaping these variables, stressing most of them and adding more to the indicator in order to suit firms operating within Dubai free zones. The following section presents the research ideas discussed with them thoroughly.

- *Human Capital Indicator components and their importance level. What do firms in free zones do to enable staff to gain knowledge and skills? What is the assumed weight of each component while constructing the human capital indicator?*

"Education and the quality of this education is an important one", said Policy Maker 1. Firms within Dubai usually attract employees with various levels of education depending on their activity type. They generally seek low skilled workers, however, and when it comes to white collar staff, firms within Dubai free zones mostly hire graduates and post graduate employees. Not only that, but most frequently, education has to be linked to the employee's specific job role. Policy Maker 2 debated that firms within the zones also "carefully seek employees with job experience and if such experience does not exist", then employees' ability to build up competence would be another important factor so that firms (if they are able) may furnish them with the required formal, informal and on-the-job training. Policy Maker 3 stated that foreign firms with a considerable size and yearly revenue positive growth dedicate training centres to equip their employees with knowledge that may not exist elsewhere. Both Policy Maker 3 and Senior Manager 1 agreed that putting knowledge into application is the last major factor in addition to the previous ones in constituting human capital in Dubai free zones. "It is crucial that firms within the zone gain from employees' ability

to apply the learnt education, experience, and skills in their day to day operations", Senior Manager 2 concludes. The Policy Makers and Senior Managers interviewed considered that firms where most people hold a post graduate degree are rated higher in human capital indicator than firms whose employees hold post-secondary degree or less.

Policy Maker 2 confirms that experience level is another important pillar of the human capital indicator. He asserted that "firms enjoy a high level of human capital when hiring and retaining staff with a considerable degree of hands on experience". Policy Maker 3 indicated that firms within the zones look for experience during their recruitment and development stages. Senior Manager 1 considers that "experience in no less important than the other components of human capital indicator especially when international firms choose to operate in this region". Senior Manager 2 believed that firms within the free zones try hard to attract employees with hands on experience, otherwise it would be a mandatory step to put up extensive and rapid plans to train the new recruits in order to equip them with the relevant job experience immediately after joining. Both the Policy Makers and Senior Managers confirmed that the higher the experience level of a firm's employee, the higher the level of human capital indicator. Firms whose employees possess 10 years and above of hands on experience are considered better than other firms with less experience with regard to the human capital indicator ranking.

Knowledge accumulation is considered to be another important pillar of the human capital indicator. Policy Maker 1 explained that accumulation occurs when, first, training is considered to be an important strategic function with an annual formal budget. Having the formal budget and training plan in hand, then employees are able to undergo job specific formal training as well as technical know-how training which they may not get elsewhere. Policy Makers 2 and 3 and Senior Managers 1 and 2 agreed that if teamwork is encouraged and facilitated then best practice and tips are shared, improved and circulated across departments. If firms within the free zones have the necessary manuals, tools, and information needed by employees then it is predictable that employees will perform their job efficiently as required.

The ability to build up competence is a fourth major pillar of the human capital indicator. Policy Makers 1 and 2 noticed that firms which possess a high level of human capital management within the zones are expected to encourage their employees to come up with ideas and find new and better ways to do their work. Policy Maker 3 and Senior Managers 1 and 2 explained that employees who have formal development plans in place, use those plans to achieve their career goals. The interviewees asserted that leadership behaviour should consistently demonstrate that learning is valued through offering a learning management system that includes features such as content management, skills or competencies management.

The final component of the human capital indicator is the ability to bridge the know-do-gap. Policy Makers 1 and 2 believed that firms within the zones usually follow best approaches in managing human capital. For that purpose they do their best to equip staff with technical job related knowledge that is not available elsewhere. Policy Maker 3 explained that the learnt knowledge, skills and training outcomes are implanted in product/service improvement and development plans. Therefore, staff have to apply the learnt techniques in their job role assignments. Senior Managers 1 and 2 said that by putting things into practice, firms within the free zones perform better. Furthermore they will witness a considerable revenue growth based on the level of the ability of employees to bridge the know-do gap.

The Policy Makers and Senior Managers interviewed described the human capital indicator within the free zone firms as a composition of five main factors of similar weight: education, experience, and knowledge accumulation, building competence and the ability to put learnt education, skills, and accumulated knowledge into practice. Firms within Dubai free zones that pay attention to those five factors are perceived to witness a high level of human capital development which will impact the firms' performance eventually. Upon questioning the weight of each component they all reached consensus that each of them should have a similar weight when composing the human capital indicator.

5.2.3 Firms' Impact on Human Capital Development

Almost all interviewees argued that there are many driving forces which have a significant impact on the development of human capital within the zone but the extent of this impact needs to be identified. Those factors can be summarised by: firm activity type, firm size, firm performance in terms of revenue generation, level of clustering within the zone, technical knowhow spillover, and Dubai business culture. The followings points were discussed with the interviewees comprehensively.

- *Point 1: Free Zone firm's activity type and its contribution level to human capital development within the zones*

Policy Maker 1 felt that firm activity type has an impact on the accumulation of human capital within the free zones. Policy Maker 2 observed that "firms whose activities require factories and production lines within the zone have a dedicated training centre to train both the blue and white collar employees". Some of them also train distributors, buyers and strategic partners on products, services and quality standards. Policy Maker 2 said that "formal training on machinery imported from outside, as well as on production lines is introduced to employees most of the time". Other firms whose activity is a service usually pay attention to behavioural skills which are considered necessary for employees to perform well pre and post service assignments. Policy Maker 3 explained that "behavioural training has been observed to take place most of the time and even on a continual basis to introduce new and modern techniques of how to deal with clients, distributors and buyers". Senior Manager 1 observed that "firms with modern technologies and complicated machinery have training plans in place to equip their employees with on-the-job training and skills that do not exist elsewhere". Senior Manager 2 agreed with the previous interviewees that firm activity type brings a considerable contribution to human capital development by introducing relevant industrial knowledge to their employees.

- *Point 2: Free Zone firm's size contribution to human capital development within the zones*

Policy Makers 1 and 2 considered that "firm size in terms of employment has a positive impact on human capital development" within the zone as well. The higher the size, the more complicated it is to manage the firm. Organisational development takes place more often within medium to large firms. Job specification and specialties appear in larger rather than smaller firms where limited business activities are happening. Policy Maker 3 added that "firms within the zone whose size are medium to large usually import modern management systems to implement". Such systems require employees with high levels of education and skill. Besides that, formal and informal training occur intensively to qualify employees to use such systems. Senior Manager 2 had an interesting view that smaller firms usually hire employees with high skills to perform multi-task assignments, compared to larger firms who usually invest time, effort and money to train their employees relying on the staff's ability to build competence.

- *Point 3: Free Zone firm's revenue growth relation to human capital development within the zones*

Policy Maker 1 considered that most of the Dubai free zone firms "witnessed a revenue decline when the financial turmoil took place in late 2008". Instead of previous positive double digit growth, some firms underwent a double digit fall. Some firms tried to survive by introducing restructuring plans which resulted in a major lay off. On the other hand, Policy Maker 2 explained that "training and development were reduced significantly". The following year, firms that did not manage to survive either ceased to operate and closed their offices or reduced their business activities and future growth plans to the minimum. Policy Maker 3 indicated that Dubai free zones had observed "a significant decline in the number of firms operating as a result of either closing down or shrinking to the lowest level of operation". As a result of firms' performance, in turn revenue growth within the zone was seen to have an impact on human capital development. Senior Managers 1 and 2 noticed that firms with higher positive revenue growth were noted to have a higher human capital indicator compared to those with a lower level.

- *Point 4: The level of cluster specific industries in Dubai free zones, how to identify it? How can this impact human capital development?*

Policy Maker 2 considered that the level of clustering is another important determinant of human capital development within the free zones. When similar firms exist in the same area, then specific roles and standards are required. For that reason, "special training institutes are established with new curriculums developed based on the needs of the new economic cluster". Policy Maker 3 felt that it is important for firms to choose to operate in a convenient free zone where a high level of clustering exists. Firms also seek clustered free zones to be well connected to the same pool of suppliers, distributors and buyers. Senior Manager 2 explains that "it is an important element for free zones to act as the basis for similar firms to interact with each other collaboratively, exchanging knowledge about related new technologies". By so doing, the high level of clustering is expected to drive positively human capital development within the free zone fence. Policy Maker 1 on the other hand explained that although it is noticed that few free zones in Dubai exert the required efforts to attract similar industries to be grouped within the fence, yet these efforts are still seen to be modest in terms of outcomes.

- *Point 5: Dubai free zones spillover effect and its importance to human capital development*

Policy Maker 1 confirmed that one of the most important factors that impact positively on human capital development is the technical know-how spillover. Most of the time, "Dubai free zones attempt to attract multinational firms and invite global brands and famous internationally-recognised firms". Policy Maker 2 explained that "it is vital for the free zones to create stiff competition among firms where each one may benefit from recruiting, hiring and head-hunting from each other". Big names usually follow internationally-recognised standards and most of the time they consider dealing only with suppliers who also comply with those approved standards. On the other hand, in order to have access to the domestic market, they tend to link themselves to contracted distributors. These distributors usually undergo product and service training continually and must achieve target training hours to maintain their relationship with the firm itself. Most of the time firms within the zone hold formal training sessions to pass knowledge,

advice and expertise to their suppliers, buyers and distributors. Policy Maker 3 pointed out that "similar firms, on the other hand, share opinions on modern related technologies but at a superficial level". Formal and informal groups are usually established to hold events, forums or seminars to obtain shared ideas about industry trends and business requirements. Senior Managers 1 and 2 agreed that these events mostly stimulate knowledge spillover where firms may imitate, copy, improve new products and services, and undertake organisational changes for better management.

- *Point 6: Characteristics of firms' culture in the free zone and the influence of culture on human capital development.*

Policy Maker 1 pointed out that "the culture is unique within Dubai free zones where employees, who are normally hired from this region, are characterised usually with a higher collectiveness score rather than individualism". Employees with a collectiveness score usually tend to establish committees, subcommittees and taskforces not to execute projects but rather to reach decisions. This approach is intended to distribute responsibilities among a group of people, to seek approval and support for their own work, and to hold prolonged and extensive meetings to discuss objectives thereby avoiding taking individual responsibility. Therefore, these firms may be attributed with a high level of avoidance. Policy Makers 2 and 3 held the view that "a considerable proportion of firms tend to formulate structured policies and procedures to avoid any risk whatsoever". Senior Manager 1said that "job security is a crucial aim for employees in this region where there is a major lack of official syndicates or legal associations which may step in and protect them from any type of arbitrary employment cessation". Furthermore, management decisions are sometimes vague and unclear. Interestingly, rules are very important in these firms even though they may limit the individuals from coming up and pursuing creative initiatives. Senior Manager 3 confirmed that where these two factors of culture exist in free zone firms, they are seen to limit and impact negatively the development of human capital.

- *Point 7: The level of research and development within Dubai free zones' firms. Does it exist? And to what level?*

Research and development (R&D), identified as one of the research variables and assumed to impact positively on human capital development, does not apply in Dubai's case. Although R&D is a major determinant of human capital development within any economic sector, yet this factor is not pertinent to Dubai free zones. Policy Makers 1 and 2 observed that firms within the zones do not undertake R&D but rather perform ordinary product or service improvement. Policy Maker 3 expressed the view that if a product or service requires modification to fit the target market, then the home country's main office performs these activities using the headquarters' researchers and scientists. Senior Managers 1 and 2 considered that "research and development in the region is below international standards where the activities fall below many other similar countries in which Policy Makers' opinions make it much harder for a multinational firm to set up an R&D centre here". Interestingly all interviewees were in agreement that this variable should be taken out of the research concept since R&D activities do not exist consistently within Dubai free zones' firms.

5.2.4 Phase 1: Outcomes

The Policy Makers 1, 2 and 3 and Senior Managers 1 and 2 interviewed in this study agreed that human capital development does occur within Dubai special free zones. Yet they are inclined to consider this development as insufficient. Human capital in Dubai special economic zones is considered to be one component factor which constitutes what may be called the human capital indicator. This indicator consists of education, job experience, knowledge accumulation, ability to build up competence, and finally the employee's ability to put learnt education, knowledge and skills into practice. On the other hand, there are many factors that act as driving forces to human capital development within the zones. These are the firm's activity type, size and financial performance, the level of cluster-specific industries within the zones, technical know-how spillover, and culture. Although this variable was identified in the literature review as a measurable factor of the research, it was found that research and development is not taking place in firms within the Dubai special economic zones. Therefore, it has to be excluded from the research concept while performing the following phase of this research – Phase 2: Case Studies: Validation of Research Proposed Framework.

5.2.5 Method of Measurement

For the purposes of this research, a basic measurement was developed in order to reach an initial indication of the level of human capital within the firms in Dubai free zones. Although quantified measurement does exist in literature as previously stated, this research will use a simple indicator based on a basket of variables obtained from the literature review. These components were verified and validated through in-depth discussion with Policy Makers and Senior Managers during Phase 1. Based on the results, components of human capital indicator carry the same weight of importance so that none of them can be considered any more important that the rest. That is why a similar weight is been given to all of them after a thorough discussion with Policy Makers 1, 2 and 3 and Senior Managers 1 and 2. Also the threshold has been determined based on the discussion held with the interviewees which is shown at the end of the table (5.2).

This measurement is intended to be a simple indicator only to provide the research with a basic numerical clue rather than an accurate number. This indicator is suggested to be taken further and developed by future research as one whole study. The rest of the variables, also validated by Phase 1, will be measured using a Likert scale technique embedded in the semi-structured questionnaire. Based on a thorough discussion and opinions obtained from the interviewees, and for the sake of firm evaluation against research variables, the threshold shown in table (5.2) will be grouped into five classifications:

*Threshold Range	0-20	Indicators are Demonstrated at an Extremely Low Level
	21-40	Indicators are Demonstrated at a Low Level
	41-60	Indicators are Moderately Demonstrated
	61-75	Indicators are Fairly Demonstrated
	76-90	Indicators are Highly Demonstrated
	91-100	Indicators are Demonstrated at an Extremely High Level

This classification is simply used to compare the level of each variable in firms operating within Dubai special economic zones which can be used for the sake of comparison. However, the research confirms that the human capital indicator along

variable measurement can be the backbone for future research while here it is utilised only to contrast firms with each other. The following table (5.2) explains how the research concept (Figure 3.5) has been modified to be as drawn in figure (5.2) the proposed research framework. Also, how it will be measured based on results obtained from the interviewees throughout the Phase 1 study.

Figure (5.2) Proposed Research Framework

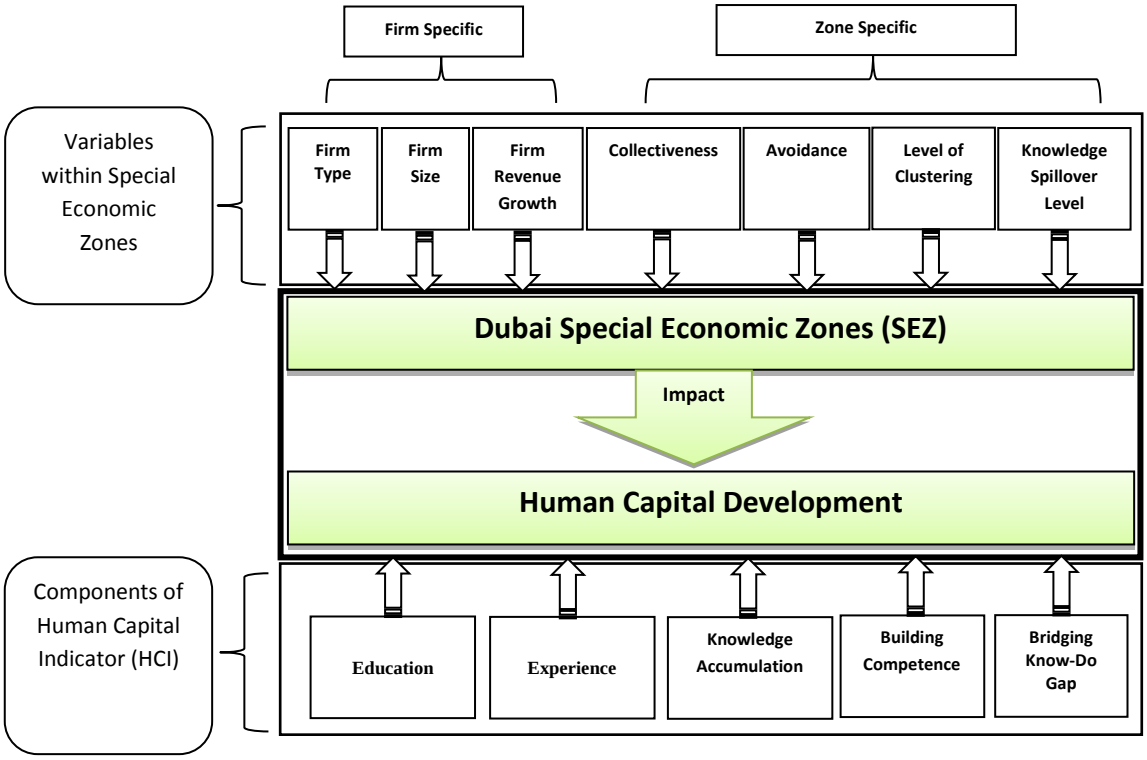


Table (5.2): Research Concept Modification, Development of Proposed Research Framework and Methods of Measurement

Research Concept (Variables Obtained from Literature Review)	Modified Variables Amended Based on Phase 1 (Proposed Research Framework)	Measurement Methods	Range
Components of Human Capital Indicator			
Education Level	***Education level***	Most people are post graduate then the company = 4 Most people have post-secondary education =3 Most people with secondary education =2 Most people with less than secondary education = 1 Results x 25xX 20% Weight	0-20
Training (Public and Proprietary)	***Knowledge Accumulation****:1- Formal Training, 2-Annual Training Budget, 3-Training Resources, 4-Teamwork, and 5-Sharing Best Practices*	Demonstration level from 1 to 5 Knowledge Accumulation Results x4 to reach 100 indicator x20% weight	0-20
On-the-job Training	***Building Competence:*** *1-Creativity,2-Development Plans,3-Leadership Commitment, and 4- Learning Management System*	Demonstration level from 1 to 5 Results x5 to reach 100 indicator then x20% Weight	0-20
Bridging Know-Do Gap	***Bridging the Know-do Gap:*** *1-Technical Knowledge, 2- Application of Knowledge, 3-Training Outcome linked Improvement in Services, Products, and Processes*	Demonstration level from 1 to 5 Results x6.67 to reach 100 indicator then x20% Weight	0-20
	Experience Level	Results = Average experience x 10 x 20% Weight.	0-20
Determinants of Human Capital Development in Dubai Free Zones			
Human Capital Indicator			
Education Level, Training (Public and Proprietary), On-the-job Training, Bridging Know-Do Gap	Formal Education, Experience, Knowledge Accumulation, Building Competence, Bridging Know-Do Gap	Human Capital Indicator = Formal Education + Experience + Knowledge Accumulation + Building Competence+ Bridging Know-Do Gap	0-100

*Threshold Range
- 0-20 Indicators are Demonstrated at an Extremely Low Level
- 21-40 Indicators are Demonstrated at a Low Level
- 41-60 Indicators are Moderately Demonstrated
- 61-75 Indicators are Fairly Demonstrated
- 76-90 Indicators are Highly Demonstrated
- 91-100 Indicators are Demonstrated at an Extremely High Level

5.3 Phase 2 Case Studies: Validation of Research Proposed Framework

The purpose of this phase is to obtain information and data about each case with regard to determinants identified in the proposed research framework. Case studies are carefully selected from various special economic zones operating in Dubai. Firms' location, years of operation, nationality, financial structure and activity type are the basis on which those firms are identified for the study. Table (5.3) shows that the selected firms are located in Jebel Ali Free Zone, Dubai Multi Commodities Centre (Jumeirah Lake Towers), and Dubai International Financial Centre. The firms range from 6 to 18 years of operation, and their activity types include: electrical and energy products; real estate, health care and hospitality; food, industrial and trading; power and energy generation, investment banking and financial brokerage; and asset management. The firms' size varied in terms of employment volume from 30 to 3000 employees. One firm was chosen because it is 100 percent locally owned, while others are 100 percent foreign owned, and some have multinational exposure. The nationalities of these firms are France, USA, and the UAE.

