

*INVESTIGATING THE INTER-RELATIONSHIP BETWEEN ORGANIZATIONAL CAPABILITIES,
DIGITAL TRANSFORMATION & DIGITAL BUSINESS STRATEGY*



**INVESTIGATING THE INTER-RELATIONSHIP BETWEEN ORGANIZATIONAL
CAPABILITIES, DIGITAL TRANSFORMATION & DIGITAL BUSINESS STRATEGY**

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DECLARATION OF ORIGINALITY

I, Ayesha Nadeem declare that this thesis, submitted in fulfilment of requirements for the award of Master by Research in Computing Science, at the faculty of engineering and IT at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise references or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis. This document has not been submitted for qualification at any other academic institution. This research is supported by the Australian Government Research Training Program.

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ABSTRACT

Digital transformation is widely affecting various industries particularly healthcare, telecommunications, automotive, banking and manufacturing sectors. Recent research on digitalization provides evidence that numerous organizations face abundant threats and opportunities in deploying digital transformation. It is found that using the fit-for-purpose organizational capabilities is critical for organizations to effectively pursue the digital business strategy leading to requisite digital transformation; this would in turn assist organizations in gaining competitive advantage and access to new sources of revenue that are crucial for today's organization survival. While some research has previously discussed the importance of organizational capabilities for digital transformation, they have failed to offer a comprehensive picture of the organizational capabilities essential for deploying a digital business strategy and how it may lead to a fruitful digital transformation. More precisely, very few studies have elaborated on the interrelationship of organizational capabilities, digital business strategy and digital transformation concerning business performance.

The objective of this Master by Research study is:

- (i) to understand what digital transformation, digital business strategy, and organizational capability entail, and
- (ii) to propose a framework for digital transformation which describes how organizational capabilities are related to digital business strategy and digital transformation.

The framework would offer organizations and the researchers an approach for examining and evaluating the issues with previous /traditional studies and present an approach/practice for digital transformation.

The research methodology for uncovering the objectives comprises two parts: (i) systematic literature review, and (ii) interviews with experts. The first part of the methodology which is a systematic literature search includes a review of top 16 Information System journals approved from The Australian Council of Professors and Heads of Information System (<http://www.acphis.org.au/v2wp/rank-order/>). The systematic literature review initially resulted in 292 articles based on the time frame 2000-2017, out of which 28 were selected for the analysis based on relevance of their full text to this research. The main outcome of this

systematic literature review has been a conceptual framework of inter-relationship between organizational capabilities, digital business strategy, and digital transformation. This framework also demonstrates the underlying dimensions of each of these three concepts.

The second part of the methodology is expert's interviews. To evaluate the utility of the framework semi-structured interviews were carried out. The second part of this research involved interviewing 7 experts from the academia and industry and a focus group to elaborate my conceptual framework, and to assess validity of my findings. All interviews with experts and focus group were then transcribed in Nvivo. The interviews assisted me in developing the framework reliability. The data gathered from the interviews was analysed and eventually validated the findings from the systematic literature review and the framework for the professional use in industry as well as for researchers from academia. Finally, research limitations and implications were discussed, and a plan for further extension of this study through a PhD study was developed.

KEYWORDS: Digital transformation, Digital business strategy, Business digitalization

CHAPTER 1. OVERVIEW

1.1 INTRODUCTION

Digital transformation is widely affecting various industries particularly healthcare, telecommunications, automotive, banking and manufacturing sectors. It enables innovation practices, improved designs, and new business models, and shapes how organizations create value on the Internet (Gudergan & Mugge 2017). Companies can leverage robust customer relationships and increase cross selling opportunities through successful digital transformation (Weill & Woerner 2015, Westerman & Bonnet 2015). Digital transformation is not solely about acquiring and deploying the fit for purpose technologies; rather it is a significant approach in tackling managerial issues such as human resources, business efficiency, and business process redesign (Li et al. 2017).

Digital transformation brings value for the society at large by enabling more effective public administration processes and services in terms of providing better and more effective health care as well as effective city management on a large scale; however, it also offers a few challenges in terms of privacy and data protection and the related cost (Reddy & Reinartz 2017). Companies these days have to transform themselves for their survival. Companies need to rethink what customers value the most and should be creating such operating models that take advantage of the modern technology for achieving competitive advantage (Vey et al. 2017).

Digital transformation is likely to bring some tangible and intangible value to the organization (Reddy & Reinartz 2017). According to Hess et al. (2016) digital transformation has become a high priority on the leadership agenda of many organizations and up to 70% of reported organizational transformation practices fail to meet organizational ambitions, the timeline or both (Kane et al. 2016). This emphasizes the motivation of my research in this field. This research would help the organizations and researchers to overcome the challenges and failures in this process by deploying the set of dimensions of digital transformation, digital business strategy and organizational transformation. This research would also provide the framework that shows the process of digital transformation and how organizational capabilities influence digital business strategy and digital transformation.

Given the above, this research focuses on understanding organizational capabilities as an essential basis for making a living for an organization and as the external environment changes due to changes in digital technologies the ordinary capabilities would need to be reconfigured by dynamic capabilities that would be needed for attaining digital transformation. Yet, prior research in IS has not clearly identified the role of organizational capabilities in deploying digital business strategy that would be useful in pursuing digital transformation by systematically reviewing publications in major IS journals. Moreover, the inter-relationship between them isn't clearly specified/noted in past literature.

1.2 RESEARCH BACKGROUND

From the past literature, it is evident that every organizational transformation involves prominent changes in operations, business processes, exposing to new risks and threats and management changes (Li et al. 2017, Chen et al. 2014, Vankatraman 1994); however digital transformation involves the structural changes, new digital artefacts, removing silos through data integration and high-tech rooting of IT in business processes & organizational capabilities (Zhou 2014, Li et al. 2017 & Vankatraman 1994). Therefore, it is very important to understand “how to transform” an organization effectively by recognizing the potential organization capabilities required for deploying a digital strategy that would lead to digital transformation. It has also been of interest to industry practitioners and academic researchers that continuous innovation and competitive pressures demand that firms repetitively adapt the digital artefacts to changing markets and economic technological circumstances (Woodard et al. 2013).

Nowadays companies that fail to note the need for digital transformation would most likely be left behind in the dust (Sebastian et al. 2017). The digital transformation is a mandatory change processes which carries a multitude of challenges for organizations which need to be tackled in a proper and efficient way (Vey et al. 2017).

For preparing for a digital future, apart from focusing on the prosperous digital transformation, developing digital capabilities and aligning them with organizational goals is essential (Kane et.al 2016, Svahn et.al 2017, Weill & Woerner 2015). Digital technologies are a key enabler of organizational capabilities (Setia, Venkatesh & Joglekar 2013) and enable digital transformation. The importance of the right set of digital technologies has further evolved as one of the leading consulting companies Mc-Kinsey & Co mentions that becoming a leader in

digital innovations would boost the Australian economy by \$ 140 billion to \$250 billion over the next eight years. This means that a careful selection of digital technologies is essential.

It is highly appreciated if organizations can work on their strengths and build distinctive capabilities by focusing on their natural strengths rather than fixing their weaknesses (Coyle 2017). Hence, it is significant to first classify the range of the capabilities that are recommended for pursuing digital transformation. Therefore, to study the organizational capabilities required for the digital transformation is prudent and essential. Furthermore, for effectively surviving in this digital innovation era, organizations need to develop new capabilities yet preserve the established innovative practices (Svahn et al. 2017). Moreover, organizations often require to cultivate new capabilities even after digital transformation for competing in new and changing markets (Li et al. 2017).

The focus of this research is looking at the organizational capability factor for digital transformation. This study would provide an effective measure to address the importance of organizational capabilities in pursuing a digital business strategy leading to digital transformation. It would also list the organizational capabilities dimensions for pursuing a digital business strategy leading to effective digital transformation. Hence, this study would fill the gap of past literature in this field.

1.3 RESEARCH SIGNIFICANCE

Understanding the business digitalization is complex as well as difficult, and researchers have repeatedly called for more research related to digitalization and digital transformation in the IS field (Sia, Soh & Weill 2016, Hess et al. 2016, Bharadwaj et al. 2013, Sambamurthy et al. 2013, El Sawy et al. 2016, Keen & Williams 2013, Markus & Loebbecke 2013). This topic has not been investigated thoroughly in recent journals, publications and scientific conferences (Gudergan & Mugge 2017).

As mentioned by Kohli & Johnson (2011) business digitalization has changed a firm's operations within the industry. The operations of an organization in this digital era have to be digital and agile in accordance with the other departments of the organization and with the external environment. According to Hess et al. (2016) the digital transformation has become a high priority on leadership agenda of many organizations, with more than 90% of the business leaders in UK and US considering that the IT and digital technologies count to an increase in strategic contribution to the overall business performance in coming decades. Furthermore, the

power of digital technologies does not lie in the technologies individually; instead, it is the integration of the technologies for transforming their business and how they work (Deloitte University press 2012). For effective digital transformation, the organizations need to be aware and engaged in the right set of characteristics of digital business strategy and organizational capabilities. Moreover, the study of digital business strategy and digital transformation requires some concepts and methods for achieving sustainable competitive advantage, which needs to be researched and studied for further professional and academic study is of great significance. Digital transformation is affecting the entire segments of our industry particularly healthcare, medicine, automotive, banking and manufacturing sectors. It enables innovation, improved design, diverse culture and new business models; moreover, digital transformation brings significant changes in the patterns of how organization create value (Gudergan & Mugge 2017). It is mentioned in the Harvard business review by lansiti & Lakhani (2014) that digital transformation changes the value captured by the organization (how money is created) and the value created for its customers (customer value proposition). It is not for organization that are more advanced in technologies; rather, it is for all kinds of industries (Gudergan & Mugge 2017).

As the importance of this field has recently come into the limelight various government departments of different countries are working collectively for developing a fruitful strategy that leads to a smooth and fruitful digital transformation. Moreover, it is noted in past literature that digital transformation is more of a managerial issue than a technological issue (Li et al. 2017). Digital transformation is not solely about acquiring and deploying the fit for purpose technological tools; rather, tackling the managerial issues effectively such as installing right set of organizational capabilities, precise human resources, redesigning business processes (Li et al. 2017) and taking the right decisions at the right time is imperative in this process. Moreover, the top management and dynamic managerial capabilities promotes digital transformation and improves a firm's performance. Thus, it would be vital to study the how and which organizational capabilities relate with digital business strategy leading to pursuing digital transformation.

According to Lansiti & Lakhani (2014) acquiring the right set of capabilities is the foremost step in transforming the organization. All organizations look for developing and introducing new capabilities for their organizations for achieving a competitive edge and for their survival in today's digital world. According to one of the leading consulting groups McKinsey & Co.

(2010) building organizational capability such as leadership development and talent management is one of the top priorities for most of the companies. Furthermore, the importance of digitalization in today's world emphasizes the need to study and develop the organizational capabilities for pursuing requisite digital transformation. Opportunities of digital transformation was mentioned by Deloitte in one of its University press articles, stating that the digitally maturing organizations are four times more likely to provide employees with needed skills than are organizations at the lower end of the spectrum.

At present the academic literature hasn't presented the inter-relationship between the three concepts i.e. digital transformation, digital business strategy and organizational capabilities as shown in figure 1. The dimensions they entail are hard to visibly distinguish from each other, in addition to how organizational capabilities are related to digital business strategy which could lead to digital transformation. Therefore, a research that represents their inter-relationship and the dimensions they entail is of significant importance.

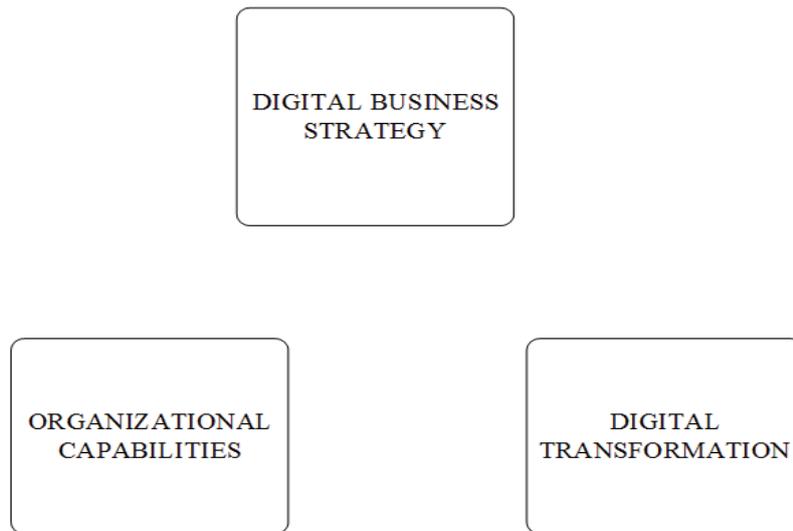


Figure 1. The three concepts

In the existing literature it is noted that many factors like use of technology (Hansen, Kraemmergaard & Mathiassen 2011), simplifying of IT (Grebe et al. 2016), digital leadership (Danoesastro, Freeland & Reichert 2017), unique strategy & IT initiative & organizational culture reshaping (Gudergan & Mugge 2017, Lansiti & Lakhani 2014), digital technologies (Hess et al. 2016), eliminating silos through data integration (Bharadwaj et al. 2013), digital capabilities (Kane et al. 2016, Svahn et al. 2017, Weill & Woerner 2015), right set of organizational capabilities (Li et al. 2017, Svahn et al. 2017), precise human resources &

redesign business process & management changes (Li et al. 2017, Karami & Walter 2015) & requiring leaders to scrutinize the digital initiatives, innovation speed (Lansiti & Lakhani 2014) could assist an organization towards digital transformation. Moreover, the organization pursuing digital transformation need to have a digital strategy (Ross, Sebastian & Beath 2017, Bharadwaj et al. 2013, Weiss et al. 2016). Furthermore, there is a growing need to understand the link between the organizational capabilities and company's performance (Gelhard & Delft 2016).

The significance of digital transformation has been discussed by numerous scholars and in many upcoming business events. Digital transformation has received a lot of effort in the last two decades (Li et al. 2017). It is also published in ACS Information age (2017) the Australian government is focusing its attention on developing and designing digital economy strategy for addressing the public and private sector and SME's for addressing the digital divide for the country's strength, developing world's leading digital businesses. This would also enable the government to open up new jobs in the market by changing the digital infrastructure for digital transformation. According to ACS (2017) the strategy that seizes the benefits of digital transformation is one of the fundamental elements of today's economy. This also highlights the significance of research in this field.

The review of the past literature shows the importance of this study and highlights the complexities that have currently been faced by numerous organizations, calling for further research in this area.

Therefore, this research in the first step conducts a systematic literature review for proposing a conceptual framework showing the inter-relationship between organizational capabilities, digital transformation and digital business strategy which would expand the understanding of organizations pursuing digital transformation and provide new insights into the transformation. Secondly, this study analyse and explain the proposed framework from the experts' perspective and experience for providing in-depth concepts and description. It is noted in past literature that frameworks are considered as essential guides for managers and researchers (Li et al. 2017). During the interview, the discussion on general dimensions and characteristics of the framework based on the interviewee's specific experience was carried out-an approach that increases the validity of the framework. As mentioned by Drever (1995) the last question was open-sweeper which ensured the interviewee got the chance to answer further questions or to seek understanding of any uncovered question. This process further helped the interviewee to

rethink and evaluate their practices in terms of organizational capabilities role in digital transformation.

These two steps have ensured the development as well as validation of a novel framework for understanding the inter-relationship between digital transformation, digital business strategy, and organizational capabilities. With the framework, I hope to create a comprehensive description that would make sense of digital transformation process and how it would take place. I offer a rich picture of the relationship and how the constructs of this research are related and how it drives digital transformation. In doing so I would unfold the black box and shed light on this emerging and complex issue. Although much research has been carried out in the past on digital transformation, I would be displaying the process and technique from a different angle and perspective, which would further assist the organizations in driving digital transformation.

1.4 RESEARCH OBJECTIVES

The objectives of this research outline what this study aims to achieve. The objectives of this research align with the research questions that stress the importance of organizational capabilities in an organization journey towards digital transformation. The objectives of this research are:

- i. to understand what digital transformation entails
- ii. to understand what digital business strategy entails
- iii. to understand what organizational capability entails, and
- iv. to investigate the role of organizational capabilities in leading an organization towards implementing a digital business strategy which further leads to digital transformation.

To understand the role of organizational capabilities in deploying digital business strategy further leading to digital transformation, it is essential to know what digital transformation, digital business strategy and organizational capabilities entail. Therefore, my first three objectives involve finding out the elements that form digital transformation, digital business strategy and organizational capabilities. Moreover, the first three objectives of this research would be answered by categorizing and listing the dimensions of digital transformation, digital business strategy and organizational capabilities.

The second objective would be explained by theorizing the framework and descriptively enlightening the relationship and by conducting semi-structured interviews with experts in academia and industry professionals. Apart from this, a qualitative method Nvivo would also be used for analysing the data from the semi-structured interviews.

To achieve the first and second objectives of this research, a systematic literature review as well as a set of interviews with experts are carried out. The selected articles from the systematic literature review are then analysed and critically evaluated following the Wolfswinkel et al. (2013) guidelines on systematic literature review method. The analyses will result in distinctive dimensions of each construct, which would further lead to the emergence of the conceptual framework.

1.5 RESEARCH QUESTIONS

For achieving the objectives of this research, the key research question of this study is to understand:

PRQ: Whether and how organizational capabilities are related to digital business strategy and digital transformation?

This question highlights and stresses the importance of organizational capabilities in organizations' digital transformation. Yet, before answering this question, a clear understanding of the three main underlying concepts needs to be established. Therefore, the following three secondary questions have also been considered in this thesis:

SRQ.1.1 what dimensions represent digital transformation?

SRQ.1.2 what dimensions represent digital business strategy?

SRQ.1.3 what dimensions represent organizational capabilities?

The first objective of this research would be accomplished by disclosing the answers of secondary research question SRQ.1.1, SRQ. 1.2 and SRQ. 1.3. The answers to these research questions would be achieved by categorizing and listing the dimensions of digital transformation, digital business strategy and organizational capabilities.

The second objective of this research would be accomplished by revealing the answer of primary research question PRQ. 1. The explanation of this research question would be carried out by developing the framework, which would lead to descriptively enlightening the

relationship leading to disclosing in what way, the organizational capabilities are related to the deployment of digital business strategy and digital transformation. The framework would offer the organizations and the researchers an approach for examining and evaluating the issues with previous /traditional studies and present an approach/practice for digital transformation.

By answering these research questions, hope to resolve the issues and clear the understanding for researchers in this field while recognizing the importance and significance of the topic for academia and industry.

1. 6 KEY CONTRIBUTIONS

In this research I have tried to fill the gaps that were highlighted in the past literature regarding the digital transformation process, specifically the role of organizational capabilities in the process of digital transformation. Following are the major contributions of this research:

- The foremost contribution of the research is that this would be an up to date research in digital transformation field as most of the research in this field is not focusing on the current constraints (Li et al. 2017).
- This research has effectively identified the specific dimensions of digital transformation, digital business strategy and organizational capabilities that were missing in the past literature. Through this research, the scholars and practitioners would be clearly able to understand digital transformation, digital business strategy and organizational capabilities dimensions.
- This is particularly the first research in this area that has been conducted using systematic literature review method. This method has been particularly valuable in identifying a set of critical dimensions that play a significant role (Abedin et al. 2013) in digital transformation process.
- Furthermore in this research the dimensions of digital transformation, digital business strategy and organizational capabilities that were identified, were then analysed by following the guidelines provided by Wolfswinkel et al. (2013)'s. This lead to the creation of a conceptual framework. Such kind of framework that explains and depicts

the inter-relationship between the digital transformation, digital business strategy and organizational capabilities has been missing in the past literature and now through this research scholars and practitioners would be able to understand the inter-relationship and the role of organizational capabilities in this process. This framework defines the digital transformation and gives a bigger picture of this process in terms of the role of organizational capabilities.

- Lastly, this research also validates the utility of the framework through semi-structured interviews with industry and academic experts and the focus group (conducted like a brain storm session). This process provided guidelines for the improvement, if required, as suggested by the experts. The interviews assisted me in developing the framework reliability. The data gathered from the interviews was first recorded in Nvivo and then analysed and eventually led towards designing of the updated framework, which would be helpful for the professional use in industry as well as for researchers from academia. Through this research, organizations would be able to deploy the organizational capabilities that would assist them in designing the digital business strategy further leading to digital transformation.

1.7 DEFINATION OF KEY WORDS

Following keywords are used in this research and below is a brief description of each of the key words used:

Digital transformation

The term digital transformation is often used but is rarely defined in the past literature and scholarly articles. In a traditional sense, digital transformation is termed as the use of computer and internet technologies for improved value creation process (Reddy & Reinartz 2017, Dremel et al. 2017). Meaning the transformation of business activities, processes and systems because of the upcoming and already existing digital technologies in the market and their impact across the society in a strategic and prioritized way. Digital transformation is the also termed as the change associated with the application of digital technology in all aspects of an organization systems and is a highly complex, companywide endeavour that is believed to affect many or all the segments of an organization (Hess et al. 2016). Moreover, digital transformation is

considered as an institutional change which is actually the combined effect of several digital innovations bringing change in the structure, value, practice and beliefs within a certain organization (Hinings, Gegenhuber & Greenwood 2018).

Digital business strategy

Sebastian et al. (2017) defines digital strategy as “A business strategy, inspired by the capabilities of powerful, readily accessible technologies (e.g. SMACIT), intent on delivering unique, integrated business capabilities in ways that are responsive to constantly changing market conditions”. This means that a digital strategy guides the organization to introduce the new value proposition by a combination of their existing capabilities and the new capabilities powered by the SMACIT technologies. Therefore the digital business strategy would initiate new capabilities within the organization that would indeed be helpful for the organization in terms of creating value for itself, customers, partners, employees and suppliers. Digital business strategy is also defined as the extent to which a firm engages in any category of IT activity (Mithas, Tafti & Mitchell 2013). Digital business strategy is also termed as an organizational strategy formulated and executed by leveraging digital resources to create differential value (Bharadwaj et al. 2013) by eliminating the organization silos through data integration of multiple functions.

Digitalization

The term digitalization reflects the way digital media and platforms influence the reconstruction of the economy, society and culture (El Sawy et al. 2016). Digitalization refers to the digital integration outside and inside of the enterprise (El Sawy et al. 2016), which leads to rewiring of the organizational structure, process technology, business strategy, business model and people elements rather than just installing apps or applications for services (Sia, Soh & Weill 2016, Hess et al. 2016).

Organizational capabilities

An organizational capability is generally considered as the ability of a company to manage its resources in such a way as to gain an advantage over competitors. Companies generally acquire

capabilities that prevent replication by the competitors further meeting the customer demands/needs (Gelhard & Delft 2016). Nowadays, it is imperative for companies to acquire the right set of organizational capabilities for fulfilling customer needs in today's world (Gelhard & Delft 2016).

Systematic literature review

Systematic literature review is recommended as a method for aggregating evidence (Kitchenham et al. 2008). Systematic literature review helps in identifying, evaluating and interpreting research particular to a specific research question or a research topic or phenomena (Kitchenham 2004). This method has been particularly valuable in identifying a set of critical dimensions that play a significant role (Abedin et al. 2013) in digital transformation process. Moreover, systematic reviews are important endeavours for any field (Webster & Watson, 2002) since they support the creation of classifications for a field and identify the areas that have been thoroughly investigated and those that need more attention (Cao et al. 2015).

Framework

It is noted by March & Smith (1995) that an “appropriate framework for I.T research lies in the design and natural science”. Prior research frameworks have characterised specific research subjects and support in identifying the set of variables to be studied further; such frameworks facilitate by suggesting interactions among specific variables (March & Smith 1995) which in this case are three constructs of this research. In this research, a framework would reconcile conflicting points of view and would represent a phenomenon or a process of digital transformation which is at this time missing in the past literature. It is noted in past literature that frameworks are considered as essential guides for managers and researchers (Li et al. 2017).

CHAPTER 2. LITERATURE REVIEW

2.1 BACKGROUND

During this era of digital age, everything we see around us is digital from cell phones to tablets, internet of things and the social media which has recently gained attention of the researchers (Schumann & Tittmann 2015). It shows how the digital world has acquired our lives indicating the significance of these technologies in real world situations. To keep for the organizations to stay updated in this digital fast moving world, it is therefore significant for them to keep themselves updated with the new innovations and developments in the world of science. As mentioned by Zhou (2013), one of the key elements for achieving strategic transformation for economic development is through constant innovations in an organization and this could only be acquired through science and technology. Earlier research focused on the significance of the enterprise systems like enterprise resource planning (ERP), customer relationship management (CRM) and supply chain management (SCM) but recently the research focus has been shifted due to the complexity the emergence of the digital era has introduced involving internet of things, big data analytics and various other digital technologies (Li et al. 2017) as well as digital strategies leading to the digital transformation.

Rapid technology changes over the last few decades have resulted in enormous challenges and prospects of digitalization for almost all industries. Earlier IT was connected to people work as an artefact, but now the strategic view is to align the IT strategy with the business strategy resulting in a transformation of the role of IT which combines IT and business processes in a unique manner (Singer & Zalmonson 2013). IT has brought the world closer in many ways and is one of the major success factors in many organizations. It is not only limited to data handling and lower costs but is also beneficial in taking various operational and financial decisions (Li, Merenda & Venkatachalam 2009). A forward plan is required for maximising the potential of digital technologies and minimizing the negative aspects.

