Digital Transformation and Change Management Practices in Qatari Organizations:

Challenges and Recommendations

By Basem M. Alabbasi

Information Technology Strategist | Digital Transformation Architect

May 2018

About the Author:

Email

contact@basemalabbasi.com

Website

www.basemalabbasi.com

LinkedIn

linkedin.com/in/basemalabbasi

I am an information technology strategist with 15 years of experience in software development, business modelling, GRC and information security management. I possess an expansive business and technical exposure through delivering multifaceted solutions and digital services. I am adept at aligning corporate goals with technological solutions to drive process improvements, competitive advantage, and bottom-line gains. I hold solid experience in IT benchmarking and how to develop digital maturity assessments. In addition of being an expert in digitization and automation of core business processes and end-to-end digitization across the value chain.

Moreover, I am proficient in taking strategy to implementation with experience in selecting tools and applications, to advising on next generation IT infrastructure. Additionally, I am adept at injecting the digital DNA on a corporate level and to enable the organization for digital, including: governance, cultural change, people topics and digital education. Furthermore, I am experienced in disrupting traditional business models as a digital attacker, with exposure to agile methodology and agile deliverables as well as understanding of agile engineering practices.

ABSTRACT:

This research looks at identifying and assessing the incorporated challenges as part of the digital transformation and change management practices in Qatari organizations. The outcomes of this research intend to supply the necessary techniques to smooth the journey of change management from the inception stage all the way through execution, completion, and acceptance by the users and business. Furthermore, this research seeks to shed light on a set of influential methods that would help in ensuring a solid transition during and after the digital transformation journey of implementation and operation, with the minimum volume of hiccups and unforeseen risks.

Additionally, this work highlights the urgency of following one of the most nowadays business necessities, which without it, present firms might end up facing a significant struggle to survive and adapt to the new influencing factors of the modern business. Thus, this research covers the benefits of the inclusive digital shift, but without ignoring the extent of necessary conditions, starting with the comprehensive digital strategy, all the way down to the adopted change and project management frameworks, along with the imperative procedures to ensure effective rollout and successful business adoption.

As part of the key findings of this study, business leaders and IT executives must realize the criticality of setting rational and right perceptions for both the leadership as well as employees. Business leaders must evaluate some influential dynamics carefully to observe in which manner their companies can closely align them with the overall digital transformation process. Those dynamics must consider four dimensions: competition, corporate, customer and leadership.

Moreover, IT executives are supposed to utilize their role for the benefit of the business, therefore adding value. They must eagerly try to highlight the set of opportunities and challenges in an engaging manner that can release positive energy. Nevertheless, the corporate culture has a substantial role in discovering the appropriate balance, and IT executives should generally outline their leadership profile for the sake to make the most out of their influence whether it is boosting innovation, leveraging interdependence or even leading from behind, to align it with the executive team (Bongiorno et al. 2017).

Table of Index

Chapter 1: Aims of the Research

1.1 Introduction:

The applied aspect of any study symbolizes its factual essence, which helps to reveal its prominence along with the probability of attaining its objectives and achieving the necessary development (Olleros & Zhegu, 2016). This research principally addresses the analytical findings of the study using a statistical estimate of the digital transformation and change management practices in Qatari organizations, to consequently examine the validity of hypothesis against the generated outcomes.

1.2 Identifying Background Information

The profound coherence and alignment between strategic business objectives and Information Technology principals' endeavor to supply and support technology to the enterprise are fundamental to digital transformation. Enterprises that effectively accomplish this have turned out to be digitally relevant and mature. From the literature perspective, there is a widespread volume of studies concerning the private sector on organizational change management. However, most recent papers have offered that the specific context of public organizations can have consequences on the organizational management change (Van der Voet, 2014).

In line with that, this research scrutinizes the scale of diverse change management and leadership practices, which take part while implementing and operating digital endeavors across Qatari organizations, and to what extent the structure of businesses

backs up, or stumbles the fulfillment of IT change projects. Following the earlier argument, it is quite decisive to recognize that having employees' support through the transitional stage of digital change is as much crucial as having a strong digital strategy, agile implementation methodology and leadership buy-in. Employees can thrive through most of the change as long as they recognize its need and purpose.

Although aiding employees obtain that understanding can be a time-consuming process, yet eventually having that understanding will support them to understand the ultimate strategic goals completely as well as help them make choices that are in alignment with the whole approach. Every single employee desires to go through the exact course, and it is up to leadership to steer them through that course and guarantee they get to contribute to in a like conversation (Dehmlow, 2016). In line with that, this study as well works on identifying the present challenges that encounter Qatari organizations as part of their digital transformation journey, the level of employees' involvement, leadership support in addition to the readiness and scalability of their digital strategy.

1.3 Research Gap Statement:

This work seeks after filling-in the present gap of missing information as well as insufficient data concerning the current state of digital transformation across Qatari organizations. Additionally, the research reflects the perception of Qatari companies to a group of factors, characteristics, and influencers that would help to achieve effective business digitization and ultimately support in bridging the earlier stated gap.

Presently no independent study handles the deep ties between technology, business maturity, customer outreach and competitive edge in the domestic Qatari market. Furthermore, there is inadequate information that highlights how diverse are the executive teams, or open, multigenerational with proficiency in business and technology topics.