Table (5.3) Details of Firms Interviewed in Phase 2

S.	Code	Free Zone Location	Nationality	Years of Operation	Employees	Financial Structure	Firm Type
1	Firm A	Jebel Ali Free Zone	France	12	100	100% foreign owned	Electrical and Energy Products Regional Distributor
2	Firm B	Dubai Multi Commodities Centre (Jumeirah Lakes Towers)	Multi-national	13	3000	100% foreign owned	Real Estate, Health, Hospitality
3	Firm C	Jebel Ali Free Zone	USA	18	320	100% foreign owned	Food, Industrial and Trading
4	Firm D	Dubai International Financial Centre	United Arab Emirates	6	150	100% locally owned	Investment Banking, Asset Management Broker
5	Firm E	Jebel Ali Free Zone	USA	16	530	100% foreign owned	Valve Assembly, Energy and Power Compression

The semi-structured interview follows the same structure for all five case studies. Figure 5.3 shows the skeleton of the phase 2 (Validation of Research Proposed Framework). The firms' description starts with firm profile and background. This is followed by the estimation of the level of human capital indicator within the firm based on the validated components from the previous phase (level of education, level of experience, knowledge accumulation, building competence and bridging the know-do gap). The section then illustrates the firm's business culture, level of clustering within the free zone in which the firm is located and finally the level of the technical know-how spillover which is happening within similar firms. Then this phase validates the human capital indicator used within the proposed research framework to conclude with summaries and findings.

Figure (5.3): Skeleton of Phase 2

1- Firm Profile
2- Firm's Human Capital Indicator
    a. Education Level and Experience
    b. Level of Employee Knowledge Accumulation
    c. Level of Building Employee Competence
3- Level of Employee Ability to Bridge the Know-Do Gap
4- Culture
5- Special Economic Zone Level of Clustering
6- Technical Know-How Spillover Indicator
7- Validation of Human Capital Indicator
8- Summary and Findings

5.3.1 Firm A: Profile

Firm A is a branch of a global organisation whose nationality is by origin French. The global organisation aims to produce safe, reliable, efficient and productive energy, and the group relies on its brand history, a strategy based on growth efficiency and people, and on its commitment as a socially responsible company.

Firm A is the main product and services distribution centre for the Gulf region. Product lines are established around boxes, cabling, interfaces, building management systems, business network communication, capacitors, inductances, harmonic filters, circuit breakers, switches, home control, industrial plugs and sockets, starter motors, switchboards and switchgear, transformers, prefabricated substations, power supplies, protection relays and contactors, sensors, signaling units, software, solar backup and off-grid systems, substation automation systems, surge arresters, universal enclosures, and recently wind power and renewable energy.

The branch has operated in Jebel Ali Free Zone for the past 12 years with an employment volume size of 100 in 2012. Employees are hired from various nationalities of whom the United Arab of Emirates' national's ratio is zero percent. The ownership structure of the firm is 100 percent foreign owned and has a wide range of distributors in the region who sell directly to the market. The import level is approximately AED 300 million with most of it sold in the domestic market via the distributors. The firm's overall revenue growth averages 15% over the previous year with an average global share price of €50.

i) Human Capital Indicator

"Human capital is a very important factor embedded in the firm's strategy, mission and strategic objectives", the manager stated when interviewed. Employees in this region gain benefits from the mother company's dedication to learning, training and development. To help employees develop energy management practices, the global firm has founded an Energy University. By enrolling in one of the unique programs, employees are expected to acquire the knowledge and tools needed to devise creative solutions and best practice. The global learning and training offerings ensure continuous growth through personal development and professional enrichment. As indicated in firm A's official website (2012), the programs offered include:

- **Specialisation in Energy Management**

- **Leadership Development** "Courses are designed to enable future and present managers to best fulfill their role. Developed with the participation of leading business schools, 5 to 21 day courses feature keynote speeches by general managers from other international high-growth companies."

- **Strategy and Execution Excellence Centre** "Empowers key employees, experts and managers to devise and execute more effective strategy. Employees broaden their understanding through participation in debates and discussions moderated by general managers at group, regional or local level."

- **Specialised Programs** of training workshops which "enable employees to enhance their functional expertise. Employees will be endowed with the tools they need to successfully fulfill their career objectives. The five areas of functional expertise span sales and marketing, operations, product and solution engineering, human resources and finance, and control."

a) Education level and Experience

When interviewed the manager confirmed that "education is a vital part of an employee's journey in the firm". During hiring procedures, the firm seeks first the relevant education for the role. The quality of this education is cross checked as well in terms of educational institute reputation. Currently, the firm employs approximately 2% of its workforce with post-graduate education, 70% with post-secondary education and the remaining 28% with secondary education. As a result, most employees are graduates rather than post graduates. Therefore, the importance of education within this firm is demonstrated at all levels fairly. Level of education is of high significance to the firm. Also the type of knowledge is another highly important aspect of human capital. Employees are assessed, and trained to be equipped with various types of knowledge needed most of the time. Years of experience on the other hand ranks moderately in terms of importance to the firm. The average experience

is 4 years across all employees with 3 years for those who hold a post-graduate degree, 5 years for those with post-secondary education, and 5 years for those with a secondary education certificate. Level of education within this firm is ranked approximately 15 out of 20 while experience is ranked 9 out of 20.

b) Level of Employee Knowledge Accumulation

Firm A has a continuous skills enhancement program to support employees' success through personal development and professional enrichment. The interviewed manager explained that "the aim is to offer employees the means and tools to build up their career, develop opportunities and learn new skills". Employees broaden their understanding through participation in debates and discussions moderated by general managers at group, regional or local level. Specialised programs of training workshops are organised to enable employees enhance their functional expertise.

Knowledge accumulation is fairly demonstrated within the firm's approach. It is obvious that all employees undergo job-specific formal training. Training is considered an important strategic function with an annual formal budget. On the other hand employees have only moderate access to the manuals, tools and information they need to do the job. Team work is fairly encouraged while employees limitedly share best practices through departments circulating tips and ideas among them. Consequently, knowledge accumulation in this firm is scored at approximately 14 out of 20.

c) Level of Building Employees Competence

New recruits are equipped immediately with a specific training plan where detailed objectives are to be achieved. By enrolling in university and training centre programs, students acquire the knowledge and tools needed to devise creative solutions and best practice. On the other hand, leadership development courses are designed to enable future and present managers to best fulfill their role.

"To identify the training and learning programs most closely aligned with career objectives, career and competency reviews are conducted prior to enrolment", the interviewed manager explained. Each review results in a personalised training and development plan for the next 12-month period. Therefore, most employees have a personal development plan already in place. Interestingly though, it is demonstrated at a low level that employees are encouraged to come up with ideas to find new and better ways to do the work. Also it is highly demonstrated that the firm has a learning management system which includes features such as content management, skill or competency management. Leadership behaviour is demonstrated to value learning and continuous education at a moderate level. The extent of employees' ability to build competence in this firm can be estimated at 17 out of 20.

ii) Level of Employees' Ability to Bridge the Know-Do Gap

Employees are fairly encouraged to apply the learnt skills in their day to day assignments. Learning knowledge, skills and training outcome are implanted in processes, products and service improvement at a moderate level. Various tools are used to make sure that most employees are applying the learnt skills. Feedback forms from clients are most of the time obtained and analysed for that purpose. "Individual key performance indicators are set up for each employee to measure the level of obtaining the target knowledge and skills, and how well they are applying the learning objectives throughout the various lines of business operation", the interviewed manager indicated. Interestingly and because of the lack of research and development activities, employees are trained in this region in public knowledge rather than in propriety knowledge existing in the mother global company. Most training, that takes place in this region, revolves around end user applications of technology invented by the mother company. It is demonstrated at an extremely low level that the branch in Jebel Ali Free Zone provides employees with the technical know-how that it holds in the mother company. Consequently, bridging the know-do gap can be calculated at 14.6 out of 20.

The human capital indicator in this firm can be calculated as 69.9 out of 100. This indicator is reached by adding up the firm's education level, average years of employee experience,

knowledge accumulation, ability to build up competence, and bridging the know-do gap. The human capital indicator suggests that human capital development is demonstrated fairly within this firm.

iii) Culture

The interviewed manager explained that "this firm is very much a process-oriented one", approvals are always required which sometimes limit the employees' ability to suggest creative and better ways of doing business. Employees tend to avoid taking risks, delay decisions, evade delegation, and then try to cover themselves when faults arise. Interestingly the firm's business culture is somehow different from the mother company's. Employees possess much more technical know-how and expertise and tend to take risks at an acceptable level in the mother company in contrast with employees hired in the Dubai free zone branch. By so doing, it is believed by the employees that building skills and capabilities is adversely affected compared to the mother company's approach. It is highly demonstrated that the firm tends to establish committees and uses teamwork to reach decisions, distributes responsibilities among a group of people, holds prolonged and extensive meetings to discuss objectives progression. The firm scores 100 out of 100 in the culture of collectiveness versus individualism.

On the other hand, it is highly demonstrated that management decisions and practices are always clear. However, rules are somehow important so that they may limit employees when devising new initiatives. Consequently, managers adhere closely to company policies and procedures with a high level tendency to formulate structured approaches to avoid risk. The firm scores approximately 60 out of 100 on the avoidance level.

iv) Special Economic Zone Level of Clustering

From the evidence of Firm A it seems, the free zone clustering level in which this firm is operating is moderately low. It is demonstrated at a low level that this free zone strives to attract similar industries to be grouped within a specific cluster. Also, it is demonstrated at

an extremely low level that this free zone acts as the base for similar firms to interact with each other collaboratively so that similar industries do not share knowledge about new related technologies. On the other hand, firms within this free zone are well-connected to suppliers and buyers and maintain a high level of relationship. Although, this firm operates in this zone based on the assumption that similar industries are located within the same cluster, the level of clustering according to the firm's opinion scores approximately 40 out of 100.

v) Technical Know-How Spillover Indicator

The interviewed manager confirmed that the firm faces stiff competition in the region, therefore "it is very important to hire new recruits from similar firms to gain an advantage". This firm is closely connected to clients and suppliers. There is a two-way learning which takes place most of the time. On the other hand, the firm applies internationally recognised standards and on a moderate level and chooses to deal with suppliers who comply with and observe these standards. Also, "it is of high importance to the firm to conduct lectures, seminars and training on new technology used by suppliers and clients, and to offer expertise on subject-related matters". At a moderately low level, the firm benefits from other similar firms to obtain knowledge and information on how to improve products, services, and to undertake organisational changes for better management. However, groups of similar firms with similar interests in new relevant technologies do not exist in the free zone, which makes it harder for the firm to share and obtain relevant information when needed. The technical know-how spillover within this zone scores approximately 54 out of 100 which indicates that spillover does occur but only at a moderate level.

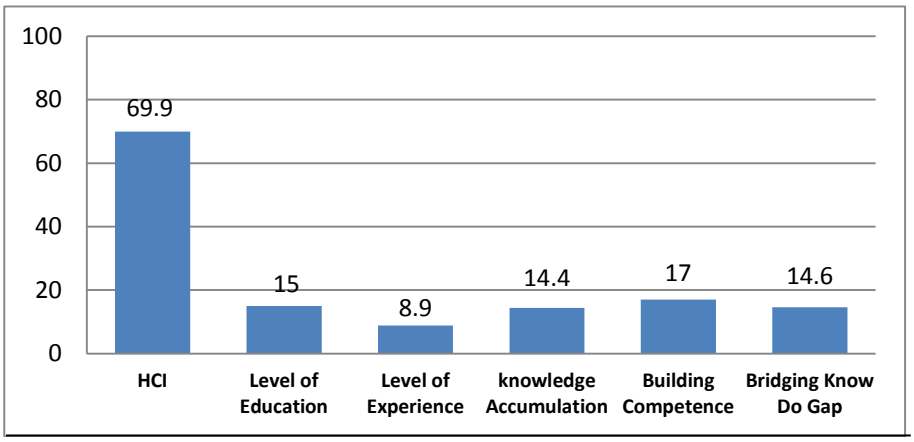
5.3.1.1 Firm A: Findings

Human capital development is found to be fairly demonstrated in Firm A, and Figure (5.4) shows that the human capital indicator is estimated to be 69.9 percent. The five components of this indicator are: 15 out of 20 in level of education, 8.9 out of 20 in level of employee experience, 14.4 out of 20 in knowledge accumulation, 17 out of 20 in building

competence, and 14.6 out of 20 in bridging the know-do gap. Although the mother company has its own education institute and focus on leadership development and functional training, it is noticed that Firm A does not offer its employees proprietary knowledge that exists in the mother company. The interviewed manager indicated that "research and product development are practised back home only", while Firm A's branch in the free zone uses the resulting products and services for distribution within the region.

On the other hand, most employees hold a post-graduate qualification. Experience average among employees is estimated at 4 years compared with the age of firms in the free zone. Best practice and tips are shared but at minimum level which makes it difficult for employees to obtain cross learning from each other.

Figure (5.4) Firm A: HCI Level & Components



Average revenue growth of 15% enables Firm A to continue its approach towards offering continuous learning and education. Also, the size of the firm at 100 employees suggests that human capital development is happening but not to the maximum level. Such development occurs mainly because the mother company values training, development, skills, and knowledge accumulation. Although the firm size is considered to be small, yet the nature of its structure as one of many branches of the global company stimulates human capital development.

The extremely high collectiveness score of 100 percent along with the avoidance high score of 60 percent affect negatively human capital development within the firm. Ideas are not encouraged, rules must be followed, and risk should be avoided. There is always a tendency to formulate policies and procedures where good managers are those who adhere strictly to them limiting the employee's scope for creativity. On the other side, holding prolonged meetings, distributing responsibilities among others, and seeking approval indicate that employees are not taking responsibility for their own decisions which in turn hinders human capital development.

The level of clustering in the special economic zone in which Firm A is operating is 40 percent as seen by the firm itself. It is noticed by the firm that this special economic zone makes minimal effort to attract similar firms. Also, it does not act as the channel for similar firms to interact with each other collaboratively where firms of similar interests get to gather or even share expertise, opinion and insights on relevant modern technologies. Although clustering is demonstrated at a low level in the free zone, it is believed that raising the clustering level will impact positively the human capital development within Firm A.

Technical know-how spillover among firms in this zone is believed to score 54 percent in Firm A's opinion. Although competition is stiff, the technical knowledge does not exist with similar firms so that it may be leaked out. The only knowledge that gets spilled over is that which is structured around leadership skills, international standards application and organisational development for better management.

Figure (5.5) Firm A: Determinants of HCI

5.3.2 Firm B: Profile

Firm B is a group of companies located in Dubai Multi Commodity Centre – Jumeirah Lakes Towers. The firms' activities vary from real estate development with many tower blocks in Dubai, Sharjah, and Abu Dhabi, to health care, and hospitality establishments. The employment volume size of the firm is estimated to be 2000 employees in 2012. Staff are hired from various nationalities of which the United Arab of Emirates' nationals comprise zero percent (0%). The firm is 100 percent foreign-owned with an overall financial performance in terms of revenue of 20 % growth in 2011 as compared with the previous year.

i) Human Capital Indicator

Although there are signs of efforts to develop human capital in Firm B, it is not yet embedded in the firm's strategy and functional objectives. Most of the time this firm counts on attracting ready skilled employees rather than demonstrating an interest in building up their own human asset.

a) Education Level and Experience

Firm B's employees are hired from various nationalities and none of them is United Arab of Emirates' national. An impressive 10% of employees hold post-graduate degrees, 20% with post-secondary education, 60% with secondary education and the remaining 10% with less than secondary education. It was noticed that a small number of employees obtained a degree after high school in contrast with those who have a secondary school degree. Consequently, the level of education scores 10 out of 20.

Employees who have post-graduate degrees have 15 years of experience compared to 7 years for post-secondary degree, 5 years for secondary education, and finally 2 years for less than secondary education holders. The average experience is approximately 7 years which results in a score of 13.5 out of 20.

b) Level of Employee Knowledge Accumulation

Firm B does not have an annual formal budget for training as it is not considered at present as an important strategic function. It is demonstrated at an extremely low level that employees undergo job-specific formal training. Necessary manuals, tools and information needed for employees to do their job rarely exist. It is highly demonstrated though that teamwork is encouraged to do the job, and on-the-job training is displayed at all levels. Yet, best practice and tips are shared and circulated at the minimum level of the human capital development requirement. Employees' level of knowledge accumulation scores for Firm B 8.8 out of 20 at a moderately low level where only on-the-job training and teamwork are facilitated compared to formal and job specific training. The manager interviewed clarified that "most of their employees are blue collar workers who are supposed to be skilled in their job and to perform assignments based on project timelines which have a start and specific end, while the white collar and especially the management team usually have the option to specify at their own discretion what type of training, when they need to attend, and apply for it when necessary". Firm B is highly dependent on hiring employees with

ready skills, experience and accumulated knowledge relevant to the job role rather than exerting extensive efforts to develop their staff.

ii) Level of Building Employee Competence

Employees are encouraged to come up with ideas and find new and better ways to do the work most of the time. However employees do not have formal development plans in place to achieve their career goals. Leadership behaviour does not consistently reveal that learning is valued. The firm does not have a learning management system, which would include features such as content management, skills or competency management. Building competence level is estimated to score 7 out of 20 in this firm.

iii) Level of Employee Ability to Bridge the Know-Do Gap

The interviewed manager indicated that “the firm does not perform any type of research and development activity”, therefore proprietary knowledge is not pertinent. Employees are not equipped with technical knowledge that is not available elsewhere. Most of the firm’s employees apply past learnt knowledge and skills in their day to day activities. On the other hand, the lack of training and specific learning plans makes it hard for the firm to recognise how the past learnt knowledge and skills get implanted in process improvement. Bridging the know-do gap is estimated to score 3 out of 20 which is a very low score.

The human capital indicator in this firm can be calculated as 42.7 out 100. This indicator is reached by adding up the firm’s education level, average experience, knowledge accumulation, ability to build competence, and bridging the know-do gap. The human capital indicator suggests that human capital development is demonstrated at a low level within Firm B.

iv) Culture

It is moderately demonstrated that the firm tends to establish committees and teamwork to reach decisions, holds prolonged and extensive meetings to discuss objectives progression; and it is highly revealed that the firm's employees tend to distribute responsibilities among a group of people to avoid accountability. Finally, it is highly demonstrated that employees always seek approval and support for their own work. The firm scores 70 out of 100 in the culture of collectiveness versus individualism.