Digital revolution has placed substantial modification in the entire economy particularly in the recent era (Gigov & Poposka 2017). Moreover, after the explosive growth of the dot.com bubble, several traditional companies have struggled to keep up with the new technology and market innovation and techniques for enhancing the customer experience. With the passage of

time, the alarming requirement of IT in organizations has increased further because of the increasing industry clock speed and environmental turbulence, as many organizations tend to have a diverse line of businesses (Reynolds & Yetton 2015). Furthermore, after the financial crisis of 2008, the global economy has gone through a wide range of milestones. Several changes have occurred in the process of re-industrialization. Strategic plans are developed to revitalise the industrialization.

Becoming digital is not just making huge investments in technology but rather determining the internal assessment efficiency (as an outsider) and analysing the useful data (CFO 2016). The emergence of digital technologies not only forces the organizations to change their operations, bringing new innovative techniques and procedures and to adapt advance technologies but also forces the organization to take efficient steps not only for their survival for their success as well. Digital technologies have enabled the organizations to transform faster as earlier organizations transformed much slower than the speed of transforming markets, customer behaviours and disruptive innovation.

Digital transformation deals with challenges and opportunities in a timely and holistic way and accomplishing this task is critical. Organizations to reap the full benefit of digital transformation need to change their entire organization culture, nature of work, flow of information with customers and even with partners (Gudergan & Mugge 2017). The importance of digital transformation is mentioned by one of recent articles of Deloitte that organizations that are more digitally mature take more risk than the traditional organizations at the early stage, which gives them an opportunity of exploring and discovering new ventures and processes for their businesses, giving them a competitive edge. Moreover, by seizing the benefits of digital transformation the organizations can redefine their core competencies and reposition in the emerging digital market place with a new set of value propositions for themselves and for their stakeholders; additionally, the digital transformation should be the core strategy for any organization that wants to succeed in this digital era (Gudergan & Mugge 2017). There are many factors that influence and impact digital transformation such as digital leadership, agile organization structure and processes, dynamic capabilities and innovative digital business strategy (Bharadwaj et al. 2013). A combination of organizational change and digital technologies has the potential to improve performance in multiple areas.

With the rise of digitalization of economy, traditional companies are facing enormous challenges to remain competitive with the born digital companies. The past literature demonstrates that the digital transformation is not just deployment of new technological tools, rather the process involves the evaluation of benefits and risks attached to the transformation by people, culture and organization strategy (CIO 2014). Therefore, implicating some pre-requisite before the deployment of such advanced technological tools is essentially required.

Becoming digital not only affects the individual or the corporate world but the overall economy is affected. Companies have to attain a firm and clear strategy and reason for transforming to Digital Business Transformation (Weiss et al. 2016). A forced transformation (either by the market or by the customer) could lead to failures no matter how timely the transformation is carried out. It is hard to say at this point that this transformation brings value added for the organization as a number of factors could be associated with it. Now almost every firm has embedded enterprise systems in their process for acquiring desirable support and strategies decisions (Mathrani, Mathrani & Viehland 2012). The organizations these days have focused their attention to transforming their business relation, business processes and data analysis to a next level known as Digital Business Transformation, by doing so they aim to improve their customer processes, optimizing business operations and developing strategies aligning with their business goals (Schumann & Tittmann 2015, Du 2012, Kharabe 2012). In addition, they also mentioned that many companies transform their processes but not every activity is successful.

Recent studies have focused on the digitalization as a primary force driving the business operations across the industries. However, a number of organizations are still reluctant to undertake a digital transformation because of perceived complexity of developing a digital business strategy (CIO 2016). A large number of organizations moved towards digitalization but failed to positively merge the strategy across the dynamic capabilities of the organization, mainly because of their low performing IT systems and slow legacy processes along with technological transparency. According to one of the leading consultant company Boston Consulting Group, the success of digital transformation depends on organization leaders i.e. CEO's (Danoesastro, freeland & Reichert 2017). Moreover, according to Harvard business review digital transformation requires the leaders to scrutinize the avalanche of digital initiatives, controlling the speed of innovation cycle and reshaping the organization culture

(Tansiti & Lakhani 2014). Almost 70% of the transformation fail to meet the organization ambition or its timeline for transformation or both (Faesta, Gumsheimer & Scherer 2015). For digital transformation a lot of investment in IT is not required, rather ensuring the appropriate size of IT staff having requisite skill is more important (BCG 2016).

Information technologies have gained importance in almost every field. This digital era has now an extensive influence on the whole economy and leads companies to transform and adopt new competition rules (Delmond et al. 2017). They are considered as one of the important threads through which the organization is woven (Li et al. 2017). In this digital era, preparing for the future is not an easy task (Kane et al. 2016). According to Reddy & Reinartz (2017) with the emergence of digital technology the businesses are likely to be transformed dramatically which is directly related to their business strategy of an organization like in some cases, companies such as GE, Uber and Netflix became “Digital Industrial Company” in other cases like Kodak this emerging technological change has completely swiped the company out from the market.

The increasing trend of heavy reliance on the internet and other digital products is shaping the transformation of customer’s habits and preferences (Gigov & Poposka 2017). Digital technologies and the advance digital tools are effecting the purchasing power of the customers as well as the production/service power of the industry. For big old companies it is not an easy task to let go of the legacy systems and processes; they must embark on the digital businesses protracted journey (Sebastian et al. 2017).

An organization is a combination of physical, financial, human, and intellectual and relationship capital (Libert, Beck & Wind 2016). Different organizations maintain different percentage of these asset types. According to Libert, Back & Wind (2016) one important element to emphasise that, generally all these assets percentage changes as the technological landscape changes effecting the decision power of the customer because of which the companies have to upate their service and processes. The companies who were at the forefront of the digital disruption two decades ago are now forced to transform themselves for their survival and existence, hence this new wave of digital disruptors and digital start-ups is changing the face of established industries with new technology (Reddy & Reinartz 2017).

Progressive organizations are actively practicing new techniques and procedures for keeping up the pace for surviving in this digital era. In doing so they usually make huge investment in advanced digital technologies without having a clear focus on solving today’s problems and

therefore fail to create value for themselves and for their stakeholders. Unfortunately, organizations do not use the digital technologies to their full potential by integrating them successfully throughout the organization levels, hence miss huge profitable business opportunities. A real digital organization is wired for change and designed for innovation (Altintepe 2014)

It is understood that digitalization offers threats as well as opportunities for the organizations. According to one of the leading consulting company McKinsey & CO. about 50% of the net profit of companies would be at risk because of the rise of digitalization, which further emphasises on the importance of this growing concern. It would be important to note that many organizations do respond to the challenges associated with digitalization while deploying digital business strategies but often fail because of their unmanageable, slow and legacy IT systems (Sia, Soh & Weill 2016). Moreover it has been experienced by one of the largest companies like Mc kinsey & Co., KPMG and E&Y that an articulate digital architecture is required for delivering the finest customer experience and ultimate survival in this digital era (McKinsey Quarterly 2014, CIO 2014).

2.2 DIGITAL TRANSFORMATION

Digital transformation is not acquired by just deploying advance digital technologies; rather it involves the integration of processes, people and organizational strategy. It is believed that digital transformation has now reached an elevated level in which the advanced digital technologies are not just limited to specific organizational units/departments or functions but are integrated across entire organizations for supporting corporate strategies (Kane et al. 2016). Moreover, digital transformation's essential purpose is to obtain the benefits of digital technologies, such as productivity improvements, cost reduction and innovation (Hess et al. 2016). Furthermore, organizational transformation necessarily begins with a leadership transformation (Libert, Beck & Wind 2016). Digital transformation is rapidly affecting all the sectors of life. It has a visible, lasting and innovatory influence, not only on the economic systems and commercial players however its impact is increasing on the lives of individuals and on the society at large (Reddy & Reinartz 2017). It is further noted in the past literature that in the transformation process, the IT unit is usually the first part that is transformed and which is eventually reflected throughout the entire company (Sebastian et al. 2017).

Digital transformation is also considered to bring greater transparency and less information asymmetry for customer followed by new customer benefits such as improved products and services that align perfectly with greater convenience and more choice/interest and price variation (Reddy & Reinartz 2017). Digital transformation also requires clearly defined and specified roles and responsibilities of different departments of an organization as well as top-management support (Dremel et al. 2017). Digital transformation requires the organizations to modify / reallocate their asset portfolio to support new, digitally enabled business models mindsets (Libert, Beck & Wind 2016).

In business the digital transformation is bringing greater efficiency and effectiveness/realignment in existing value chains and opportunities to create new value (Reddy & Reinartz 2017). According to a recent research, digital transformation is considered to be the heart of the Fourth Industrial Revolution which would be changing our past understanding on learning and developing improved ways of doing business with days (Vey et al. 2017).

Digital transformation offers threats as well as opportunities. The opportunities from digital transformation are followed by the potential cost and threats as well like tangible and intangible prospects, loss of privacy and performance uncertainty as well (Reddy & Reinartz 2017). Companies can leverage robust customer relationships and increase cross-selling opportunities through valuable digital transformation (Weill & Woerner 2015). However, the threats such as rising demands from digitally savvy customers and fintech revolution are often responded to in an ad hoc manner (Sia, Soh & Weill 2016). Therefore, it would be significant to cascade this agenda to the C-suite management and to the management staff and the IT department so that all the staff are on the same page and understands the importance and needs of this process. In the literature and in recent consulting magazines it has been highlighted numerous times that now is the time to cascade the digital agenda systematically down the hierarchy to mobilize the change in an organization (Sia, Soh & Weill 2016) and to rewire the entire organization for digital transformation. However, one of the concerns in today's digital era is that it is difficult for organizational leaders to quickly adapt to new digital transformation approaches in response to the changes in the competitive and technology landscape (Hansen, Kraemmergaard & Mathiassen 2011).

Every legacy organization is tackling digital transformation now (Libert, Beck & Wind 2016). There have been various transformation failures because of the lack in commitment by top

management as it requires brand new skill set and mindsets (Libert, Beck & Wind 2016). According to a recent article of Boston consulting group, digital transformation could be achieved easier when Simplifying IT is used as an essential task for example, developing digital services in a clean IT landscape having less number of applications, processes and technologies (Grebe et.al 2016). It is further studied that the success of the digital transformation depends on the digital leadership of the CEO (Danoesastro, Freeland & Reichert 2017) but they need to be open to the feedback from the people in the organization, partners and from customers. Now the tipping point of deploying the digital transformation in companies has passed and the upcoming agenda of C-suite executives is how to use the transformation as a competitive advantage and a positive move (Hess et.al 2016), emphasising the need to study this area in detail. Some misconception about digital transformation is that it is a bolt-on strategy which is actually not the case (Gudergan & Mugge 2017). Moreover, it is thought that digital transformation is an IT initiative and should be carried out as an IT project whereas it is actually a responsibility of all business functions (Gudergan & Mugge 2017) where the initiative must be taken by the C-suite management in conjunction with the IT department.

2.3 DIGITAL BUSINESS STRATEGY

From the past literature, it is evident that environmental vitality influenced from digital innovation and interconnectedness of global business has led organizations and researchers to pursue the concept of digital strategy (Sia et al. 2016, Yeow, Soh & Hansen 2018). For maximizing the value from investments in new technologies, the firms must have a great digital business strategy and a great digital business strategy provides strategic directions to executives i.e. CEO and CIO to lead digital initiatives and to accelerate the organization progress (Ross, Sebastian & Beath 2017). Findings in the past literature show that digital business strategy is not only optimizing an organization's operations internally or to responding to competitors, but is raises awareness and responsiveness to the digital business competitive environment (Mithas, Tafti & Mitchell 2013).

The organizations aspiring to pursue a digital business strategy should be prepared to continuously navigate the vibrant and evolving digital landscape (Sia, Soh & Weill 2016). However, due to its complex and interrelated factors, it makes it difficult for managers to foresee all investment outcomes (Mithas, Tafti & Mitchell 2013). One of the key requirements of digital business strategy is developing new organizational capabilities to design and manage

networks as well as harnessing the huge amount of data, information and knowledge that is generated on a continuous basis and gain competitive advantage (Mithas, Tafti & Mitchell 2013, Bharadwaj et al. 2013). The digital business strategy will require the development of organizational capabilities and efficient abilities to harness the huge quantities of heterogeneous data, information and knowledge that is generated on a continuous manner (Bharadwaj et al. 2013). Hence the firms in this era would largely rely on modernizing their business processes and plug and play capabilities for linking of the digital resources. Moreover, it is noted that operational background and digital services platform capabilities are crucial enablers of digital business success / strategies (Sebastian et al. 2017). Further it is noted in past literature that articulating a digital strategy is much easier than executing it (Sebastian et al. 2017).

Further digital business strategy needs to have an integrated platform of distinctive capabilities, they may vary by organization but an organization that lacks organizational capabilities will not be able to deliver reliable operations and thus would fail to compete digitally (Ross, Sebastian & Beath 2017). Therefore, a clear strategy for deploying digital technologies and capabilities is crucial for future business success (Hess et al. 2016). Digital strategy is not merely the technology strategy; rather, digital strategies are the business strategies that integrate with the opportunities that the digital economy presents (Sebastian et al. 2017).

Digital business strategy has made possible the democratization of content, sharing, remixing, redistribution and shaping of content in more useful forms. These changes have caused enormous power shifts in market channels and intermediations that interrupt traditional sources of economic profits while creating essential new value for businesses (Bharadwaj et al. 2013).

It is also researched in previous papers that firm's digital business strategy should be aligned with the firm's value for achieving the required digital transformation (Singer & Zalmonson 2013). Digital business strategies bring into focus the multisided revenue models and platforms for the businesses (Bharadwaj et al. 2013). This means that the company produces the products and services on one layer and captures value on another layer. For example, Google's entry in mobile phones is based on giving away their software for free and at the same time monetizing it by controlling the advertising. The digital business strategy of a firm could be determined by scaling the extent of the IT investment of a firm and the percentage of its IT budget it spends on outsource services (Mithas, Tafti & Mitchell 2013). This emphasises the need to study in-depth the determinants of digital business strategy and the organizational capabilities required

for pursuing this strategy which further leads to value creation and re-structuring of high level value architecture.

Digital strategies could also be focused on the customer engagement (Sebastian et al. 2017) meaning that the digital strategy should be aligned with the customer expectations. One the digital strategy is being developed the customer needs and their anticipation should be kept in mind as with the growing digital world the needs of the customers are also changing. Moreover, a digital strategy is valued only if it initiates resource allocation and capital investments (Sebastian et al. 2017).

In analysing the digital business strategy, the time plays a vital role in determining the effectiveness (Bharadwaj et al. 2013). Furthermore, digital business strategy accelerates the speed of the business growth and product launch. Therefore, the time factor compels the hybrid (digital + physical) companies to also accelerate their product launch and business processes by deploring the digital business strategies. The organizational ability needs to recognize and respond to the fact-paced nature of innovation and implementation with planned obsolescence, being fundamental to the firm's competitive success and survival under digital business conditions (Bharadwaj et al. 2013). It might be tricky to commit to one digital strategy because according to some scholars, a digital strategy might involve either customer engagement or digitized solutions or both (Sebastian et al. 2017). Organizations understand that the only way to win consistency is by doing what the customers are expecting from them rather than focusing on just numbers (Coyle 2017).

2.4 ORGANIZATIONAL CAPABILITIES

An organization's capability is defined as an organization's ability to "perform a set of co-ordinated tasks, utilizing organizational resources, for the purposes of achieving a particular end result" (Marian, Eileen & Gerry 2016).

It is noted that many businesses are embarking on digital transformations, and as they do so they will often need to acquire and build capabilities (Dremel et al. 2017). Every company has some sort of capability. It is further mentioned in literature that organizations need to continually re-configure the capabilities they have developed over time (Marian, Eileen & Gerry 2016). Some have a major set of capabilities and some have a smaller set of capabilities. Some companies do not focus on attaining the specific set of capabilities, the reason is that

capability is considered to be a part of the culture of an organization (McKinsey & Co. 2010). Companies need to use those capabilities in the most efficient way for their better performance. For effective digital transformation, organizations need to expand their focus on including the fundamental organizational capabilities that are essential for their success rather than solely considering technology in isolation (Marian, Eileen & Gerry 2016). Furthermore, for acquiring the necessary capabilities companies need to particularly transform their decision-making processes (Dremel et al. 2017). However, arranging these capabilities effectively is a major concern and factor. In addition only a third of companies can actually conduct training programs that focus on acquiring the right set of capabilities which eventually adds value to the company performance (McKinsey & Co 2010).

Dynamic capabilities are a meta-capability that organizations use to change or reconfigure their resources and ordinary capabilities in order to adapt to changing environments (Yeow, Soh & Hansen 2018). Dynamic capabilities are termed to reflect those super capabilities that are essential for an organization for welcoming new opportunities, developing new products, services and designing practical and worthwhile business models that further shape the business ecosystem (Marian, Eileen & Gerry 2016). When the world has changes the ordinary capacities may no longer be relevant to customers so dynamic capabilities upon sensing the impending change will modify/replace the ordinary capabilities to remain competitive (Teece 2007). It is studied in past literature that dynamic capabilities are composed of both broad organizational capacities and specific actions that work together to affect organizational change (Yeow, Soh & Hansen 2018). Furthermore, the identification of factors that generate dynamic capabilities also supports IS researchers in identifying digital transformation drivers that are necessary for building digital platform capabilities in responding to digital disruption (Karimi & Walter 2015) showing a significant role of organizational capabilities in the process of digital transformation. Moreover, previous research has found that organizations with superior IT capabilities demonstrate above average performance and support the development of other business capabilities (Mithas et al. 2011, Marian, Eileen & Gerry 2016).

Further it is studied that fruitful digital transformation requires an organization to develop a wide range of organizational capabilities which would vary in significance/impact depending on the business context and the specific organization's needs (Marian, Eileen & Gerry 2016). Time and resource constraints, however, will undoubtedly challenge organizations that attempt to develop multiple capabilities simultaneously, and ultimately may impede the success of the digital transformation (Marian, Eileen & Gerry 2016).

2.5 GAPS IN THE LITERATURE

Solving a problem or a gap only starts after discovering one. It is studied that a gap does exist between the theory and the practice of digital transformation (Gudergan & Mugge 2017).

There has been extensive study on the digital artefacts required by organizations for competing in this extensively changing and growing environment. After an in-depth analysis of the past literature, some of the important gaps are highlighted and noted. Following are a few of the gaps that are missing in the past literature:

1. A clear understanding and definition of digital transformation is missing in the past literature. The past literature so far has not specified dimensions of digital transformation, digital business strategy and organizational capabilities (Svahn, Mathiassen & Lindgren 2017, Li et al. 2017, Mathrani, Mathrani & Viehland 2012, Schumann & Tittmann 2015, Du 2012, Kharabe 2012, Sia, Soh & Weill 2016, Bharadwaj et al. 2013 & Venkatesh & Joglekar 2013, Gudergan & Mugge 2017). Yet, understanding of those dimensions is a critical step for this study as well as for future studies into digital transformation and factors that may influence it.
2. Secondly there is a lack of systematically reviewing, analysing, and understanding past studies on this topic, which is considered to be a rigorous method of analysing the data systematically (Li et al. 2017, Berger et al. 2014, Webster & Watson 2002, Cao et. al 2015).
3. Given the importance of organizational capabilities in transforming organizations, little has been previously done to understand how they may be related to digital business strategy and digital transformation. Thus, more studies are needed for investigating the inter-relationship between these concepts (Ross, Sebastian & Beath 2017, Bharadwaj et al. 2013, Li et al. 2017, Gudergan & Mugge 2017). A framework is missing that defines the process of digital transformation in a very clear way, making it more relevant for the everyday experiences of senior management (BCG 2012).

4. Most of the literature on digital transformation is pre-Internet era so an up to date knowledge addressing the current concerns on emerging complexities of digital transformation is missing in the literature (Li et al. 2017).

On the basis of current gaps in the literature, this study would provide an effective approach to address the importance of organizational capabilities in pursuing a digital business strategy leading to digital transformation. It would also list the organizational capabilities dimensions for pursuing digital business strategy leading to effective digital transformation. Hence this study would bridge the gap of past literature in this field.

CHAPTER 3. RESEARCH DESIGN

The research design of this research has been developed in order to solve the theoretical and practical issues related to digital transformation. This research aims to explore the understanding of what digital transformation, digital business strategy and organizational capabilities entail. Further it aims to investigate the role of organizational capabilities in implementing the digital business strategy which leads to digital transformation.

The research methodology for uncovering the objectives comprises two parts: (i) systematic literature review, and (ii) interviews with experts and focus group (conducted like a brain storm session). The first part of the methodology which is a systematic literature search includes a review of top 16 Information System journals, which are leading journals in this field. The systematic literature review initially resulted in 292 articles based on the time frame 2000-2017, out of which 28 were selected for the analysis based on relevance of their full text to this research. The main outcome of this systematic literature review has been a conceptual framework of the inter-relationship between organizational capabilities, digital business strategy, and digital transformation. This framework also demonstrates the underlying dimensions of each of these three concepts.

The second part of the methodology is expert's interviews and focus group conducted like a brain storm session. To evaluate the utility of the framework semi structured interviews were carried out. The interviews assisted me in developing the framework reliability. The data gathered from the interviews was analysed and eventually validated the finding from systematic literature review and the framework for the professional use in industry as well as for researchers from academia. This process also provided guidelines for the improvement, if required, as suggested by the experts.

The second part of this research involved interviewing 7 experts from academia and industry and a focus group attended by 11 participants, to evaluate and refine my conceptual framework, and to assess validity of my findings. All the interviews with experts and focus group were then transcribed in Nvivo. The findings of the expert's interviews and focus group were then analysed and evaluated. Some of the fundamental themes and updated framework have designed.

*INVESTIGATING THE INTER-RELATIONSHIP BETWEEN ORGANIZATIONAL CAPABILITIES,
DIGITAL TRANSFORMATION & DIGITAL BUSINESS STRATEGY*

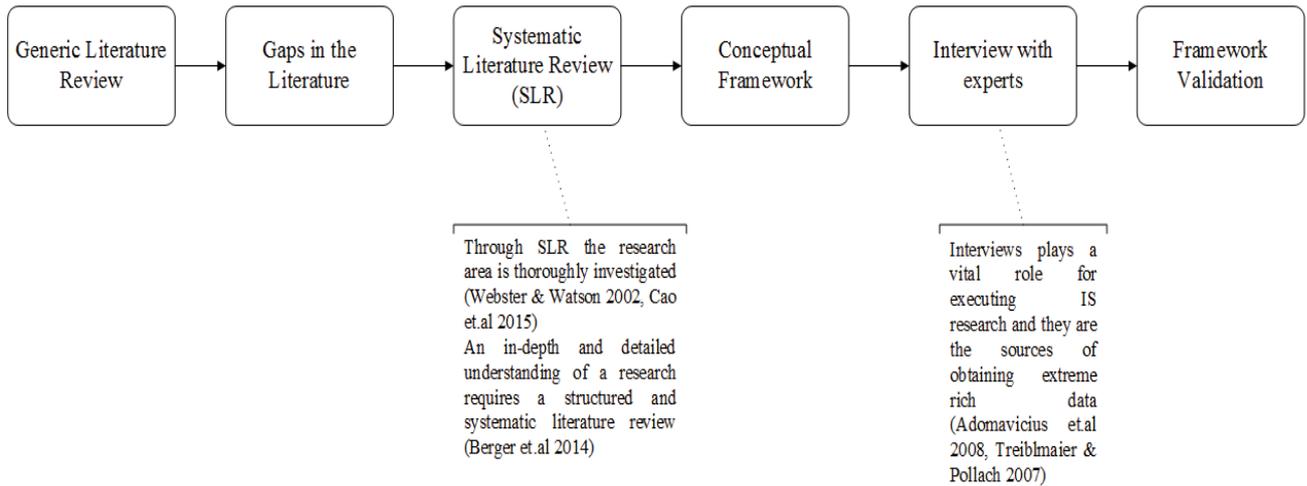


Figure 2: Research design

The figure 2 shows the research design of this research. It gives a summary of the research methods used in this research and the authenticity and significance of these research methods highlighted in past literature. Further figure 2 shows how these research methods have assisted me in uncovering the research questions by developing the framework and then the validation through the interviews with experts. Following is more detail of the research method and their viability in this research.

My research design has two components:

- First is conducting a systematic literature review method whilst analysing the findings. My systematic literature review search includes the Information System leading journals, which are highly reputable for their quality work and are thus comprised of major contributions. I selected the top journals approved from The Australian Council of Professors and Heads of Information Systems (<http://www.acphis.org.au/v2wp/rank-order/>). The date of retrieval of journals from this list was in early 2017. A details on the selection of journals have been illustrated in the later session. The systematic literature review also identifies the gaps in the current studies which would be discussed and analysed systematically.
- Second is conducting the interviews with experts and focus group with expertise in digital transformation for validating the findings. The experts were the expected actual users of the framework or academic scholars for future research in this field. The interviews assisted me in developing the framework reliability and proposals for improvement. The data gathered from the interviews was analysed and eventually

assisted me in updating the framework as per the suggestions from the experts. The findings from this process would be useful for professional use in industry as well as for researchers from academia.

3.1 SYSTEMATIC LITERATURE REVIEW (SLR)

While the contribution to the literature in this area is growing, very few writers have systematically reviewed the research in this field. Systematic reviews are considered as a significant endeavour in any field (Webster & Watson 2002, Cao et al. 2015) because they maintain the creation of a new framework through identifying the common gaps/misconception in a field. Through Systematic literature review the area of research is thoroughly investigated and leads to the discovery of new research opportunities (Webster & Watson 2002, Cao et al. 2015).

A detailed and in-depth investigation of a research field requires a systematic and structured literature review (Berger et al. 2014). It also requires a widespread and replicable literature search strategy that includes selecting relevant publication outlets (i.e., journals and conferences), relevant keywords, and a relevant period of time frame (Berger et al. 2014). In this research I would follow Bandara et al. (2011) who proposed two main steps: (1) selecting the relevant sources to be searched (Webster and Watson, 2002), and (2) defining the search strategy in terms of time frame, search terms, and search fields (Cooper, 1988; Levy & Ellis, 2006).

