Digital Business Evolution: lessons from a decade of KTP industry projects

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Abstract

Digital transformation is a daunting process for many business leaders, who sometimes find themselves in unfamiliar territory. This challenge is particularly prominent for resource stretched and multi skilled small and medium sized enterprises (SMEs). This paper provides a context for this on-going discussion, and drivers for transformation will be discussed together with the challenges business leaders are currently facing. Following this, we argue that a digital business can be viewed as an information system (IS) with six common subsystems; people, data, hardware, software, process and communication, that must interconnect effectively. Finally HINGE the project planning approach is introduced and how twelve knowledge transfer partnerships informed this approach. The paper highlights that digital transformation is becoming a necessity and offers a phased approach that enables business leaders to construct a systematic project plan that enables their enterprise to reach new levels of digital maturity in a holistic and meaningful way.

Keywords: digital transformation, digital innovation, strategic change, SMEs, KTPs

1. Introduction

Digital transformation is a daunting process for many business leaders, who sometimes find themselves in unfamiliar territory. This challenge is particularly prominent for resource stretched and multi skilled small and medium sized enterprises (SMEs). A recent Accenture report (2018) claims that 95% of business leaders have aspirations to grow their digital maturity by investing into structure, people, processes and applications. Digital transformation is becoming a necessity and not engaging with this process could lead to a demise of an organisation (Evans, 2017). Many practitioners and consultant research findings are reporting a similar story of businesses being in various stages of transformation (Heinze et al, 2016) and yet business leaders seem to be in a state of perplexity on exactly how to fully embrace and exercise the shift to being digital. It can be argued that many businesses are currently at a transformational intersection. The surge of digital technologies and the fusion of once disparate technologies such as the Internet of Things, Artificial Intelligence, Machine Learning, Big Data, Virtual Reality and Augmented Reality, the potential of interconnectivity are forming the 'perfect storm'. The resulting tsunami of change is radically disrupting and perplexing the business landscape and being likened to a similar state of flux that the industry revolution brought. Additionally, many of the named consultant groups are stating, that if businesses have not already started thinking and doing transformation, they will be left behind, given the predicted rapid change.

The aim of this paper is to present a new planning model for digital transformation, which has been informed by a research team's work, of over a decade, with SMEs and Knowledge Transfer Partnerships (KTP). We argue that companies that engage with KTPs are embarking on a transformational process with digital underpinning associated activities. The authors have formed part of the academic team on 10 KTPs and 2 Knowledge Exchange Projects (KEPs) over the past decade, with one author also being an associate KTP Graduate. The authors have amassed a great deal of expertise on successfully managing the transformation process within SMEs environments. More recently, on the last two KEPs that the team are working on, there was a realisation by the team that a reusable model had organically emerged. With further development the HINGE project planning model was finalised. The structure for this work in progress

paper is to initially provide a context for this on-going discussion, the drivers for transformation will be discussed together with the challenges business leaders are currently facing. Following this, we argue that a digital business can be viewed as an information system (IS) with 6 common subsystems; people, data, hardware, software, process and communication, that must interconnect effectively. Finally HINGE the planning model is rationalised and justified followed by proposed future activities that will validate this research.

2. Context for Transformation

It could be an argued that the current digital transformation noise can be likened to 1990's MIT's Professor Mike Hammer and Boston Consulting Group's James Champy's approach to creating a competitive advantage via Business Process Re-engineering (BPR). Fundamentally the drivers for BPR are not dissimilar for business looking at transformation using digital technologies, improving customer experience, overall improving internal processes and ultimately reducing operational costs. A major impact of reducing costs when adopting BPR and streamlining and highlighting redundant processes was reduction in headcount and on the flipside a huge growth in the managing consultant sector. Hammer (1990:1) observed *'The usual methods for boosting performance—process rationalization and automation—haven't yielded the dramatic improvements companies need. In particular, heavy investments in information technology have delivered disappointing results—largely because companies tend to use technology to mechanize old ways of doing business. They leave the existing processes intact and use computers simply to speed them up'*. It is worth noting here that we do not apologise for this lengthy quote rather we want to highlight a number of insightful observations Hammer made almost 30 years ago, especially the issue that investment in IT was not being effective given that rather than radical redesign of processes, existing processes were being automated. Fellow MIT researchers (Soule et al 2016:3) are currently tackling a similar dilemma of 'Enterprises aiming to transform themselves through digital often focus on technology solutions to achieve specific tactical objectives...shows that value comes not from adopting technology, but from using technology to transform the way a company does business'. Almost three decades on the Holy Grail is still being pursued under a different guise of digital transformation as businesses are still looking for a way to perform better, reduce costs, and enhance customer engagement. For the purpose of this paper we situate transformation within a