Also, it is highly demonstrated that management decisions and practices are always clear. However, rules are not regarded as that important because they may limit employees' creativity in devising new initiatives. Yet managers adhere most of the time to company policies and procedures with a high level of tendency to formulate structured approaches to avoid risk. The firm scores approximately 70 out of 100 on the avoidance level.

v) Special Economic Zone Level of Clustering

In the firm's opinion, "the free zone clustering level in which it operates is low", the interviewed manager confirmed. It is demonstrated at an extremely low level that this free zone attracts similar industries to be grouped within a specific cluster. Also, it is demonstrated at an extremely low level that this free zone acts as the base for similar firms to interact with each other collaboratively for similar industries to share knowledge about new relevant technologies. But firms within this free zone are well connected to suppliers and buyers and maintain a high level of relationship. This firm does not consider whether similar industries are located with the same cluster or not; that was not the basis of decision used by the firm when making the decision to be located in this free zone. The level of clustering in the firm's opinion scores approximately 32 out of 100.

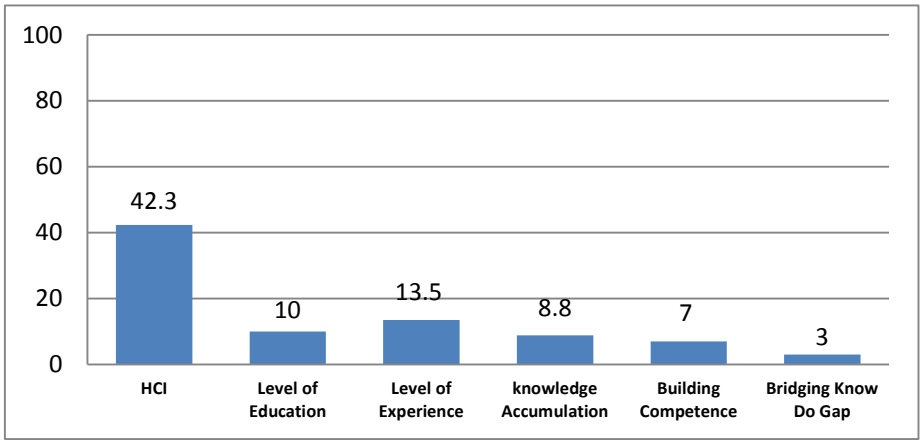
vi) Technical Know-How Spillover Indicator

Firm B faces moderate competition in this market and is well connected to clients and suppliers. The interviewed manager said that "it is highly desirable that new recruits come from similar firms to benefit from their knowledge and experience". However, such pre-acquired knowledge is only relevant within the context of international standards that are demanded by the UAE Government in sectors such as health management, which is one of the business interests of Firm B. The firm deals with a few suppliers who comply with these standards. Firm B sometimes provides advice and experience to its buyers and suppliers but at an extremely low level. Rarely, the firm benefits from other similar firms to obtain knowledge and information, to improve products and services, and undertake organisational changes for better management. Groups of similar firms with similar interests in new technologies do not exist in this free zone which makes it harder for Firm B to share and obtain relevant knowledge. The technical know-how spillover within Jumeirah Lakes Towers free zone scores 32 out of 100 which indicates that spillover does occur but at a limited level. Spillover, if any, occurs with knowledge and information related to international standards application, management style, and quality management where technical know-how does not exist with similar firms.

5.3.2.1 Firm B: Findings

Human capital development is demonstrated in Firm B at a low level. Figure (5.6) shows that the human capital indicator scores 42.7 percent. The five components of this indicator score are: 10 out of 20 in level of education, 13.5 out of 20 in level of employee experience, 8.8 out of 20 in knowledge accumulation, 7 out of 20 in building competence, and 3 out of 20 in bridging the know-do gap.

Figure (5.6) Firm B: HCI Level and Components



It is observed that Firm B's activity type affects significantly the human capital development within this firm. Being originally a real estate developer and highly dependent on projects which have a specific and an approximate end date makes it reasonable for this firm to hire employees with ready skills, knowledge and relevant education rather than to exert efforts on development. Although employee numbers reach 2000 and revenue growth is estimated to be 20% of the previous year, human capital development, if it occurs, is always in respect of white collar employees and specific persons in the top management team. Nevertheless, and because the firm is launching health-care as well as hospitality establishments, it is observed that human capital development is gradually becoming part of the firm's strategy. Some economic sectors, such as the health management segment, are required by law to achieve minimum training hours. This is where this firm will witness in the future a progressive increase in its human capital score.

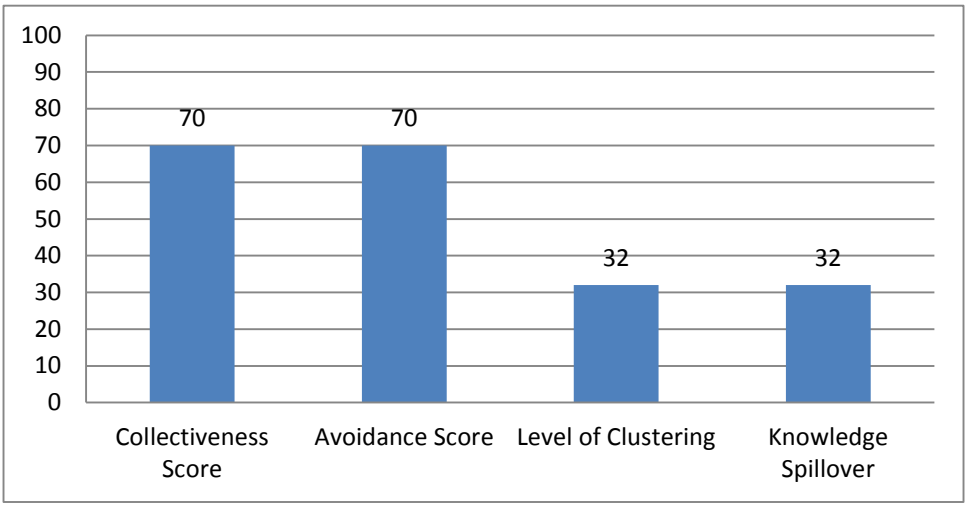
The high collectiveness score of 70 percent along with the high avoidance score of 70 percent adversely affect human capital development within the firm. Ideas are not encouraged most of the time, rules must be followed, and any type of risk must be avoided in order to maintain job security. Although policy and procedures are not well structured in Firm B, yet there is a tendency to formulate rules, bylaws and processes for which good managers are those who most of the time adhere to them, limiting the employees' level of creativity. On the other hand, seeking approval and support for their own work indicates

that employees avoid taking responsibility for their own decisions which in turn hinders human capital development in the areas of application of learnt education, accumulated knowledge, and skills.

The level of clustering in the special economic zone in which Firm B operates is estimated to be 40% as seen by the firm itself. It is noticed by the firm that this special economic zone makes minimal effort to attract similar industries. Also, it does not actively develop a base of similar firms who may interact with each other collaboratively. Firms of a similar interest within the zone's fence do not get to gather or even share expertise, opinions and insights on relevant modern technologies. Although clustering is demonstrated at a low level in this free zone, it is believed that raising the clustering level would impact positively on the human capital development within Firm B itself.

Technical know-how spillover among firms in this zone is estimated to score 32% as per Firm B's opinion. Although competition is moderate, technical knowledge does not exist either in this firm nor among similar firms, so there is little technical know-how to be leaked out. The only knowledge which may be spilled over is that which is centred on leadership skills, international standards application, and organisational development for better management.

Figure (5.7) Firm B: Determinants of HCI



5.3.3 Firm C: Profile

As a multinational firm which is American and privately owned, Firm C was established in Dubai in 1993 to be responsible for the sales and marketing of products across the Gulf region, North Africa, and the Levant. With approximately 320 employees, Firm C is one of the Middle East's leading candies, food, and beverage manufacturers producing a wide range of products.

Started in a Tacoma, Washington kitchen, this firm has grown into a company of global scope with six business segments including chocolate, pet care, gum and confectionary, food, drinks and bioscience, generating annual revenues over $28 billion. As a private family-owned company for nearly a century, the firm believes in five core principles: quality, responsibility, mutuality, efficiency and freedom. The firm continually strives to put these principles into action in everything it does. The most interesting slogan it believes in is "making a difference to people and the planet through performance".

Interviewed managers said that the firm "offers its employees total freedom to shape their own future and create a genuine mutuality of benefits". It is believed that the contribution of each individual is a vital ingredient in the continued success of the business, and this is recognised by the use of the term 'associate' for everyone who works in the firm. It symbolises the determination of the belief in the way the associates should be treated. "In return for accepting responsibility for the achievement of specific goals and objectives, the 'associates' are entitled to enjoy fair treatment, respect, and rewards commensurate with their contribution".

Firm C believes in quick and transparent communication. Opportunities are posted for all associates to see around the world and to apply if qualified. This way of working fosters a style of equality, with open plan offices in all units around the world, with no private offices or executive facilities, and regular business communication for all.

i) Human Capital Indicator

Firm C considers that "it is its role to release the talents of individuals, providing structured processes and a clear framework that enables every associate to give their very best", the interviewed manager confirmed. By clarifying accountabilities, designing challenging and interesting jobs with built-in career development steps, and creating communities of shared purpose, the firm strives to enhance the engagement (and therefore the performance) of all associates around the world. "To meet this goal of being highly consumer-centric, local operating units have the freedom to act quickly, with un-bureaucratic management, where responsibility is delegated and associates have wide discretion in making decisions that affect their day-to-day work."

Employees in Firm C can be characterised as "people who actively seek out new ways of making things happen, people with a desire to keep on learning and developing, and people with the courage to take responsibility", the interviewed manager said. Firm C supports employee development, giving them fascinating challenges and offering them diverse career paths. The firm looks always for skilled employees who would like to take the initiative, have a passion to excel and the courage to explore new paths using ethical and responsible decisions.

a) Education Level and Experience

Firm C has a virtual university where employees obtain specific training relevant to the business. It is an important factor of the hiring process to recruit candidates with the appropriate quality education. Eighty percent of employees hold graduate and post graduate degrees. The structure of employees' education is 35% with post graduate education, 45% with post-secondary education, 10% with secondary education and the remaining 10% with less than secondary education. The estimated education score is 15 out of 20.

Experience in the role is moderately required for Firm C. Established in 1993 in Jebel Ali Free Zone, the average employee's experience is 6 years. The firm believes that they have

all the tools to equip their employees with the on-the-job training they need when it is required. Post graduate degree holders' average experience is 4 years; similarly 4 years for employees with post-secondary degree, 4 years for employees with secondary degree, but 6 years for employees with less than secondary education. Experience level is estimated in Firm C to be 9 out of 20.

b) Level of Employee Knowledge Accumulation

Firm C has many tools to equip their employees with the relevant knowledge needed for the business. The interviewed manager explained that one of these tools is "the virtual university that provides employees with functional training in fields such as sales, marketing, finance, human resources, operations etc." A global team, distributed across the world in colleges that either support a certain function (e.g. marketing, or engineering), looks after a broader set of cross-functional skills such as line manager excellence or engagement, or provide fully customised learning solutions that address critical business needs. "It can be considered as a business school, just more flexible, better tailored to employee needs and guided by the global firm". The principle learning model is guided by the idea that "only 10% of the learning should come from courses and training. An additional 20% comes from mentors, and the remaining 70% comes from having an opportunity to put what employees have learned into practice. It is considered a fully integrated learning experience."

It is essential for employees to undergo job-specific formal training where the training is considered to be an important strategic function with an annual formal budget. All employees have the necessary manuals, tools and information they need to do their jobs. Team work is encouraged all the time where best practice and tips are shared, improved, and circulated across departments. Knowledge accumulation in Firm C is estimated at a high level reaching 20 out of 20.

ii) Level of Building Employee Competence

Leadership behaviour consistently demonstrates that learning is valued. The interviewed manager said that “the firm invests a lot of time and money to train, develop, and build competence. Employees are constantly encouraged to come up with ideas and to find new and better ways to work; and they have formal development plans in place which they use to achieve their career plans”. Firm C has a learning management system which includes features such as content management, skill or competency management. The level of building employee competence in Firm C is estimated at 20 out of 20.

iii) Level of Employees Ability to Bridge the Know-Do Gap

It is essential for Firm C that employees are able apply the learnt skills and techniques in their day to day assignments. It is observed that bridging the know-do gap is embedded in the firm’s learning and knowledge accumulation approach. Employees are encouraged at a high level to implant the learnt knowledge, skills and training outcomes in processes, products and service development. The interviewed manager said that “the firm has a unit supplied with a budget, food scientist, researchers and chemical engineers who put theories into practice. This unit has been successful in developing a new product customised only for the Gulf region’s taste. This product requires specific recipes, packaging, and marketing tools which are all carried within the free zone branch. At a moderate level Firm C tends to equip staff with technical know-how that is not available elsewhere. Consequently, the firm scores approximately 18.6 out of 20 on employee ability to put developments into practice.

The human capital indicator in this firm can be calculated as 82.6 out of 100. This indicator is reached by adding up the firm’s education level, average experience, knowledge accumulation, ability to build competence, and bridging the know-do gap. The human capital indicator suggests that human capital development is demonstrated at a high level within this firm.

iv) Culture

"The firm has its own distinctive culture which is a mixture of the mother company's culture, the UAE local culture, and finally the culture of the mixed nationalities of expatriate employees", commented the interviewed manager. "It is a more relaxed culture in Dubai compared to the mother company in the USA. The quality of life and high living standards which most of the expatriates enjoy in Dubai also play a part in the firm's business culture". The firm tends to establish committees and uses teamwork to reach decisions. It is common within the firm to distribute responsibilities among a group of employees. Discussing the progress of objectives by means of prolonged meetings is an important process for the firm. On the other hand, employees seek approval and support for their own work on a moderate level. Firm C has a high score on the collectiveness indicator reaching approximately 85% which indicates that this firm's employees most of the time are inclined to distribute responsibilities to avoid being accountable for their own work.

Management decisions and practices are always clear at a high level yet in order to avoid unseen circumstances, the firm tends at a high level to formulate structured policies, procedures and rules. Interestingly managers have the freedom not to adhere to those structured policies and procedures, which encourages employees to come up with innovative and creative ideas. The avoidance within this firm scores approximately 55% which indicates a moderate level in this firm.

v) Special Economic Zone Level of Clustering

The interviewed manager stated that "the level of clustering within Jebel Ali Free Zone is moderately low in Firm C's opinion". Although the free zone struggles to attract similar industries to be grouped within the fence, the firm's decision to operate in Jebel Ali was not based on clustering. There are few official groups for similar industries where firms may get involved in formal sessions and events to discuss and share opinions about new relevant technologies. It is essential however, to firms in Jebel Ali to be well connected to suppliers and buyers locally at a high level, as they are at present. Firm C considers that the level of

clustering in this zone is moderate, rather than high as it should be. The approximate score for clustering is 52%.

vi) Technical Know-How Spillover Indicator

Firm C faces a moderate level of competition in this zone, however it has a wide range of local distributors for whom the firm provides constant structured training, advice and experience. Special programs are held to explain the firm's values and business practices which are structured in a way to maintain a strong relationship with its buyers and suppliers. Firm C strictly applies international quality standards and requires suppliers to comply with these standards at a moderate level. Most of the time the firm benefits from hiring "new recruits head-hunted from similar firms", said the interviewed manager.

Although the firm has strong links and tends to hire from similar firms, the management does not benefit from it to undertake organisational change for better management. However, this firm strives to form official and unofficial groups of similar firms with similar interests to share ideas at a moderate level. Finally, this firm benefits from such practices to improve processing techniques, quality control, and upgrade equipment to a fair level resulting in a moderate score of technical know-how spillover over reaching 66%.

5.3.3.1 Firm C: Findings

Firm C has a high level of human capital development indicator reaching 82.6%, with two main aspects that raise this indicator higher than other firms. The first is the research and development unit incorporated into the firm's structure. The second aspect is the virtual university they own which offers functional and related business training to their staff.

Most employees hold either a post graduate degree (40%) or graduate degree (40%) scoring 15 out of 20. Average experience is moderate although it suggests that the firm benefits from young people's ideas with an approximate score of 9 out of 20. The high human capital score is attributed to the high level of employee knowledge accumulation, building

competence and bridging the know-do gap scoring 20, 20, and 18.6 out of 20 respectively. Firm C ensures that all employees attend relevant business and technical know-how training. The leadership team ensures that training and development are valued at all levels. Personal development plans are essential to career development where all the learning tools are available upon request. On the other hand, employees are always encouraged to apply training and development outcomes in day to day operations. For that reason, key performance indicators are set within each employee performance management system to measure the application level of the learnt skills.

Figure (5.8) Firm C: HCI Level and Components

The 20% revenue growth is an essential factor required by the firm to sustain human capital development. Firm C believes that human capital in turn impacts positively on the financial performance which is the reason why they invest heavily in training and development. The size of the firm at 320 employees is considered a small to medium-size firm, yet there is a hidden factor in that regard because the firm has a high ownership share with the local distributors from where the revenue growth occurs, but the distributors are considered as separate entities which are not included in the firm size located within the free zone fence, (Figure 5.9).

Business culture is unique within this firm. The collectiveness score of 85 percent suggests that the firm is managed collectively to avoid accountabilities. Employees tend to favour groups, committees and teamwork to avoid being placed under the spotlight if things go wrong. This high score may affect negatively the human capital development indicator to a level that accountability and accepting responsibilities are an important factor in driving self-development. On the other hand, uncertainty avoidance scores 55 percent within this organisation which is considered as moderate. Firm C has strong rules, policies and procedures, yet managers avoid applying literally the firm's bylaws in order not to limit the employees' abilities to come up with creative and innovative ideas.

The level of clustering reaching 52 percent within Jebel Ali Free Zone is moderately low which makes it tough for similar organisations to be advanced, based on a structured benchmark. Technical spillover on the other hand happens on a moderate level. At 66 percent, international quality standards, management style, soft skills are leaked out compared with the heavy technologies possessed by the firm's products. Firm C has a strong technical know-know with regard to recipes and especially the customised product developed for the regional taste. Yet technical spillover is hardly happening due to many factors such as the lack of hard competition as well as the existence of similar industries operating within the same free zone.

Figure (5.9) Firm C: Determinants of HCI

5.3.4 Firm D: Profile

Firm D is a public shareholder company established in 1971, regulated by the UAE Central Bank and listed on the Dubai Financial Market. Firm D is headquartered in Dubai, and deals basically with asset management, investment banking, brokerage, private equity and finance. The firm provides its services to corporations, institutional clients and high net worth individuals.

The interviewed manager explained that “in recognition of its contribution to the financial services sector, EUROMONEY named the firm as 'Best Equity House in the United Arab of Emirates’ Award' a number of times and more recently 'the UAE Equity Fund of the Year' in 2011 by MENA Fund Manager”. Firm D was one of the first companies listed on the Dubai Financial Market in 2000, with shares held by shareholders from a broad spectrum of local, regional and international investors. “In 1993, the company was the first in the UAE to adopt International Accounting Standards and to issue quarterly financial statements, now required of all companies listed on the Dubai Financial Market”. Firm D has a full Dubai Financial Services Authority authorisation to carry out investment banking activities at Dubai International Financial Centre (DIFC). The company was the first Arab and regional investment banking institution to act as a clearing member and custodian on the NASDAQ Dubai.