A systematic literature review is a type of literature review that collects and critically analyses multiple research studies/papers. It helps in uncovering the answers in a structured way and by analysing previous studies that relate to the answers in an organized way (Berger et al. 2014).

The process of identification of relevant articles through systematic literature review is a thorough and rigorous method as shown in figure 2. It enables the researcher to classify the articles relevant to the current research in a step-wise process. The process of relevant article selection through systematic literature review was carried out as shown in figure 2, starting from selecting the keywords and sources (Journal, database or conference) which is an iterative process until the right set of keywords and source selection is carried out. For a profound

understanding of the process, the source selection and the exclusion criteria have been explained in the next section of this research. To provide a comprehensive overview of the process of systematic literature review, it is further demonstrated in figure 3.

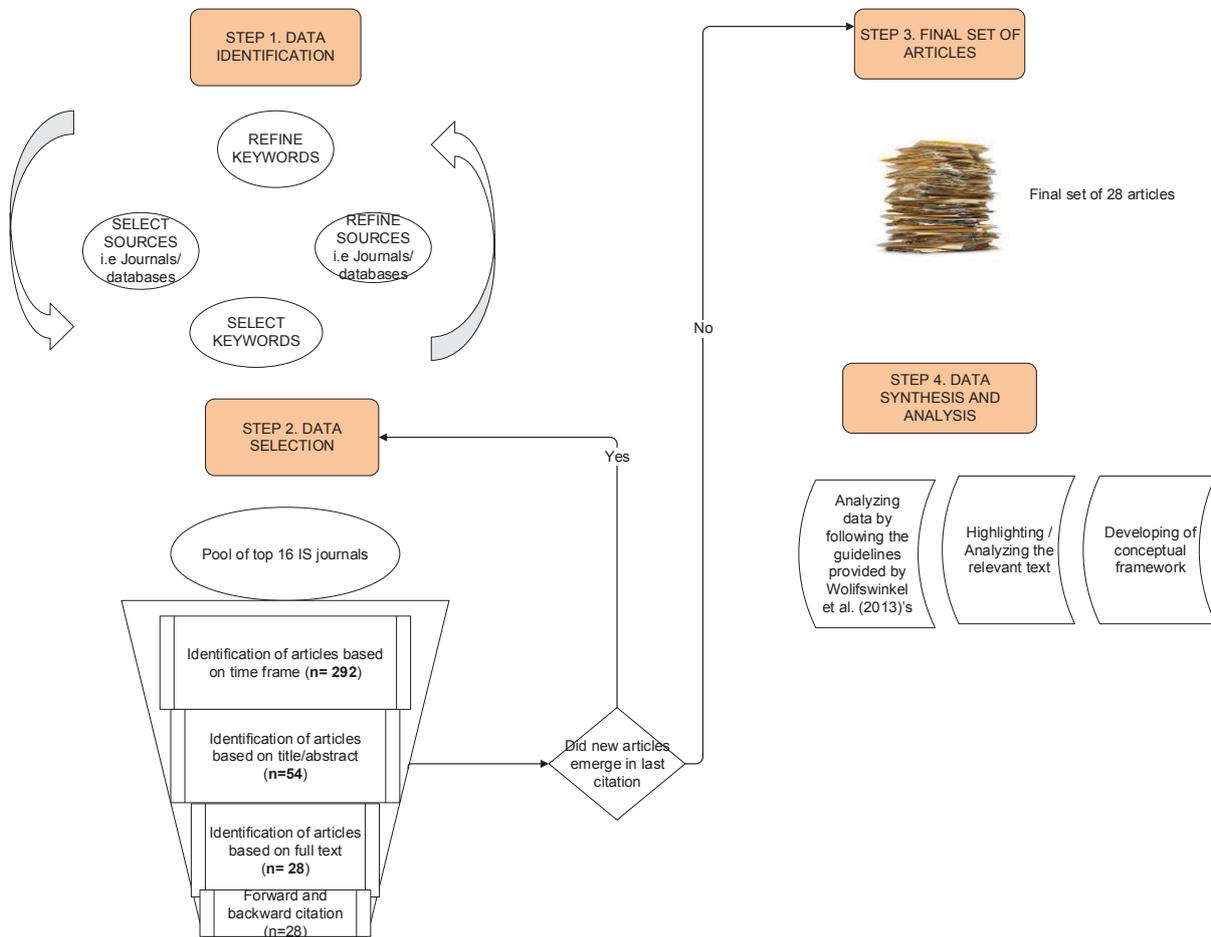


Figure 3. Process for selecting papers through Systematic Literature review

3.1.1 IDENTIFICATION OF KEYWORDS

The systematic literature review process was initially carried out by determining the research scope of this study and this was supported by the generic literature review where this field was searched and overall gaps in the literature were noted. Later different keywords related to this research were defined and searched. After an iterative process of defining keywords and sources as shown in figure 3, eventually the three keywords were finalized and selected were included in this research, which are shown in table 2.

3.1.2 SOURCE SELECTION

For identifying the journal quality, researchers and scholars refer to the IS top journal rankings (Berger et al. 2014). My literature search includes the top Information System leading journals, which are highly reputable for their quality work and are thus comprised of major contributions. I selected the top 16 IS journals approved from The Australian Council of Professors and Heads of Information System (<http://www.acphis.org.au/v2wp/rank-order/>).

This literature review research initially started with a generic literature research, where I searched the top databases like IEEE Explorer, ProQuest, Springer and Science Direct. However, they resulted in generating a large amount of published papers focusing on the general topic rather than my research topic. Therefore, for answering the research questions of this research I limited myself to Information System top A+ and A journals (16 top journals). The table 1 outlines the selected sources for systematic literature review. These journals allowed me to produce an organized, transparent and comprehensive summary of IS research in identifying the inter-relationship between digital transformation, digital business strategy and organizational capabilities. This was also valuable for quantitative analyses with respect to the number of publications and their development over time.

TABLE 1: SELECTED JOURNALS	
Journals	MIS Quarterly, Journal of the association of Information Systems, Information System Journal, Journal of Strategic Information Systems, Journal of Management Information Systems, MISQ Executive, Sloan Management Review, Communications of the ACM, Human computer – interaction, Behaviour and Information Technology, Information Technology and People, Decision Support Systems, European Journal of Information Systems, Information and Management, Information System Research, Journal of Information Technology.

TABLE 1 SELECTED JOURNALS

3.1.3 SEARCH STRATEGY AND RESULTS

For achieving a considerable result for this systematic literature review, I considered a time frame from 2000 to 2017. A 17 years' time frame was searched in order to acquire a wider picture of this field. However, it was analysed and concluded that only 21 articles were submitted during 2000-2006 in selected journals, further showing that this field came into the limelight after 2006. For identifying significant and appropriate publications in the sources selected, I mainly conducted the search using Google Scholar and EBSCOhost, UTS library and web search engines that targeted scholarly literature (Cao et al. 2015).

The systematic literature review was carried out by specifying the keywords, time period and other specification as mentioned in table 2 for each top 16 IS journal.

This resulted in achieving a desired research papers from each top IS journal after following an identical and uniform search strategy.

TABLE 2: OVERVIEW OF SEARCH STRATEGY	
Time period	2000-2017
Search terms/keywords	Digital business strategy, Digital transformation, Business digitalization
Search fields	Title, Abstract, Keywords

Table 2 Overview of the search strategy

The keywords mentioned above (see Table 2) were used in determining the relevant published papers in the selected journals (see Table 1) by specifying the time frame and search fields (see Table 2).

The articles in the systematic literature search resulted in 292 articles after applying all the three search terms and search strategy as mentioned in table 2. After that for identifying the relevance of each published paper to the research question as shown in figure 3, I manually analysed each paper's title, abstract and keywords which resulted in 54 papers.

Exclusion criteria
Articles that are conference papers
Article is a duplicate of another article
Articles not written in English

Table 3 The Exclusion criteria

For selecting the final set of articles exclusion criteria were used. The criteria were further classified into relevance of articles (Murugesan, Hoda & Salcic 2015). The exclusion criteria for data extraction purpose during the systematic literature review are shown below in table 3. These criteria were applied during the title and abstract level resulting in excluding several papers that satisfied the exclusion criteria (Murugesan, Hoda & Salcic 2015).

The next step was to exclude all the papers which did not match my research focus. In this perspective, I considered only those papers which were either directly dealing with Digital Transformation or in general the techniques/procedures for pursuing Digital business strategy or digital transformation. Further I selected those articles which have relevance to my research questions. This procedure led to a final set of 28 papers, which served as the basis for the subsequent analyses.

3.1.4 IDENTIFICATION OF EXCERPTS

For the purpose of deeply analysing the final set of data, the unstructured stake of published papers was organized and rearranged in terms of their disciplinary approaches for making the task more do-able as recommended by Wolfswinkel et al. (2013).

The analysis of the papers was carried out in a stepwise mode. Firstly, all the papers were read line by line and I highlighted the sentences that seemed relevant to the research questions and research scope. The highlighted part from every paper was termed as ‘Excerpts’ (Wolfswinkel, Furtmueller & Wilderom 2013). The excerpts were read repeatedly and were noted in the logbook for future reference. During this process of excerption ‘open coding’ took place (Wolfswinkel, Furtmueller & Wilderom 2013).

3.1.5 CODING PROCESS

Open coding is the first step when the researcher starts the abstraction stage (Wolfswinkel, Furtmueller & Wilderom 2013). During this process few categories emerged that were part of the excerpt data. In this paper the word ‘dimensions’ has been used instead of categories as shown in figure 8. Dimension means a characteristic or feature. Therefore, each dimension of each construct would be representing a unique characteristic of the specific construct. This stage requires the analytical and the creative skill of the researcher (Wolfswinkel, Furtmueller & Wilderom 2013). One after the other the papers were read and the related dimensions/categories were noted in the logbook and the reason for entering it in the dimension section was also noted. If during any stage of paper reading new or alternate dimensions were identified then the logbook was consulted and reviewed for potentially new categories /dimensions emerged in later papers.

The next stage of analyses of literature review is the ‘Axial coding’ and in this stage of coding the categories are sub divided into sub-categories (Wolfswinkel, Furtmueller & Wilderom 2013). In this paper the sub-categories have been termed as ‘Attributes’ as shown in the figure 8. Attribute would be a characteristic of each dimension. Therefore, each attribute of a dimension would be a unique feature and essential part of the dimension. The sub-category/attributes of each category/dimension represent their unique characteristics. During this process if new categories emerge then the logbook was consulted again for merging/evolving of new categories and sub-categories.

After the identification of categories and sub-categories, the process of ‘comparative analysis’ (Wolfswinkel, Furtmueller & Wilderom 2013) takes place, where linking and mapping of the categories with sub categories was carried out. This last stage of coding ‘Selective coding’ involves identification of core dimensions/categories. The core dimensions/categories represent the central phenomenon behind the study. It identifies the main idea the literature review represents. In this stage the categories/dimensions that have been poorly explained or have hardly any specific sub-categories/attributes defining its properties would be highlighted and would be either eliminated or merged with other similar dimension.

This coding process was carried out by going forward and backward between the papers as suggested by Wolfswinkel et al. (2013). The coding process at this stage was reviewed and validated by my supervisors. At this stage if any new category or sub-category emerged then

the data was reviewed again starting from the excerpts process until the data was saturated. Once the data is exhausted or fully saturated only then the process of theory building starts (Wolfswinkel, Furtmueller & Wilderom 2013).

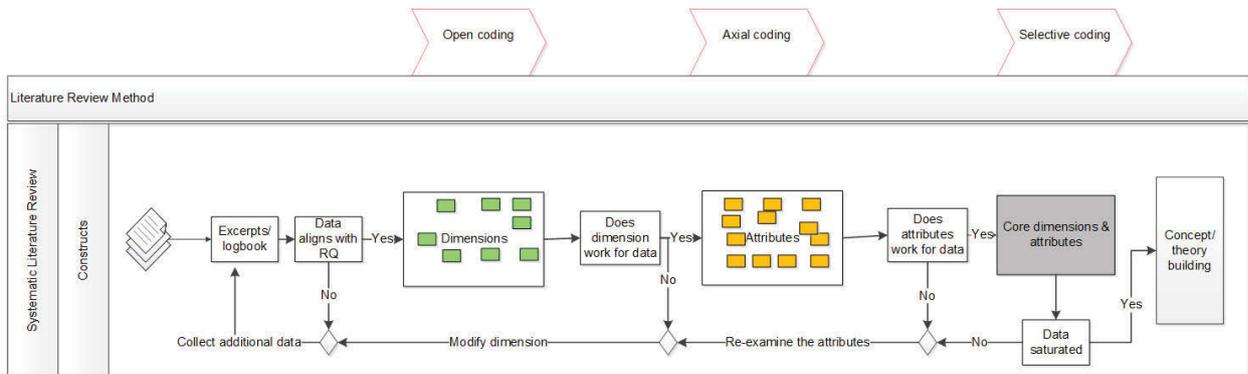


Figure 4 Process of analyses of literature review

The figure 4 represents the open coding, axial coding and selective coding, once the categories were identified and analysed; if they worked with the research question only then the process was moved to the next coding stage otherwise the excerpts were reviewed and categories were modified. Eventually after the open coding, axial coding and selective coding, the core dimensions and attributes were reviewed and the final concept was identified which would be discussed in the later section of this thesis.

3.2 INTERVIEW WITH EXPERTS & FOCUS GROUP

The framework proposed from the analysis of the final set of articles recovered through the rigorous and thorough systematic literature review represents the dimensions of each of the concepts i.e. digital transformation, digital business strategy and organizational capabilities. The framework also depicts the common set of dimensions shared among the three concepts. In order to validate the framework, I conducted interviews with experts. The systematic literature review conducted earlier also highlights the numerous scholars from Information systems journals namely Zimmermann, Muller & Heinrich (2016), Herterich, Uebernickel & Brenner (2016), Ju Wu, Straub & Liang (2015), Mettler, Sprenger & Winter (2017), Guest, Bunce & Johnson (2006), Pallud & Monod (2010), Abrell et al. 2015, Ebel, Bretschneider & Leimeister (2016), Peters, Blohm & Leimeister (2015) who have suggested and used the

methodology interview with experts in their research further highlighting the significance of this methodology.

Rubin and Rubin (2005) highlights the significance of qualitative interviews by mentioning they are like night goggles which help in seeing and examining what is not seldom seen. An expert is an individual who is in constant use of the specific technique or procedure and has enough knowledge on the subject matter for guidance and improvement. It is studied in literature that interviews play a vital role for executing IS research and they are the sources of obtaining extreme rich data (Adomavicius et al. 2008, Treiblmaier & Pollach 2007). In prior literature research it is noted that data derived from a combination of literature and interviews with experts are most likely to produce a representative sample (Dennis 1988, Mettler, Sprenger & Winter 2017). Furthermore, it is noted that in-depth interviews would be better than questionnaires when acquiring a person's opinion and experience (Monod, Pallud 2010). Additionally, interviews are also considered as a primary data source (Tim et al. 2016, Myer & Newman 2007) and this process is used in qualitative research of all kinds (Myers & Newman 2007). Therefore, the second methodology of my research i.e. interview with experts is well supported by the past literature.

I structured the interviews with experts in compliance with the research objectives. The interview covered questions of how user perceived the role of organizational capabilities in digital transformation and digital business strategy. Furthermore, the impact of the suggested framework on their work practice and how it could be improved on the basis of real work situations. For this study I conducted interviews of experts from industry professionals and scholars from academia. This gave me a combination of opinions from industry as well as the academia side. The expert's interviews were carried out by conducting semi structured interviews. Preference was given to the actual users of the framework from industry professional and academic researchers.

It is significant to know how many interviews would be conducted before entering the field for writing down in the interview protocol (Guest, Bunce & Johnson 2006). Some researchers recommend between six to eight interviews and some suggest five to twenty five should be a good number of interviews. Guest, Bunce & Johnson (2006) suggests that where the aim of the interview is to develop common understanding and acquiring the experiences results and their opinions, twelve interviews should suffice. Further experts occupying different roles at

different levels in different organizations were selected for allowing multiple interpretations and understanding, for gathering possible differences in interpretation among the interviewees (Tim et al. 2016, Kranz, Hanelt & Kolbe 2016). Therefore, I conducted 7 interviews with experts and a focus group attended by 11 participants. Each interview duration was approximately 45 mins and the focus group duration was approximately 75 mins. All interviewees were asked same questions in the same sequence. As the same question were asked of all the interviewees, therefore data collected from various perspectives helped in ensuring the reliability and validity of the data (Huang, Pan & Liu 2016, Tallon, Ramirez & Short 2014). The interviews conducted were semi structured but the sequence of questions asked was the same for effectively analyzing the interview transcripts in Nvivo. All interviews were conducted in English and auto-taped and transcribed. The interview schedule was given a lot of importance as mentioned by Drever (1995). The introduction part was designed concisely for reminding the interviewee of what the interview is about which in turn helped to avoid any misunderstanding (Drever 1995). All the interviews were auto-taped, recorded and later transcribed (Cho, Mathiassen & Nilson 2008, Zimmermann, Muller & Heinrich 2016, Ravishankar, Pan & Myers 2013, Drever 1995). The notes that were taken during the interview were later summarized after the interviews. In this research I transcribed the interviews in Nvivo for accuracy and transparency.

Semi-structured interviews were conducted to accomplish the following objectives:

- (i) Understanding and inspiration for organizations pursuing digital transformation and seeking a valid error free framework for digital transformation.
- (ii) Evaluation of the utility and effectiveness of the proposed framework in real work situations.
- (iii) Providing suggestions for improvement and future research.

The approach for interviewing the experts included an incomplete script as well having some questions prepared beforehand required for improvisation, openness and flexibility unlike the structured interview where the script is completed before hand (Myers & Newman 2007). This also helped me in asking all the relevant questions and to ensure that the questions are understood and properly comprehended. The questions were asked in order to evoke the opinion of the participants in terms of the systematic literature review conducted and the framework presented and its validation in the real world.

The semi structured discussion enables the researcher to freely interact with interviewee for identifying and classifying critical issues (Buhalis 2003, Tim et al. 2016). The interviewee were given appropriate time for giving feedback on this research and how effective it could be in terms of real world situations in an industry. The in-depth interviews enabled reaching to a rich understanding of the practices of digital transformation. The interviewees were requested to state their opinions regarding their views on the dimensions shared among the three concepts. The questions were asked in a flow and they were in sequence for making it easy for the interviewees to respond accordingly as suggested by Drever (1995).

In this semi- structured interview I prepared most of the questions before the interview and ensured that all questions were covered. I followed guidelines given by Myers & Newman (2007) as shown in the figure 5, for preparing the script for the interviews which include: 1) Preparing the opening sentence i.e. introducing myself, 2) preparing the introduction 3) explaining the purpose of the interview 4) preparing the key questions 5) preparing for interview closure. I also used the snowball technique as suggested by Myer and Newman (2007) where I requested one interviewee to recommend me to anyone if possible who might be interviewed as well, which in turns leads to another. This technique was helpful for me in obtaining a critical mass of interview data (Myers & Newman 2007). The interviewees were contacted through email. Each interview started with the broad question regarding the current issues with digital transformation and how organizations are being rapidly affected by it.

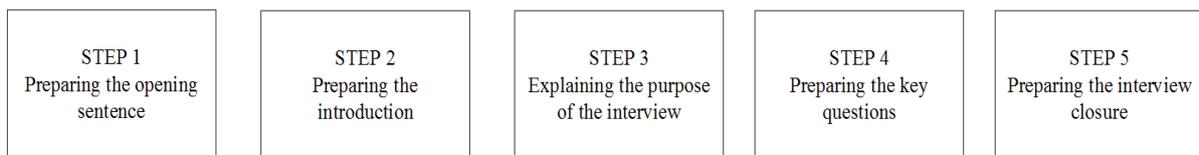


Figure 5 Steps for preparation for the interview (Myer & Newman 2007)

Semi structured interviews conducted in this research also included the verbal probing technique. In verbal probing technique I enquired the specific and detailed information related to the interview questions, which helped me in collecting further information from the interviewee (Beatty and Willis 2007, Kim & Han 2017). Through the interview process I did not analyse or ask interviewee personal information or personal experiences, rather I was looking for experts' opinion about whether my framework and results of systematic literature review made sense and how it could be improved. The opinions are best assessed by people

having a special interest with particular expertise and knowledge about the subject matter (Mettler, Sprenger & Winter 2017). Therefore, the interviews were conducted with the experts having most knowledge and having the best data about digital transformation. Similarly, the focus group participants also had the best knowledge about digital transformation from the industry side. The interviewees were asked about the current difficulties they are facing in digital transformation.

3.2.1 GUIDELINES FOR THE ANALYSIS OF EXPERT INTERVIEWS & FOCUS GROUP

According to Lynn (1986) validity is a vital aspect in selection of an instrument or framework. Lynn (1986) presents a process by which content validity can and should be determined and has demonstrated some means by which content validity determination could be quantified. Content validity is evidence of content relevance of the elements/items of an instrument by the application of a two-stage process (Lynn. M. R 1986). It is noted by Lynn (1986) that a two-stage process for determining the validity of the content is fundamental. The two-stages suggested by Lynn (1986) are the development stage and the judgement stage. In the development stage it is instructed by Lynn (1986) that the content should be thoroughly reviewed in terms of identification of dimension and sub dimensions and the assimilation of the dimensions in a presentable/ useable form. In the judgement stage the content validity of items/dimensions and the whole instrument / framework takes place (Lynn. M. R 1986). The “content validity can be quantified with the application of the index of content validity (CVI)” suggested by Lynn (1986) & Waltz and Bausell (1981, p. 71).

The content for this research was identified and presented rigorously reviewing the literature through systematic literature review (SLR) and then analysing the final set of articles using the guidelines suggested by Wolfswinkel’s et al. (2013). By using his guidelines, the identification of dimensions and attributes took place. Furthermore, the conceptual representation of the dimensions was also identified. The inter-relationship between the organizational capabilities, digital transformation and digital business strategy was also specified by thorough reading of the final set of articles recovered through systematic literature review. Therefore, the first stage process for determining the validity of the content mentioned as a fundamental task by Lynn (1986) was fulfilled.

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In the judgemental stage the declaration of specific number of experts on an item to be content validated is noted and then the entire items that are content validated are noted (Lynn. M. R 1986). Firstly, the number of experts needed that must agree for the content validity was established and decided by the application of the standard error of the proportion (Lynn. M. R 1986). It was determined by how many experts agreed on the specific dimensions. For a study where total number of seven experts have to be interviewed then as per the figure 6 a minimum number of six participants would provide a sufficient level of agreement on a certain item, however in some areas it may be difficult to locate this many domain experts and their cooperation (Lynn. M. R 1986). Therefore, areas where experts are hard to find and to cooperate, a minimum of three experts should be used (Lynn. M. R 1986). So, three is the number of experts in interview with experts and focus group who must agree for a specific item to be established as content validated.

According to Lynn (1986) “This could be carried out by calculating the proportion of number of experts who might agree out of the total number planned for use and setting out the standard error of the proportion to identify the cut-off for chance verses real agreement”. The figure 6 below was used as a guideline for reviewing the proportions of experts agreeing on the content validity of an item along with the entire instrument and the standard error of those proportions. Therefore, in this research a standard procedure was used for validating the content.

NUMBER OF EXPERTS	NUMBER OF EXPERTS ENDORSING ITEM OR INSTRUMENT AS CONTENT VALID									
	2	3	4	5	6	7	8	9	10	
2	1.00									
3	.67	1.00								
4	.50	.75	1.00							
5	.40	.60	.80	1.00						
6	.33	.50	.67	.83	1.00					
7	.29	.43	.57	.71	.86	1.00				
8	.25	.38	.50	.63	.75	.88	1.00			
9	.22	.33	.44	.56	.67	.78	.89	1.00		
10	.20	.30	.40	.50	.60	.70	.80	.90	1.00	

NOTE: The caution over using the standard error of the proportion when $n \leq 10$ (Downie & Heath, 1974) does not apply in this situation because only when $p > q$ is there significance, and any nonunique $p \times q$ solutions are irrelevant.

Figure 6 Number of experts endorsing an item (Lynn. M. R 1986)

The experts were given a structured procedure /practice for the evaluation of the content validity (Lynn. M. R 1986; Kerlinger 1973). The experts were not selected by only looking at their expertise in this area; rather, their expertise was determined by sharing with them the dimensions of each concept along with specific questions pertaining to content relevance (Lynn. M. R 1986). I also used the commonly used content validity index (CVI) in this research for the validity of the content. Index of content validity is commonly used for content validity (Lynn. M. R 1986) and it is carried out by using a 4-point ordinal rating scale where 1= not relevant; 2= unable to access or item to be in need of revision; 3= relevant but need minor alterations; 4= very relevant. Furthermore, the experts also identified the areas that have been omitted in this research, which is one of the fundamental factors of the content validity (Lynn. M. R 1986). Finally, the content was considered content validated if missing items were highlighted and the content was in conjunction with the content validity index (CVI) (Lynn. M.R 1986). If an expert did not identify any area of omission and evaluated the dimensions positively yet not assess the inter-relationship /framework as content valid then suggestions for improvements were requested from the expert (Lynn .M .R 1986).

3.3 CONSIDERATION OF ETHICS & RISKS

The concern for ethics is of pronounced importance in research involving interaction with human participants. I am absolutely aware that any research activity that is conducted by UTS staff or student that encompasses the human individual and discrete information would require approval from UTS Human Research Ethics Committee (HREC) before proceeding.