SME context though it is worth highlighting, at this point, that other sectors such as health, government agencies and third sector are also concerned with this transforming.

Digital transformation is either happening in many organisations and if not happening yet it is definitely being considered (Evan 2017). Research by the larger managing consultancies, the likes of, Accenture's (2017) or Gartner are reporting on a number of common challenges that many businesses are facing regardless of their size. Harvard Business Review have conducted a recent survey (2017) and findings indicate that the inability to experiment quickly, legacy systems and existing siloed working practices are preventing agility and the ability for an immediate response to achieve a sustainable competitive advantage. There is a need to react in a rapidly changing competitive and emerging landscape. Additionally they found a number of cultural issues that are hindering the transformation process, such as a risk averse attitude, resistance to change, a lack of vision for digital and practical barriers were a lack of skills and talent, cyber security and insufficient investments.

3. Digital Business as an Information System

Not wanting to contribute to an already contested debate regarding defining what an 'Information Systems' is, we turn to Ray Paul's (2010: 96) discussant paper on this often emotive topic. Paul makes the argument that it is 'unclear what the meaning of an Information System is, and different meanings have different interpretations for different adherents'. As IS researchers and practitioners, we are sympathetic with this worldview, and have 'tended' many different evolving gardens to understand the dynamic nature of Information Systems. However what is interesting for this paper is Paul's (2010:97) analogy of 'IS as a model… a model of the organisation at some level of abstraction, approximation and aggregation' as this is a similar argument that is being made in this paper, that a digital business is compared to an IS. Both Paul's and our proposed model (figure 1: The Digital Business as an Information System) are comparable in the principle that the IS as a model of an organisation will have to change or transform as the business flexes and shifts while accommodating internal influences and external forces. Like many researchers across many disciplines there are certain concepts, terminologies that we include and concur are part of our professional discourse. Such concepts as 'knowledge', 'system', 'digital' or 'information' are used with a universally believed definition attached. The truth is that we 'conceive of them like of objects that we can store, process and retrieve in material form' (Werner 2001:55). The

reality is they are not objects but nebulous entities that are shaped, informed, developed by a multitude of interactive, connected subjects (Nissen 2001).