The interviewed manager explained that “the asset management business line deals with the longest investment track record in the Middle East, building value for clients and shareholders through consistent diligence, dedication, innovation and strategic development. Areas of investment and expertise span 15 stock exchanges in the MENA region, stretching from Morocco to Oman, with a particular focus on the GCC”. The Investment Banking team provides tailored solutions to clients' financial advisory and capital raising requirements. “With a track record of over nine years in the region, combining exceptional financial expertise with extensive market knowledge, Firm D has a corporate finance advisory team that possesses in-depth experience advising on the structuring and execution of capital raising transactions”. The combination of “deep

regional knowledge, an understanding of investors' needs and broad sector coverage across the GCC, allows the firm to offer tailor-made investment solutions to private and public companies", the interviewed manager added.

The Brokerage arm, including Securities, offers clients "a comprehensive brokerage and advisory service spanning 14 exchanges in 12 regional markets, covering the entire GCC as well as six markets across the wider MENA region. The Securities arm is a member of the Dubai Financial Market, the Abu Dhabi Securities Exchange, the Amman Stock Exchange and the Egyptian Stock Exchange", the interviewed manager explained. The firm's capital brokerage arm is also a member of the Saudi Arabian Stock Exchange (Tadawul). The Securities section is a one-stop-shop service offering its individual and institutional clients direct access to all the key regional financial exchanges and multiple asset classes via a single-account system, for ease and convenience. Furthermore, the firm's securities clients benefit from comprehensive and widely-respected research capabilities.

Finally, the firm has a private equity arm which is led by an experienced team of investment professionals with a proven track record and a deep understanding of the Middle East. This section offers the thorough experience of its investment professionals to identify attractive investment opportunities primarily in the GCC and Levant regions. The current funds under management come to $300 million in addition to certain assets managed within the firm's portfolio.

i) Human Capital Indicator.

The interviewed manager stated that the "firm has operated in Dubai International Financial Centre for the past 6 years with approximately 150 employees of whom 10 percent are UAE nationals. Firm D's core services are generated by a high financial and investment team who provide expertise, research, tips, and advice to clients to increase individual as well as corporate shareholder values". Interestingly in 2011 this firm witnessed "a decline in revenue generating from the previous year as an indirect impact of the world financial turmoil". The decline in revenue is estimated at 10% compared with 2010 revenue. This

issue put pressure on the firm itself in terms of human capital development. Although they continue to attract a highly skilled calibre, the firm observed a major reduction in training, development and learning activities due the decline in the firm's financial performance. As a result, the firm struggled to hire employees with a high level of education, experience, technical know-how, business and commercial acumen abilities.

a) Education Level and Experience

The interviewed manager explained that "although, education is an important factor embedded in the hiring process, professional qualifications such as those relating to financial, accounting and treasury management play a much more important role in the final hiring decision. It is essential for Firm D to have a high profile cadre who are able to deal with clients with a strong professional and commercial communication business style". Five percent of the firm's employees hold a post graduate degree, compared to 75 percent who hold post-secondary education and 20 percent with secondary education. Education level scores approximately 15 out of 20. Experience on the other hand is another factor which has moderate importance to Firm D with an average 7 years of experience. With a score reaching 13.3 out of 20 in experience level, this element suggests that the firm has young employees.

b) Level of Employee Knowledge Accumulation

As stated above, the firm is witnessing a serious fall in revenue estimated to be 10% less than the previous year. The firm's financial performance affects in many ways the ability to offer training, development and continuous learning to employees. The firm used to invest heavily in offering employees intensive training, continuous learning, and management development programs. Currently, with a very limited training budget, employees hardly undergo job specific training. It is estimated at a high level that employees have the necessary manuals, tools and information they need to do their job. Interestingly training is not considered as an important strategic function with an annual formal budget. While team work is encouraged among employees, best practice and tips are shared, improved and

circulated across departments whenever possible. The score of employee knowledge accumulation is estimated to be at a moderate level of 12.8 out of 20.

ii) Level of Building Employee Competence

Firm D encourages employees at a high level to come up with ideas and find new and better ways to work. Employees currently do not have formal development plans in place compared with last year. Surprisingly, while the firm's core activities are extracted from the cadre's competence abilities, leadership behaviour does not demonstrate that learning is valued where career goals and training objectives are not monitored. It is likely that the firm does not have a learning management system which includes features such as content management, skill, or competency management. These aspects make it clear that the firm pays limited attention to building employee competence with an estimated score of 7 out of 20.

iii) Level of Employees Ability to Bridge the Know-Do Gap.

The interviewed manager stated that "the firm's type of products and financial services require a high level of technical know-how related to finance, fund and asset management and financial brokerage." The firm does its best to hire staff with technical knowledge and strives to offer them product knowledge which does not exist elsewhere. Since that training, development and continuous education is limited, employees usually apply learnt techniques related to product knowledge in their day to day assignments at a moderate level. The learnt knowledge obtained from on-the-job training and informal knowledge-sharing are implanted in processes, product and service development at a moderate level. Bridging the know-do gap is estimated at a moderate level of 9.3 out of 20.

The human capital indicator in this firm can be calculated as 57.7 out of 100. This indicator is reached by adding up the firm's education level, average experience, knowledge accumulation, ability to build competence, and bridging the know-do gap. The human

capital indicator suggests that human capital development is demonstrated at a low level within this firm.

iv) Culture

The culture within the firm is somehow noteworthy. “There are elements of communication barriers among employees. It is inclined to be a family-oriented culture rather than a publicly shared firm”, the interviewed manager explained. “Shareholders do not hold voting power, therefore they do not interfere with the firm’s corporate governance structure. It is sometimes a relaxed culture rather than a stressed one which it is assumed to be. These elements hinder human capital development within the firm as seen by its employees”. Firm D tends most of the time to establish committees and teamwork to reach decisions. To avoid individual accountabilities, responsibilities are distributed among a group of people. It is a habit that employees and even managers often seek approval and support for their own work to avoid blame which may arise in the future. On the other hand, decisions are reached quickly rather than holding prolonged and extensive meetings to discuss the progression of objectives. Most processes, decisions and activities are worked out collectively rather than individually. The collective score in this firm is estimated to be 65%.

The interviewed manager indicated that “remarkably, being established organically by Emiratis, the firm is greatly influenced by the domestic culture”. In turn, management decisions and practices are not clear all the time. At a high level, there is a tendency to formulate structured policies, procedures and rules to avoid risk. Rules are very important even though they may limit individuals’ ability to come up with new initiatives. The avoidance score is estimated to be at a high level reaching approximately 75%.

v) Special Economic Zone Level of Clustering

The interviewed manager described Dubai International Financial Centre (DIFC) as "clustered around specific businesses at a high level. Many conferences, seminars, formal, and informal events are held by this free zone to facilitate interaction among the firms". DIFC strives most of the time to attract similar businesses to be grouped with the fence and Firm D decided to operate in this zone because of the existence of similar businesses. This specific zone tries at a minimum level to act as the base for similar firms to interact with each other collaboratively. On the other hand, similar companies in this zone share knowledge about new related business technologies at a moderate level. Also, firms within this zone are connected but at a moderate level with suppliers and buyers locally. The level of clustering of DIFC is estimated to be at a high level reaching 72% in this firm's opinion.

vi) Technical Know-How Spillover Indicator

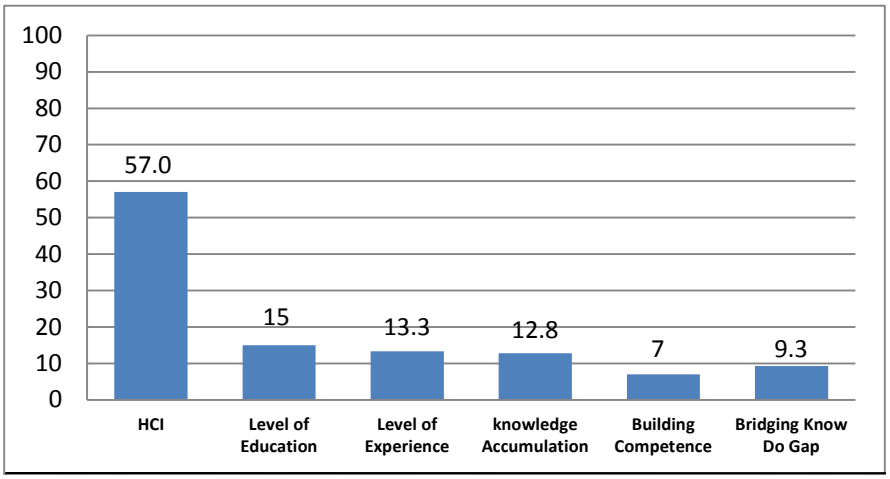
Firm D faces a moderate level of competition within DIFC. "Because of the existence of similar firms within the free zone, Firm D sometimes hires from those firms to benefit from them mostly in improving processing techniques, quality control, and upgrading services but at a moderate level", the interviewed manager remarked. However, this firm applies international standards and especially those which are related to finance at an advanced level. Eventually, Firm D may require suppliers to comply with these international standards at a moderate level. The relationship between the firm and its suppliers, clients and customers is an extremely important one so that the firm itself offers advice and experience all of the time and whenever needed. Having a unique value proposition, the firm does not benchmark other similar firms as important sources of improving products and services or even to undertake organisational change for better management. The spillover is estimated to be at a moderate level of 66% suggesting that technical knowledge is leaked out but at a limited level where quality standards and improving service techniques are shared at a moderate level

5.3.4.1 Firm D: Findings

Firm D is observed to have a moderate level of human capital development reaching 57%. Although the firm is highly dependent on employee skills and competence in generating business, the firm pays inadequate attention to staff training, development and continuous education. The negative double digit fall in revenue in the year 2011 forced the firm to cut costs in many business aspects of which the training and development budget suffered severely. Consequently the firm's financial performance has a great impact on human capital accumulation.

Another interesting finding is that the firm recruits and hires young employees, which indicates that the firm requires only moderate experience rather than a high level. Firms with similar activities are usually highly dependent on employees who possess intrinsic long experience in finance, fund and asset management. Knowledge accumulation remained humble during this year where most employees depended on their informal resources to get the knowledge and information needed. Building capabilities among employees is not seen by the management for the time being as a strategic function which may add (if it exists) to the firm's overall financial performance. The firm has its own technical knowledge which relates to finance, brokerage, investment banking and asset management. The financial advisers are highly dependent on market research and financial data in order to offer the best advice to their clients. However, and because of the limitation in training and development opportunities, most employees do not have a direct link between what they are learning (informally) and how they are putting things into practice, (Figure 5.10)

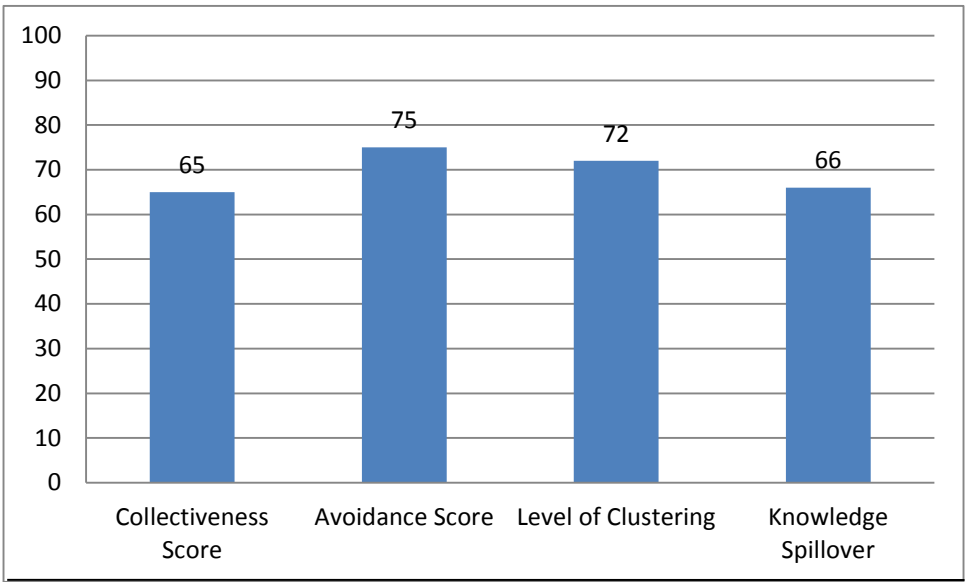
Figure (5.10) Firm D: HCI Level and Components



On the other hand this firm has a unique structure compared with the other case study subjects. The firm was originally established by UAE nationals then transformed into a public share holding firm listed on the Dubai Financial Market. Yet, many UAE nationals are still on the Board of Directors which formulates the firm's strategic policies and directions. Ten percent of the firm's employees are UAE nationals while the rest are hired from various other nationalities. The firm has a moderate level of collectiveness score where some of the business decisions are taken collectively rather than individually. Although it is a publicly listed firm now, the nature of business within the firm is similar to that which exists in privately owned firms. Committees, teams, workforces are sometimes established where individuals avoid all type of risk by seeking approval and support for their work. Having a trend of formulating structured bylaws, policies and procedures, the firm scores high on the avoidance indicator. Rules must be followed by managers as well as by staff even though creativity and innovation may get blocked because of that. The firm's culture and lack of a transparent structured corporate governance system is seen to be a hurdle to human capital development where avoiding accountabilities, risk, having structured rules, and the lack of overall clear management practices contribute adversely to human capital development within this firm.

As characterised by Firm D, the level of clustering within DIFC is highly demonstrated. DIFC does its utmost to attract similar firms to be located within the free zone fence. However, it is observed that DIFC acts as the base of interaction, coordination and collaboration among the existing firms at a moderate level. Although this zone periodically runs events, forums and conferences, there is no structured grouping or association established to facilitate mutually rewarding interactions among firms. Technical know-how spillover exists to a moderate level in DIFC. Generally, leaked knowledge is that which relates to quality management, process improvement, services development and better management structure. Financial knowledge spillover-over happens, but to a minimum level within firms through hiring from similar businesses. Although recruitment adds value, this firm is inclined to develop their core products and services counting on intrinsic resources rather than extrinsic ones. Hence, the spilled over financial knowledge is happening but at a moderate level, (Figure 5.11).

Figure (5.11) Firm D: Determinants of HCI



5.3.5 Firm E: Profile

The interviewed manager explained that “Firm E is a branch of an American company established in Jebel Ali Free Zone which offers a variety of products related to valve assembly, repair and testing. One hundred percent foreign owned, the firm delivers products across the breadth of industry applications, from control valves, pressure relief valves, to safety valves offering smart technology including smart communications software that provides crucial valve configuration, calibration and diagnostic information. The portfolio includes actuators, meters, switches, regulators, piping products, natural gas-fueled engines for compression, retail fuel dispensers and associated retail point-of-sale systems and air and gas handling equipment.”

In February 2011 the successful closing of a $3 billion acquisition of the global firm with its branches was announced by an international leading energy infrastructure technology and service provider. This firm was integrated into the acquirer’s global business unit that offers energy services, power and water. It was assumed that both firms were a natural fit together in terms of technology innovation related to the energy field.

The acquiring firm has a diversified infrastructure, finance and businesses. From aircraft engines and power generation to financial services, health care solutions, and television programming, the firm operates in more than 100 countries and employs about 300,000 people worldwide. The firm serves the energy sector by developing and deploying technology that helps make use of natural resources. With revenue of nearly $38 billion in 2010, the firm is considered to be one of the world’s leading suppliers of power generation and energy delivery technologies. The businesses that comprise the firm structure are power, water, energy services, oil, and gas. These products and services work together to provide integrated product and service solutions in all areas of the energy industry including coal, oil, natural gas and nuclear energy; renewable resources such as water, wind, solar and biogas; and other alternative fuels. As indicated in the firm’s official website (2012), the products and services are organised into the following four segments:

- *Flow Technologies* which provides control valves, safety valves, pressure-relief valves, instrumentation, software and aftermarket services. These products and services are used in a diverse range of energy infrastructure applications including oil and gas production, transportation, storage, refining and petrochemical processing, and in coal, gas, and nuclear power generation.

- *Measurement and Distribution* which supplies fuel dispensers, pumps, point-of-sale (POS) systems, forecourt controllers, outdoor payment devices and technology. It also supplies compressed natural gas (CNG) fueling stations and other related end-user refueling accessories such as high-precision fuel meters, vapour recovery products and electronic media applications at the pump.
- *Infrastructure Solutions* which provides products, solutions and aftermarket support for natural gas measurement, regulation, control and pipeline integrity applications consisting of production, gathering, processing, transmission, storage, power generation, and local distribution.
- *Power and Compression* which designs, manufactures and provides aftermarket support for natural-gas-fueled engines used primarily for natural gas compression in all stages of natural gas production and transmission, as well as for distributed electrical power generation, including combined heat and power.

For the purpose of the analysis, this study will consider both firms as one firm based on the acquisition in 2011, having common industry and similar business products; also both firms share a comparable approach in developing human capital.

i) Human Capital Indicator

The total employment size of Firm E is 30 employees with an average financial performance of 15% revenue growth. The acquirer firm's branch established in 1996 has

approximately 500 personnel with an average revenue growth of 12% (also located in Jebel Ali Free Zone). The interviewed manager explained that “the firm seeks to commit to integrity through respecting the human rights of everyone touched by the business as well as by enforcing legal and financial compliance”. These commitments are detailed in the firm’s integrity policy, where every employee supports the policy with a signed pledge. They are further enabled by each process which encourages any employee to report integrity concerns without fear of reprisal. The working environment encourages people to meet their work commitments while balancing their own life responsibilities. “To support this balance, flexible work arrangements are an integral part of the way business is conducted. The firm also offers many programs and resources to support employees including financial management and family counseling”.

The interviewed manager said that “leadership development in this firm is always evolving where leadership dialogues are instituted to look at issues with participants ranging from top management to academics. Conversations focus on the importance of networking, defining company stakeholders more broadly, and inspirational leadership. Although the results are not yet finalised, the company plans to incorporate the findings into its leadership development process”.

The interviewed manager commented that the global firm “invests in education programs based on fundamental principles”. A quality education helps to build a strong and diverse loyal workforce to work and live in an increasingly competitive world. The firm’s foundation addresses this education imperative by supporting high-impact initiatives that improve approaches towards equity and quality of public education. The interviewed manager explained that “school districts use their grants from the firm to develop a rigorous, system-wide math and science curriculum and to provide comprehensive professional development for their teachers. Through more hands-on instruction, students learn from teachers and volunteers from the firm as they work together on special mathematics and science projects involving real-world challenges”.