For this research to evaluate my research conceptual framework, I conducted semi structured interviews of experts from industry and academia. This helped me in viewing and analysing the framework from experts' eyes and opinions. During the interview process I was not eeking individuals' information or personal experience, rather looking for experts' opinion about whether my framework and results of SLR make sense and to validate the framework that was developed through the systematic literature review and how it can be improved. This process of interviewing experts for their opinion on the framework would not include disclosing any of their personal or sensitive information.

Before conducting the interview with experts, I applied for the UTS ethics approval as this is one of the fundamental requirement before conducting the interviews. As in this research I was

only looking for expert's opinion about the developed framework and the findings from the systematic literature review and not looking for their personal information therefore this research was considered as a nil/negligible risk application and required my faculty of Engineering and Information Technology to recheck and finally approve it.

I applied for the ethics approval in the end of Feb 2018 and the reference number of my application was eth18-2253. As this research is a nil/negligible risk application therefore approval for my ethics application did not take much time and I received the approval for my application in early March 2018.

After the approval from the UTS department of ethics I then finally started interview with experts. The participant information sheet, invitation letter to the interviewee, interview protocol and interview questions have been attached to the appendix.

For acquiring the accurate knowledge on the ethics relevant policies and processes for being an ethical and responsible researcher, I also successfully completed the following modules:

- The online module 1 on research integrity and code of conduct.
- The safety and well-being essential module.
- Carefully read the University policies on responsible conduct of research.

CHAPTER 4. FINDINGS

4.1 FINDINGS FROM SYSTEMATIC LITERATURE REVIEW

In this study, the outcomes of the systematic review are discussed in two groups: firstly, I present what the notion of ‘digital transformation’ entails and identify its underlying dimensions. I also discuss what ‘digital business strategy’ and ‘organizational capability’ may mean and what their underlying dimensions are based on past studies in the literature. Secondly, I aggregate the current empirical evidences to demonstrate how these three concepts may relate.

To grasp in-depth understanding of how the academic discussions on Digital transformation and Digital business strategy have been established in IS literature over time and to fully apprehend the importance of Digital Transformation in today’s digital era, I calculated and noted the number of articles published in the selected journals in each step of systematic literature review (see Table 4).

The findings in the table 4 signify the importance of this research. Though the topic of digitalization has been discussed since the digital era started but still the missing aspects and key foundations of digital transformation are still missing in past literature. The final set of articles found through the systematic literature review process yield a consolidated set of articles relevant to my research.

Sources Journals	Time frame 2000-2006	Time period 2006-2017	Time frame 2000-march2017	Title/Abstract	Relevance of papers
MIS Quarterly	2	32	34	19	6
MIS Quarterly Executive	0	20	20	9	6
Information Systems Research	1	39	40	6	4
Journal of Management Information System	1	18	19	1	1

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Journal of Information Technology	2	28	30	3	2
Sloan Management Review	2	18	20	8	8
Journal of Strategic Information systems	2	12	14	1	1
Decision Support Systems	0	26	26	0	0
European Journal of Information Systems	0	13	13	3	0
Information and Management	4	17	21	2	0
Journal of the association for Information Systems	1	16	17	0	0
Information System Journal	0	13	13	2	0
Communications of the ACM	6	5	11	0	0
Human-computer-interaction	0	4	4	0	0
Behaviour and Information Technology	0	4	4	0	0
Information Technology and People	0	6	6	0	0
TOTAL	16	271	292	54	28

Table 4 Number of Published articles noted in each step of systematic review process

The table 4 above depicts that a total of 16 Information System journals were selected for this research. From this pool of top IS journals only 292 articles were selected for further study based on the timeframe from 2000 to 2017. Later from these 292 articles only 54 articles were carried forward to the next step as their title and abstract had relevance to this research. Finally,

these 54 articles full text was studied and from them only 28 articles were selected as their full text had relevance to this research. The above table 4 also highlights that Sloan Management Review Journal had the most articles that were related to this research i.e. 8 articles for the final study. Further MIS Quarterly and MIS Quarterly Executive had the second most articles that were related to this research i.e. 6 articles for the final study.

The process of systematic literature review in this research emphasized that though this topic of research had been of interest and significance for the researchers, very little has been researched and published in IS journals so far. As out of top 16 IS journals only 28 articles had relevance to this research, this depicted the importance of this research.

The final set of 28 articles for the analysis were read thoroughly and their demographic location, industry sector and research methods used were also noted and classified as shown in table 5. This gives a comprehensive knowledge of the background of the articles which is substantial for the systematic literature review. The table 5 gives a consolidated summary of the systematic literature review in terms of the name of articles selected from each Journal, theory if used in those articles, research method, author's name, and the sector of selected articles and the country of origin of the articles.

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Journals	Research method/ Theory used	Country	Sector	Author	Articles
MIS Quarterly	Qualitative / Theory not used	U.S.A	LITERATURE ANALYSIS	Bharadwaj et.at 2013	Digital Business Strategy: Towards a next generation of insights
	Qualitative/Theory not used	U.S.A, SWEDEN	AUTOMOTIVE	Svahn, Mathiassen & Lindgren 2017	Embracing digital innovation in incumbent firms: How Volvo cars managed competing concerns
	Quantitative/ Theory not used	U.S.A	I.T FIRMS	Mithas, Tafti & Mitchell 2013	How a firm's competitive environment and digital strategic posture influence digital business strategy.
	Qualitative/ Theory of customer-side digital business strategy	U.S.A	BANKING	Setia, Venkatesh & Joglekar 2013	Leveraging digital technologies: How information quality leads to localized capabilities and customer service performance
	Qualitative/ Theory not used	U.K, CHINA	LITERATURE ANALYSIS	Henfridsson, Liu & Newell 2017	Growing on Steroids: Rapidly scaling the user base of digital ventures through digital innovation.
	Qualitative/ Theory not used	U.S.A	LITERATURE ANALYSIS	Grover & Kohli 2013	Revealing your hands: Caveats in implementing digital business strategy.
MISQ Executive	Qualitative / Theory not used	U.S.A, SINGAPORE	BANKING	Sia, Soh & Weill 2016	How DBS Bank Pursued a Digital Business Strategy
	Qualitative/ Theory not used.	GERMANY	MEDIA	Hess et.al 2016	Options for Formulating a Digital Transformation Strategy
	Qualitative / Theory not used	U.S.A	OIL & GAS	Kohli & Johnson 2011	Digital Transformation in Latecomer Industries: CIO and CEO Leadership Lessons from Encana Oil & Gas (USA) Inc
	Qualitative / Theory not used	U.S.A, DENMARK	(LEGO)	El Sawy et.at 2016	How LEGO Built the Foundations and Enterprise Capabilities for Digital Leadership
	Qualitative / Theory not used	U.S.A, DENMARK	PUBLIC SECTOR	Hansen, Kraemmergaard & Mathiassen 2011	Rapid Adaptation in Digital Transformation: A Participatory Process for Engaging IS and Business Leaders

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	Qualitative & Quantitative / Affordance theory & socio-cultural theory	SWIZERLAND	MANUFACTURING	Herterich, Brenner & Uebernickel 2016	Stepwise Evolution of Capabilities for Harnessing Digital Data Streams in Data- Driven Industrial Services
Information Systems Research	Qualitative / Configuration theory	U.S.A	LITERATURE ANALYSIS	El Sawy et.al 2010	Research Commentary—Seeking the Configurations of Digital Ecodynamics: It Takes Three to Tango
	Qualitative / Theory not used	U.S.A	HEALTHCARE	Agarwal et.al 2010	The Digital Transformation of Healthcare: Current Status and the Road Ahead
	Qualitative / Privacy boundary theory	U.S.A	HEALTHCARE	Anderson & Agarwal 2011	The Digitization of Healthcare: Boundary Risks, Emotion, and Consumer Willingness to Disclose Personal Health Information
	Qualitative / Theory not used	SWEDEN	AUTOMOTIVE	Akram 2012	Towards Servitization in the Age of Digital Innovation – A Case from Vehicle Industry
Journal of Management Information System	Quantitative / Disruptive innovative theory	U.S.A	MEDIA	KARIMI & WALTER 2015	The Role of Dynamic Capabilities in Responding to Digital Disruption: A Factor-Based Study of the Newspaper Industry
Journal of Information Technology	Qualitative / Theory not used	U.K, SWEDEN	TELECOM	Selander, Henfridsson & Svahn 2013	Capability search and redeem across digital ecosystems
	Qualitative / Theory not used	MALAYSIA	LITERATURE ANALYSIS	Runddy 2013	Digital Innovation in Design Practices: Technologies, Opportunities and Challenges
Sloan Management Review	Qualitative / Theory not used	U.S.A*	CONSULTING FIRM	Kane et.al 2016	Aligning the Organization for Its Digital Future
	Qualitative / Theory not used	U.S.A	LITERATURE ANALYSIS	Ross, Sebastian & Beath 2017	How to Develop a Great Digital Strategy
	Qualitative / Theory not used	U.S.A	CONSULTING FIRM	Michelman 2016	Leading in an Unpredictable World
		U.S.A, SWEDEN	AUTOMOTIVE	Svahn et.al 2017	Mastering the Digital Innovation Challenge

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	Qualitative / Theory not used				
	Qualitative / Theory not used	U.S.A	CONSULTING FIRM	Kane et.al 2015	Strategy, not technology, drives digital transformation
	Qualitative / Theory not used	U.S.A	CONSULTING FIRM	Kane 2016	The Dark Side of the Digital Revolution
	Qualitative / Theory not used	U.S.A	LITERATURE ANALYSIS	Weill & Woerner 2015	Thriving in an Increasingly Digital Ecosystem
	Qualitative / Theory not used	U.S.A	CONSULTING FIRM	Kane et.al 2017	Winning the Digital War for Talent
Journal of Strategic Information systems	Qualitative / Organization theory	FRANCE	LITERATURE ANALYSIS	Besson & Rowe 2012	Strategizing information systems- enabled organizational transformation: A transdisciplinary review and new directions

Table 5 Industry sector, Demographics location and research method of each article selected for the final analysis

The table 5 represents that a lot of research in this field has been carried out in U.S.A and the least in Asia. Moreover, the research method used in the articles selected was either qualitative or quantitative or a blend of both methods, showing a mix of statistical data i.e. descriptive data and application of statistical coding and numbers. Furthermore, out of 28 articles 22 articles didn't use any theory in their research. This table has a lot of significance as it gives a broader picture of the summary of systematic literature review in terms of displaying the concise related information which would be useful for future researchers.

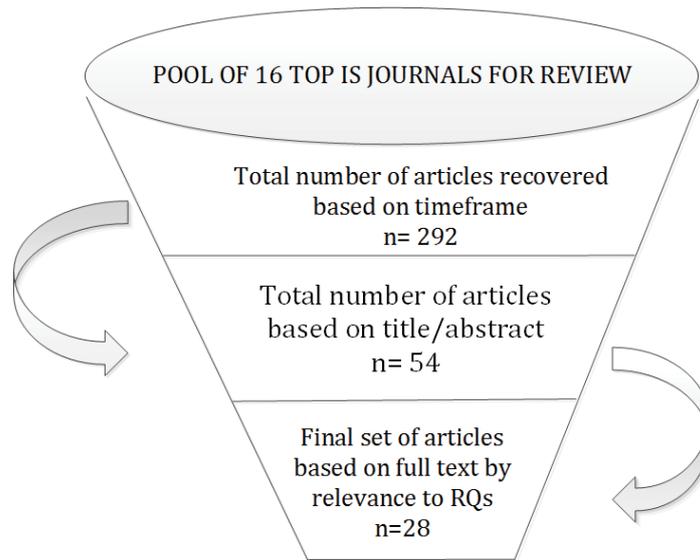


Figure 7 Depicting the number of relevant articles

The above figure 7 shows a summary of the selected articles and the process of their selection. It shows how in each step a thorough and systematic research was carried out for the selection of the final set of articles.

The result indicated that this field had been of significance for a long time as shown in figure 8. However, the level of publication activity increased considerably in 2016. Today, the number of IS journals publishing about digital transformation is substantial. The research topic however varies in its receptiveness to digitalization.

4.1.1 DEMOGRAPHIC FINDINGS

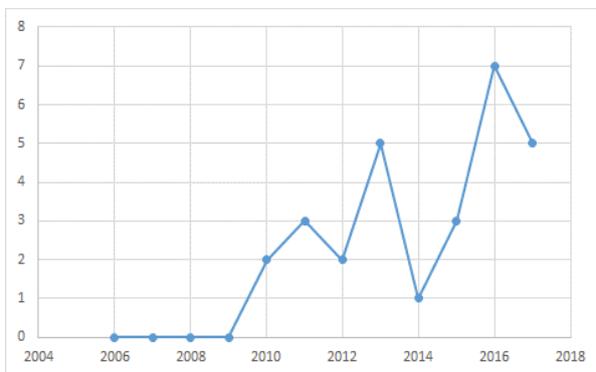


Figure 8 Publication trend of reviewed articles

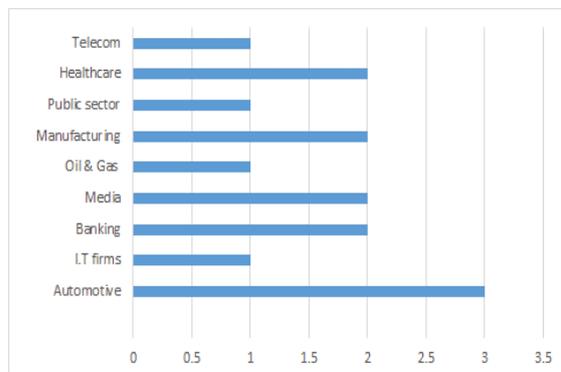


Figure 9 Selected papers by industry sector

Overall, out of 292 papers only 28 papers were relevant and showed a 9.58% relevance. The results also show that the research on Digital Transformation is not yet well established, which again highlights the significance of research in this field.

The systematic literature review produces a rich picture of the various characteristics of the selected articles when analysed deeply (Berger et al. 2014). Furthermore, results also demonstrate that research on digital transformation has extensively been focusing on automotive industry, banking sector, telecommunications and healthcare, oil and gas and manufacturing sectors as shown below in the figure 9.

Moreover, the literature review portrays that a large number of studies has concentrated on the US and European countries such as France, Germany, Switzerland, Denmark and UK, and in comparison, less work has been so far undertaken in Asia and other regions like the Middle East, Latin America, and Africa as shown in figure 10.

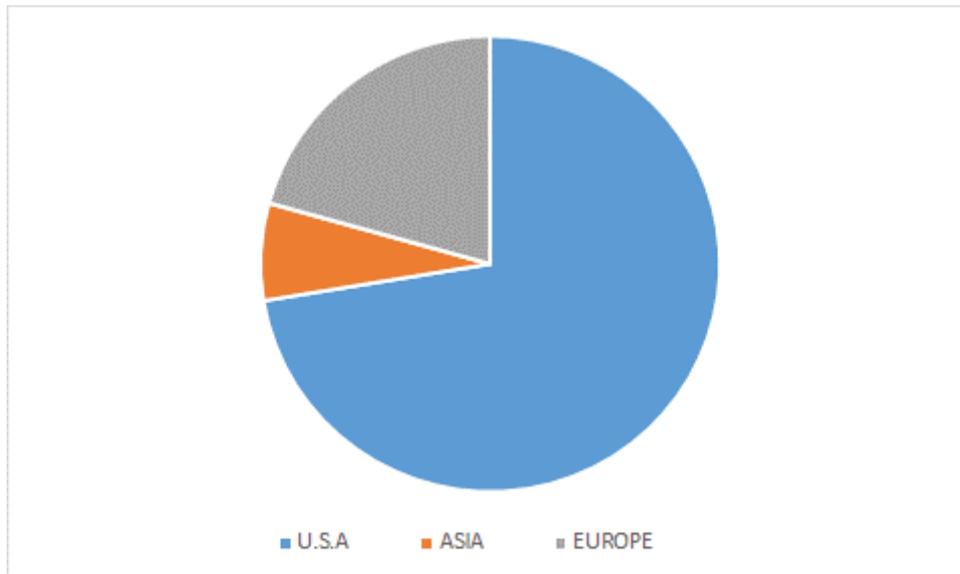


Figure 10 Continent of origin of selected articles

4.1.2 IDENTIFICATION OF DIMENSIONS

The data extracted from the analyses of data was then accumulated and examined for the identification of dimensions of digital transformation, digital business strategy and

organizational capabilities as shown in the table 6, table 7 and table 8 below. The dimensions developed in this research could be termed as the key success factors of digital transformation or the ingredients required for the digital transformation.

The secondary research questions 1, 2 and 3 have been answered in this section of the research. My SRQ 1, SRQ 2 and SRQ 3 were to determine what digital transformation, digital business strategy and organizational capabilities entails. Through the systematic literature review and the guidelines followed by the Wolfswinkel et al. (2013) the dimensions of each of digital transformation, digital business strategy and organizational capabilities were developed.

No	Dimensions of DT
DT1	Use of technology
DT2	Value creation
DT3	Structural changes
DT4	Financial aspects
DT5	Digital leadership
DT6	Agile & scalable digital operations
DT7	Digitally enabled CEX
DT8	Digital innovation /Digital artefacts
DT9	Executing business strategy digitally
DT10	Collaborative ecosystem of digital platform
DT11	Enterprise platform integration
DT12	Flexible & humanized workplace

Table 6 Dimensions representing digital transformation

The table 6 shows the dimensions that represent digital transformation. These dimensions as explained above were selected through the coding process guided by the guidelines given by Wolfswinkel et al. (2013). A total of 12 dimensions were selected that represent digital transformation.

No	Dimensions of DBS
DBS1	Collaborative ecosystem of digital platform
DBS2	IT infrastructure

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BDS3	Cross-functional integration
DBS4	Organizational structural changes
DBS5	Use of technology
DBS6	New dynamic capabilities

Table 7 Dimensions representing digital business strategy

The table 7 represents the dimensions of digital business strategy that were identified through the coding process guided by the guidelines given by Wolfswinkel et al. (2013).

No	Dimensions of OC
OC1	Digital leadership
OC2	Agile & scalable operations
OC3	Digitally enabled CEX
OC4	Digital innovation/ Digital artefacts
OC5	Flexible & scalable digital platforms
OC6	Internal & managerial capabilities
OC7	External collaboration of digital platforms
OC8	Dynamic capabilities
OC9	Plug & play capabilities
OC10	Operational capabilities

Table 8 Dimensions representing organizational capabilities

The table 8 represents the dimensions of organizational capabilities. A total of 10 dimensions were highlighted that represent organizational capabilities that are significant for an organization moving towards digital business strategy and digital transformation.

The coding process yielded different number of dimensions for each of the constructs. They were initially examined by myself. To have an unbiased approach as suggested by Wolfswinkel et al. (2013) they were then discussed with my mentors and after their feedback and a joint brainstorm session the final set of dimensions for each of the constructs emerged. Total number of dimensions for digital transformation are 12 and the total number of dimensions for digital business strategy are 6 and finally 10 are the total number of dimensions for organizational capabilities, which were extracted from the coding process. The merging of the categories was

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carried out by keeping in mind the guidelines given by Wolfsswinkel et al. (2013) which are the inductive and the deductive skills being carried out by the researchers.

The final set of dimensions for digital transformation, digital business strategy and organizational capabilities were given a specific code as shown in the tables 6, 7 and 8 for proper identification and presentation.

Digital Transformation (DT)	#	Dimensions of DT	Description
	DT1	Use of technology	Reflects a firm's capability to explore and exploit new technologies (Kane et al. 2016).
	DT2	Value creation	Reflects the influence of digital transformation on a firm's value creation (Kane et al. 2016).
	DT3	Structural changes	Changes refer to the modifications in organizational structures, processes & skill sets (Kane et al. 2016, Svahn, Mathiassen & Lindgren 2017).
	DT4	Financial aspects	Relates to a firm's need for action and ability to finance in response to digital transformation endeavour (Kane et al. 2016).
	DT5	Digital leadership	New leadership roles and governance that facilitate rapid digital transformation (Lansiti & Lakhani 2014, Jafarzadeh et al. 2015, Svahn, Mathiassen & Lindgren 2017).
	DT6	Agile & scalable digital operations	Strategic initiatives to build operations that are scalable, flexible and value capturing (Svahn, Mathiassen & Lindgren 2017).
	DT7	Digitally enabled CEX	Strategic initiatives for leveraging digital information for better data optimization (Svahn, Mathiassen & Lindgren 2017).
	DT8	Digital artefacts	Strategic initiatives for continuously navigating the digital landscape and technology scanning and implementation (Svahn, Mathiassen & Lindgren 2017).
	DT9	Executing business strategy digitally	Building business strategy digitally around the enterprise core distinctive competencies (Mithas, Tafti & Mitchell 2013, Lansiti & Lakhani 2014).
	DT10	External collaboration of ecosystem of digital platform	Leveraging ecosystem of partners for complementary competencies involving value proposition and revenue sharing (Gudergan & Mugge 2017).
	DT11	Enterprise platform integration	Intensive interactive digital connectivity to the outside and inside enterprise (Gudergan & Mugge 2017).
DT12	Flexible & humanized workplace	Providing a flexible and attractive workplace for born digital employees (Gudergan & Mugge 2017).	
Digital Business Strategy	#	Dimensions of DBS	Description
	DBS1	External collaboration of ecosystem of digital platform	Leveraging ecosystem of partners for complementary competencies involving value proposition and revenue sharing (Gudergan & Mugge 2017).

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	DBS 2	IT infrastructure	A fusion of IT with business using IT application systems (Kane et al. 2016, Svahn, Mathiassen & Lindgren 2017, Bharadwaj et al. 2013).
	DBS 3	Cross-functional integration	Reconfiguration of IT and business resources across multiple organizational processes (Svahn, Mathiassen & Lindgren 2017).
	DBS 4	Organizational structural changes	Rethinking the role of corporate IT and CIO (Gudergan & Mugge 2017).
	DBS 5	Use of technology	Extent to which a firm engages in any category of IT investment (Setia, Venkatesh & Joglekar 2013).
	DBS 6	New dynamic capabilities	Building advance capabilities in response to environmental turbulence (Gudergan & Mugge 2017).
Organizational Capabilities (OC)	#	Dimensions of OC	Description
	OC1	Digital leadership	Developing and acquiring new competencies and ambidextrous skill (Svahn, Mathiassen & Lindgren 2017).
	OC2	Agile & scalable operations	Building robust and flexible operations to overcome the constraints of legacy systems (Svahn, Mathiassen & Lindgren 2017, Gudergan & Mugge 2017).
	OC3	Digitally enabled CEX	Deeper analysis of value proposition and seamless integration of functional silos across the enterprise (Svahn, Mathiassen & Lindgren 2017).
	OC4	Digital artefacts	Developing continuously new digital processes, infrastructures, services and products handling large amount of data (Weill & Woerner 2015, Svahn, Mathiassen & Lindgren 2017).
	OC5	Flexible & scalable digital platforms	Platforms that are tailored to their particular need (Karami & Walter 2015).
	OC6	Internal & managerial capabilities	Defining roles and structures having diverse skill set (Karami & Walter 2015).
	OC7	External collaboration of ecosystem of digital platforms	Developing collaboration with external partners to co-create value (Karami & Walter 2015).
	OC8	Dynamic capabilities	Powerful capabilities to cope up with turbulence (Bharadwaj et al. 2013, Schumann & Tittmann 2015, Levy & Ellis 2006, Weill & Woerner 2015, Gudergan & Mugge 2017).
	OC9	Plug & play capabilities	Assessing unique drivers in digital settings for modularizing the business processes (Bharadwaj et al. 2013).
	OC10	Operational capabilities	Developing capabilities for sudden changes in market demands (Setia, Venkatesh & Joglekar 2013, Gudergan & Mugge 2017).

Table 9 Underlying dimensions of digital transformation, digital business strategy and organizational capabilities

The table 9 shows the summary of findings for the SRQ 1, SRQ 2 and SRQ 3. Table 9 delineates the dimensions of each of the three concepts along with their description. I identified twelve dimensions of digital transformation. Similarly, six dimensions of digital business strategy and ten dimensions of organizational capabilities were identified. This was to address the gap in

the literature in terms of providing a synthesis of the literature for identification of underlying dimensions for each of the three factors. The above table summarizes the findings from the extant literature and gives a guideline to upcoming researchers and industry professionals.

4.1.3 SUMMARY OF FINDINGS: A CONCEPTUAL FRAMEWORK

The articles recovered from systematic literature review also facilitated in identifying the relationship between the three research concepts of this research i.e. organizational capabilities, digital transformation and digital business strategy. It is noted that digital business strategy requires the development of new organizational capabilities that are developed and reconfigured on a continuous basis (Bharadwaj et al. 2013, Sia, Soh & Weill 2016, Setia, Venkatesh & Joglekar 2013). Additionally, in order to seize the benefits of digital transformation, more efforts need to be focused on the development of a competitive digital business strategy (Ross, Sebastian & Beath 2017 – i.e. specifically digital strategy initiatives need to be defined for the execution of the digital transformation (Kane et al. 2015). In addition, past literature also highlights that market-alignment drivers of organizational capabilities would help identify the organization's drivers for digital transformation in electronic-commerce (Karimi & Walter 2015 & Herterich, Brenner & Uebnickel 2016) which in turn would lead to better business performance (Mithas, Tafti & Mitchell 2013). The figure 11 below represents the relationship between organizational capabilities, digital transformation and digital business strategy.