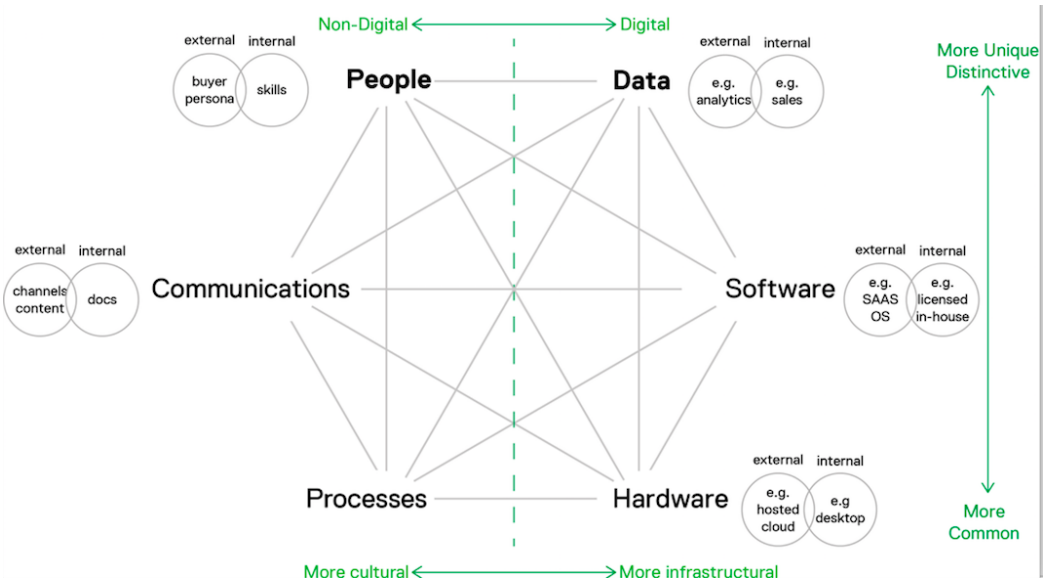

Figure 1: The Digital Business as an Information System Model

We further argue the need to highlight that such concepts are fluid and in a constant state of change especially in this current period of digital transformation (Evans 2017) and those changes are influenced from both external and internal forces. The proposed model The Digital Business as an Information System (Fig 1) brings together six entities borrowed from a traditional Information System model that we suggest are found in a digital business; **people** internal needs for the right talent and skills, also a need for a digital culture, external pressures come from customers and gaining an holistic insight of the customer; **communications**, internal communication channels and documentation with external channels and content; **processes** being agile enough to adopt new and emerging business models, form the non-digital and cultural side of the model. This structure mirrors three digital entities of a digital business; **data** with external needs growing data analytics, visualisation and internal needs to acquire a data-centric view of IS/IT; **software** brings connectivity and the traditional models of building external partnership with enterprise systems are still required compared to licensed in-house applications, with an awareness of consequences of staff replacing Bring Your Own Devices (BYOD) with Bring your Own Apps (BYOA); **hardware** is constantly reviewed as cloud becomes more sophisticated, data storage and aggregation and workspaces changes and staff working environment globalises and time becomes fluid. It can be argue that businesses are gaining digital capabilities, however the challenge is, how do you change the inherent structure of a traditional business (Evan 2017)? We propose that the Digital Business as an Information System model provides a

digital centric lens for business stakeholder when considering the transformation process.

4. HINGE: Project Planning Approach for Digital Transformation

In this section we introduce the HINGE: Project Planning Approach (see Fig 2) that offers a phased methodology for SMEs undertaking digital transformation that has emerged from lessons learned by the combined experiences of the research team from a decade of working on Knowledge Transfer Partnerships (KTPs) industry projects. This approach is situated within an SME context with an acknowledgement of the constrained environment that these size businesses operate within alongside the need to adopt an agile attitude in order to keep pace with external changes and drivers. This emerging digital transformation planning approach has been co-constructed from the research team's collaboration across twelve KTPs and Knowledge Exchange Projects (KXPs). Knowledge Transfer Partnerships were established over 40-year-olds and are government-funded schemes to facilitate innovation in UK businesses. They were part of the Department of Trade and Industry that was replaced by the Department of Innovation, Universities and Skills. The KTP partnership includes a team of academics, a company with a business problem and a graduate associate who works on a typically two year discrete project to solve the business problem. An ultimate goal of a KTP is wealth generation resulting from enhancing the competitiveness and productivity of the company. Recently KXPs have been introduced by a number of universities and have the same structure of KTPs but are Higher Exchange Internal Funded (HEIF) projects. Table 1 lists the companies and time frames of the KTPs/KXPs (please note that this data in in the public domain) that research team have work upon over the past decade and each projects has included the application of technologies in the transformation process.