The interviewed manager stated that “The Leadership Centre has been at the forefront of real-world application for cutting-edge thinking in organisational development, leadership, innovation and change. Established in 1956, the 53-acre corporate learning campus attracts the world's brightest and most influential minds in academia and business. Every year, thousands of people from entry-level employees to the highest-performing executives are enrolled in a transformative learning experience that, for many, becomes a defining career event. The centre serves as a powerful organisational force that commissions each one of the global organisation employees with an important reminder: *to never stop learning”*. Various levels of leadership programs are administered as follows:

- *“***Entry-Level Leadership Programs”** which offer recent college graduates development opportunities that combine real-world experience with formal classroom study. Through a series of rotating assignments (typically over a period of two years) young professionals receive an accelerated professional development program, world-class mentors, and global networking that cuts across the businesses, (the firm’s official website 2012). The program comprises:

i. *“The Communications Leadership Development Program (CLDP)”* which is a challenging, rotational program focused on developing top potential communications and public relations talent. Rotations may include (but are not limited to) public relations, marketing communications, employee communications, and executive communications, among others, (the firm’s official website 2012).
ii. *“The Edison Engineering Development Program (EEDP)”* which develops technical problem-solving skills through advanced courses in engineering and technical projects and presentations to senior leadership that are aligned with business objectives. Diverse experiences may include: systems, analysis, design, quality, reliability, integration and testing, (the firm’s official website 2012),.
iii. *“The Financial Management Program (FMP”)* which develops leadership and analytical skills through classroom training and key assignments. Hands-on experience may include financial planning, accounting, operations analysis,

auditing, forecasting, treasury/cash management and commercial finance, (the firm's official website 2012).

iv. *"The Information Technology Leadership Program (ITLP)"* which develops strong technical and project management skills through a combination of coursework and challenging technical assignments. The program consists of four six-month assignments through one of the global firm's major business units, (the firm's official website 2012).

v. *"The Operations Management Leadership Program (OMLP)"* which is an ideal entry point for engineers with the energy and drive to define and deliver world-class manufacturing processes, products and services. Possible assignments include shop operations, process engineering, lean manufacturing, global supply chain management, materials management, and environmental health and safety implementation, (the firm's official website 2012).

vi. *"The Commercial Leadership Program (CLP)"* which offers a core curriculum that fosters the development of commercial skills and techniques that are critical to success in all the global firm's businesses. The program prepares candidates for a successful career in sales or marketing by providing the opportunity to learn about the products, industry, and customers while simultaneously making valuable contributions to the organisation, (the firm's official website 2012).

vii. *Programs* for those who wish to accelerate their careers with suitable opportunities. The programs position high-potential talents in collaboration with some of the top innovators in their fields, offering intensive on-the-job development in the areas of corporate audit, human resources and sales and marketing, (the firm's official website 2012). The program comprises the following

- **"The Experienced Commercial Leadership Program (ECLP)"** which is an intensive two-year program for commercially astute talent consisting of three eight-month rotational assignments in the sales and marketing functions of a business unit in the global firm. The program combines job assignments with focused training and leadership opportunities, (the firm's official website 2012).

- **"The Human Resources Leadership Program (HRLP)"** which is a challenging rotational program focused on accelerated development of top potential human resources talents, with the purpose of creating a pipeline for HR leadership roles across the global organisation's business unit. HRLP is an intensive two-year program consisting of three eight-month rotational assignments in the human resources functions of the business. The program combines job assignments with focused training and leadership opportunities, (the firm's official website 2012).

a) Education Level and Experience

Although education level is highly important in the global firm as stated in the previous section, within Firm E located in Jebel Ali, it is a moderately important factor where relevant education for the job role is tested throughout the hiring stages most of the time. Particular individual skills play a similar role of significant scale when it comes to abilities such as creativity, innovation, clear and logical thinking, and the competence to step always outside the comfort zone. Fifteen percent of the firm's employees hold post graduate degree education compared to 50% with post-secondary education degrees. The remaining 35% of employees hold secondary education certification. The education level with Firm E is estimated to score 15 out of 20.

The interviewed manager stated that "proficiency in the function area is another important element in the hiring decision as well. The human resources team ensures that it hires and retains employees with well-structured experience relevant to the job role. Also, employees are sought with the potential to learn quickly and obtain fast track experience through well specified on-the-job-training programs". The experience level of employees who hold post graduate degree is 10 years compared to 15 years for those who hold a post-secondary education degree, and 5 years for those with secondary education degree. The average experience level is 10 years with a score of approximately 20 out of 20.

b) Level of Employee Knowledge Accumulation

At an extremely high level, training in Firm E is considered “an important strategic function armed with an annual formal monetary budget”, said the interviewed manager. “Employees have regular plans to undergo job-specific training. The training programs vary from business-related programs, entry level, to experienced leadership level programs”. Manuals, tools and information pertinent to job roles are commonly available to all employees. Finally, teamwork is encouraged most of the time where best practice and tips are shared, improved and circulated across departments. The level of knowledge accumulation within Firm E is estimated to be 17.6 out of 20.

ii) Building Competence

The interviewed manager asserted that nearly all employees in Firm E have “personal development plans in place which they use to achieve their career goals. The firm has many developmental programs such as the fast track program which is linked directly to succession planning”. At a high level, leadership behaviour consistently demonstrates that learning is valued. Achieving financial targets is not sufficient if managers do not exert efforts to develop their staff. Moreover, the management team is questioned most of the time on staff developmental plans which is linked directly to their individual performance appraisal final score. On the other side, the global firm has a sophisticated virtual learning management system available for all business units around the world. This system includes features such as content management, skill and competency management. Although the global firm enjoys an extremely high level of ability to build competence, yet employees in Firm E located in Jebel Ali Free Zone are hardly encouraged to come up with ideas to find new and better ways to work. Building competence in Firm E is estimated to be 16 out of 20.

iii) Level of Employees Ability to Bridge the Know-Do Gap

Firm E has a very dynamic learning environment and strives to equip staff with technical knowledge that is not available elsewhere. Nevertheless, “research and development activities are exercised only at the mother company’s site, therefore employees located in Jebel Ali are gaining knowledge which relates only to the way of doing business rather than technical innovation”, the interviewed managers confirmed. The learnt knowledge, skills and information relate to leadership, management of various functions, and quality standards that the firm applies. At a moderate level, staff in Firm E practice the learnt skills in their day to day assignments where training outcomes are implanted in processes, products and services improvement. Firm E scores approximately 14.6 out of 20 for bridging the know-do gap.

The human capital indicator in this firm can be calculated as 83.2%. This indicator is reached by adding the firm’s education level, average experience, knowledge accumulation, ability to build competence, and bridging the know-do gap. The human capital indicator suggests that human capital development is demonstrated at a high level within this firm.

iv) Culture

Although establishing committees and teamwork in this firm is important to reach decisions, employees are accountable and responsible for their own actions and decisions at a moderate level. In order to avoid individual risk employees are inclined to seek approval and support for their own work at a high level. The firm monitors objective setting and progression throughout, holding prolonged and extensive meetings. The collectiveness score is estimated to be 45%.

Management decisions and practices are usually direct and clear. There is an extreme tendency to formulate structured policies, procedures and rules to avoid anticipated ambiguity where good managers are those who always adhere to the firm’s bylaws. Interestingly in Firm E rules are important at a high level even though they may limit

employees' ability to come up with creative and innovative initiatives. The culture is highly characterised by avoidance where most employees are expected to do what is asked of them and follow the rules in order to achieve the ultimate targets. Interestingly, the mother firm has a distinguished culture where individual employees are stimulated to be creative rather than adhering to structured policies and procedures. The interviewed manager believed that the fact that Firm E's staff are located in the Middle East "obliges them to adopt a high level of avoidance compared with the moderate level of the mother company". Firm E's avoidance score is estimated to be 75%.

iv) Level of Clustering

The interviewed manager claims that "Jebel Ali Free Zone is considered by Firm E to be a moderately business cluster-specific free zone". Jebel Ali tries most of the time to attract similar industries to be grouped within the fence, although this free zone struggles to act as the base for similar firms to interact with each other collaboratively. Moreover, Firm E chooses to operate within this free zone not on the basis of the existence of similar industries but rather for the convenience of the location. Sharing knowledge among firms does not happen most of the time. Nevertheless, firms are well connected to suppliers and buyers locally. Jebel Ali's level of clustering is estimated by Firm E to be 56% which indicates a moderate level of existence of similar industry-specific firms within the fence of Jebel Ali.

vi) Technical Know-How Spillover Indicator

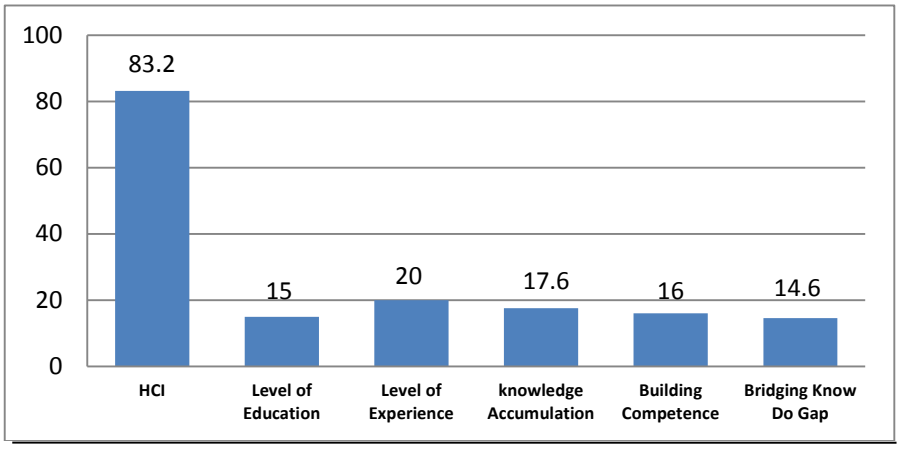
Firm E faces stiff competition from other firms within the zone, and benefiting from the new recruits hired from similar firms is an important aspect of that. It is also important for the firm to apply international quality standards and consider dealing with only suppliers who comply with those standards. Most of the time the firm offers training, consultation and advice to their buyers and suppliers inclining to develop and maintain a strong relationship with them. However, the firm does not benefit from that in improving products or imitating the competitors' services. Product development and improvement happen only

within the research and development unit located in the mother firm. Generally, the leaked information and knowledge among firms are only those which relate to organisational change programs and quality management rather than the core technical knowledge. The spillover indicator is estimated to score 64% which indicates a moderate level of knowledge and information spillover.

5.3.5.1 Firm E: Findings

Supported by the global firm's strategy to invest in education, training, and development, Firm E holds a high human capital development score of 83.2%, as illustrated in Figure (5.12). It is clear that the level of experience in the job role is extremely important to the firm, while the level of education plays a moderately high level in the firm's decision to recruit and develop employees. With a score of 17.6 out of 20, knowledge accumulation is another important component of the indicator. Employees are always encouraged to develop their capabilities through functional and business formal or informal training sessions. Personal development plans are used at all levels where managers are assessed on the achievement of their subordinates' development objectives. Research and development activities are practiced only in the mother firm, therefore employees located in Jebel Ali gain knowledge that relates only to business practices and approaches rather than the core technical know-how. Interestingly employees are not encouraged most of the time to come up with creative and innovative ideas which may improve the firm's services and products. The level of building capabilities therefore is estimated to score 16 out of 20. In contrast, the learnt skills and training objectives are implanted in day to day services to a high level scoring 14.6 out of 20. Employees who undergo specific training and development programs are observed and are expected to demonstrate the new learnt skills and technologies in day to day operational work.

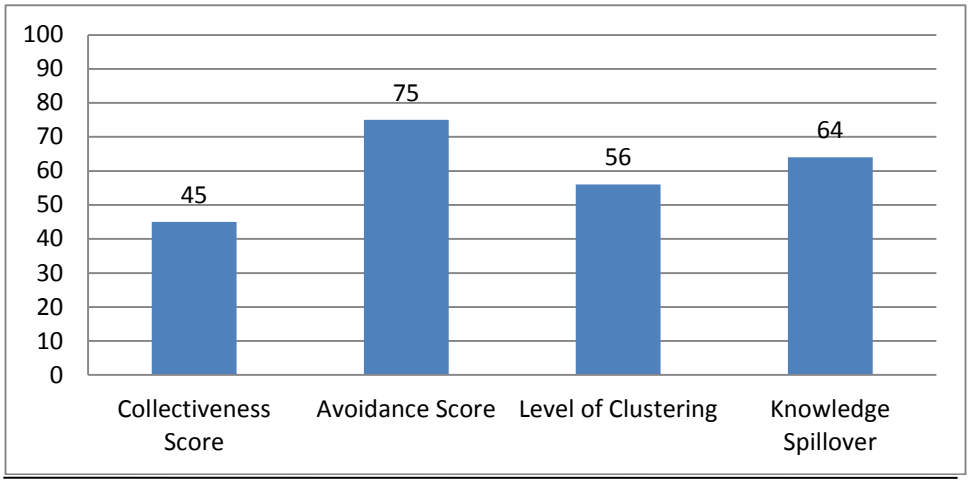
Figure (5.12) Firm E: HCI Level and Components



Firm E has a distinctive situation having been acquired recently by a global firm which is considered as one of the top international firms with revenue reaching billions of dollars ($38 billion in 2010). Firm E's revenue growth is estimated to reach 12% during 2011 compared to 15% growth of the branch in Jebel Ali (the acquirer). After the acquisition process, employee numbers reached 530 which brought the firm into the medium range of firms operating in the free zone. Interestingly the firm has witnessed a high human capital score as seen in the previous section (83.2 percent) where the size of the company had a positive effect on that result. Also the revenue amount and growth played an important part in human capital development so that the firm followed a strict strategic path enabling employees to gain from formal or informal training and development activities. The moderate level of collectiveness, along with the high level of avoidance, has an adverse impact on human capital development. Employees realise limitations with regard to ideas generation which bound the firm's level of human capital development. Jebel Ali branch is found in Dubai only to sell or distribute products and services which does not require a deep level of core technical knowledge rather than product general specification. This issue is found to hinder human capital development in terms of acquiring specific knowledge. The level of clustering within Jebel Ali zone is observed to be at a moderate level. Rarely are groups formed to discuss and share ideas about new relevant modern technologies. Technical know-how spillover happens among firms but at a moderate level, however the core technical knowledge scarcely gets spilled over. In contrast, knowledge, information,

and data relating to management practices and international quality standards are leaked out at a moderate level. Firms in Jebel Ali Free Zone do not see any importance in imitating the products and services of their competitors. They tend to leave this aspect to the mother company where the essence of research and development takes place.

Figure (5.13) Firm E: Determinants of HCI



5.3.6 Validation of Human Capital Indicator

The Human Capital Indicator was introduced above based on intensive interviews. Five components were identified and assumed to compose this indicator: education level, training (public and proprietary skills), on-the-job training (learning-by-doing), and finally the ability to apply the learnt skills (bridging the know-do gap). Also, numerical values and threshold were acknowledged conceptually by interviewees to best shape this indicator.

After applying the indicator across five case studies for the sake of comparison only, this research finds it very important to have a quality check in order to initially test the indicator, present the results to figure heads within the zone, and finally propose an initial first step of validation. This section is used to collect feedback on the proposed human capital indicator in order to initiate the first stage of validation. In order to accomplish this, three figure heads were interviewed using a presentation tool to illustrate the indicator,

followed by a semi structured questionnaire. The optimum aim is to initially validate the indicator, gain views on the extent of importance and relevance of this indicator, finally to propose suggestions for future research.

The three figure heads (FH) were carefully selected on the basis that they have thorough knowledge of human capital as well as holding a top position in firms within Dubai special economic zones

Table (5.4): Details of Interviewees to Validate Human Capital Indicator

s.	Code	Profile	Location
1	FH1	Policy Maker	Dubai Airport Free Zone Authority
2	FH2	Firm Senior Manager- Human Resources Services	Knowledge Village - Dubai Human Resources Forum
3	FH3	Director of a Regional University related to an International firm	Jebel Ali Free Zone

The skeleton of this section was identically used for all the interviews. Figure (5.14) illustrates the base structure employed symmetrically.

Figure (5.14): Skeleton of HCI Validation

1. Presenting human capital indicator (HCI)
2. Validating variables composing HCI
3. Proofing numerical values, threshold, and variables weight
4. Relevance of human capital indicator to Dubai special economic zones
5. Summary and Findings

5.3.6.1 Presenting Human Capital Indicator (HCI)

A slide presentation was used to explain to the interviewed figure heads the idea behind the human capital indicator. This was done deliberately as a starting point and opening up session for the semi-structured questionnaire used immediately after the presentation. The aim was to explain fully to them the indicator and its linkage and significance to the

research. The slides started with a brief about the research aim and objectives highlighting the important relationship between Dubai special economic zones and human capital development. Then the slides shed light on the importance of human capital to economic growth both on the macro and micro level.

The human capital indicator then was brought up as a notion evolved through the literature review, explored during the first phase, and how it was used through the second phase of the study. Indicator components were introduced to them and explained fully along with measurement criteria for each one. The weight and threshold used were the last to present before proceeding with the semi-structured questionnaire used to obtain their feedback, ideas, and suggestions. It was made clear to them that this indicator is used for contrast purpose and it might be used as the backbone for future research while the concentration of this study was the impact of Dubai special economic zones on human capital development.

5.3.6.2 Validation of Variables Composing HCI

As previously stated, HCI is composed of education level, experience level, employee's level of accumulated knowledge, employee's ability level to build competence, and finally employee's level to bridge the know-do gap.

Q1. In your opinion, do the HCI components represent human capital?

Figure Head 1 confirmed that those components could be the corner stone of a human capital index. However, the average years of experience is seen by him as a high one. Those who have 10 years' experience and above are given the maximum scores while, Figure Head 1 says that this should be 2 - 3 years instead of 10. He debated that 10 years does not reflect the uniqueness of young workforce population in Dubai special economic zones. According to his opinion, Dubai zones are made up of "start-up companies with an average 2-3 years of experience on job".

Although the indicator can be considered as a standalone with the suggested components, yet he preferred to consider another one representing the employee's ability to be flexible at work, having the will and desire to be productive. In his opinion most companies look for employees who are flexible in accepting work assignments and have the intrinsic motivation to produce. By having employees with this ability, it is believed that any firm will strengthen its position in terms of human capital level.

"Potential is the word that comes to my mind", said Figure Head 2. The employee's willingness to perform is something to be considered when thinking about human capital within any organisation. The potential as well as the intrinsic motivation could be nurtured in a way to form another dimension and to be added to the indicator. Although this indicator looks a new perception, he thinks that by applying it to firms in the zones it can measure the human capital level within firms to a great extent. Yet" it will be much stronger if the dimension of potential and intrinsic motivation is embedded within this indicator".

Figure Head 3 felt that this indicator should be modified to represent human capital and said the education level is "extremely irrelevant". In his free zone firm they test the candidate's knowledge using certain tools and look at the quality of knowledge the employee possesses rather than his level of education." Experience level is less important in the west than in Dubai and specifically in firms within the zones. The experience level should be characterised however to reflect the actual accumulative skills rather than 10 years of repetitive assignments. These specific components link this indicator to the local business environment because it is required in Dubai on a general basis. In this region an employee gets extra points when he/she possesses relevant experience. This is the opposite of western companies. Pixar for instance does not look at experience but rather the "ability to think as an entrepreneur".

On the other hand, Figure Head 3 agreed on the importance of the other three components to the indicator. Knowledge accumulation is a good component and contributes to the proposed indicator. The ability to build competence is another significant factor as well.

And finally, bridging the know-do gap can be characterised as the most important one. Looking at the indicator as a whole, Figure Head 1 commented that most of components measure either input or output. For instance development plans are an input while the component should measure the quality of the output of employees' development plans. Figure Head 3 uses an assessment tool in order to measure the output of development plans and relates the outcome to the company's overall performance.