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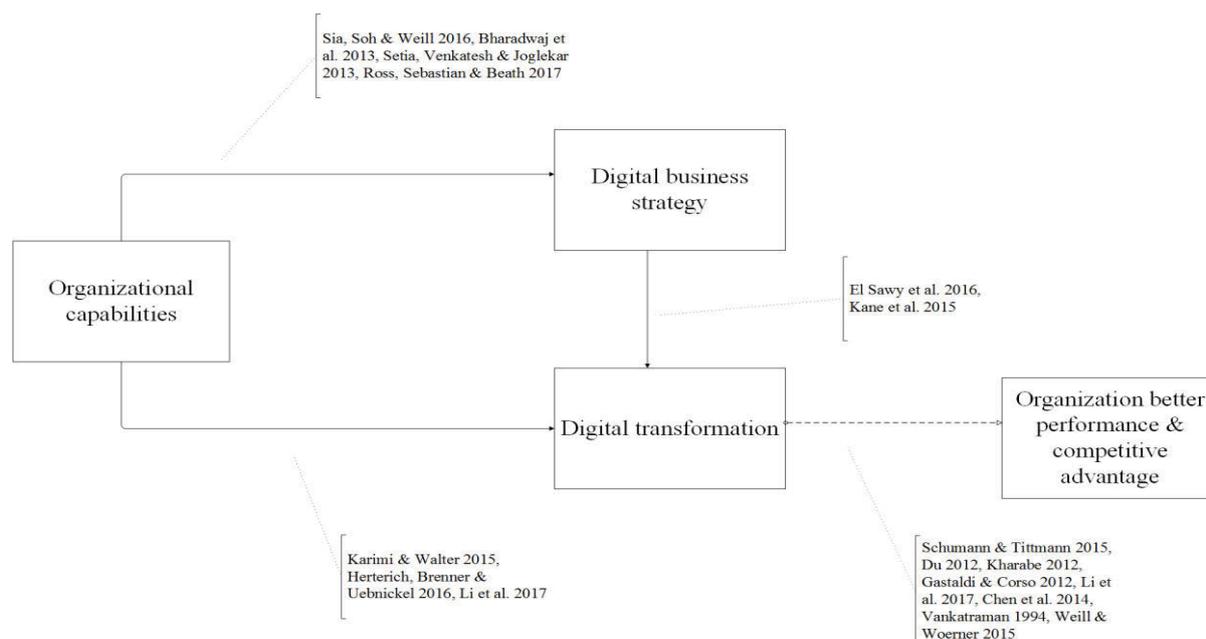


Figure 11 Inter-relationship between organizational capabilities, digital transformation & digital business strategy

Figure 11 represents the inter-relationship between the organizational capabilities, digital transformation and digital business strategy. It shows organizational capabilities are required for the development of digital business strategy and also for the digital transformation by an organization. Moreover, digital business strategy also plays a vital role in the digital transformation process. Furthermore, this whole process once completed would lead an organization towards better performance and competitive advantage.

Further I have followed the Wolfswinkel et al. (2013)'s guidelines for the analysis of literature review results. It involves a systematic reading and application of codes to the final set of published articles. The final set of articles recovered from systematic literature review represents the best available literature knowledge for this research area. Therefore, the final set of articles recovered from systematic literature review have been investigated carefully by applying the approach mentioned by Wolfswinkel et al. (2013) which would lead to identification of categories, sub-categories and core categories/themes. The process of literature review for this research following Wolfswinkel et al. (2013)'s guidelines has been shown in figure 4.

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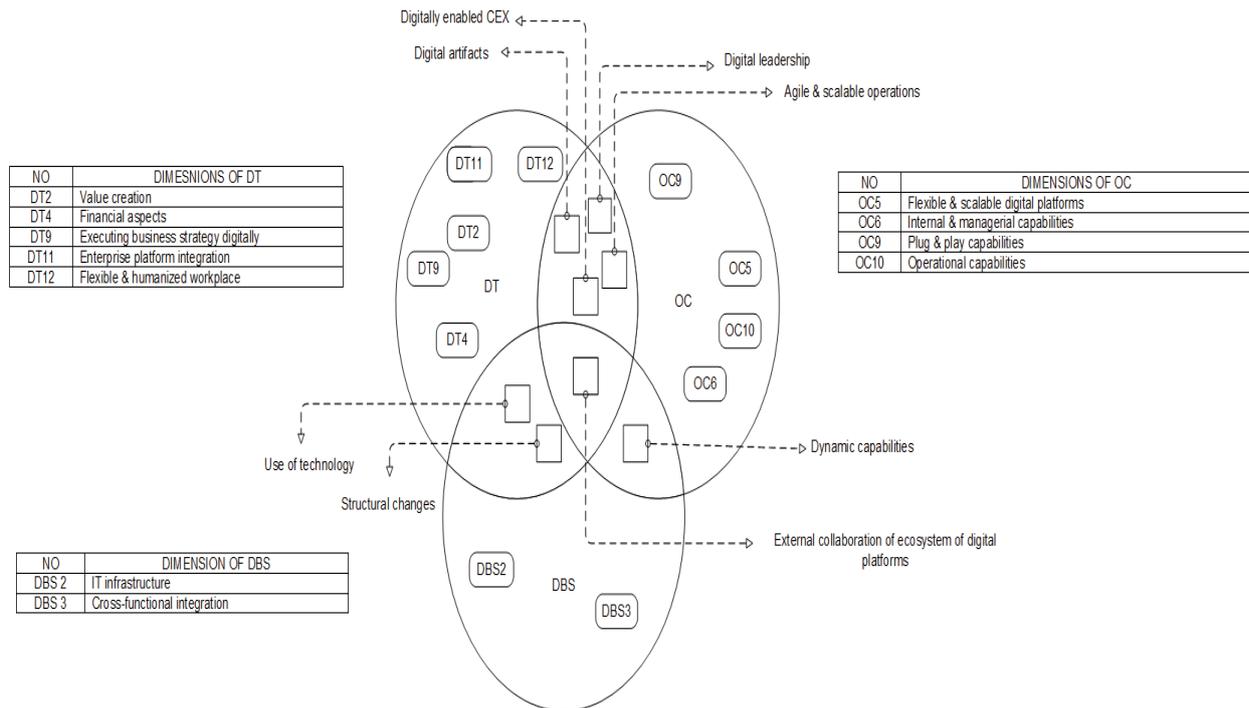


Figure 12 Depicting the graphical representation of organizational capabilities, digital transformation and digital business strategy

It signifies and highlights the common categories that have been overlapped and how they are related. A solid representation of the gathered data is very significant for those who want to grasp an overview of the findings and systematic review analyses (Wolfswinkel, Furtmueller & Wilderom 2013). The graphical representation depicts that the common dimension shared by digital transformation, digital business strategy and organizational capabilities is ‘external collaborative of ecosystem of digital platform’. Also the common dimension shared by digital transformation and digital business strategy are named as ‘use of technology’ and ‘structural changes’ whereas the common dimensions shared by digital transformation and organizational capabilities are named as ‘digital leadership’, ‘agile and scalable operations’, ‘digitally enabled CEX & ‘digital artefacts’. Moreover, the common dimension shared by digital business strategy and organizational capabilities is ‘dynamic capabilities’ as shown in figure 12.

In the literature so far, there hasn’t been any articles representing the inter-relationship of the digital transformation, digital business strategy and organizational capabilities. This framework shown in figure 12 signifies and highlights the organizational capabilities that an organization needs to acquire for deploying digital transformation and digital business strategy. It also indicates how digital business strategy and digital transformation are inter-linked to each other. It shows that the process of digital transformation is basically the digital business strategy

in action. The digital business strategy if deployed by an organization, is only the blueprint which further leads to digital transformation.

Although digital transformation, digital business strategy, and organizational capabilities are termed as three different concepts, they actually have inter-relationships as shown in figure 8. The external collaboration of ecosystem of digital platforms shared by all the three concepts highlights that developing the collaboration with external partners is significant in today's digital world for co-creating value and better organizational performance. The firm's digital leadership, agile and scalable operations, digital customer experience (CEX) and digital artefacts, can manifest organizational capabilities required for pursuing the digital transformation to align with the changing external environments. Digital leadership describes that organizations should acquire more recent and updated digital skills and competencies whilst introducing new leadership roles to match the electronic commerce's changing external environments. Likewise, building flexible and vigorous operations would assist in overcoming the previously embedded legacy systems further assisting the organization in deploying the digital transformation to make the firm's electronic commerce remain relevant. Furthermore, digitally enabled CEX is another important element in response to changing customers, as it assists with analysing customers' value proposition in the electronic commerce context, which would be achieved by developing and implementing the digital processes and infrastructures that would be beneficial in handling large amounts of data. Digital capabilities facilitated by digital artefacts would therefore enable the firm to create or adapt new products / services for its electronic commerce to fulfil the desired digitally enabled CEX to fit with the changing customer needs.

4.2 FINDINGS FROM INTERVIEWS WITH EXPERTS

This section illustrates the findings that were noted from the interview with experts.

4.2.1 PILOT INTERVIEW

Before conducting the interviews, a pilot test was conducted. The pilot test for the interview question has been of foremost importance as it facilitates the refinement of the interview questions and updating of the useful details if any significant information is missing. Before conducting the interview with the experts two pilot interviews were conducted. It helped me in

understanding and conveying my interview questions more appropriately and precisely. The feedback from the pilot test was carefully noted and the required steps were taken to fulfil the missing elements.

The interviews conducted were auto-taped as mentioned earlier. It was explained to the interviewee that recording would help me in capturing all the discussion. The recordings were then transcribed by using the Nvivo. The process of Nvivo helped in gathering/transcribing the data from the interviews conducted. Nvivo was used for exploring/analysing the data and for visualization of the data gathered. Nvivo helped in accurately finalizing the data gathered from the interviews and effectively summarizing/analysing the responses of the interviewees.

4.2.2 DEMOGRAPHICS OF THE PARTICIPANTS

The below table shows the characteristics of each interviewee specifying the role of the interviewee, gender, industry and number of years' experience in digital transformation. A total of 7 participants participated in the interviews with experts. To receive the combination of responses from academia and industry, the participants were selected from both the sectors. The majority of the participants were selected from the support of my supervisors.

Participants	Gender	Industry	No of yrs	Role
P1	Male	Public Sector	9	Data scientist
P2	Male	Banking sector	20	CIO
P3	Male	Public sector	5	I.T Strategy Manager
P4	Female	Academia & Consulting	10	A. Professor
P5	Male	Telecommunication	13	Data scientist
P6	Male	Academia & Consulting	7	A. Professor
P7	Male	Telecommunication	7	Consultant /Analyst

Table 10 Demographics of interview with experts

Apart from the interview with experts, I also conducted a focus group which was carried out like a brainstorm session. One of my supervisors assisted me in conducting the focus group. There were 11 participants that participated in this session. To receive feedback from the industry side, all the participants of this session were from industry and were working in the digital transformation for more than 4 yrs.

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Focus group participants	Gender	Industry	No of years	Role in the organization
FGP 1	Male	I.T	5	Solution architecture
FGP 2	Male	I.T	5	I.T Strategy Manager
FGP 3	Male	I.T	5	Consultant /Analyst
FGP 4	Male	I.T	5	Telecom Manager
FGP 5	Female	Telecommunication	10	I.T Strategy Manager
FGP 6	Male	I.T	10	CIO
FGP 7	Female	I.T	20	Consultant /Analyst
FGP 8	Male	Banking sector	5	Consultant /Analyst
FGP 9	Male	Banking sector	10	Project manager
FGP 10	Male	Banking sector	10	CIO
FGP 11	Male	Telecommunication	10	Consultant /Analyst

Table 11 Demographics of interview focus group

A total number of 7 interviews were conducted individually with interview with experts and a focus group was also conducted in which 11 experts participated. The experts from the interview and focus group sessions were mainly from the I.T sector (33.3%), telecommunication sector (22.2%) and banking sector (22.2%). Moreover, the majority of participants were consultant/analyst (27.8%), I.T strategy manager (22.2%) and CIO (16.7%).

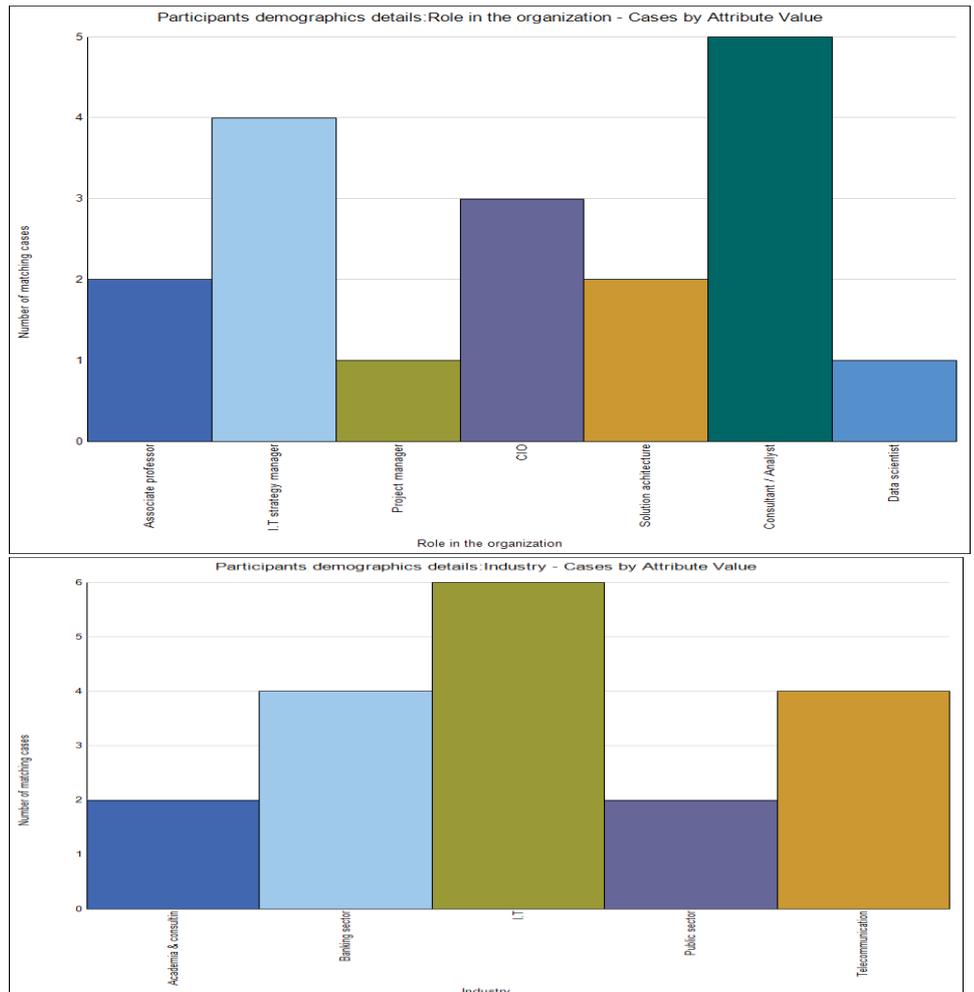


Figure 13 Role and industry background of the participants

4.3 REVISED FRAMEWORK AND UPDATED FINDINGS

This section summarizes the responses given by the participants in the individual session i.e. interview with experts and the focus group session. With the help of Nvivo I was able to summarize and analyse the data that was gathered from the interview session. Following table shows the summary of the themes/items that were discussed by the participants. For authenticity sake the table below also represents the participant's quotes and the source of a specific theme.

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Table 13 A summary of the themes discussed by the participants

0	THEMES/FINDINGS	SOURCES	PARTICIPANTS QUOTE
1	FRAMEWORK TO BE ITERATIVE PROCESS	FGP11	"I think the arrow should go in both directions from and to organizational capabilities and digital business strategy"
		FGP2	"I would say DT is an iterative process"
		FGP10	"I think the process of digital transformation is not one way rather two ways"
		FGP1	"I agree that the process of transformation is an iterative process"
		FGP6	"Transformation always needs to be iterative"
		FGP9	"I would also agree with the process to be iterative"
		FGP7	"Transformation is an iterative process. Showing an endless process"
		P4	"I would say they arrow should be two ways"
2	OTHER FACTORS INVOLVED OTHER THAN OC	P7	"Further I think that the digital transformation is not a one way process a continuous journey , it is an iterative process"
		FGP5	"I think external alignment is also an important factor in the process of transformation"
		P3	"external competition could also play important role in digital transformation"
		P4	"CEO theme and their experiences might influence their way of designing the strategy"
3	DIGITALLY ENABLED CEX MOST FUNDAMENTAL DIMENSION - Customer centricity	P7	"what you don't have in the framework is the external impact i.e. the disruption the biggest driver of DT"
		FGP1	"In my current organization as well, they always say how this specific service or product would add value to the customer. So they focus a lot on customer centricity"
		P2	"Digital transformation in my experience is achieving a greater customer experience, customer centricity being the core driver"
		P6	"The digitally enabled CEX is very fundamental"
4	MERGING OF DIMENSIONS	P7	"Digitally enabled CEX would be the top priority for every company who are aiming to go for the digital transformation"
		FGP8	"I think I can hardly differentiate between OC 8 Dynamic capabilities and OC 10 Operational capabilities"
		P1	"I believe DT5 can be regarded as a subset of DT3 and OC 10 could fall into OC8"
		P2	"the dynamic capability should be linked with digital leadership"
5	DT AN ECOSYSTEM WITHIN AN ORGANZIATIONAL ECOSYSTEM	P7	"I would also say that OC 1 digital leadership is like a subset of OC 8 dynamic capabilities and DT6 and DT 3 are related"
		FGP1	"For me digital transformation is something that resides in the business strategy"
		P2	"DT becomes a subset of business strategy and then there is no difference between digital strategy and business strategy"
		P7	"D6 and DT 3 are related I think and I would also say that OC 1 digital leadership is like a subset of OC 8 dynamic capabilities"
6	ACKNOWLEDEGMENT OF OTHER FACTORS	FGP1	"The all dimensions of digital transformation make sense. But maybe it would be more efficient to classify in categories. "
		P4	"If you go sector wise then perhaps some organizational capabilities are more critical than the others"
		P7	"I would say categorizing the dimensions would be more efficient"
7	REVISION & UPDATION OF DIMENSIONS		
	Use of technology to be modified	FGP11	"use of technology would not necessarily be part of digital business strategy because of category of IT investments doesn't reflect digital"
		FGP2	"I don't see use of technology a part of strategy"
		P3	"I suggest that use of technology should be named as use of data as this is one of the essential element "
		P4	"Use of technology is very wage. It should be more specific like investment in Artificial intelligence, robots etc all other technologies"
		P6	"Use of technology is very wage and generic"
		P7	"Technology itself is not valid in today's world. I would say the extend of use of technology doesn't show that the organization is digital"
	Flexible & humanized workplace to be modified	FGP2	"Culture aspect should be added in this dimension"
		FGP7	"Probably extant the DT 12 flexible and humanized workplace to include the cultural aspect. Because digital transformation is not only just about the workplace"
		FGP1	"I would challenge that why a humanized workplace could be a dimension of digital transformation"
		P3	"More over flexible and humanized workplace has not much to do with digital transformation as it has nothing to do with digital"
		P4	"It should be replaced to distribution of the workforce on the basis of their digital capabilities"
		P6	" The flexible and humanized workplace can be applied to anything, its very generic"
	IT infrastructure to be moved to OC	P7	"digital transformation journey is almost nothing to do with the flexibility in the timing and overall environment of the workplace"
		FGP1	"My first feeling is to move the IT infrastructure to organizational capability dimensions"
		FGP8	"we do need IT infrastructure in strategy part"
		FGP9	"IT infrastructure as it is certainly not a particular driver or an essential dimension of digital business strategy"
		FGP2	"IT infrastructure is not specifically a part of strategy "
		P3	"According to me IT infrastructure has more to do with organizational capabilities instead of digital business strategy"
	Digital innovation to be added in DBS	P7	"IT infrastructure shouldn't be in DBS according to my knowledge and I think it should be moved to organizational capabilities"
		FGP7	"Digital innovation is a method to create value in today's world so digital innovation should be added as a dimension in digital business strategy"
FGP6		"I prefer the digital innovation part as a dimension in digital business strategy as well"	
FGP2		"I would say digital innovation leads to value creation so yes it is an important part of digital business strategy"	
FGP9		"Digital innovation should be moved to DBS part"	
P3		"Digital innovation would be the most important tool for digital business strategy"	
Human skill to be added in OC	P4	"Digital innovation could also affect digital business strategy and in this case you can see the innovation of company for the last five yrs"	
	P7	"Digital innovation should be added to DBS dimensions"	
	FGP11	"May be you could amend to a more specific human capability related or structure related"	
	FGP1	"I would say the capabilities for digital would be more related to human skill set"	
Financial aspect being least imp in DT & moved to DBS	P5	"There is need to expand the organisational capabilities for hiring the right people with required skills"	
	P7	"would say human skills is missing in the organizational capabilities and it should be added in that"	
	FGP1	"I would see the financial part more in the digital business strategy part (DBS) rather in the digital transformation part. Financial should be a part of the strategy "	
	FGP8	"I am a bit not comfortable with the idea of putting DT 4 financial aspect in digital transformation dimension however should be moved to the strategy part"	
		P2	"The least important is the financial aspect because what traditionally happens is people say we don't get the funding and say it is expensive but they are coming from the wrong mind set."

As mentioned above the interviews after being recorded were transcribed and analysed for the emergence of themes. Some of the items were considered validated as all the participants agreed on them but the existence of some items were questioned and critiqued. The frequency of the items that were disagreed by three or more participants has been added in the table above. As suggested by Lynn (1986) all the items that were discussed by at least three experts were grouped together as shown in the table above. As presented in the table above, following are the themes /items that were discussed by three or more participants showing their validity for revision.

-Framework to be iterative

According to participants, the framework showing the process of digital transformation is not a one-time process rather it is an iterative process which keep occurring again and again with the addition of new and updated organizational capabilities. At the end of each successful iteration some unique capabilities are installed in the organization and with that updated capability the organization is able to perform more efficiently towards better digital transformation.

The process of digital transformation is considered to have influence on digital business strategy as well as organizational capabilities. Strategies are considered to shape an organization's capabilities and once an organization has developed a strategy, the whole organization works in updating the organizational capabilities as it is not one time process; it works in iteration. Moreover, organizational capabilities is considered to be a behaviour and the digital transformation is the action of that specific behaviour therefore every time an organization acquires digital transformation, it enters an iterative process where the organizational capabilities and strategies are updated with each iteration.

“Transformation is an iterative process. Showing an endless process”

-Other factors involved other than OC

Participants suggested that apart from the organizational capability role in digital business strategy and digital transformation, there could be other factors involved as well. So it would be interesting to know that it is not only the role of organizational capability in deploying digital business strategy but other factors like human capital, location, could be playing a

vital role as well. Some mentioned that external competition could also play a vital role in this process.

It is believed that digital transformation is always initiated as a result of a firm's perceived external opportunities or threats. An organization only goes towards digital transformation if it is facing some external factor which in most cases is the external competition. We have hundreds of examples in the past where organizations were progressing slowly in their own comfort zone until they were faced by some competitor who adopted a certain marketing strategy, consumer strategy or a certain technology which forced the organization to change its strategy as well. In most cases digital transformation is taken up by various organization only because their competitor had already chosen that path and therefore they had to choose it for their survival then to go for digital transformation as well.

"What you don't have in the framework is the external impact i.e. the disruption the biggest driver of DT"

-Digitally enabled CEX most fundamental dimension (Customer centricity)

According to four participants digitally enabled CEX is all about hearing about the customer journey. Customer centricity is one of the significant tools during the process of digital transformation. Digital transformation is about taking the lens for the customer backwards. It is a key part. One of the other important tools is the design competency; the design of the product and the services should be linked backward with the customer perspective. Services designed in such a way that customers are satisfied with it. Most services are developed with scaling and efficiency but not about customer CEX. Many participants agreed that designing interaction is really a good attempt towards digital transformation. Most organization do not have that mind set. Now is the time that organizations should be presenting to the customer what they need rather just hearing from them. Digital services are able to provide a great experience which most of the companies are missing.

"In my current organization as well, they always say how this specific service or product would add value to the customer. So they focus a lot on customer centricity"

-Merging of dimensions

During the interviews with experts and focus group, it was analysed and discussed by various participants that some of the dimensions represented looked alike so the participants suggested that those dimensions should be merged together to give a better understanding. The participants agreed that operational capability (OC10) falls into dynamic capabilities (OC8) so they could be merged. They seemed similar because dynamic capability is considered to be the extra-ordinary capabilities organizations need for the turbulent environment and once an organization develops dynamic capabilities, the operational capabilities come under the umbrella of dynamic capabilities. Moreover, it was discussed in the interviews by various participants that agile and scalable operations (OC2) in practice lead an organization towards flexible and scalable digital platforms (OC5) so they could be merged as well. Furthermore, the digital leadership (DT5) might be a subset of structural changes (DT3) according to one of the participants.

"I can hardly differentiate between OC 8 Dynamic capabilities and OC 10 Operational capabilities"

-DT an ecosystem within an organizational ecosystem

According to the participants the digital transformation is a subset of digital business strategy. The important thing is not to make a business strategy or transformation but this context has to be understood by the overall organization that they need to transform. Digital transformation was termed as an ecosystem within an organization ecosystem by a few of the participants. Generally digital transformation becomes a subset of digital strategy which over time grows and the organization actually becomes prosperous. It starts with the change within the organization and it grows and grows.

"DT becomes a subset of business strategy and then there is no difference between digital strategy and business strategy"

-Acknowledgement of other factors

The participants of both sessions i.e. interview with experts and focus group (which was conducted like a brainstorm session) also suggested some factors that were missing in this research and would be beneficial if they could be added as well. As digital transformation is a

wide topic and has a wide understanding from sector to sector so it might be efficient to do this research by selecting a specific sector. Moreover, to categorize the dimensions would also give a better understanding to the reader for future research. Additionally, it was discussed that the dimensions if explained on the basis of some sort of perspective either customer perspective or organizational perspective would also be effective.