	KTPs and KXPs	Year
1	Reputation Consultancy (KXP)	2018- 2019
2	Hydro-X (KXP)	2017-2018
3	Sigma Ltd	2014 - 2016
4	Pennine Telecom Ltd	2014 - 2016
5	Tameside Council	2013-2015
6	Freeclaim / Tranters Solicitors	2012

7	Fast Web Media	2011-2014
8	ASC Ltd	2010
9	Cetus	2009 -2011
10	BETA Group Ltd	2009-2011
11	Pressurelink Contracting Ltd	2009
12	Foundry Ltd	2009-2011

Table 1: KTP and KXP Project

The combined experiences of working with 12 KTPs/KXPs and observations made of each business faced similar challenges in how to digitally transform their business in a practical manner. The research team realized that no matter the sector or business problem that was being resolved through the KTP process, a pattern of common stages emerged. The project planning for digital transformation tends to follow a five-stage cycle, the HINGE: Project Planning Approach, **H**orizon scanning, **I**nternal auditing, **N**ew business model creation, **G**ap analysis, and **E**valuation of options. This approach enables business leaders to construct a systematic project plan that enables their enterprise to reach new levels of digital maturity in a holistic and meaningful way.

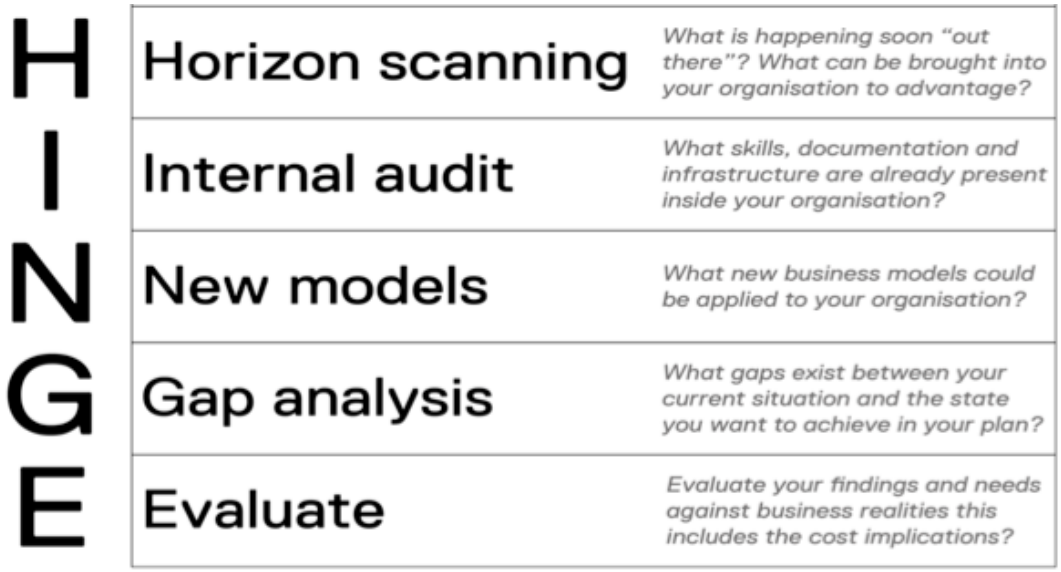

Figure 2: HINGE: Project Planning Approach

The HINGE model as proposed in (Heinze et al, 2018) outlines the key stages of digital transformation as follows:

- Horizon Scanning - evaluation of the external environment, seeking out disrupters, accelerators and innovations that may act as an external stimulus for change within the organisation's system.
- Internal Audit - auditing of the internal environment to understand influential external changes and the knowledge of the value created by these changes. An emphasis is made on the need to understand the internal challenges that may impede businesses ability to meet external drivers for change.
- New Models – developing a responsive business model that may not require radical change but its does require the willingness to change
- Gap Analysis - the gap between current and future digital business maturity stages and business models are identified, and plans made to bridge those gaps are formed.
- Evaluation of Options - The feasibility of the various options are assessed against the priorities that have been identified and these options are tested and evaluated

The research team is currently collaborating on academic teams for two KXPs that are at different stages of the HINGE: Project Planning Approach, one is the Gap Analysis stage and then other is at the Internal Audit Stage.

5. Future work

The team are currently working on two case studies SMEs with polar opposite businesses from the sector, size, business culture, heritage, structure, different products and services. The HINGE: Project Planning Approach has being adopted for both of these KEPs and current and future work involves the monitoring, observation and practical application of HINGE. These successful digital transformation case studies will then provide empirical evidence and validate the HINGE staged approach.

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