This indicator measures human capital as a rule of thumb nearly 70% if education is removed and input and output are considered within the indicator. Figure Head 3 explained that this indicator can be classified into three levels:

a. **Individual Level**: Steve Jobs is an example of that. If this specific individual is removed from the company, then the company will suffer and this is exactly what is happening. The power of this individual is the ability to think.
b. **Team Level**: Sometimes you have great employees, but if you put them together in teams, sometimes they fail. Therefore, human capital indicator may consider this specific real example
c. **Organisation Level:** Wikipedia is an example of that. If you remove the contributors, you still have 100% of the organisation value because of the collective intelligence collaboration of this organisation.

Q2. What do you think of the variables calculated values, threshold, and weight distribution?

"In my opinion the variables have different weight" said Figure Head 1. Bridging the know-do gap may have more weight than the other components. The will and desire to be productive are much more important variables and have more weight "regardless of the level of education, knowledge, or how many years of experience an employee has". The

quality of education might be much more important than the degree itself, Figure Head 1 emphasised. Looking at the existing variables, the weight can be distributed as follows:

- Education Level 10%
- Experience Level 10%
- Accumulated Knowledge 20%
- Building Competence 25%
- Know-Do Gap 35%

The threshold used for this indicator is reasonable if compared to the same threshold used for most applicable performance appraisal in the region. However, and since the study is concerned with human capital, then Figure Head 1 would prefer to use the common threshold linked to "capital performance" used in most companies. This would be as follows:

- Below 20% Non Performing Capital
- 21-40 % Low level of Value Added Capital
- 61-75% Acceptable Value Added Capital
- 76-100% Extremely Value Added Capital

Figure Head 1 suggested applying this indicator to a few companies to verify the results by studying the correlation with financial performance for a period of 5 years at least. This would strengthen the importance of considering such an indicator as one of the cornerstones of achieving the desired financial growth.

Figure Head 2 suggested that "less weight be given to education", and more to the others. The other four components are about the same in importance. Experience level is to be characterised by the word "Relevant". Figure Head 2 regarded relevant experience in the job as more significant than the overall number of years work experience.

Figure Head 2 described the indicator as a reasonable measurement of human capital. This indicator can be presented as "a mechanism for firms to build up their human capital". If

this indicator is to be developed further, then the factors of potential and intrinsic motivation can be addressed within this indicator.

The threshold linked to this indicator is reasonable in the way it is compared with commonly used ones in human resources functionalities. “I cannot think of anything more than what the research is suggesting”, Figure Head 2 confirmed.

Figure Head 3 thought that education should be taken out of the indicator. Therefore the weight could be distributed initially on the other four components. Weight can be redistributed as follows:

- Education Level 0%
- Experience Level 15%
- Accumulated Knowledge 10%
- Building Competence 30%
- Know-Do Gap 45%

Knowledge accumulation is not more important than bridging the know-do gap. Steve Jobs is an excellent example again because of his design models and translating this thinking into innovative well-designed products that achieve a high market share.

Forrest Mars the founder of the chocolate company Mars, visited Spain and saw a chocolate covered with sugar to prevent it from melting. He brought it home and devised the phenomenally successful product that is “M&Ms”. So it was not his knowledge but rather the ability to adapt for success. Organisations and especially international ones are still looking for a similar type of human asset rather than the classical ones.

Q3. How relevant is this indictor to Dubai special economic zones?

Figure Head 1 explained that this indicator can hypothetically represent human capital. However, other factors can be investigated especially those related to an individual’s will

and desire to perform. On the other hand, this indicator can be applied within the free zones as well as outside. However it has a uniqueness in terms of its relevance to the UAE.

Figure Head 2 commented that most of the organisations in Dubai special economic zones are heavily under pressure. They are populated by a large number of small to medium establishments (SME). Therefore, learning management systems and leadership commitment should be given more weight within the indicator when applied to the zones. This is what can be described as the uniqueness of the human capital indicator with relevance to Dubai special economic zones. “This weight is higher than other firms operating outside the zones”. There is more on-the-job training, self-development, and individual improvement than in firms existing outside the free zone fence. Most free zone firms have a strong desire to “acquire ready human capital” rather than working on their development, and few of the firms have the mechanism to develop employees because they are either too small or understaffed. As a result, Figure Head 2 suggested considering those facts in order to make the indicator more relevant to Dubai special economic zones.

Figure Head 3 thought that this specific indicator is relevant to Dubai and in turn the free zones. There is no distinction between Dubai and the free zones in this aspect. The relevance is only because of the existence of an Experience Level component which matters in this region as compared to other regions. Therefore, there is an “element of localisation” embedded within this indicator with reference to Dubai in general rather than to free zones specifically. As far the threshold, Figure Head 3 agreed with the existing classification of the threshold. He said that it is a good way to represent it in that way which may be an enabler to employees to progress from one band to another.

5.3.7 Phase 2: Outcomes

The three Figures Heads agreed on the importance of a human capital indicator for this region. Education and experience level seemed to be a common concern, with suggestions either to give them a lower weight or remove the education component totally from the indicator. Bridging the know-do gap was seen as the most important component followed

by building competence and finally knowledge accumulation. However, the indicator was evaluated by all of them as a good start which can be up to 70% accurate in measuring companies' human capital. To make it 100% accurate, modifications have to be introduced in terms of contributing components and their weight. Also, this indicator can be correlated to companies' financial performance across a period of years in order to empirically validate the numbers.

*Threshold Range	0-20	Indicators are demonstrated at an Extremely Low Level
	21-40	Indicators are demonstrated at a Low Level
	41-60	Indicators are Moderately demonstrated
	61-75	Indicators are Fairly demonstrated
	76-90	Indicators are Highly demonstrated
	91-100	Indicators are demonstrated at an Extremely High Level

5.4 Phase 3: Cross Cases Contrast

This phase is used to investigate the aggregate information data and to explain how the firms discussed during phase 2 contribute collectively to human capital development. The Cross Cases Contrast entails an examination across the main driving forces that stimulate human capital development within the free zone firms (case studies).

5.4.1 Human Capital Indicator: Cross Explanatory Analysis

Table (5.5) shows that the average human capital indicator (HCI) across the case studies is estimated to be 66.76%. This level indicates that human capital development occurs within these firms at a fair level. Most employees hold a post graduate degree with an average of 6 years' experience of the job role. The average level of knowledge accumulation across the firms is estimated to be 14.4/20 which indicates that learning is happening but at a moderate level. Employees' ability to build up competence as a direct outcome of management commitment to learning and development is estimated to be 13.4/20 also indicating a moderate level. Finally, employees' capability to put the learnt education,

knowledge and skills into practice is estimated to be occurring moderately at a score of 12.04/20.

5.4.2 Aggregate Explanation of HCI Determinants

Human capital development is determined by many factors as observed during Phase 2 (Validation of Research Proposed Framework). Table (5.5) quantifies both the individual and aggregate numerical details of each and every factor. The firm's type, financial performance, free zone level of clustering, and the level of technical know-how spillover have an influence on human capital development within Dubai free zones. In contrast, the culture of collectiveness is realised to have a minor effect on human capital development within free zone firms, while an avoidance culture is recognised as having no impact whatsoever.

- **Firm Type** is recognised as impacting positively on the accumulation of knowledge within the firms especially the technical know-how. Firms with manufacturing capacity such as Firm C make sure that learning and development are an integral part of their strategic direction. The production line which is brought in from the mother company entails a specific in-depth training which cannot be obtained elsewhere. On the other hand, in Firm C employees tend to accumulate knowledge of how to produce chocolates, candies and drinks based on set recipes and ingredients which are developed within the branch itself to suit local taste. This observation is similarly noticed in the case of both Firms A and E which deal with energy, electrical equipment, industrial software, power, valves, and piping. These types of product require special knowledge in order to market, sell, and service such high end technological goods. In contrast, such Firms as B and D whose activities are real estate developer and financial services do not possess proprietary knowledge (technical know-how) within the core level of production. Firm B whose main activity is real estate developer employs mostly blue collar low-skilled employees basically to work on their construction sites. Projects have a specific start and end date which requires ready skilled white collar employees rather than

investing in learning and development on a longer term. Finance and real estate development can be considered as public knowledge available for everybody everywhere. Therefore, it is perceived that the human capital indicator in Firms B and D is lower than Firms A, C and E whose business exposure tends to be manufacturing and high end technological products. As a result human capital development is positively influenced by the firm's activity type of manufacturing, production, and high end technological products which require specific types of knowledge, in contrast with other activity types dealing with sales, services and real estate development which require popular learnt knowledge.

- **Firm Size** plays an important role in building up the human capital score. The average employment size across the cases studied is 620 employees with a minimum of 100 and 2000 as a maximum. The higher the firm size, the higher the human capital indicator. This is observed across four firms except the firm which is located in JLT whose main business is real estate developer with employees mostly from the blue collar category. Training, development, and continuous knowledge accumulation is encouraged in firms according to the size level. Bigger firms tend to have a strategic objective to build capabilities in order to gain benefits from the learnt skills reflected in process, product and service improvements.
- **The Firm's Financial Performance** influences human capital development within free zone firms. The higher the capital turnover and growth level, the higher the human capital development. Firms A, C and E witnessed a positive two digit growth compared to Firm D which observed a decline in revenue growth (-10%). The positive revenue growth necessitates that firms pay attention to human capital development compared with declining revenue of Firm D which is undergoing a major cut in costs seriously affecting the training and development budget. Yet, this is not realised with Firm B whose revenue growth is estimated to be 20%. This can be explained by the fact this firm has finished all of the construction sites during the last year and has started to benefit from its capital invested at the first place. It is unlikely that this firm will witness similar growth in the coming two years, which is

why the firm started to diversify its business activities to encompass health care management and hospitality services.

- **Culture** seems to have a minor effect on human capital development within firms in Dubai free zones. The average collectiveness score across the case studies is estimated to be 73% which indicates a fair level of dependence on groups of people rather than relying on individual challenging assignments. With the exception of Firm C, it is observed on a fair level that the human capital development score is higher when the collectiveness score tends to be low. Therefore, the collective culture seems to slightly influence negatively human capital development within these firms in contrast to Firm C.
- The culture of avoidance and seeking support and approval for their own work seems fairly demonstrated across the cases studied, with an average score of 67%. Yet the avoidance culture seems to have no impact on human capital development within the firms interviewed. Although this culture is fairly demonstrated, nevertheless firms are gradually moving away from the mother country's culture in favour of a mixed expatriate one.

- **Level of Clustering** within the free zones is estimated on average at 50%. At a moderate level it is observed that free zones level of clustering positively influences human capital development. Dubai International Financial Centre is attributed as having a fair level of clustering with mostly financial and finance related firms. Firm D located in DIFC scores 57.45% in human capital indicator which might be explained partly by operating in a similar business environment. Knowledge, information and skills may be obtained by interacting with other similar firms within the clustered free zone. On the other hand, Jumeirah Lake Towers (Dubai Multi Commodities Centre Free Zone) is characterised as having a low level of clustering where Firm B is located. The low score of Firm B human capital indicator can be to some extent explained by the low clustering level of this free zone where various unmatched industries do exist. Jebel Ali Free Zone clustering level on the other hand is perceived by Firms A, C and E to score an average of 52% which suggests a moderate level of the presence of clustered specific industries

within this zone. It is observed however on an individual basis that human capital indicator increases when the level of clustering increases within the free zones at a moderate level.

- **Knowledge Spillover** is demonstrated at a moderate level in Dubai free zones with an average of 56%. Case studies surveillance suggests that knowledge spillover influences positively human capital development where knowledge and best practice is shared among firms at a fair level. However, it is observed that the leaked knowledge is mostly characterised to be a general public one rather than the technical know-how knowledge. Most of the firms interviewed, such as A, D and E, concentrate on marketing, selling, and distributing the mother firm's products. Innovation and product development occur at the mother company rather than within branches in this region, therefore these firms do not possess their own proprietary technical knowledge. Only Firm C which is, to some extent, involved in knowledge creation through various successful attempts to devise recipes suitable for the regional market taste. Yet, this knowledge is not shared outside the firm walls and is considered to be the sole property of the company itself. Hence, the spilled over knowledge occurring within the free zone as seen by the firms interviewed may be characterised as public rather than proprietary. Spillover takes place through a vehicle composed of many gears. Most firms interviewed tend to train, advise and provide knowledge to distributors on their product specifications. They also seek to deal with suppliers who comply with their imported international standards at a moderate level. In a highly competitive environment, firms tend to head-hunt talented employees from their counterpart firms to gain advantage in processes, services and product improvement. Consequently, the spilled over knowledge is linked positively with the individual firms' human capital development at a moderate level.

Table (5.5): Human Capital Indicator and Determinants across Cases Studied

	Firm (A)	Firm (B)	Firm (C)	Firm (D)	Firm (E)	Average
Location	**Jebel Ali**	**Multi Commodity Centre (JLT)**	**Jebel Ali**	**Dubai International Financial Centre**	**Jebel Ali**	
Ownership Structure	100% Foreign	100% Foreign	100% Foreign	Public Share Holders	100% Foreign	
Nationality	French	Middle East	USA	United Arab of Emirates	USA	
UAE Nationals Percentage	0%	0%	0%	10%	0%	2%
Market Exposure	Regional	Local	Regional	Regional	Regional	
HCI	69.9%	42.3%	82.6%	57.45%	81.65%	66.76%
Level of Education	15/20	10/20	15/20	15/20	15/20	14%
Level of Experience	8.9/20	13.5/20	9/20	13.3/20	20/20	12.94%
Knowledge Accumulation	14.4/20	8.8/20	20/20	12.8/20	16/20	14.4%
Building Competence	17/20	7/20	20/20	7/20	16/20	13.4%
Bridging Know-Do Gap	14.6/20	3/20	18.6/20	9.3/20	14.6/20	12.02%
Driving Forces of Human Capital Development in Cases Studied						
Activity Type	Multi National Electrical Equipment	Real Estate Developer, Health and Hospitality	Chocolates, Drinks Candies Manufacturer	Asset Mgmt., Financial Brokerage	Energy, Power, Valves, Piping	
Firm Size (Employment)	100	2000	320	150	530	620
Approximate Average Income (in Millions AED)	100 M	20M	150M	-	200 M	117.5M
Financial Performance (Revenue Growth)	15%	20%	20%	-10%	12%	11.4%
Culture (Collectiveness Score)	100%	70%	85%	65%	45%	73%
Culture (Avoidance Score)	60%	70%	55%	75%	75%	67%
Level of Clustering	40%	32%	52%	72%	56%	50.4%
Level of Knowledge Spillover	54%	32%	66%	66%	64%	56%

0-20 Indicators are demonstrated at an Extremely Low Level
21-40 Indicators are demonstrated at a Low Level
41-60 Indicators are Moderately demonstrated
61-75 Indicators are Fairly demonstrated
76-90 Indicators are Highly demonstrated
91-100 Indicators are demonstrated at an Extremely High Level

5.5 Summary

This chapter presents the field studies in order to localise the research concept obtained from the literature review. This is achieved through three phases: Exploratory Study: Localisation of Variables, Case Studies: Validation of Research Proposed Framework, and finally Cross Cases Contrast

Human capital development does occur within Dubai special free zones; however, this development is seen as insufficient. Although the R&D variable was identified in the literature review as a measurable factor of the research, it was not found to be taking place in firms within the Dubai special economic zones. Therefore, it has to be excluded from the research concept. The main outcome of this chapter can be classified into two elements. First is establishing the proposed research framework. Second is the proposed human capital indicator which can be improved by future research.

Human capital indicator is seen as a significant tool to be assessed for this region. The indicator was evaluated as a good start in measuring companies' human capital. However, modifications have to be introduced in terms of contributing components and their weight. Also, this indicator is suggested to be correlated to the company's financial performance across a period of years in order to empirically validate the numbers in future research. The chapter investigates the indicator further and validates the variables used, threshold and weight. The research recommends that this indicator is be investigated further by future research.

The chapter embarks on contrast and comparison among firms interviewed with regard to the research variables. It is observed that firms with high human capital indicator tend to have positive financial performance, and the research shows that a cluster-specific free zone can be an important platform to which firms anchor. Firms consider knowledge spill over a significant element which can be contribute to a higher human capital indicator. It is detected, however, that culture does not play a major role in shaping high or low human capital indicator.

Chapter Six : Conclusion and Recommendations

6.1 Introduction.

This chapter presents the summary of the work done, introduces the research recommendations to policy makers and government officials, and outlines the major findings and the outcomes of this study.

Human capital development is considered a major driver for economic growth. Countries such as the United Arab Emirates that are rich in natural resources, in this case oil and gas, are more likely to face what is called the Dutch disease. This term was coined as the apparent relationship between the increase in exploitation of natural resources and a decline in the manufacturing sector. The natural resource abundant countries usually witness a dramatic shift in economic sectors favouring activities revolving around these resources. This may lead to short-term growth generated from selling the natural resources to other countries which are in need of such commodities, but in the long run they may face major hurdles. This occurs when the resource reserves start to fall leaving countries with no other economic sector to depend on for production.

Dubai, being a state of the oil rich United Arab Emirates, observes the emerging need to diversify its economic sectors away from the decreasing oil reserves on its own land. In order to do that, Dubai the young state began to focus on human capital development via decisive top leaders' vision and strategic articulation. Dubai's tiny population makes it difficult to advance in this development at the required pace. Education from early years to postgraduate stage is still a concern to the emirate. It requires considerable time, effort and money in order to work on it. Although Dubai has begun to do that, the Emirate targets faster economic diversification and growth, which requires human capital. Vocational training, knowledge spillover, and modern management skills become a dominant requirement to be addressed if the desired economic growth is determined. This is where special economic zones are adopted by Dubai to be a major vehicle for human capital development. International firms bring in technology, machinery, modern management skills and tools to the host country. On the other hand,

special economic zones in Dubai by their branded given names are assumed to be cluster-specific industries. This is where similar firms exist, perform, produce, interact within the same boundaries, and by turn generate a considerable body of vocational knowledge.

Located in Dubai, special economic zones may get influenced with the existing national culture. The culture is characterised by two elements: a. escaping risk by establishing committees, distributions roles and evading accountabilities; b. avoiding uncertainty by structuring strong bylaws and procedures. These two factors may limit the advancement of human capital development if it really exists. This research investigates the levels of human capital in the Dubai special economic zones and what are the main drivers of this development. Three main stages are performed in order to answer this question and case study methodology is utilised for this purpose.

The research is structured in six chapters in order to explore the impact of special economic zones on human capital development within the context of Dubai. The Introduction, Chapter 1, introduces the research problem, aim, objectives, research questions, and the scope of the study. Specific research questions are identified as follows: a) to what level does human capital accumulation occur within Dubai SEZs? b) What characterises human capital development in SEZs? c) What are the drivers of human capital development in Dubai SEZs? Other important questions are articulated as follows i) Do firms undertake research and development (R&D)? ii) To what extent does the firm's financial performance influence human capital development? iii) To what extent does the firm's size influence human capital development? iv) Does clustering influence human capital development within the zones? v) Do we have knowledge spillover in the zones? If yes, what influence does it have on human capital development? vi) What is the influence of culture within Dubai special economic zones on human capital development?