"I would say categorizing the dimensions would be more efficient"

-Revision & updating of dimension

-Use of technology (DT 1 & DBS 5) to be modified

The participants suggested that use of technology should be modified as this term is very vague and generic as it cannot support in measuring or analysing the use of certain technology which is a key part of digital transformation. Use of technology merely shows the broader term which actually does not fulfil the requirement of the specific dimension.

"Use of technology is very vague. It should be more specific like investment in Artificial intelligence, robots, etc. all other technologies"

-Flexible and humanized workplace (DT 12) to be modified

It was discussed actively during the interviews and focus group that flexible and humanized workplace has not much to do with digital transformation as it has nothing to do with digital as in the real world the digital skills should be implanted instead of humanized workplace. Digital transformation has more to do with the updated digital culture, technology and digital leadership instead of humanized workplace and the flexibility of the workplace.

"Digital transformation journey is almost nothing to do with the flexibility in the timing and overall environment of the workplace"

-IT infrastructure (DBS 2) to be moved to OC

Most of the participants agreed that developing of strategies requires taking strategic steps towards the common goals of the organization. IT infrastructure including the IT software like CRM, SCM and ERP would be an organizational capability part. Therefore, IT infrastructure should be moved to organizational capability dimension.

"IT infrastructure is certainly not a particular driver or an essential dimension of digital business strategy"

-Digital innovation to be added in digital business strategy

During the interviews the participants agreed that the digital business strategy could not be designed without value creation being a part within a strategy. Using digital technologies for creating value would certainly be an important aspect of the strategy part. Hence digital innovation would be added in the digital business strategy dimensions.

"Digital innovation is a method to create value in today's world so digital innovation should be added as a dimension in digital business strategy"

-Human skill to be added in OC

Nowadays in this digital world, talent sourcing it is very important aspect in the capabilities of an organization according to the participants. It helps the organization in creating more innovative products and services by sourcing the appropriate specialized digital skills. Therefore, human skills should be added in OC dimension.

"There is need to expand the organisational capabilities for hiring the right people with required skills"

-Financial aspect being least important in DT and should be moved to DBS

Some participants highlighted that a few factors might be of less importance than the other factors. Digital is the opportunity to spend money effectivity. Organizations need to change the way are spending money. Most of the organizations have expensive transformation programs where they spend more money on top of what they are originally doing. So, may be, deploying the right set of resources won't make them spend more on things that are not required. So, the key question is on what to spend and what not to spend. So basically, organizations do spend money but they do it on the wrong things. As this is out of the scope of my study at the moment, future research can take this into considerations.

It was discussed in the interviews that financing of a project always comes under discussion during the strategy development. If the financial viability of the concept is not suitable then the concept is rejected during the strategy part. Therefore, the financial part should be moved to the strategy session.

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"The least important is the financial aspect because what traditionally happens is people say we don't get the funding and say it is expensive but they are coming from the wrong mind set"

CHAPTER 5. DISCUSSION AND CONCLUSION

5.1 DISCUSSION OF FINDINGS

The two methodologies used for this research had been very fundamental in achieving the desired picture of the inter-relationship between organizational capabilities, digital business strategy and digital transformation.

The first methodology which was the systematic literature review assisted me in finding what the past literature says about the three constructs of this research. The second methodology helped in developing a better understanding of the framework and its dimensions from the expert's point of view. Basically, my findings were validated if they made sense in the practical world and if so, how they could be more aligned to actual scenarios and circumstances.

The primary research question and three secondary research questions have been effectively answered by the two methodologies selected. The systematic literature review resulted in designing of the framework, which essentially answers the primary research question of this research. This process showed that organizational capabilities influence's digital business strategy and digital transformation meaning that any organization planning for the transformation should possess the requisite set of organizational capabilities. Secondly it is also presented in the framework that digital business strategy influences digital transformation. Therefore, an organization preparing itself for digital transformation should develop their digital business strategy accordingly. However, this framework was critiqued during the interview stage as the majority of the participants agreed that during the digital transformation process the organization enters into an iterative process which keeps occurring again and again with the addition of a new and updated set of organizational capabilities. According to the experts' own experience, the transformation is termed as a continuous process (as shown in the table below) which brings about changes in the capabilities, architecture and the strategy of the organization. Moreover, it was highlighted in the experts' interviews that there could be other factors other than organizational capabilities influencing digital business strategy and digital transformation. It was discussed in the interview process that factors such as digital disruption, external competition, human capital and CEO mindsets and experiences could affect this process of digital transformation.

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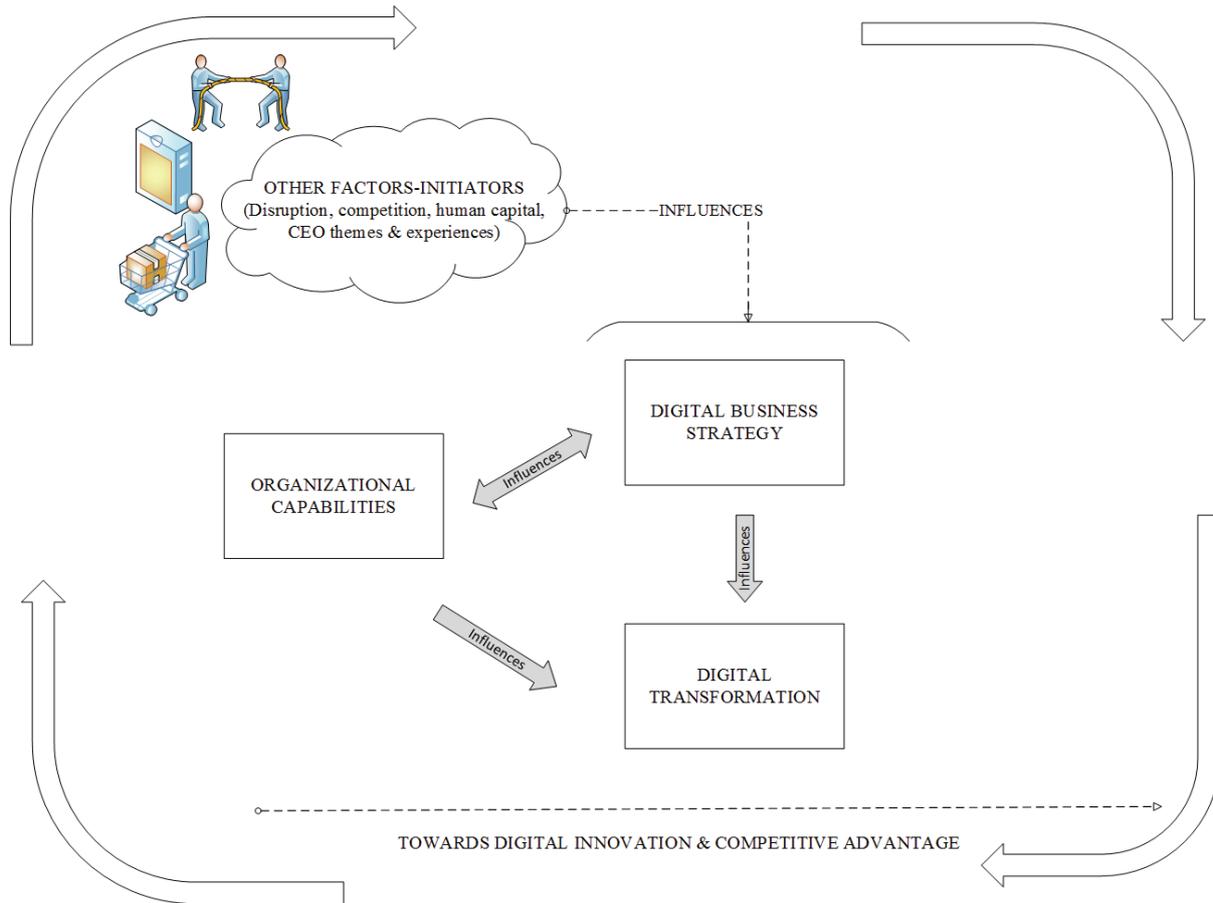


Figure 14 Updated framework

“Transformation is a continuous journey. Therefore the strategy and the architecture would change during this process”

The three secondary research question which were: “what dimensions represent digital transformation, digital business strategy and organizational capabilities” had been effectively answered as well. From the systematic literature review process, the final set of dimensions for digital transformation, digital business strategy and organizational capabilities emerged and then these were discussed with the experts in the interview and focus group session. It was discussed in the interview process that a few dimensions should be merged because they represented the same thing such as dynamic capability was considered to a very generic and wide capability as it covers almost all of the dimensions. Moreover there were few suggestions regarding the modification of the dimension such as “use of technology” being a too vague and general/common item, “Humanized and flexible workplace” as flexibility has nothing to do

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with digital world in general, “IT infrastructure to be moved to OC” being not an essential aspect of digital business strategy and “digital innovation to be added in digital business strategy” as value creation should be a fundamental item during the strategy development as digital innovation leads to value creation. A company could easily see the innovation for the last five years by seeing the sales that came from the new product showing the outcome of a specific innovative product or a service. In this way you would know if the product is innovative or not. The updated dimensions of digital transformation, digital business strategy and organizational capabilities have been listed below:

No	Dimensions of DT
DT1	Use of data /investment in artificial intelligence
DT2	Value creation
DT3	Structural changes
DT4	Digital leadership
DT5	Agile & scalable digital operations
DT6	Digitally enabled CEX
DT7	Digital innovation /Digital artefacts
DT8	Executing business strategy digitally
DT9	Collaborative ecosystem of digital platform
DT10	Enterprise platform integration
DT11	Digital culture/skill workplace

Table 14 Updated dimensions representing Digital transformation

No	Dimensions of DBS
DBS1	Collaborative ecosystem of digital platform
DBS2	Digital innovation
DBS3	Cross-functional integration
DBS4	Organizational structural changes
DBS5	Use of technology
DBS6	New dynamic capabilities
DBS7	Financial aspect

Table 15 Updated dimensions representing Digital business strategy

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No	Dimensions of OC
OC1	Digital leadership
OC2	Agile & scalable operations
OC3	Digitally enabled CSU
OC4	Digital innovation/ Digital artefacts
OC5	Flexible & scalable digital platforms
OC6	Internal & managerial capabilities
OC7	External collaboration of digital platforms
OC8	Dynamic capabilities
OC9	Plug & play capabilities
OC10	Operational capabilities
OC 11	IT infrastructure
OC 12	Human skills

Table 16 Updated dimensions representing organizational capabilities

This research has provided significant contribution to the existing literature on digital transformation, digital business strategy and organizational capabilities. This research provides a framework to the researchers and professionals working in industry displaying the process of digital transformation and how three constructs digital transformation , digital business strategy and organizational capabilities influence each other and their importance and dependence on each other in this process. The organizations currently planning to transform or have tried to transform themselves but failed, would have clear understanding of the digital transformation process and the elements / attributes each of them are made of. Further the findings of this research displays provides with a set of external factors that effect this process. Moreover as discussed with the experts in the interview process, majority of the organizations fail to understand the digital transformation process by considering it a one time process, however in reality it's a continous process in which the organizations continuously update their capabilities with the help of advance digital technologies.

5.2 CONTRIBUTIONS TO THEORY

This research has effectively answered the gaps that were identified during the literature review. I have significantly contributed to the body of knowledge of digital transformation. Moreover, my contribution has also been published (Nadeem, Abedin, Cerpa & Chew 2018). The first part of this research which was conducting systematic literature review, its overall process of selection of articles and the results have been published in the Journal of theoretical and applied electronic commerce research (JTAER). I plan to soon publish the discussion of the interview with experts and how this process has validated my findings from systematic literature review.

5.3 SYSTEMATICALLY REVIEWING THE LITERATURE

It is significant to study the past literature systematically in any field of study as it results in designing new frameworks and identifies misconception in the field (Webster & Watson 2002, Cao et al. 2015). The findings from this research show that very little has been researched or published in IS journals regarding this area of study. Moreover, this area hasn't been systematically researched by previous researchers. Therefore, this study would assist any future researchers and practitioners to review the past findings that have been analysed through the systematic literature review. Hence this research with the help of the method "systematic literature review" has summarized the past findings which would be beneficial for researchers in this field.

This research provides significant insights into digital transformation process which is achieved by systematically reviewing the past literature. This area of research was thoroughly investigated by the systematic literature review process. Therefore, this process helped me in uncovering the answers to the research questions and filling the past gaps in a structured way. This is so far the first research in this area of study that has systematically reviewed the past articles and has published the results as well in (Nadeem, Abedin, Cerpa & Chew 2018).

5.2.2 DIMENSIONS IDENTIFIED

Organizations have been continuously looking for specific dimensions/elements of organizational capabilities, digital business strategy and digital transformation for achieving

better understanding of digital transformation and factors that might influence this process. Past literature in this area also validates that the specific dimensions that could assist an organization towards pursuing digital business strategy leading to digital transformation is lacking at the moment. Therefore, the researchers and the practitioners are looking for some precise and detailed knowledge in this matter.

The findings from the systematic literature review and interview with experts lead me towards identifying the dimensions of organizational capabilities, digital business strategy and digital transformation. Through the process of systematic literature review and the guidelines given by Wolfswinkel's et al. (2013) I was able to use the coding method systematically for categorizing the items into dimensions and attributes. This eventually led me towards classifying the dimensions of all three constructs of this research. Further these dimensions were validated through the interview with experts, where 7 experts and a focus group (which was conducted like a brain storming session) of 11 participants validated each of the items through their individual feedbacks and suggestions.

Therefore, this research has been fundamental and significant in identifying the dimensions of organizational capabilities, digital business strategy and digital transformation, that were missing in the earlier research theory.

5.2.3 IDENTIFIED THE INTER-RELATIPNSHIP BETWEEN OC, DBS & DT

The third theoretical contribution of this research is that it has provided a significant inter-relationship between the organizational capabilities, digital business strategy and digital transformation. Earlier literature in this research, it was not clear if organizational capabilities play a role in digital transformation and which elements/dimensions of organizational capabilities could be fundamental in the digital transformation process. By applying the two essential methodologies i.e. systematic literature review and interview with experts I have designed the framework that shows how the three constructs are inter-related and how the role of organizational capabilities in pursing digital business strategy leads to digital transformation. The framework depicts that digital transformation relies heavily on organizational capabilities for adapting the digital change and a comprehensive digital business strategy. Moreover, the framework represents that organizational capability acts like a behaviour and the digital

transformation is the action of that behaviour so you make changes /amendments in the behaviours and the action is changed accordingly. Therefore, it is important to deploy the right set of organizational capabilities for delivering the required digital business strategy that guides digital transformation initiatives.

5.3 CONTRIBUTIONS TO PRACTICE

Digital transformation has strong industrial implications. Through this research I have tried to bring awareness/understanding of the digital transformation process and how organizational capabilities role is involved in this practice. My findings from the systematic literature review and the interview with experts will bring insights to digital transformation for the practitioners. The identified dimensions of digital business strategy, organizational capabilities and digital transformation and framework depicting the inter-relationship between the three constructs would help the organizations evaluate the stage in digital transformation as to where they are and where they should be.

The framework would guide the organizations by presenting the digital transformation as an iterative process. The framework showing the process of digital transformation is not one-time process; rather it is an iterative process which keep occurring again and again with the addition of new and updated organizational capabilities. At the end of each successful iteration some unique capabilities are installed in the organization and with that updated capability the organization is able to perform more efficiently towards better digital transformation.

Therefore, transformation is a continuous journey. The biggest driver for digital transformation is the disruption. Therefore, a need is generated first and then you start having a digital strategy and then you look at the organizational capabilities and finally then transform. Moreover, an initiator carries out the whole process and then you develop the capabilities. Companies do not necessarily think about the transformation all the time; only, once they face an external or internal impact; then they think about the transformation. The external competition, disruption, human capital and CEO themes and experiences impact the business strategy that guides the digital transformation initiatives. It is significant for the organizations to know that organizational capabilities impact the strategy and the strategy influences the organizational capabilities as well.

Stakeholders that would benefit from this study would be the organization's CEO and CIO (C-suite management) who are looking for an effective framework depicting the inter-relationship between the digital transformation, organizational capabilities and digital business strategy. Companies usually hire consulting companies to assist them adequately in deploying the fit-for-purpose organizational capabilities for pursuing digital business strategy which further leads to digital transformation. However, they often end up investing a huge amount in installing digital technologies and still are unable to acquire the effective smooth digital transformation throughout the organization. Therefore, this study would guide them in determining and deploying the right organizational capabilities for their organization for digital transformation leading to better performance.

Another stakeholder of this study would be the IS researchers, who are in the search for a step forward in deploying digital business strategy and digital transformation. IS researchers have previously published many articles on this topic in various journals therefore showing a growing concern for more awareness in this field. The researchers would gain an understanding of the challenges faced in digital transformation.

5.4 RESEARCH LIMITATION AND PROSPECTS FOR FUTURE RESEARCH

While the framework depicting the inter-relationship of organizational capabilities, digital business strategy and digital transformation and the dimensions of each of the constructs has been developed rigorously and constructively validated through the interview with experts and a brain storm session, some limitations are still present. These limitations were unavoidable due to the limited time frame of this Master by research degree. I plan to take this research to the next step in my PhD where I would consider the limitation of this research and address the gaps that were identified during this research. Some of the limitations are listed below.

-Research on sector-wise

Digital transformation is an extensive and broad topic. This concept might vary from sector to sector. Individuals in different sectors might have their different opinions and perceptions about digital transformation. Therefore, it would be useful to study this research by focusing on some particular sector for achieving a better understanding of the digital transformation process.

-Categorizing the dimensions

In this research I have not measured / identified the least significant and most fundamental dimensions. The dimensions presented in this research might not give a clear and precise picture of the three constructs as the reader might prefer to know the most important and the least significant dimension, therefore it would be imperative to categorize the dimensions and then see their impact /significance on the digital transformation process.

-Determining the Initiator /driver for digital transformation

Another area of research could be determining the initiator for the digital business strategy and digital transformation. In this research it was identified through the interview with experts and brainstorm session that there could be initiators/drivers for digital transformation. It would be fundamental to identify the driver for the digital business strategy pursuing digital transformation as often some initiators/drivers could be an essential feature for an organization to transform.

5.5 CONCLUSION

This research investigated the gaps that have been highlighted in literature. It investigates the inter-relationship between the organizational capabilities, digital transformation and digital business strategy. It explains and demonstrates how the right set of organizational capabilities and unique dimensions of digital business strategy could drive an organization towards digital transformation. This research also expands the understanding on digital transformation and would present new insights into digital transformation.

Fascinated by the gaps observed in the literature, I conducted a qualitative study (SLR) to fully understand and explore the role of organizational capabilities in transforming an organization digitally and the inter-relationship between these organizational capabilities, digital transformation and digital business strategy.

Demographic findings of this systematic literature review show that this field has been researched extensively by researchers for consulting firms, automotive industry, banking sector, telecom and healthcare. Furthermore, the literature review also portrays that a majority

of past research has been conducted in developed countries, and less has been done in other regions such as Asia and developing countries.

During the review of the literature it was analysed that so far there has not been any systematic literature research in this topic, which further highlights the importance of this research as it would be the first systematic research in this field in which the whole relevant data has been studied. Secondly, till now, there hasn't been any research that shows the inter-relationship between organizational capabilities, digital transformation and digital business strategy, which yet again has been shown to be a significant element of this research and for industry professional and researchers. The results of the study would be useful for organizations aiming for smooth digital transformation.

After conducting the systematic literature review which eventually resulted in 28 articles, selected articles were analysed and critically evaluated by following the Wolfswinkel et al. (2013)'s guidelines. The analyses resulted in distinctive dimensions of digital transformation, digital business strategy, and organizational capabilities. These results answered the objectives of this research which were: to understand what digital transformation, digital business strategy and organizational capabilities entail. The results offered an initial understanding of how these three constructs may be related, which further led to the emergence of the conceptual framework. It signifies and highlights the common categories that have been overlapped. The fourth objective was to find how they are related and to investigate the role of organizational capabilities in leading an organization towards implementing digital business strategy which further leads to digital transformation. This objective was answered by theorizing the framework and descriptively enlightening the relationship leading to disclosing in what way, the organizational capabilities are related to the deployment of digital business strategy and digital transformation. The findings of the systematic literature review and the literature analysis have successfully led to answering the first objective of this research and the three secondary research questions as shown in table 6, table 7 and table 8 (see above). The development of conceptual framework has identified the overlapping of the dimensions and which organizational capabilities are related to digital transformation and digital business strategy. The second objective of this research focusing on how those capabilities are related has also been explained and effectively evaluated by the interview with experts' process. This has also led to answering the first primary question of this research.

Thus, my study gives a broader and greater over-view of the guidelines for digital transformation. This study also provides substantial theoretical contributions on digital transformation to literature and would enrich the literature by providing a framework of the inter-relationship of the organizational capabilities, digital transformation and digital business strategy.

CEO and CIO (C-suite management) who are looking for an effective framework portraying the inter-relationship between the digital transformation, organizational capabilities and digital business strategy would be able to benefit from this study. As currently in the industry the practitioners are hiring consulting companies to assist them updating their capabilities for adoption to digital strategy leading to digital transformation. However, they often lose their investments as well as their precious time as they still are unable to transform completely in the longer run. Therefore, this study would guide them in determining and deploying the right organizational capabilities for their organization for digital transformation leading to better performance.

Another stakeholder of this study would be the IS researchers, who are in the search for a step forward in deploying digital business strategy and digital transformation. IS researchers have previously published many articles on this topic in various journals therefore showing a growing concern for more awareness in this field. The researchers would gain an understanding of the challenges faced in digital transformation.

After completion of Master of Science (Research) I intend to apply for a PhD. Transforming the organizations digitally is one of highly discussed topics in research as well as in the industry sector. The framework I designed in this degree will be beneficial for all the stakeholders of this study in terms of transforming organizations effectively and for future research. Researching on the suggestions specified by experts for future study in a PhD would be highly constructive in the research and industry sectors. In Master of Science (Research) I conducted a systematic literature review of top IS journals but I intend to do a detailed systematic literature review of other journals in future while doing my PhD.

APPENDIX

INTERVIEW PROTOCOL

The interview protocol allows the comparison of different interviews and gives freedom to the interviewees to express their views in their own words, eliminating the misunderstanding but creating reliable qualitative data (Ebel, Bretschneider & Leimeister 2016). The interview protocol for this research is illustrated below.

Project Title:

Investigating the inter-relationship between organizational capabilities, digital transformation and digital business strategy.

Project Summary:

The focus of this research is investigating the inter-relationship between organizational capabilities, digital transformation and digital business strategy. In the past literature the importance of organizational capabilities in pursuing digital transformation has been illustrated but it fails to offer a comprehensive picture and the list of organizational capabilities required for pursuing digital strategy leading to digital transformation. This study has conducted a systematic literature review to explore what entails organizational capabilities, digital transformation and digital strategy, and uses current empirical evidence. This review has resulted in a framework which proposes how organizational capabilities may affect organization's digital transformation and digital business strategy.

The purpose of this interview:

In order to validate the above framework, I would like to conduct a series of interviews with experts in the field of digital transformation. The questions would be asked in order to evoke the opinion of the participants in terms of the systematic literature review conducted and the framework presented. Through the interview process I will not analyse or ask about personal information or personal experiences, rather I would be looking for experts' opinion about whether my framework and results of systematic literature review make sense and how it can be improved.

INTERVIEW QUESTIONS

As a result of the systematic literature review conducted during this research the following dimensions of each concept were found. We would like to receive your insights to find out if these findings make sense based on your experience.

Question 1: The following dimensions have been found to represent ‘digital transformation’. Do you agree or disagree with this representation? Can you please elaborate why?

No	Dimensions of DT	Description
DT1	Use of technology	Reflects a firm’s capability to explore and exploit new technologies (Hess et.al 2016)
DT2	Value creation	Reflects the influence of digital transformation on a firm’s value creation (Hess et.al 2016)
DT3	Structural changes	Changes refer to the modifications in organizational structures, processes & skill sets (Hess et.al 2016), (Sia, Soh & Weill 2016)
DT4	Financial aspects	Relates to a firm's need for action and ability to finance in response to digital transformation endeavour (Hess et.al 2016)
DT5	Digital leadership	New leadership roles and governance that facilitate rapid digital transformation (Kane et.at 2016), (Hansen, Kraemmergaard & Mathiassen 2011), (Sia, Soh & Weill 2016)
DT6	Agile & scalable digital operations	Strategic initiatives to build operations that are scalable, flexible and value capturing (Sia, Soh & Weill 2016)
DT7	Digitally enabled CEX	Strategic initiatives for leveraging digital information for better data optimization (Sia, Soh & Weill 2016)
DT8	Digital innovation /Digital artefacts	Strategic initiatives for continuously navigating the digital landscape and technology scanning and implementation (Sia, Soh & Weill 2016)
DT9	Executing business strategy digitally	Building business strategy digitally around the enterprise core distinctive competencies (El Sawy et.at 2016), (Kane et at. 2016)
DT10	External collaboration of ecosystem of digital platform	Leveraging ecosystem of partners for complementary competencies involving value proposition and revenue sharing (El Sawy et al. 2016)
DT11	Enterprise platform integration	Intensive interactive digital connectivity to the outside and inside enterprise (El Sawy et al. 2016)

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DT12	Flexible & humanized workplace	Providing a flexible and attractive workplace for born digital employees (El Sawy et al. 2016)
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Question 2: The following dimensions have been found to represent ‘digital business strategy’. Do you agree or disagree with this representation? Can you please elaborate why?

No	Dimensions of DBS	Description
DBS1	External collaboration of ecosystem of digital platform	Leveraging ecosystem of partners for complementary competencies involving value proposition and revenue sharing (El Sawy et al. 2016)
DBS2	IT infrastructure	A fusion of IT with business using IT application systems (Hess et.al 2016), (Sia, Soh & Weill 2016), (Bharadwaj et al. 2013)
BDS3	Cross-functional integration	Reconfiguration of IT and business resources across multiple organizational processes (Sia, Soh & Weill 2016),
DBS4	Organizational structural changes	Rethinking the role of corporate IT and CIO (El Sawy et al. 2016)
DBS5	Use of technology	Extend to which a firm engages in any category of IT investment (Mithas, Tafti & Mitchell 2013)
DBS6	New dynamic capabilities	Building advance capabilities in response to environmental turbulence CIO (El Sawy et al. 2016)

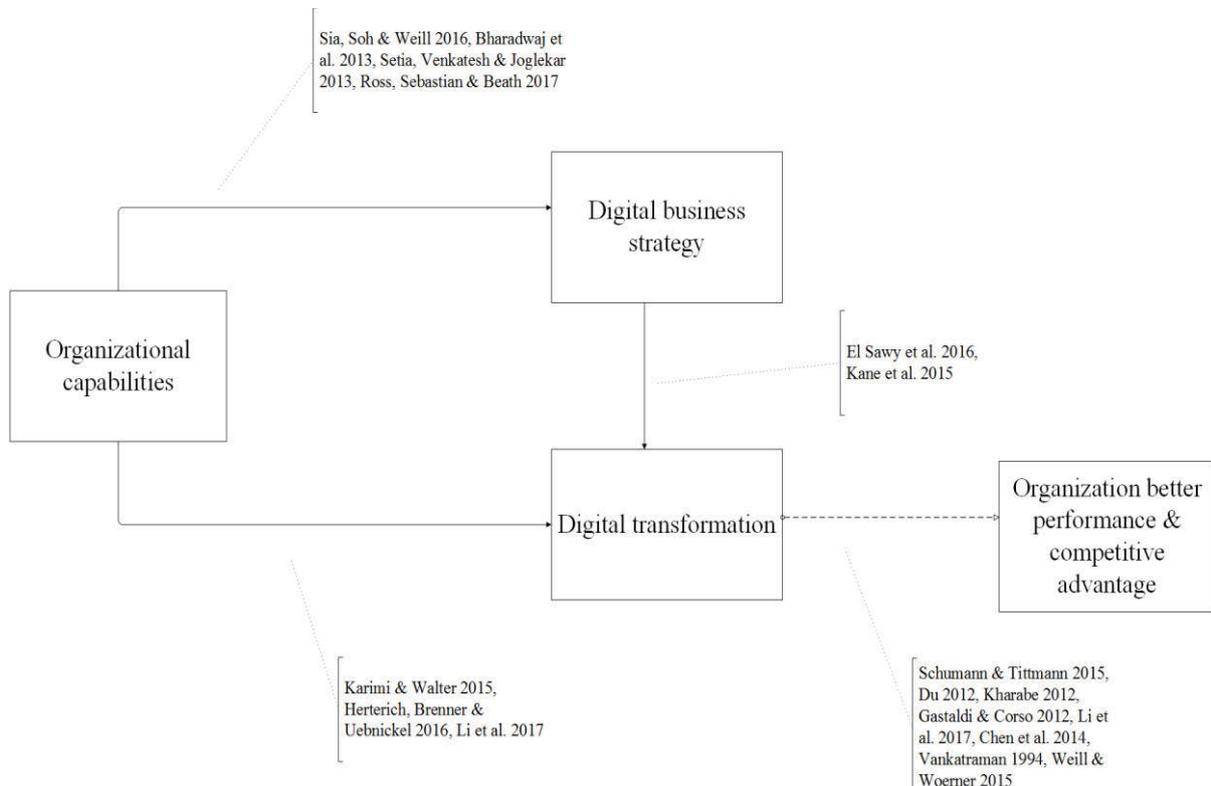
Question 3: The following dimensions have been found to represent ‘organizational capabilities’. Do you agree or disagree with this representation? Can you please elaborate why?

No	Dimensions of OC	Description
OC1	Digital leadership	Developing and acquiring new competencies and ambidextrous skill (Sia, Soh & Weill 2016),
OC2	Agile & scalable operations	Building robust and flexible operations to overcome the constraints of legacy systems (Sia, Soh & Weill 2016),, (El Sawy et al. 2016)
OC3	Digitally enabled CEX	Deeper analysis of value proposition and seamless integration of functional silos across the enterprise (Sia, Soh & Weill 2016)
OC4	Digital innovation/ Digital artefacts	Developing continuously new digital processes, infrastructures, services and products handling large amount of data (Svahn et al. 2017), (Sia, Soh & Weill 2016)
OC5	Flexible & scalable digital platforms	Platforms that are tailored to their particular need (Jafarzadeh et al. 2015)

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OC6	Internal & managerial capabilities	Defining roles and structures having diverse skill set (Jafarzadeh et al. 2015)
OC7	External collaboration of ecosystem digital platforms	Developing collaboration with external partners to co-create value (Jafarzadeh et al. 2015)
OC8	Dynamic capabilities	Powerful capabilities to cope up with turbulence (Bharadwaj et.at 2013), (Setia, Venkatesh & Joglekar 2013), (Karami & Walter 2015), (Svahn et al. 2017), (El Sawy et al. 2016)
OC9	Plug & play capabilities	Assessing unique drivers in digital settings for modularizing the business processes (Bharadwaj et.at 2013)
OC10	Operational capabilities	Developing capabilities for sudden changes in market demands (Mithas, Tafti & Mitchell 2013), (El Sawy et al. 2016)

Question 4: The following diagram suggests how organizational capabilities can influence digital business strategy and digital transformation. Do you agree or disagree with this representation? Can you please elaborate why?



INTERVIEW FORM

The interviews will be based on the interview guidelines I adapted over time. For conducting the interview in a structured way, the interview guide has been prepared as suggested by Monod & Pallud (2010), Myers & Newman (2007) and Drever (1995).

<p>PROJECT SUMMARY</p>	<p>The focus of this research is emphasising the inter-relationship between organizational capabilities, digital transformation and digital business strategy. This study conducts a systematic literature review on selected set of journals to explore what entails organizational capabilities and digital strategy, and uses current empirical evidence for proposing a framework for future research on how these two factors may affect organization’s digital transformation.</p>
<p>PURPOSE OF INTERVIEW</p>	<p>In order to validate the framework I will conduct interview with experts. The questions would be asked in order to evoke the opinion of the participants in terms of the systematic literature review conducted and the framework presented and its validation in real world. Through the interview process I will not analyse or ask interviewee personal information or personal experiences, rather I would be looking for experts' opinion about whether my framework and results of systematic literature review make sense and how it can be improved. I structured the interview in compliance to the research objectives.</p>
<p>INTERVIEW QUESTIONS</p>	<p>As a result of the systematic literature review conducted during this research, unique dimensions of each concept were found. We would like to receive your insights to find out if these findings make sense based on your experience.</p> <p>I would be glad to share the interview questions in details before if you are interested to participate.</p>
<p>SIGNATURE OF THE INTERVIEWEE</p>	<p>_____</p>

INTERVIEW INVITATION

Subject: Invitation for the interview

Dear XYZ,

Hope this email finds you well.

My name is Ayesha Nadeem. I'm doing Master of Science (Research) in computing sciences at University of Technology, Sydney. My principal supervisor is Dr. Babak Abedin (cc'ed in this email) and Co-supervisors are Prof. Eng Cew and Dr. Narciso Cerpa.

The topic of my research is investigating the inter-relationship between organizational capabilities, digital transformation and digital business strategy. As part of this research, I have performed a comprehensive review of past research, which resulted in highlighting the underlying dimensions of organizational capabilities, digital transformation and digital business strategy. Furthermore, this review has resulted in proposing a framework showing the inter-relationship of these three concepts.

At this stage of my research I'm looking for experts in this field who can share their opinion about the achieved framework and how our findings may make sense to organizations, according to their experience. Through the interview process I will not analyse or ask any personal information or personal experiences. The interview is expected to take between 40 minutes to one hour, and has received UTS's ethics approval.

I would be highly grateful if you can spare some time and accept my interview invitation. If you agree to participate, I'll be more than happy to meet you at your preferred time and place for this interview.

Please let me know if any further information or clarifications is needed.

Thank you in advance,

Best regards,

Ayesha Nadeem

INTERVIEWEE TRANSCRIPTS

INTERVIEW CONDUCTED WITH RIZWAN BASHIR (Participant no 1)

Answer to Question 1: I think the representation below very clearly sums up all dimensions of digital transformation. All these aspects need to be clearly understood and implemented appropriately for a successful digital transformation. Digital transformation brings the potential to transform businesses; however, it is complex at the same time. One needs to take into account all aspects of digital transformation to test digital readiness of an organization before initiating the digital transformation itself. The table below provides useful insights to test the digital readiness of an organization.

However, I believe DT5 can be regarded as a subset of DT3.

Answer to Question 2: I agree with all the elements/ dimensions of digital business strategy. According to me all the dimensions of digital business strategy were very relevant from his experience.

Answer to Question 3: I agree that the organizational capabilities required in a digital transformation have been captured very precisely in the table presenting organizational capabilities. Undergoing digital transformation requires upskilling the capabilities of the individuals in an organization on a regular basis. With the digital technology changing very rapidly these days, it is critical to keep the individuals in an organization up-to-date with the advancements in the technology.

However I recommend that OC 10 could fall into OC 8.

Answer to Question 4: I agree with the digital transformation architecture/process. Digital transformation of an organization gives it a competitive edge in today's world. However, digital transformation relies heavily on organizational capabilities to adapt the digital change and a comprehensive digital business strategy.

INTERVIEW CONDUCTED WITH MR. HARRY (Participant no 2)

Answer to Question 1: The capabilities are good and they make sense. The one important core competency is customer centricity. It has two aspects. One aspect is to focus on customer because a lot of organizations traditionally went through a school of thought which is the product development, it includes all the products features. Or it is to do with operational efficiency and scale and manufacturing capabilities. What digital really brings for them is about taking a lens from the customer backwards. And it is a key part of how you think about it and I would almost call it a capability in its own sense. Most existing organizations have a design competency that design interactions and processes and they are linked to the customer backwards and it's incredibly important. And that key design skill is not a common thing in industry at the moment. The success is really happening when you see how good you design your interactions in a digital world for human beings. And the most organizations don't have those skill set. Therefore I would say digitally enabled CEX should be used instead of digitally enabled CSU. Things are changing but when I went through university and I was taught that marketing is not just listening what the customer need are but talking to them and understanding them and therefore you develop services that fulfil their unmet needs. Both these skill sets are making change in large organization because traditionally marketing doesn't teach that way and most service is developed around scale and efficiency. If you look at large industries in Australia they need to scale their efficiency. Digital transformation is a fantastic opportunity. Therefore the customer experience competency is really important and I guess it is embedded in some of your aspect but I would say that is the most fundamental one. The least important is the financial aspect because what traditionally happens is people say we don't get the funding (when I ask them about digital transformation) and say it is expensive but they are coming from the wrong mind set. Because most organizations they provide distribution services and have extensive branch network with numerous people around which are incredibly expensive infrastructure and branch expensive like recarpeting and repainting would offset the digital investment you need. Digital is an opportunity to change that thinking. So it is not that the organizations need more money to spend however there is needs to change the way it spends money. People get really hung up on this. You need capital to start business and stuff like that but for an organization to transform then an organization needs to spend money on the efficient things. It is very important to know why you are spending the money on that particular thing otherwise you will always find a reason not to go for digital. So basically you are spending

money on the wrong things and therefore it's a decision on what to spend and what not to spend on.

Prof Eng: Are you suggesting that the purpose of digital transformation in your experience is to achieve a greater customer experience? Customer centricity is being the core driver?

Mr. Harry: Yes. I'm a deep believer of long term value. There are lots of business models that don't work like that. But I don't think they would be sustainable in a long term. You can do things for short terms but for longer terms this is one thing that needs to be done. People call it the voice of the customers. It's incredibly enriched with data and interactions and you can turn that data into powerful means for success. The sustainability of the business model would come through great customer experience. Basically it is the voice of the customer, digital is so enrich with great interactions with customers. CEX is the most fundamental part of digital transformation.

I was having a discussion with a marketing group on what is the brand of a company and they said, company is actually sum of the experiences your customers have been interacting with you. The digital interactions would have bigger impacts if your customers is using that technology every day. You use marketing to influence people perceptions but much better thing to focus on is the customer service outcomes. Because there is nothing worse when you advertise one thing and you get a different experience. When I look at NBN it actually mismatches between the marketing messages and the people experiences. They didn't focus on what people actually wanted. They forgot about delivering the basic of good experience in the whole journey. Digital transformation is a long process, I would say it's a long process it's not like you wake up one day and say it's been done, it actually takes 10 to 20 yrs.

Answer to Question 2: External environment would have opportunities as well as threats. Turbulence is always bad so organization has to build some powerful and extra ordinary capabilities for coping up in such situation. Organizational structural changes shouldn't be applied only for the IT department as you have to change everyone thinking along the way in the practical work sometimes government asks for the legislation from the company as well. Therefore the legal department structure should also be changes for securing oneself from an unknown or sudden threat. In a large organization it's the corporate department that take the leads not the corporate IT, where they advise actually the need to take the risk or not. Most fundamental element would be the cross-functional integration. Very hard to do without that. The idea of process being efficient but doesn't have collaboration won't be successful. In this

digital world the silos of integration is important. Value co creation could be with integration. If the process is not integrated properly throughout the different levels then it would not be sufficient for the success. It has to be end to end. There are many positives of digital but one of the negatives are the frauds and extra security attached to it. A lot of organizations get burnt because of not looking at both sides and aspects. Organizations are there ready to exploit your image and brand

Answer to Question 3: Resilience should be the capability (ability to persist over a period of time) in dynamic capability. Any transformation is a long term process so if the organization doesn't have the capability to persist and be resilient then it might not be possible. We tend to overestimate the short term results and underestimate the long term results. In short term the change is not that big but in longer term the change is much larger, so persistence and resilience is very important. For example when we were in Westpac in 2009-2010, we were working on digital platform, it was a big project and was really hard. And we set our set a goal and in seven yrs a lot of things which we expect didn't happen and a lot different did happen. But if you look at the net effect it was much larger than we thought of. We overestimated the results that they might come quicker but actually they started coming after a considerable period of time. And that change if you think about, you are applying tens of thousands of people on one side and may be more than a hundred on the other wise to change but all falls under one roof that you need to focus on short term pain and long term gain. In any transformation or change in an organization it would be a long term process and therefore the organization need to be resilient. In the long run if one persist then actually the organization would win. Moreover the dynamic capability should be linked with digital leadership. In digital you get value from the people who use it. For example if you think about how many users does Facebook has? The answer would be 20 million but it's only the active users that create value for you. One of the main aims of digital is to make the people use their technology and service and to be embedded in their live and only then you would be able to start creating the value.

Digital transformation is not an IT problem but you need to change your business strategy. Business strategy and digital business strategy is the same but many organization find hard to know that. There is a generational change as well, as most CEO are not comfortable with IT as they don't have enough understanding and comfort using that. Gone are the days when General Manager doesn't know about IT skills, they should be knowing it the same way as just like other skills for example people management etc. The most important dimension in organizational capability would be again the digitally enabled CEX.

Answer to Question 4: It shows that framework makes sense, the only thing is that an organization has an overall strategy. Organization strategy is about what are their goals and objectives and what are they trying to achieve and generally if you are talking transformation then digital transformation becomes a subset of that strategy and over time it grows and the organization success really becomes and then there is no difference between digital strategy and business strategy. This actually starts within an organization like an organism that starts within an overall body and it grows and grows out. It sort of becomes a key part when you are looking at what capabilities you need for an organization to change. Part of it is not just developing an business strategy or business transformation, it's also how it's embedded in an overall organization because the overall organization also needs to understand that it needs to transform. I would say it is an ecosystem within an ecosystem.

INTERVIEW CONDUCTED WITH MR. KARRIPUR NANDA KUMAR (Participant no 3)

Answer to Question 1: I agree with almost all the dimensions of the digital transformation. I suggest that use of technology should be named as use of data as this is one of the essential element that is to be looked carefully while going digital as in the data only the organizations can find the true value for themselves and for the customers. And use of technology /use of data is considered to be as the most fundamental part in digital transformation. Moreover flexible and humanized workplace has not much to do with digital transformation as it has nothing to do with digital as in real world the digital skills should be implanted instead of humanized workplace.

Answer to Question 2: I agree with almost all the dimensions mentioned in digital business strategy. According to me IT infrastructure has more to do with organizational capabilities instead of digital business strategy. Further I would add that digital innovation is a key part digital business strategy that should be in the list and having said that he further emphasised that digital innovation would be the most important tool for digital business strategy.

Answer to Question 3: I agree with all the dimensions of organizational capabilities and in fact the list of organizational capabilities is very comprehensive. Digital leadership is termed as the most fundamental element of organizational capabilities. Furthermore the IT infrastructure should be added in the list of organizational capabilities.

Answer to Question 4: I agree with the framework of digital transformation. Digital business strategy and organizational capabilities play important role in digital transformation but he external competition could also play important role in digital transformation.

INTERVIEW CONDUCTED WITH PROF. DILEK CETINDAMAR (Participant no 4)

Answer to Question 1: Use of technology is very vague. It should be more specific like investment in Artificial intelligence, robots etc all other technologies. How would you measure such a dimensions. Each company would have different perspective about the use of technology as now a days almost all have deployed simple technological tools. Digital transformation is the action you are going to observe because you have the strategy you build the capabilities you apply them and see the outcomes.

Alignment of business strategy with digital strategy is a better term instead of executing business strategy digitally. It is not execution but degree of alignment/ level of alignment. If the company alignment exist between the business strategy and the digital strategy after the digital transformation then you can say the company is successfully transformed. Because this process would take 3 yrs or 5 yrs and after that if there is an alignment and a fit then the company is transformed but if the alignment didn't take place then transformation didn't take place as well. DT11 enterprise platform integration is good. DT 12 doesn't reflect digital transformation. It should be replaced to distribution of the workforce on the basis of their digital capabilities. Structural changes is broad and again how will you measure that. You need to have data to see changes before and after the digital transformation. You should be knowing how your workforce will be transformed into digital. You need to see how processes change as it is important as we are talking about the action.

Answer to Question 2: Use of technology is a more generic term may be scope of technology could be a better version for that. Use of technology is not a good term. Perhaps integration of digital into product service could be effective as well. Digital innovation could also affect digital business strategy and in this case you can see the innovation of company for the last five yrs. Where you see the sales that comes from the new product showing the outcome of a specific product or a service. In this way you would know the product is innovative or not. There should be a target set for that and it would further show if that is an innovative company or not if that specific product has produced more sales for the company. Such kind of thing can reflect your strategic attitude.

Answer to Question 3: You should have all the organization capabilities and then you see how they impact digital. You shouldn't be relying on only those capabilities that are required for digital. You should include all the organizational capabilities and then check how they are

going to affect digital transformation. If you go sector wise then perhaps some organizational capabilities are more critical than the others. Dynamic capabilities cover almost all the capabilities. It is a broader concept. David Teece started all the discussion on dynamic capabilities. You should look at that.

Answer to Question 4: For me business strategy is the first thing to do for any manager. And then you build capabilities by investing in them and by generating projects. Capabilities come somewhere between the digital business strategy and digital transformation. So DBS wants to have DT and DT is all about the changes in the infrastructure and processes within the company. You do have a strategy and OC are required for DT. OC is the behaviour and the DT is the action of that behaviour. You can't separate OC from DBS and DT. OC are embedded within an organization regardless of the strategy it might have. Other factors other than OC could be CEO theme and their experiences might influence their way of designing the strategy.

For DT everyone has their own opinion and perspective but you should be focusing on a certain sector may be that would be better for understanding the process of DT. OC are soft things, there are few studies that have come up with few constructs and you can use them and figure them out. You should be focusing on the organizational capabilities in the technological field and elaborate on them.

INTERVIEW CONDUCTED WITH MOHAMMAD TAYYAB (Participant no 5)

Answer to Question 1: Yes, I agree the dimensions which are described in above table. But according to my experience while working in different firms, I found that organisation goal is trigger point of change and there are different business models like service or sales oriented etc and every business wants to expand and digital transformation is the way to get the information of all successful models and do informed decisions based on strategy or business model. All dimensions are applicable on different stages during implementation digital transformation.

Answer to Question 2: Yes, I want to add one more dimension, before implementing digital business strategy, the strategy should be reviewed by business leader of the industry and implantation model should be Agile. Every stage should be reviewed and perform introspective of stage and improve the subsequent stages of strategy.

Answer to Question 3: Agreed. There is need to expand the organisational capabilities for hiring the right people with required skills and make them responsible and define specific roles and responsibilities. These roles don't overlap with each other. It is always good to involve external business partners and professional consultants to review the ongoing process.

Answer to Question 4: Agreed. The strategy derives to enhance organizational capabilities.

INTERVIEW CONDUCTED WITH DR. ASIF GILL (Participant no 6)

Answer to Question 1: DT1 is very generic. DT2 really depends how we measure value creation. Value creation is important for digital transformation but really depends on what is value. Structural changes is absolutely correct. The digital CSU should be digital CEX. Digital innovation is yet again a broader term. This term should be narrowed down. For digital connectivity we do need enterprise platform integration. The DT 12 is very generic one. The flexible and humanized workplace can be applied to anything. They all require a bit of review. These all dimension could be grouped together on the bases of some sort of perspective either it's grouping from an organizational perspective or customer perspective or digitally used perspective. Use of technology could be grouped together with digitally enabled customer innovation. Value creation and executing business strategy digitally could probably come under strategic team.

Answer to Question 2: I think when we talk about the strategy it should be linked to the goals. Strategy and goal should go hand in hand. External collaboration of ecosystem of digital platform is important when going through digital business strategy. It should be summarising what needs to be done for achieving what goal.

Answer to Question 3: All entities are much clear when you think about organizational capabilities. Modularization of the business processes is very important so that we can plug and play with the capabilities according to the changing requirements. However operational capabilities is very generic term.

Answer to Question 4: I would say the framework would be some other way. Digital business strategy requires organizational capabilities to deliver digital transformation. And probably if you label the relationship between the constructs would be good otherwise arrows are there but its hard to see what the relationship would be. Digital business strategy requires digital organizational capabilities actually delivers digital transformation. And digital business strategy actually guides digital transformation initiatives. This whole process would further lead to better performance which is still subject to further research. I would say that digital transformation do have an impact on the performance. I would suggest you to remove the word better from the performance part because this digital transformation might have a positive or a negative impact or a no impact. For example if you digitalize a coffee shop you need to digitize

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the whole system, you would need the digital capabilities, people, process and technology to deliver digital strategy.

INTERVIEW CONDUCTED WITH MR. BENJAMIN (Participant no 7)

Answer to Question 1: Technology itself is not valid in today's world. I would say the use of technology doesn't show that the organization is digital. I would say categorizing the dimensions would be more efficient. Organizations need to have up to date technology landscaping to transform in the digital world. But it is becoming less and less important in today's world because of the number of options available. You can buy some systems like CRM very easily so I would say technology is becoming less important. If I look at value change and structural change, they are definitely important. More important is the operating model, it sits within the business. Funding is very important in the transformation journey. So financial aspect is valid. The right set of digital leadership is important. D6 and DT 3 are related I think. Digitally enabled CEX would be the top priority for every company who are aiming to go for the digital transformation. The reason it is very important is that you need to know that your customer is happy about your tools and products and services. Digital innovation DT 8 and DT 1 use of technology might be related as well. I would say in DT 12 humanized is fine but not sure about the flexible workplace as digital transformation journey is almost nothing to do with the flexibility in the timing and overall environment of the workplace. In my opinion the digital strategy is the business strategy. They both are the same in today's digital world. Digital transformation also requires change management. As a lot of changes would be happening during the transformation phase so a management for that change would also be good to look at.

Answer to Question 2: I would say internal and external collaboration is very important. So internal collaboration is also relevant. IT infrastructure shouldn't be in DBS according to my knowledge and I think it should be moved to organizational capabilities. Moreover digital innovation should be added to DBS dimensions. Rest all the dimensions seem fine to me and I agree with them. I would another area for research would be finding out the initiators for the digital business strategy.

Answer to Question 3: I would say human skills is missing in the organizational capabilities and it should be added in that. Talent sourcing is very important in the organizational capabilities. So you might need outsourcing. So I would say talent sourcing would be one important dimension in the organizational capability. I would also say structural changes should be added in the organizational capabilities. I would also say that OC 1 digital leadership

is like a subset of OC 8 dynamic capabilities. Dynamic capability is a high level capability I would say.

Answer to Question 4: Transformation is a continuous journey. Therefore the strategy and the architecture would change during this process. And therefore the enterprise architecture also changes and becomes very dynamic. What you don't have in the framework is the external impact. The biggest driver for digital transformation is the disruption. People don't necessarily think about the transformation sometimes only once they face external or internal impact only then they think about the transformation. The external impact your business strategy. It would be hard to say that organizational capabilities impact the strategy, I would say digital business strategy influences organizational capabilities. So I would say there is a need generated first and then you start having digital strategy and then you look at the organizational capabilities and finally then transform. Further I think that the digital transformation is not a one way process. It is an iterative process. I would say you need to have an initiator first for carrying out the whole process and once then you develop the capabilities but then once you do your strategy you certainly impact your organizational capabilities. Another thing could be some times the need/initiator defines the transformation phase. I would also say external impact could be user need change could be regulation change or changes in the financial markets. I would also say CEX is one of the external drivers for digital transformation. I would also say that digital transformation could be a subset of the overall organizational strategy. Some business have some very clear demarcation between their business strategy and other subset strategies. So there would be organizations that are federations of many things. So you could have an organization that would have ten or twenty different things in each department. So the business strategy in such organizations would be so high level e.g. government would have business strategy saying that the people of their area should have a good wellbeing. As this defines the strategy and go one level down each business would have their own digital strategy to achieve that high level business goal.