The Introduction is followed by a Literature Review in Chapters 2 and 3. Within these two chapters, both the human capital and special economic zones are discussed thoroughly. Firstly human capital is investigated by exploring the various economic growth models where this perception is developed to be one of the most important

factors driving a country's economic growth. Then the research looks at the various ways in which research attempts to measure human capital. The measurement of human capital is viewed from the macro point of view down to the level of the firms' point of view. The importance of this measurement is to come up with common variables composing what is later called the human capital indicator. The indicator is considered as an initial attempt for measurement within the context of Dubai special economic zones and utilised mainly for comparison among the case studies performed in Chapter 5. Subsequently, the literature review is narrowed down to explore Dubai's economic scene as the second major emirate of the UAE whose ambition is to become the business hub of the Middle East. Dubai with its strategic plan attempts to diversify the economic sectors away from an oil-driven economy. This is mainly because of its decreasing reserves of oil and gas. However, the limited skills are a challenge hindering this strategic move. To introduce proper solutions to this hurdle, Dubai adopts the notion of special economic zones to attract FDI and consequently multinational establishments with their modern machinery, quality systems, and modern management techniques. Building Dubai human capital is one of the main outcomes of special economic zones which Dubai seeks deliberately.

The outcome of the literature review is the research concept where variables with special economic zones are introduced and conceived to impact human capital development. This is theorised mainly by two sets of variables. The first set is firm specific which are: type, size, performance and the firm's level of research and development. The second set of variables is zone specific which are: the level of clustering within the zone, knowledge spillover, and the culture of avoidance and collectivism. Most of the variables are hypothesised to drive human capital development positively except the culture of avoidance and collectivism.

To address the research problem, aim, objectives and questions, and come up with the research proposed framework, the research uses case study methodology as an empirical inquiry that investigates the contribution of Dubai special economic zones to human capital development where the boundaries are not clearly evident (Chapter 4). The study employs triangulation exploiting a multiple case design where each case (a firm within one of the zones) is different in its strategy and practice of human capital development.

Field studies (Chapter 5) are then carried out in order to localise the research concept obtained from the literature review. This is done by: Localisation of Variables, Validation of Research Proposed Framework, and finally Cross Cases Contrast. Within the first phase three quasi-government Policy Makers and two company Senior Managers were interviewed. The aim was to determine the significance of establishing special economic zones in Dubai. Also to explore the components of a human capital indicator as well as the main driving forces which impact human capital development. Five firms are interviewed in the second phase to obtain information and data about each case with regard to determinents identified in the proposed research framework. Case studies are carefully selected from various special economic zones operating in Dubai. Firms' location, years of operation, nationality, financial structure and activity type are the base on which those firms are identified for the study. Within this phase and after applying the human capital indicator across the five firms, a quality check is undertaken in order to initially test this indicator, present the results to figure heads within the zone, and finally propose an initial first step of validation. Three figure heads are interviewed using a presentation tool to illustrate the indicator, followed by a semi structured questionnaire. The optimum aim is to initially validate the indicator, gain views on the extent of importance and relevance of this indicator, finally to propose suggestions for future research.

Human capital development does occur within Dubai special free zones. However this development is seen as insufficient. Although this variable was identified in the literature review as a measurable factor of the research, it was found that research and development is not taking place in firms within the Dubai special economic zones. Therefore, it has to be excluded from the research concept. The main outcome of this chapter can be classified into two elements. First is establishing the proposed research framework, excluding R&D as mentioned above. Second is the proposed human capital indicator which can be improved by future research.

Human capital indicator is seen as a significant tool to be assessed for this region. The indicator was evaluated by all of them as a good start which can be up to 70% accurate in measuring companies' human capital. To make it 100% accurate, modifications have to be introduced in terms of contributing components and their weight. Also, this

indicator can be correlated to companies' financial performance across a period of years in order to empirically validate the numbers. The chapter investigates the indicator further and validates the variables used, threshold and weight. The research recommends that this indicator be investigated further by future research. The chapter embarks on contrast and comparison among firms interviewed with regard to the research variables. It is observed that firms with high human capital indicator tend to have positive financial performance and look at cluster-specific free zones as an important platform to be anchored on. Firms consider knowledge spillover a significant element which can contribute to a higher human capital indicator. It is detected, however, that culture does not play a major role in shaping high or low human capital indicator.

6.2 Research Findings

This study achieved its aim successfully by meeting the following objectives as well as providing findings to the research questions.

First Objective: Undertake a literature review on human capital and special economic zones.

This objective is met by undertaking a thorough literature review. The research expands on the existing body of knowledge. This is done through extensive literature review on both human capital and special economic zones. Out of the literature analysis, an indicator is proposed to measure human capital development based on commonly used factors. Chapter 2 presents the notion of human capital and how it evolved throughout time to be a major driver of economic growth. The chapter comes up with an indicator to define and measure human capital based on a selected basket of factors introduced within the body of literature. This indicator is validated in Chapter 5 and is established to include education, job experience, knowledge accumulation, ability to build up competence, and finally the employee's ability to put learnt education, knowledge and skills into practice. Although a first step validation is presented to this indicator, yet it requires future studies in order to introduce a proper weight, threshold, and suggest a proper correlation with firm's financial performance for a period of time. The literature

review chapter explores then the notion of special economic zones and their relevance to Dubai's aimed growth. A clear linkage is identified among the special economic zones, firms within the zones and human capital development.

Second Objective: Establish a comprehension of human capital characteristics within Dubai SEZ context

This objective is met through Chapter 3. This section acts as the contextualisation chapter presenting the required localisation factor. It provides details about the UAE and specifically Dubai. The details include the economic structure, knowledge, innovation level, and current education system. This is followed by the introduction of the special economic zones and their importance to Dubai's aimed economic diversification. As the chapter goes deeper, a clearer picture is painted of the significance and impact of Dubai special economic zones on human capital development.

Third Objective: Determine the level of human capital accumulation in Dubai special economic zones and what shape does this take.

This objective is attended by answering the following two research questions as follows:

Question 1: To what level does human capital accumulation occur within Dubai SEZs?

The average human capital indicator (HCI) across the case studies interviewed is estimated to be 66.76%. This level indicates that human capital development occurs within these firms at a fair level. Most employees hold a post graduate degree with an average of 6 years of experience of the job role. The average level of knowledge accumulation across the firms is estimated to be 14.4/20 which indicates that learning is happening but at a moderate level. Employees' ability to build up competence as a direct outcome of management commitment to learning and development is estimated to be 13.4/20 also indicating a moderate level. Finally, employees' capability to put the learnt education, knowledge and skills into practice is estimated to be occurring moderately at a score of 12.04/20.

Question 2: What characterises human capital development in SEZs?

Although further research is recommended to cover this question, this study suggests that human capital development within Dubai special economic zones is characterised by education level, years of experience, the level of continual knowledge accumulation, employees' ability to build competence, and the application of the learnt education, knowledge and practice.

Fourth Objective: Investigate the drivers of human capital development in the Dubai Special Economic Zones.

This objective is attained by answering the following research questions:

Question 3: What are the drivers of human capital development in Dubai SEZs?

Human capital accumulation within Dubai special economic zones is significantly influenced by firm type, size, performance, level of SEZ clustering, knowledge spillover.

Question 4: Do firms undertake research and development (R&D)?

There is very limited evidence that firms are performing research and development within Dubai special economic zones. Most of the firms interviewed do not have a dedicated unit with an annual R&D budget for such activities. Firms rather send their comments, feedback and insights to the mother company (if multinational) in order to modify the products/services to better suit the market requirement. As a result this variable, although it is very important to human capital development, has been removed completely from the research concept

Question 5: To what extent does a firm's financial performance influence human capital development?

The firm's financial performance influences human capital development within free zone firms. The higher the capital turnover and growth level, the higher the human

capital development. Firms A, C and E witnessed a positive two digit growth compared to Firm D which observed a decline in revenue growth (-10%). The positive revenue growth necessitates that firms pay attention to human capital development compared with declining revenue of Firm D which is undergoing a major cut in costs seriously affecting the training and development budget. Yet, this is not demonstrated by Firm B whose revenue growth is estimated to be 20%. This can be explained by the fact this firm has completed all its construction sites during the last year and has started to benefit from its capital invested at the first place. It is unlikely that this firm will witness similar growth in the coming two years, which is why the firm started to diversify its business activities to encompass health care management and hospitality services

Question 6: To what extent does firm size influence human capital development?

Firm size plays an important role in building up the human capital score. The average employment size across the cases studied is 620 employees with a minimum of 100 and 2000 as a maximum. The higher the firm size, the higher the human capital indicator. This is observed across four firms except the firm which is located in JLT whose main business is real estate developer with employees mostly from the blue collar category. Training, development, and continuous knowledge accumulation is encouraged in firms according to the size level. Bigger firms tend to have a strategic objective to build capabilities in order to gain benefits from the learnt skills reflected in process, product and service improvements.

Question 7: Does clustering influence human capital development within the zones?

The level of clustering within the free zones is estimated on average at 50%. At a moderate level it is observed that free zones level of clustering influences positively human capital development. Dubai International Financial Centre is attributed as having a fair level of clustering with mostly financial and finance related firms being attracted. Firm D located in DIFC scores 57.45% in human capital indicator which might be explained partly by operating in a similar business environment. Knowledge, information and skills may be obtained by interacting with other similar firms within the clustered free zone.

On the other hand, Jumeirah Lake Towers (Dubai Multi Commodities Centre Free Zone) is characterised as having a low level of clustering where Firm B is located. The low score of Firm B human capital indicator can be to some extent explained by the low clustering level of this free zone where various unmatched industries do exist. Jebel Ali Free Zone clustering level on the other hand is perceived by Firms A, C and E to score an average of 52% which suggests a moderate level of the presence of clustered specific industries within this zone. It is observed however on an individual basis that human capital indicator increases when the level of clustering increases within the free zones at a moderate level.

Question 8: Do we have knowledge spillover in the zones? If yes, what influence does it have on human capital development?

Knowledge spillover is demonstrated at a moderate level in Dubai free zones with an average of 56%. Case studies surveillance suggests that knowledge spillover influences positively human capital development where knowledge and best practice is shared among firms at a fair level. However, it is observed that the leaked knowledge is mostly characterised to be a general public one rather than the technical know-how knowledge. Most of the firms interviewed, such as A, D and E, concentrate on marketing, selling, and distributing the mother firm's products. Innovation and product development occur at the mother company rather than within branches in this region, therefore these firms do not possess their own proprietary technical knowledge. Only Firm C which is, to some extent, involved in knowledge creation through various successful attempts to devise recipes suitable for the regional market taste. Yet, this knowledge is not shared outside the firm walls and is considered to be the sole property of the company itself. Hence, the spilled over knowledge occurring within the free zone as seen by the firms interviewed may be characterised as public rather than proprietary. Spillover takes place through a vehicle composed of many gears. Most firms interviewed tend to train, advise, and provide knowledge to distributors on their product specifications. They also seek to deal with suppliers who comply with their imported international standards at a moderate level. In a highly competitive environment, firms tend to head-hunt talented employees from their counterpart firms to gain advantage in processes, services and

product improvement. Consequently, the spilled over knowledge is linked positively with the individual firms' human capital development at a moderate level.

Question 9: What is the influence of culture within Dubai special economic zones on human capital development?

Culture seems to have a minor effect on human capital development within firms in Dubai free zones. The average collectiveness score across the case studies is estimated to be 73% which indicates a fair level of dependence on groups of people rather than relying on individual challenging assignments. With the exception of Firm C, it is observed at a fair level that human capital development score is higher when the collectiveness score tends to be low. Therefore, the collective culture seems to influence slightly negatively human capital development within these firms in contrast to Firm C.

The culture of avoidance and seeking support and approval for their own work seems fairly demonstrated across the cases studied, with an average score of 67%. Yet the avoidance culture seems to have no impact on human capital development within the firms interviewed. Although this culture is fairly demonstrated, nevertheless firms are gradually moving away from the mother country's culture in favour of a mixed expatriates' one

Fifth Objective: Develop an understanding of driving forces (independent variables) of human capital accumulation in Dubai zones.

This objective is met through Chapters 2 and 4. Chapter 2 introduces the driving forces extracted from the literature review. The main drivers are found to be firm type, size, financial performance, culture of risk and uncertainty avoidance, the level of clustering within the zones, and finally level of knowledge spillover, while Chapter 4 validates the drivers which are taken into consideration while building the proposed research framework. Research and development (R&D) has been removed from the proposed research framework based on the findings that little R&D activity takes place within Dubai free zones.

Sixth Objective: Develop a framework to measure the development of human capital within economic zones

This objective is met by introducing the proposed research framework. There are two sides of the proposed research framework, one is the special economic zones and the other is human capital. Hence, the proposed research framework establishes the link between the Dubai special economic zones and human. The proposed research framework comes out from the case studies chapter variables are verified throughout the semi-structured interview with policy makers and firms with the zone.

Seventh Objective: Test and validate the above framework

This objective is met through Chapter 5. The proposed research framework is tested across five firms from various major free zones in Dubai. The main outcomes are removing research and development out of the research concept, as well modifying the human capital indicator.

Eighth Objective: Propose recommendation to policy makers on the necessary steps for maximum exploitation of free zones as a vehicle of driving human capital development.

This objective is met by the introducing the research recommendation section within this chapter.

6.3 Research Conclusion

Based this research the main findings from the literature review, three phases of: a. exploratory study (localisation of variables), b. Case studies (Validation of the research proposed model), and c. Cross Cases Contrast are:

Literature reviews

1. Drawing on an existing body of knowledge on definitions from previous scholars, a working definition human capital is been developed and used throughout the thesis. In this thesis, human capital is described as the level of

knowledge and skills held by a person that enables them to carry out work so as to produce economic value. Human capital development is characterised by a set of components consisting of: education level, training, and ability to apply the learnt skills. It has been suggested in various literatures that human capital does have apparent advantages that drive economy growth.

2. Literature reveals that special economic zones has a positive influence on driving human capital development through a set of variables which are: firm type, size, performance, level of research and development as well as the special economic zone's level of clustering within the zone, knowledge spillover, and the culture of avoidance and collectivism.

3. The economic scene setting of Dubai explored in the literature review displays that Dubai is positioning itself strongly to develop human capital as a vehicle for its strategic ambitious growth. Of many important channels to do that is the adoption of special economic zones in attracting foreign direct investment. Having a limited oil supply, Dubai is taking serious measures to diversify its economy by building cluster-specific economic sectors. The major challenges faced by Dubai are the small population, high dependence on low skilled labour, an inefficient education system, and the mismatch between education outcome and strategic economic sector needs. In order to overcome these challenges, Dubai has adopted the notion of special economic zones to attract multinational companies and accelerate domestic human capital development through the spillover effect. With almost 32 current special economic zones, it is believed that human capital has been developed throughout the last 3 decades of operations.
4. The literatures revealed that Dubai has very strong, encouraging initiatives to build human capital as well as a strong support to establish cluster specific zones in order to bring in new diversified non-oil based economy. The special economic zones are conceived as main platform of spilling out new modern knowledge, skills, experience and hands on training needed for the establishing of new strategically desired economic sector.
5. The literatures underlined the research concept which describes how special economic zones influence human capital development. Also, identifying what

variables that compose human capital. This is theorised mainly by two sets of variables. The first set is firm specific which are: type, size, performance and the firm's level of research and development. The second set of variables is: zone specific which are the level of clustering within the zone, knowledge spillover, and the culture of avoidance and collectivism. Most of the variables are conceived to drive human capital development positively except the culture of avoidance and collectivism.

Exploratory Phase (Localisation of Virables), case studies (Vildation of propsed research model), and Cross Cases Contrast

1. The exploratory phase has reveals that human capital development does occur within Dubai special free zones. Yet this development is conceived to be as insufficient. Human capital in Dubai special economic zones is considered to be one component factor which constitutes what may be called the human capital indicator. This indicator consists of education, job experience, knowledge accumulation, ability to build up competence, and finally the employee's ability to put learnt education, knowledge and skills into practice. Similar weight are assigned to these variables in term of importance and a certain threshold is assigned based on the policy makers experience and in depth understanding of human capital development with Dubai Zones.

2. The exploratory phase establishes a basic measurement which is developed in order to reach an initial indication of the level of human capital within the firms in Dubai free zones. This research uses a simple indicator based on a basket of variables obtained from the literature review. These components are verified and validated through in-depth discussion with Policy Makers and Senior Managers during Phase 1. Based on the results, components of human capital indicator carry the same weight of importance so that none of them can be considered any more important that the rest. Also the threshold has been determined based on the discussion held with the interviewees. This indicator is suggested to be taken further and developed by future research as one whole study. The threshold is grouped into five classifications. This classification is simply used to compare

the level of each variable in firms operating within Dubai special economic zones which can be used for the sake of comparison. However, the research confirms that the human capital indicator along variable measurement can be the backbone for future research while here it is utilised only to contrast firms with each other

3.

*Threshold Range	0-20	Indicators are Demonstrated at an Extremely Low Level
	21-40	Indicators are Demonstrated at a Low Level
	41-60	Indicators are Moderately Demonstrated
	61-75	Indicators are Fairly Demonstrated
	76-90	Indicators are Highly Demonstrated
	91-100	Indicators are Demonstrated at an Extremely High Level

3. The exploratory phase embark the proposed research framework which explains how there are many factors act as driving forces to human capital development within the zones. These are the firm's activity type, size and financial performance, the level of cluster-specific industries within the zones, technical know-how spillover, and culture. Although this variable was identified in the literature review as a significance factor of the research, it was found that research and development is not taking place in firms within the Dubai special economic zones. Therefore, it has to be excluded from the research concept while performing the following phase of this research – Phase 2 Case Studies: Validation of Research Proposed Framework.
4. Phase 2 (Validation of the proposed research framework) finds out using subjective and objective research strategy that the proposed research framework is validated throughout applying it into five firms selected on a random basis. It is observed that firms with high human capital indicator tend to have positive financial performance, and the research shows that a cluster-specific free zone can be an important platform to which firms anchor. Firms consider knowledge spill over a significant element which can be contribute to a higher human capital indicator. It is detected, however, that culture does not play a major role in shaping high or low human capital indicator. The outcome of this phase provides a clear evidence that the proposed research framework is validated and can applied on similar firms in similar zones.

5. After applying the indicator across five case studies for the sake of comparison only, this research finds it very important to have a quality check in order to initially test the indicator, present the results to figure heads within the zone, and finally propose an initial first step of validation. The outcome of this stage finds out that the vriabels introduced for composing the human capital indictor are all important and offer a clear understanding of what shape does human capital development take in Dubai special economic zones. However, the indicator was evaluated by all of them as a good start which can be up to 70% accurate in measuring companies' human capital. All variables are agreed on, yet the weightage and threshold are to be taken further. To make it 100% accurate, modifications have to be introduced in terms of contributing components and their weight. Also, this indicator can be correlated to companies' financial performance across a period of years in order to validate the numbers.

General Outcome

- Human capital development occurs in the Dubai special economic zones but on a moderate level. Special economic zones influence this development through two classified variables.
    a. From the special economic zones perspective: clustering plays an important role in driving positively the human capital development. Dubai special economic zones have to concentrate on attracting desired industry clusters in order to promote knowledge spill over and instilling new knowledge, experience, knowledge accumulation, capability buildings, and skills to apply the learnt knowledge which needed to build new economic sector. On the other side, and although the contextual culture of avoidance and collectiveness exist in Dubai, and they are conceived to influence negatively the human capital development in literature review. But these seem to have no influence on human capital development within firms in Dubai special economic zones. This due to the factor that the firms are having various nationalities from all over the world, thus the firms adapt to a changing productive culture.
    b. From the firm perspective: the research finds out that the firm type, size, and financial performance have an important influence on human capital

development. It is perceived that firms whose activities are around manufacturing and production lines are having higher influence on human capital development as compared with other activities. This is due to the fact that these firs invest on training staff on modern machinery, production techniques and modern international standards. Also, if the size of the firm is in perceived a considerably high. Then these firms are having hierarchy of management which dictates a investing on specific training on modern management techniques. Finally the research finds out that firms who perform financially well, are more likely to invest more in building internal capabilities in order to sustain this growth. Hence, more investment is been done to train, qualify, and develop human capital within the firm.