FOCUS GROUP SESSION (Total number of participants 11)

Answer to question 1

FGP 1: The all dimensions of digital transformation make sense. But maybe it would be more efficient to classify in categories.

FGP 2: To me some are bit more specific than others. Even some are overregging statements especially in the case of value creation and digital leadership while some seem to be a lot more specific such as agile and scalable digital operations because it seems like a description and not necessarily an aspect or a dimension. It seems to be a characteristic of itself or may be suggesting some specific tactics. So maybe you could amend or modify DT 6 agile and scalable operations.

FGP 3: The only thing which triggers me is as we are talking about the transformation so it should be around the architecture type setup. So you have got the structural changes, agile operations and value creation but generally the transformation is about re-architecting the approach to technology and its output. So I can't really see if that is already mentioned in any of your listed dimensions for Digital transformation.

FGP 1: For me digital transformation is something that resides in the business strategy. So I would say an organization first comes up with a business strategy and if they say okay we need to transform digitally then yes that would be executed. And that is why I would see the financial part more in the digital business strategy part (DBS) rather in the digital transformation part. Financial should be a part of the strategy.

FGP 2: Digital leadership according to me a key aspect of digital transformation. But also I am aware the culture aspect is within the dimensions of digital transformation. I'm not sure if that aspect it already embedded in your digital leadership dimension. But I would say it should be somewhere in the dimension of digital transformation. However DT 9 executing business strategy digitally is quite a good term by itself.

FGP 7: Or probably extant the DT 12 flexible and humanized workplace to include the cultural aspect. Because digital transformation is not only just about the workplace.

FGP 1: I also don't see any customer value proposition aspect in the dimensions of digital transformation. As you know that now a days we know that it's all about the customer, customer and customer. However the digitally enabled CEX shows that it is very fundamental in case of digital transformation. In my current organization as well, they always say how this

specific service or product would add value to the customer. So they focus a lot on customer centricity. So I think you should include this aspect somewhere in your dimensions.

FGP 6: According to my understanding, enterprise architecture is missing in the overall dimensions for digital transformation. I would say it is a key aspect before an organization goes digital.

FGP 1: I would say these dimensions are the key success factors of digital transformation or the ingredients of digital transformation and they all make sense to be. The only one dimension of digital transformation I could challenge would be DT 12 Flexible and humanized workplace. I would challenge that why a humanized workplace could be a dimension of digital transformation because according to my understanding there is no need for the workplace to be humanized for the transformation process.

FGP 2: All the dimension might co relate but the cause of relationship may not be that strong.

FGP 6: The one that I would argue would be DT 11 Enterprise integration platform as you don't necessarily need to open up the architecture to the external world to transform digitally in my eyes. Inside I agree with but not 100% outside I agree.

FGP 2: Some companies also don't do rapid digital transformation. They do really slowly because it is a long term time consuming process.

FGP 8: I think I am a bit not comfortable with the idea of putting DT 4 financial aspect in digital transformation dimension however should be moved to the strategy part.

FGP 4: I agree with the dimensions of DT.

Answer to question 2:

FGP 1: My first feeling is to move the IT infrastructure to organizational capability dimensions. I see it as a capability not as a strategy.

FGP 8: I would say you need to strategically think about it, to support the architecture so support the digital capability, we do need IT infrastructure in strategy part. This is how I feel about it.

FGP 9: I would agree with FGP 1 that you might have to adjust or change the DBS 2 IT infrastructure as it is certainly not a particular driver or an essential dimension of digital business strategy.

FGP 8: I would say it is just not a driver however just a part of digital business strategy. Introducing new capabilities which require strategic investments and strategic directions to say we need to adjust the architecture in order to achieve that goal and if you look at replacing an entire CRM and hundreds and millions of dollars' worth of projects for transformation you can't just throw that on top of existing legacy architecture without considering the longer term strategic effects. Having said that IT infrastructure is definitely an organizational capability as well.

FGP 11: I would say DBS 5 use of technology would not necessarily be part of digital business strategy because of category of IT investments doesn't reflect digital. My Company invests \$700 million dollars a year in infrastructure it is like a technology spending but I won't categorized it as a digital organization. So if your organization spends hundreds of thousands million dollars on their infrastructure doesn't mean it is would a digital organization. Just if you have an IT department doesn't mean you are capable enough for going digital.

FGP 2: I agree as well. DBS 2 IT infrastructure and DBS 5 use of technology are not specifically a category of digital business strategy.

FGP 7: I feel that as we are talking about the digital business strategy I can't see the value creation part in the session. I think the value creation should be added as one of the dimension of digital business strategy. I would say using digital technology to deliver value creation is an important aspect of digital business strategy. Digital innovation is a method to create value in today's world so digital innovation should be added as a dimension in digital business strategy.

FGP 6: I prefer the digital innovation part as a dimension in digital business strategy as well.

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FGP 2: I would say digital innovation leads to value creation so yes it is an important part of digital business strategy. How do you plan to create a digital strategy when you don't have innovation as one of the ingredients in your strategy?

FGP 9: Digital innovation should be moved to DBS part.

Answer to question 3:

FGP 8: I think I can hardly differentiate between OC 8 Dynamic capabilities and OC 10 Operational capabilities. I think they are very much the same and they could be merged together.

FGP 11: Customer wants different product and something innovative and that refers to dynamic capabilities. Especially when there is competitive competition so dynamic capability would be an important one. Whereas operational capability is increasing the scale and the production capability. Because I consider that operations make the machines running through while the money is made. So operational capability would be running their machine effectively and productively.

FGP 11: The OC 1 digital leadership is a very bold topic. May be you could amend to a more specific human capability related or structure related.

FGP 1: Something missing here is the resources mostly human resources. I would say the capabilities for digital would be more related to human skill set. I don't see they are reflecting in organizational capabilities. I can see that human aspect is being noted in the dimension representing digital transformation but in organizational capability any such dimension is missing.

Answer to question 4:

FGP 10: I think the process of digital transformation is not one way rather two ways. I don't think one influences the other. It is not that only one factor effects the other however it is two ways. Strategy can actually shape organizational capabilities. Because once you have the strategy the whole organization works in that direction and once you build those capabilities you can reflect back at the strategy part. I think it's a two ways.

FGP 11: I also agree that it is a two ways process. I would give you an example for this one. SUNCORP decided to change their business strategy as they decided to go for more automation. They didn't have this capability so as part of the business strategy that was set out they had to create an organizational capability called Artificial Intelligence and Automation. It's not that existing capabilities strive towards business strategy. That is why I think the arrow should go in both directions from and to organizational capabilities and digital business strategy.

FGP 2: So according to this framework you start with the capability then strategy parts takes place and then the digital transformation finally happens. However I would say it's an iterative process. The transformation once happens then it would require more capabilities to add on new features in your strategy part so that the new strategy would look different than the previous one. It is kind of cyclical.

FGP 1: I agree that the process of transformation is an iterative process. As the transformation is a long term process and might take 5 to 8 yrs so in that process the organization certainly develops new capabilities and that would have consequences in your next business strategy. So Yes it could be seen as an iterative cycle. Absolutely!

FGP 6: Transformation always needs to be iterative.

FGP 2: I think capability helps perform strategy which then helps transform the organization and then through that it leads to new organizational capabilities. But in transformation itself it actually leverages existing capabilities to enable transformation as well.

FGP 9: I would also agree with the process to be iterative.

FGP 7: I would agree with that as well. Transformation is an iterative process. Showing an endless process.

FGP 5: I think external alignment is also an important factor in the process of transformation. I think external alignment could continue as with every change your organization capability

would also change and so will the strategy part. I think the external alignment is missing in the framework at the moment. External alignment influences a continuous change. I would say external alignment could be an external factor that would affect the framework process for change.

REFERENCES

1. Abedin. B, Khoei. T, Gapanchi. A. 2013, 'A review of critical factors for communicating with customers on social networking sites', *The international technology management review*, vol. 3, issue. 4, pp. 208-218.
2. Abrell, T., Pihlajamaa. M., Kanto. L., Brocke. J., Uebernickel, F. 2016, 'The role of users and customers in digital innovation: Insights from B2B manufacturing firms', *Information and Management*, vol. 53, issue. 3, pp. 324-335.
3. Adomavicius, G., Bockstedt. J., Gupta. A., Kauffman, R. 2008, 'Making sense of technology trends in the information technology landscape: A design science approach', *MIS Quarterly*, vol. 32, issue. 4, pp. 779-809.
4. Hansen, A. M., Kraemmergaard. P., Mathiassen. L. 2011, 'Rapid adaption in Digital Transformation: A participatory process for engaging IS and business leaders', *MIS Quarterly Executive*, vol. 10, no. 4, 2011.
5. Agarwal, R., Gao. G., Desroches. C., Jha. A. 2010, 'The digital transformation of healthcare: Current status and the road ahead', *Information System Research*, vol. 21, issue. 4, pp. 796-809.
6. Alexandre, R., Isabella. W., Michel. K. 2016, 'Is SAM still alive? A bibliometric and interpretive mapping of the strategic alignment research field', *The Journal of Strategic Information Systems*, vol. 25, issue. 2, pp. 75-103.
7. Altintepe, H. 2014, 'Is your IT ready for the digital age?' CIO, 14 June, Viewed 12 August 2014, <http://www.cio.com/article/3078824/leadership-management/is-your-it-ready-for-the-digital-age.html>
8. Anderson, C., Agarwal, R. 2011, 'The digitization of healthcare: Boundary risks, emotions and customer willingness to disclose personal health information', *Information System Research*, vol. 22, issue. 3, pp. 469-490.
9. BCG 2012, Organization of the future-design to win, viewed 20 March 2018, <<https://www.bcg.com/en-au/publications/2012/leadership-engagement-culture-organizational-capabilities-matter.aspx>>
10. Beatty, P.C., Willis. G.B. 2007, 'Research synthesis: The practice of Cognitive Interviewing', *Public opinion quarterly*, vol. 71, issue. 2, pp. 287-311.
11. Beatty, P.C., Willis, G.B. 2007, 'Research synthesis: The practice of Cognitive Interviewing', *Public opinion quarterly*, vol. 71, issue. 2, pp. 287-311.
12. Bharadwaj, A., El Sawy, O.A., Pavlou, P.A., Venkatraman, V. 2013, 'Digital business strategies: Toward a next generation of insights', *MIS Quarterly*, vol. 37, issue. 2, pp. 471-482.
13. Bharadwaj, A., El Sawy, O.A., Venkatraman, V. 2013, 'Visions and voices and emerging challenges in Digital Business Strategy', *MIS Quarterly*, vol. 37, issue. 2, pp. 633-661.
14. Buhalis, D. 2004, 'eAirlines: strategic and tactical use of ICTs in the airline industry', *Information and Management*, vol. 41, issue. 7, pp. 805-825.
15. Cao. J., Basoglu. K., Sheng. H., Lowry. P. 2015, 'A systematic review of social network research in Information Systems: Building a foundation for exciting Future research', *Communications of the Association for Information Systems*, vol. 36, issue. 37, pp. 727-758.

16. Capgemini consulting 2012, The digital advantage, How digital leader outperform their peers in every industry, viewed 7th Feb 2017, < <https://www.capgemini.com/resources/the-digital-advantage-how-digital-leaders-outperform-their-peers-in-every-industry>>
17. CFO 2016, Realizing the value of a digital enterprise, viewed 15 Aug 2016, <<http://ww2.cfo.com/sponsored/realizing-value-digital-enterprise/>>
18. Chain drug review 2016, Building a business strategy in a business world, viewed 20th March 2017.
19. Cho, S., Mathiassen, L., Nilson, A. 2008, 'Contextual dynamics during health information systems implementation: an event-based actor-network approach', *European Journal of Information Systems*, vol. 17, issue. 6, pp. 614-630.
20. Cobin, J., Strauss, A. 1990, 'Grounded theory research : Procedures , canons and evaluation criteria', *Qualitative sociology* , vol. 13, issue. 1, pp. 3-21.
21. Deloitte University press 2015, Strategy , not technology , drives the digital transformation, viewed 12 Jan 2017, < <https://dupress.deloitte.com/dup-us-en/topics/digital-transformation/digital-transformation-strategy-digitally-mature.html?id=gx:2el:3dc:dup1213:eng:cons:dcpromo>>
22. Delmond, M., Coelho, F., Keravel, A & Mahl, R. 2017, How information systems enable digital transformation: A focus on business models and value Co-production, *The Journal of Business Strategy*, vol. 14, issue. 3, pp. 7-40
23. Dennis, K.E. 1988, 'Q-methodology: New perspectives on estimating reliability and validity. Measurement of nursing outcomes', *Western journal of nursing research*, vol. 2, pp. 49-419.
24. Drever. E. 1995, 'Using semi structured interviews in small scale research: A teacher's guide', Scottish Council for Research in Education, - SCRE publication, Glasgow.
25. Dremel, C., Wulf, J., Herterich, M., Waizmann, J., Brenner, W. 2017, How Audi AG established big data analytics in its digital transformation, *MIS Quarterly Executive*, vol. 16, issue. 2, pp. 81-100.
26. Ebel, p., Bretschneider, U., Leimeister, J. 2016, 'Leveraging virtual business model innovation: a framework for designing business model development tools', *Information System Journal* , vol. 26, issue. 5, pp. 519-550.
27. El.Sawy, O., Kremmergaard, P., Amsinck, H., Vinther, A. 2016, ' How LEGO build the foundations and enterprise capabilities for digital leadership', *MIS Quarterly Executive*, vol. 15, issue. 2, pp. 141-166.
28. El Sawy, O., Malhotra, A., Park, Y., Pavlon, P. 2010, ' Seeking the configurations of digital ecodynamics : It takes three for Tango', *Information System Research*, vol. 21, issue. 4, pp. 835-848.
29. Gelhard,C., Delft, S. 2016, The role of organizational capabilities in achieving superior sustainability performance, *Journal of business research*, vol. 69, issue. 10, pp. 4632-4642
30. Gigov, I., Poposka, K. 2017, Digital transformation of the banking sector in republic of Macedonia: State and opportunities for further advancement, *Economic development*, vol. 19, issue. 3, pp. 103-107.

31. G.C. Kane, D. Palmer, A. N. Phillips, D. Kiron and N. Buckley, Aligning the organization for its digital future, MIT Sloan Management Review, 2016
32. Grover, V., Kohli, R. 2013, 'Revealing your hand: Caveats in implementing digital business strategy', *MIS Quarterly*, vol. 37, issue. 2, pp. 655-662.
33. Granados, N., Gupta, A. 2013, 'Transparency Strategy: Competing with information in a digital world', *MIS Quarterly*, vol. 37, issue. 2, pp. 637-641.
34. Gudergan, G., Mugge, P. 2017, 'The gap between the practice and theory of digital transformation', U.S.A.
35. Guest, G., Bunce, A., Johnson, L. 2006, 'How many interviews are enough? An experiment with data saturation and variability,' *Field methods*, vol. 18, issue. 1, pp. 59-82.
36. Hertirich, M., Uebernickel, F., Brenner, W. 2016, ' Stepwise evolution of capabilities for harnessing digital data streams in data driven industrial services ', *MIS Quarterly Executive*, vol. , issue. 4, pp. 297-318.
37. Hinings, B., Gegenhuber, T., Greenwood, R. 2018, 'Digital innovation and transformation: An institutional perspective', *Information and Organization*, vol. 28, issue. 1, pp. 52-61.
38. Horlach, B., Drews, P., Schirmer, I. 2016, 'Bimodal IT: Business-IT alignment in the age of digital transformation', Retrieved on 26th Sept 2016.
39. Henfridsson, O., Huang, J., Liu, M., Newell, S. 2017, ' Growing on steroids: Rapidly scaling the user base of digital ventures through digital innovation', *MIS Quarterly*, vol. 42, issue. 1, pp. 301-314.
40. Huang, J., Newell, S., Huang, J., Pan, S.L. 2014, 'Site-shifting as the source of ambidexterity: Empirical insights from the field of ticketing', *Journal of strategic information systems*, vol. 23, issue. 1, pp. 29-44.
41. Jafarzadeh, H., Aurum, A., D'Ambra, A., Abedin. B., Assemi. B. 2015, 'Search Engine Advertising Adoption and Utilization: An Empirical Investigation of Inflectional Factors', *Organizational Computing and Electronic Commerce*, vol. 25, no. 4, pp. 402-427.
42. Jahangir, K., Zhiping, W. 2015, 'The role of dynamic capabilities in responding to digital disruption: A factor based study of the newspaper industry', *Journal of Management Information System*, vol. 32, no. 1, pp. 39- 81, 2015.
43. Ju Wu, S., Straub, D., Liang, T. 2015, 'How information technology governance mechanisms and strategic alignment influence organizational performance: Insights from a matched survey of business and IT managers', *MIS Quarterly*, vol. 39, issue. 2, pp. 497-518.
44. Karimi, J., walter, Z. 2015, 'The role of dynamic capabilities in responding to Digital Disruption: A factor based study of the news paper industry', *Journal of Management Information System*, vol. 32, issue. 1, pp. 39-81.
45. Keen, P., Williams, R. 2013, 'Value architectures for digital business: Beyond the business model', *MIS Quarterly*, vol.37, issue. 2, pp. 643.
46. Kitchenham, B., Brereton, O., Budgen, D., Turner, M., Bailey, J., Linkman, S. 2008, 'Systematic literature reviews in software engineering – A systematic literature review', *Information and Software technology*, vol. 51, issue. 1, pp. 7-15.

47. Kitchenham et al. 2009, 'Systematic literature review in software engineering – A systematic literature review', *Information and software technology*, vol. 51, issue. 1, pp. 7-15.
48. Kim, H.K., Han, S.H. 2017, 'Defining and classifying IT interaction disability', *Behaviour and information technology*, vol. 36, issue. 4, pp. 422-434.
49. Kranz, J.J., Hanelt, A., Kolbe, L.M. 2016, 'Understanding the influence of absorptive capacity and ambidexterity on the process of business model change – the case of on-premise and cloud-computing software', *Information System Journal*, vol. 26, issue. 5, pp. 477-517.
50. Lansiti, M., Lakhani, K. R. 2014, 'Digital ubiquity : How connections , sensors and data are revolutionizing business', *Harvard Business Review*, viewed 10 October 2017, < <https://hbr.org/2014/11/digital-ubiquity-how-connections-sensors-and-data-are-revolutionizing-business>>.
51. Li, L., Merenda, M. & Venkatachalam, A.R. 2009, 'Business process digitalization and new product development: An empirical study of small-sized manufactures', *International Journal of E-Business research*, vol. 5, issue. 1, pp. 49-64.
52. Li, L., Su, F., Zhang, W., Mao, J. 2017, 'Digital transformation by SME entrepreneurs: A capability perspective', *Information system journal*.
53. Libert, B., Beck, M., Wind, Y. 2016, How to navigate a digital transformation, *Harvard business review. 2016*
54. Lynn, M. R. 1986, "Determination and quantification of content validity", *Nursing Research*, vol. 35, issue. 6, pp. 382-386.
55. Marian, C., Eileen, D., Gerry, C. 2016, 'A dynamic capability approach to digital transformation: a focus on key fundamental themes', *The European Conference on Information System Management*.
56. Markus, M., Loebbecke, C. 2013, 'Commoditized digital processes and business Community Platforms: New opportunities and challenges for digital business strategies', *MIS Quarterly*, vol. 37, issue. 37, pp. 649-654.
57. Mckinsey quarterly 2014, Reinventing IT to support digitalization, viewed 15 Sept 2016, <http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/reinventing-it-to-support-digitization>
58. Mckinsey & Co 2010, Building organizational capabilities: Mckinsey global survey results, viewed 10 March 2018, <https://www.mckinsey.com/business-functions/organization/our-insights/building-organizational-capabilities-mckinsey-global-survey-results>
59. Mettler, T., Sprenger, M., Winter, R. 2017, 'Service robots in hospitals: New perspectives on niche evolution and technology affordance', *European journal of Information Systems*, vol. 26, issue. 5, pp. 451-451.
60. Mithas, S., Tafti, A., Mitchell, W. 2013, 'How a firm's competitive environment and digital strategic posture influence digital business strategy', *MIS Quarterly*, vol. 37, issue. 2, pp. 511-536.
61. Murugesan, L., Hoda, R., Salcic, Z. 2015, 'Designing criteria for visualization of energy consumption: A systematic literature review', *Sustainable cities and society*, vol. 18, pp. 1-12.

62. Myers, M., Newman, M. 2007, 'The qualitative issue in IS research: Examining the craft', *Information and Management*, vol. 17, issue. 1, pp. 2-26.
63. Nadeem. A., Abedin. B., Cerpa. N., Chew. E. 2017. 'Editorial: Digital transformation and digital business strategy in electronic commerce-The role of organizational capabilities', *Journal of theoretical and applied electronic commerce research*, vol. 13, issue. 2, pp. 1-8.
64. Pallud, J., Monod, E. 2010, 'User experience of museum technologies: the phenomenological scales', *European Journal of Information Systems*, vol. 19, pp. 562-580.
65. Peters, C., Blohm, I., Leimiester, J. 2015, 'Anatomy of Successful Business Models for Complex Services: Insights from theTelemedicine Field', *Journal of management Information System*, vol. 32, issue. 3, pp. 75-104.
66. Ravishankar, M.N., Pan, S.L., Myers, M.D. 2013, 'Information technology offshoring in India: a postcolonial perspective', *European Journal of Information Systems*, vol. 22, issue. 4, pp. 387-402.
67. Reddy, S., Reinartz, W. 2017, Digital transformation and the value creation: Sea Change ahead, *Value in the Digital era*, vol. 9, issue. 1, pp. 11-17.
68. Rubin, H. J., Rubin, I. S. 2005. *Qualitative interviewing: The art of hearing data* (2nd ed.). Thousand Oaks, CA: Sage.
69. Schumann, C.A., Tittmann, C. 2015, 'Digital business transformation in the context of knowledge management', *European conference on knowledge management*, Germany.
70. Sebastian, I. M., Ross, J.W., Moloney, K. G., Fonstad, N. O., Beath. C., Mocker, M. 2017, How big old companies navigate digital transformation, *MIS Quarterly Executive*, pp. 197-213.
71. Setia, P., Venkatesh, V., Joglekar, S. 2013, 'Leveraging digital technologies: How information quality leads to localized capabilities and customer service performance', vol. 37, issue. 2, pp. 565-590.
72. Sia, S., Soh, C., Weill, P. 2016, 'How DBS bank pursued digital business strategy', *MIS Quarterly Executive*, vol. 15, issue. 2, pp. 105-121.
73. Smart Investor 2016, 2016 Trends: Business will drive digital transformation, viewed 14 Sept 2016, < <http://www.smartinvestor.com.my/2016-trends-business-will-drive-digital-transformation/>>
74. Svahn, F., Mathiassen, L., Lindgren, R. 2017, ' Embracing digital innovation in incumbent firms: How Volvo cars manged competing concerns', *MIS Quarterly*, vol. 41, issue. 1, pp. 239-253.
75. Mithas, S., Tafti, A., Mitchell, W. 2013, 'How a firm's competitive environment and digital strategic posture influence Digital Business Strategy', *MIS Quarterly*, vol. 37, no. 2, pp. 511- 536.
76. Tallon, P.P., Ramirez, R.V., Short, J.E. 2014, 'The information artefact in IT governance: Towards a theory of Information governance', *Journal of management information systems*, vol. 30, issue. 3, pp. 141-177.
77. Teece, D. J. 2007, 'Explicating dynamic capabilities: the nature and micro foundations of (sustainable) enterprise performance', *Strategic Management Journal*, vol. 28, issue. 13, pp. 1319-1350.

78. Tim, Y., Pan, S., Bhari, S., Fauzi, A. 2017, 'Digitally enabled crime-fighting communities: Harnessing the boundary spanning competence of social media for civic engagement', *Information and Management*, vol. 54, issue. 2, pp. 177-188.
79. Hess, T., Matt, C., F., Benlian, A., Wiesbock, F. 2016, 'Options for formulating a digital transformation strategy', *MIS Quarterly Executive*, vol. 15, no. 2, pp. 103-119.
80. Vey, K., Meyer, T., Zipp, J & Schneider. C. 2017, Learning and development in times of Digital Transformation: Facilitating a culture of change and innovation, *International Journal of Advance Corporate Learning*, vol. 10, issue. 1, pp. 22-32
81. Waltz, C. W., Bausell, R. B. 1981, "Nursing research: Design, statistics and computer analysis". Philadelphia: F.A.
82. Weiss, A., Schade, C., Riedl, M., & Matt, D. 2016, 'Present and future of Digitalization in South Tyrolean SME's', *Innovation Conference*, Portugal.
83. Woodard, C., Ramasubbu, N., Tschang, F., Sambamurthy. V. 2013, 'Design capital and design moves: The logic of digital business strategy', *MIS Quarterly*, vol. 37, issue. 2, pp. 537-564.
84. Webster, J., Watson, RT. 2002, 'Analysing the past to prepare for the future: Writing the literature review', *MIS Quarterly*, vol. 26, issue. 2, pp. 13-23.
85. Wolfswinkel, J., Furtmueller, E., Wilderom, C. 2013, 'Using grounded theory as a method for rigorous reviewing literature' , *European journal of information systems*, vol.22, issue. 1, pp.45-55.
86. Yeow, A, Soh., C & Hansen, R. 2018, 'aligning with new digital strategy: A dynamic capabilities approach', *The Journal of Strategic Information Systems*, vol.27, issue. 1, pp. 43-58.
87. Zimmermann, S., Muller, M., Heinrich, B. 2016, 'Exposing and selling the use of web services—an option to be considered in make-or-buy decision-making', vol. 89, issue. C, pp. 28-40.