6.4 Research Contribution to Knowledge

The contribution to knowledge is articulated as follows:

- There is a little discussion about the impact of special economic zones on human capital development. This discussion however, is based on general research where no field studies are done to understand this impact. On the other hand, there are no studies done so far on Dubai special economic zones and their significance in building human capital. This is where this research comes in to contribute to knowledge by understanding the characteristics of special economic zones within the context of Dubai, as well as offer an understanding of what drives human capital within the zones.

- An indicator is proposed within this research to measure human capital development. Although this indicator is explored, verified, and validated, yet it requires extra extensive future research to produce the final version for proper exploitation.

- This research contributes to knowledge by establishing a proposed research framework where link and relationship are established. This framework

represents what factors impact the accumulation of human capital within firms existing in Dubai special economic zones.

6.5 Research Recommendation

Many recommendations have developed from the process of undertaking this research. This section presents the major recommendations to policy makers, government officials and free zone senior management team.

It is recommended that an authority or an official body be established to look after the existing special economic zones in Dubai. The authority mandate may be as follows:

1. *Establish an empirically verified human capital indicator within the zones*. This would be measured annually with authority programs aligned with the accumulation of this development.

2. *Enhance the perception of cluster-specific industries within each relevant zone.* The cluster-specific industries boost human capital of the host country which is the main driver of economic growth

3. *Attract firms whose size in terms of capital investment is high*. This will influence the positive development of human capital in Dubai.

4. *Attract firms whose type requires the establishment of modern machinery as well as modern management techniques.* These firms provides job specific as well as technical know-how training to the employees. Consequently, this would introduce improvement to Dubai human capital.

5. *Pay attention to spillover among firms*. Come up with various programs in order to enhance the level of knowledge spillover.

6. *Boost research and development (R&D) activities*. This might be done by encouraging the reform of research labs relevant to the activities of the specific industrial firms within Dubai zones. Although R&D has been taken out of the

proposed research framework, the empirical established research links this activity to human capital development. Therefore, the research suggests a careful exploration of the impact of R&D activities on this development for a longer period. It is an experimental exercise in order to draw the proper conclusion about this factor.

7. *Establish incubation centres within the zones in order to encourage linkage to the economic chain, cluster-specific entrepreneurs, and knowledge spillover*.

6.6 Research Limitations

An intensive focus is given to this research throughout the various previous stages. Serious concentration and focus are practiced which led to a considerable level of confidence that the research findings are reasonable and helpful to organisations and policy makers. This research at least provides a better comprehension of how human capital development is shaped in Dubai special economic zones and what drives this development. Nevertheless, it is known that almost all research suffers from limitations and concerns due to many different factors. These limitations and concerns are acknowledged by this research as follows:

a. This research took place in three main free zones in Dubai: Jebel Ali, Jumeirah Lake Towers (Dubai Multi Commodity Centre), and Dubai Financial International Center. Although other free zones exist in Dubai, there were similarities among them in almost all terms of operation. Almost all the existing free zones attract various firms with little attention to the cluster they were named for. Based on that, generalisation of the research findings was on the basis of outsized likenesses among them rather than the small differences that may exist.

b. There might be an element of bias while selecting cases studies, policy makers, and figure heads. Policy makers were selected based on their rank in Dubai government authorities or leading Human Resources forums. The research made an assumption that the policy makers had knowledge, access to top government decision-makers, and were contributing in shaping human capital development

or special economic zones in Dubai. On the other hand, the firms were selected purposely from different free zones. Various types of industry, production, and size were taken into consideration as well.

c. The research finds similarities of variables levels within the cases studies. These variables tend to be correlated within the literature review as well. The research cannot claim that cause and effect is established among the variables. However, the literature review and Cross Cases Contrast provide confidence of the level of relationship among the variables within the proposed research framework. Also, the research cannot generalise the results, however, and due the variance of firms types, structure, operational activities, and performance, there is a confidence that the results apply to similar firms within similar zones.

d. Data and information was limited. Some firms answered the questions thoroughly, others did not. Some people refused to be interviewed. However, the researcher kept on seeking data and information from various public resources such as firms' websites, articles, and media interviews in order to get over this limitation.

e. The research does not take into consideration the UAE national employees. This is based on the fact of the low number or even non-existence of UAE national employment in firms within Dubai free zones. Human capital indicator is measured among all nationalities and assumed that the same level of development will take place if UAE nationals are to be employed.

f. The research takes into consideration two factors of the six common factors which shape the differences of national culture among countries (a. Power, b. Masculinity vs Femininity, c. Uncertainty Avoidance, d Individualism vs Collectiveness, e. Long Term Orientation, f. Indulgence vs Restraint). The two factors explored in this research are collectiveness and avoidance which, on one side, relate well in the literature review to human capital development; and on the other side, United Arab Emirates among the Arab countries scores high in these two factors. Also, the main focus of this research is not the national culture

but rather the factors which affect human capital development within Dubai special economic zones, therefore the research does not tap into all of them.

6.7 Final Remarks and Future Research

It is mentioned very often throughout this research the importance of the proposed human capital indicator. This research comes up with the idea and leaves it to future researchers to investigate properly. For example, this indicator may be validated and correlated to firms' financial performance in order to establish the causality effect. Once this indicator is empirically verified, then government officials can propose programs and initiatives to look after each component. Also, pay attention to attract firms who contribute to the positive advancement of this indicator.

On the other hand, this research looks at the potential knowledge spillover towards the host economy (Dubai domestic economy) at a certain level. This is done specifically with firms who have clients or sales agent. However, the spillover effect with suppliers and clients (backward supply chain linkage) are explored at a minimum level. Future research may explore the exact level of knowledge spillover towards the firms outside the fence.

Finally, this research does not differentiate between expatriates and the UAE nationals. Therefore, future research can focus on the UAE national human capital indicator rather than how it is proposed here generally.

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Appendices

Appendix 1: Interview Questionnaire with policy makers, government representatives, firms in Dubai free zones

1.0 General Firm Information
Please introduce me to your firm details.

1.1 Firm Name : _____ 1.2 Firm Nationality : _____

1.3 Years of Operation : _____

1.4 What was the employment size in 2010:_____

1.5 **Ownership Structure of your Firm :**

(a) 100 percent foreign owned ☐

(b) 100 percent locally owned ☐

(c) Joint venture ☐ ⟶ Local equity _____%

Foreign equity _____%

1.6 What is your firm activity type_____

1.7 What was the average percentage of profit growth during the past 2 years_____%

1.8 What is the percentage of UAE nationals in your organisation

2.0 Human Capital Development Indicators
In your opinion what are the factors that contribute to characterise Human Capital in your firm

_____
_____
_____
_____

2.1 What is the importance level of the followings factors of free zone firms in developing human capital?

Human Capital Factors	**Level of importance from 1 to 5**
Firm size	
Firm activity type	
Firm performance in terms of revenue growth percentage	
Level of clustering in Free Zones (similar firms within the same area)	
Research and development activities	
Culture : groups, committees, meetings are used to reach decisions Creating rules for each and everything to avoid risk	
Technical know-how spillover	

2.2 When recruiting new staff and developing existing staff, how important are the following factors to human capital development?

Human Capital Factors	**Level of importance from 1 to 5**
Level of education	
Type of knowledge (proprietary: knowledge that does not exist elsewhere, public: knowledge available to everybody).	
Years of experience	
Ability to build up skills, and self-competence.	
Applying learnt skills. Putting things into practice	

2.3 What does your firm do to enable staff to gain knowledge and skills?

_____
_____
_____

2.4 Please illustrate the major steps that your firm follows to develop staff?

_____
_____
_____

2.5 What are the tools your firm uses in order to enable workers to apply new learnt skills?

_____
_____
_____

3. **Determinants of Human Capital**

3.1 How do you define research and development in your firm? What are the differences between R&D and continuous product/service improvement?

_____
_____

3.2 Does your firm conduct research and development? If yes would you please explain how? And how much your company spends on R&D

_____
_____
_____

3.4 Culture

3.4.1 Firms existing in free zones may get affected by way of unique business practice. Would you please explain what characterises this culture?

_____
_____

3.4.2 What is the impact of the free zone firms' culture on human capital development?

_____
_____

3.3 Clustering within the Zones (groups of companies near each other doing similar activities)
Which of the following factors are important to illustrate the clustering concept within Dubai Free Zones?

N.	Description	Rank of Importance from 1 to 5
3.3.1	Dubai Free Zones are to attract similar industries to be grouped within the specific zones.	
3.3.2	Firms choose to operate in this zone because of the existence of similar industries.	
3.3.3	Firms in Dubai Free Zones are well- connected to suppliers/buyers locally.	
3.3.4	Dubai Free Zones act as the base for similar firms to interact with each other collaboratively	

Other, please elaborate:

_____
_____
_____

3.5 Knowledge Spillover.

3.5.1 How do firms in the free zones learn from each other?

_____
_____
_____
_____

3.5.2 How do firms inside the zone exchange opinions about new technologies? Are there formal or informal channels of interaction among them?

_____
_____
_____
_____

3.5.3In your opinion, rank the importance of the following factors which may facilitate technical know-how spillover?

Human Capital Factors	**Level of importance from 1 to 4**
Level of competitiveness	
Labour mobility	
Linkage to suppliers/clients	
Applying international quality standards	

Other, please elaborate:

_____
_____
_____
_____
_____

I would like to thank you very much for your efforts in filling out the questionnaire. Your response is so important and will be treated with total confidentiality. Should you need any further information about the research, please feel free to contact the undersigned.

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Appendix 2: Interview Questionnaire Firms within the zones (Case Studies)

3.0 General Firm Information

1.1 Firm Name : _____ 1.2 Firm Nationality : _____

1.3 Years of Operation : _____

1.4 Employment size in 2010: _____

1.5 **Ownership Structure of your Firm :**

(a) 100 percent foreign owned ☐

(b) 100 percent locally owned ☐

(c) Joint venture ☐ ⟶ Local equity _____%

Foreign equity _____%

1.6 Firm license type_____

1.7 Average percentage of profit growth during the past 2 years_____%

4.0 Human Capital Development Indicators

2.1 Please give the approximate percentage of workers according to educational level in your firm in 2010

Level of Education	**Emirati**	**Non Emirati**
With post-graduate education		
With post-secondary education		
With secondary education		
With less than secondary education		
Total percentage	100%	100%

a. Most people on post graduate then the company = 4
b. Most people on post-secondary education =3
c. Most people with secondary education =2
d. Most people with less than secondary education = 1

4.1 Results x 25 x 20% to reach 100% indicator.
Except if organisation is found to be 4, then 4 x 25 = 100 x 20% = 20

2.2 Please give the approximate average years of workers experience according to educational level in your firm in the year 2010

Level of Education	**Average years of workers experience**	
	Emirati	**Non-Emirati**
With post-graduate education		
With post-secondary education		
With secondary education		
With less than secondary education		

2.2 Average experience x 10 x 20% weight.

2.3 Knowledge Accumulation

- ***In your firm, to what extent do you agree with the following statements:***

		Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
2.3.1	Employees undergo job specific formal training.	☐	☐	☐	☐	☐
2.3.2	Training is considered as an important strategic function with an annual formal budget.	☐	☐	☐	☐	☐
2.3.3	Employees have the necessary manuals, tools, and information they need to do their jobs.	☐	☐	☐	☐	☐
2.3.4	Teamwork is encouraged and facilitated.	☐	☐	☐	☐	☐
2.3.5	Best practices and tips are shared, improved, and circulated across departments.	☐	☐	☐	☐	☐

2.3 Knowledge Accumulation Results x 4 to reach 100 indicator x 20% weight

2.4 Building Competence

- ***In your firm, to what extent do you agree with the following statements:***

		Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
2.4.1	Employees are encouraged to come up with ideas, find new and better ways to do work.	☐	☐	☐	☐	☐
2.4.2	Employees have formal development plans in place, and they use those plans to achieve their career goals.	☐	☐	☐	☐	☐
2.4.3	Leadership behaviour consistently demonstrates that learning is valued.	☐	☐	☐	☐	☐
2.4.4	Firm has a learning management system which includes features such as content management, skill or competency management.	☐	☐	☐	☐	☐

2.4 Building Competence Results x 5 to reach 100 indicator then x 20% weight

2.5 Bridging the Know-do Gap

- ***In your firm, to what extent do you agree with the followings statements:***

		Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
2.5.1	Firm does its best to equip staff with technical knowledge that is not available elsewhere.	☐	☐	☐	☐	☐
2.5.2	Staff apply learnt techniques in their day to day assignments.	☐	☐	☐	☐	☐
2.5.3	Learnt knowledge, skills and training outcome are implanted in processes product/service development	☐	☐	☐	☐	☐

2.5 Bridging the Know–do Gap Results x 6.67 to reach 100 indicator then x 20% weight

Human Capital Index = Formal Education + Experience + Knowledge Accumulation + Building Competence + Bridging Know-Do Gap

3. **Determinants of Human Capital**

3.1 Culture

-Collectiveness

- ***In your firm, how important would it be to:***

		Utmost importance	Very Important	Of moderate importance	Of little importance	Of no importance
3.2.1	Establish committees and teamwork to reach decisions.	❑	❑	❑	❑	❑
3.2.2	Distribute responsibilities among group of people.	❑	❑	❑	❑	❑
3.2.3	Seek approval and support for own work.	❑	❑	❑	❑	❑
3.2.4	Hold prolonged and extensive meetings to discuss objectives progression.	❑	❑	❑	❑	❑

Collectiveness Indicator = (3.2.1+3.2.2+3.3.3+3.3.4) x 5

- Avoidance

In your firm, to what extent do you agree with the following statements?

		1Strongly Agree	2Agree	3Undecided	4Disagree	5Strongly Disagree
3.2.5	Management decisions, and practices are always clear	❑	❑	❑	❑	❑
3.2.6	There is a tendency to formulate structured policies, procedures and rules to avoid risk.	❑	❑	❑	❑	❑
3.2.7	Good managers are those who always adhere to companies' policies and procedures.	❑	❑	❑	❑	❑
3.2.8	Rules are very important even though they may limit the individuals to come up with new initiatives	❑	❑	❑	❑	❑

Avoidance Indicator = (3.2.5+3.2.6+3.2.7+3.3.8) x 5

3.3 Level of Clustering

-To what extent do you agree with the following statements?

		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
3.3.1	Dubai Free Zones attract similar industries to be grouped within the specific zones.	☐	☐	☐	☐	☐
3.3.2	Our firm chose to operate in this zone because of the existence of similar industries.	☐	☐	☐	☐	☐
3.3.3	Firms in Dubai Free Zones are well connected to suppliers/buyers locally.	☐	☐	☐	☐	☐
3.3.4	Dubai Free Zones act as the base for similar firms to interact with each other collaboratively	☐	☐	☐	☐	☐

3.3. Level of Clustering= Results x 5

3.4 Spillover

3.4.1 To what extent does your firm face competition with other firms within the zone?

☐ None ☐ Moderate ☐ Stiff ☐ Very Stiff

0 2 3 5

- ***How important is it for your firm to***:

		Utmost Importance	Very Important	Of Moderate Importance	Of little Importance	Of no Importance
3.4.2	Benefit from the new recruits hired from similar firms.	☐	☐	☐	☐	☐
3.4.3	Benefit from applying international quality standards.	☐	☐	☐	☐	☐
3.4.4	Consider dealing with only suppliers who are applying international quality standards.	☐	☐	☐	☐	☐
3.4.5	Develop joint ventures with its buyers/distributors	☐	☐	☐	☐	☐
3.4.6	Provide advice and experience to its buyers/suppliers.	☐	☐	☐	☐	☐

-How does your firm benefit from other firms in the Free Zones?

		Ranking by Importance					
3.4.7	Improving your products, develop new products, copy/imitate their products etc.	0	1	2	3	4	5
3.4.8	Improve processing techniques, quality control, upgrade equipment.	0	1	2	3	4	5
3.4.9	Undertake organisational changes for better management	0	1	2	3	4	5
3.4.10	Form groups of similar firms with similar interests in new technologies	0	1	2	3	4	5

Spillover indicator = (3.4.1+3.4.2+3.4.3+3.4.4+3.4.5+3.4.6+3.4.7+3.4.8+3.4.9+3.4.10) x 2

_____End

Results Groups

1	**0-20**	**Indicators are Demonstrated at an Extremely Low Level**
2	**21-40**	**Indicators are Demonstrated at a Low Level**
3	**41-60**	**Indicators are Moderately Demonstrated**
4	**61-75**	**Indicators are Fairly Demonstrated**
5	**76-90**	**Indicators are Highly Demonstrated**
6	**91-100**	**Indicators are Demonstrated at an Extremely High Level**

Appendix 3: Interview Questionnaire to Validate Human Capital Indicator

Firm Type : _

Total Number of Employees : _

Location : _

Type of Activity : _

Human Capital Index is a proposed component of the following variables:

A. Education Level
B. Experience Level
C. Employee's level to accumulate knowledge
D. Employee's ability level to build competence
E. Employee's level to bridge the know-how gap

1. In your opinion, do the above components represent human capital?

---

2. Similar weight is been used for each component, what do you think of that?

---

3. The following threshold is been used to classify the answers, what is your opinion on that?

0-20	*Indicators are Demonstrated at an Extreme Low Level*
21-40	*Indicators are Demonstrated at a low Level*
41-60	*Indicators are Moderately Demonstrated*
61-75	*Indicators are Fairly Demonstrated*
76-90	*Indicators are Highly Demonstrated*
91-100	*Indicators are Demonstrated at an Extreme High Level*

---

4. Does the proposed index measures what it meant to measure?

---

5. In your opinion, is there any other component left out which needs to be considered within the index?

---

6. In your opinion, do the index components relate to companies within Dubai Free Zones?

---

7. How best the index can be improved further?

I would like to thank you very much for your efforts in filling out the questionnaire. Your response is so important and will be dealt with top confidentiality. Should you need any further information about the research, please feel free to contact the undersigned.

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Appendix 4 : Research Statement

To whom it may concern

Mr. Fadi Al Sakka is conducting a study about UAE special economic zones effects on human capital development. The researcher needs to obtain opinion about various issues which will help me to establish an understanding of the factors that make up human capital accumulation. Furthermore, what drive this accumulation in the free zones. The drivers can be explained by realizing the level clustering in free zones, firms' "investment" in terms of capital, research and development, "size" in terms of employment, and the extent of knowledge spillover among firms.

The information provided will be entirely confidential. It will be only used for the purpose of this study where no firm name or individual will be identified. If you have a question, please feel free to contact me or else Prof. Mustafa Al Shawi at Salford University, UK (m.a.alshawi@salford.ac.uk)

The results which will help to obtain a better picture about the subject and will be an enabler to come up with valuable suggestion to policy makers.

Additionally, The University will be happy to provide a summary of the results if require by officially writing to directly Prof. Mustafa

Again, thank you so much for your time spent sharing your opinion

Best Regards

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