In addition, there are insufficient studies with reference to the way business executives are looking into the IoT (Internet of Things) as a priority or secondary objective. Moreover, the association between corporate culture, change management, communications management, project management and employees' buy-in as part of running digital transformation in Qatari organization is not thoroughly discussed nor scrutinized in any academic or scholar papers.

In line with the previously mentioned, this research aims to link earlier stated gaps and come up with a comprehensive work that targets to cover the subject holistically through answering fundamental research questions and supply their associated findings in the perspective of the intended scope of analysis and targeted audience across various segments of Qatari organizations:

1. How is digital transformation leading the journey of change in businesses?
    a. What is the bond amongst business transformation and digital transformation?
    b. Why is marketing a paramount factor to drive digital transformation inside organizations?

c. How would it be easier to execute the digital transformation in small and big organizations? Which are the preferred techniques?

2. What are the key features of digital transformation in the modern business information? What does digital transformation actually imply for today's business leaders?

3. What is the needed culture for undertaking a successful digital transformation endeavor?

4. How digital transformation disrupts business processes, customer experience, and operations?

1.4 Hypothesis:

The main hypothetical stand, which this research tries to prove, is the fundamental association between the direct commitment and sponsorship of top management and the success of digital transformation in any given organization. As a result, the study focuses on addressing the maturity level of organizations' culture along with the pace of picking up the wave of constantly growing principles, demands, and challenges of digital transformation across main business sectors in the state of Qatar. Moreover, the study intends to emphasize the close tie amongst the adopted change management practices and the strength of applied project management frameworks, which are paramount for the sake to ensure a smooth and successful transition.

Furthermore, the study targets to express the connection between the change management practice and the effectiveness of adopted internal communication procedures that primarily focuses towards delivering the value behind the intended change, get employees' buy-in and offer continuous updates regarding the digital transformation progress. Additionally, the research aims to present the correlation

between the Project Management Office (PMO) within the organization and corporate change management practices, as an integral part towards achieving a successful digital transformation endeavor.

1.5 Aims and Objectives:

The main set of research objectives as part of this the study, is to focus on highlighting the main challenges that organizations in Qatar do encounter while aiming to transform their technology stack and digitize their business operations while joining the growing crowd of digital transformation adopters. Such changes are usually encountered with bumpy roads of bureaucracy, which in some instances might be associated with minimal to almost no support from the upper management.

Even if the support is found, some organizations might get stuck while in transition due to the lack of operational and recognized change and communication management methodologies that would securely navigate any change endeavor. Thus, people in charge of such change must be equipped with a varied set of skills that would help them to sell the idea, through supplementing it with comprehensive strategies, effective cost analysis and ROI studies, along with realistic and rational total cost of ownership (TCO) estimates.

Additionally, the research emphasizes on how organizations need to evolve to address the shifting business landscapes, with the consideration that IT expenditure is directed by the demand to fulfill business requirements. As a result, business leaders require IT principals to remain concentrated on business innovation, outcomes, and constant

enhancement. This being said, Edmead (2016) described digital transformation as the concept of speeding up activities, processes, business capabilities, and models to entirely control prospects as much as changes of digital technologies along with their influence on a prioritized and strategic perspective.

In alignment with earlier statement, the digital business transformation is undeniably the utmost encounter in change management. Since it affects not just the organizational structure and strategic stand, but it as well influences every administrative level across the organization (every process, activity, and task), even it stretches supply chain. Therefore, business leaders are obliged to continually challenge their employees for the sake to guarantee that this change can boost productivity expansions and substantial competitive advantage all while bringing remarkable customer experience (Edmead, 2016).

1.6 Methodology Applied and Sources of Data for the Study:

There are two prominent research methodologies in the domain of applied studies, quantitative and qualitative, with both having their strengths and weaknesses. Whereas in the case of quantitative research, it has a notable downside in recognizing the situation or applying which information is gathered, in a time qualitative research might comprise prejudices and does not afford itself to generalization and statistical analysis (Hesse-Biber, 2010). Therefore, mixed method strategies can make up these shortcomings by permitting for both analysis and exploration in the same work.

Additionally, researchers utilizing the mixed-method approach will be in a better stand to make use of all the available tools for them and assemble data that deem more inclusive. Consequently, this will supply outcomes that have an extensive outlook on the problem or research issue. More to add, the outcomes might even embrace both statistical analyses, as well as remarks, with both practices in one study, can supply added proof and support for the outcomes, which can be confirmed within the study.

In line with the previous argument, the mixed-method strategy of this research utilizes the qualitative documental revision through assembling, analyzing and objectively commenting on a variety of subject-relevant literature covering the general concepts of the study. While concerning the quantitative part, then the data collection process concentrated on a web-based survey, which addressed a set of subject-focused questions that helped this work to produce relevant and rich information, with a sample that comprises corporations from multiple business domains in Qatar. Additionally, the data collection process observed the number of business entities that are effectively using modem digital assets that can help them gain a higher competitive edge and better customer outreach.

As part of the quantitative web survey, this work considered the probability sampling, which utilizes randomization and considers the necessary measures to ensure that all members of a population have a fair selection probability. The particular technique is the stratified sampling, which is commonly considered when the population is heterogeneous, or unrelated, while simultaneously specific homogeneous, or related,

sub-populations can be set aside (El-Masri, 2017). Thus, the breakdown of stratified sampling would look similar to here below representation:

Population	All major organizations in Qatar.
Groups (Strata)	Banking, IT, Hospitality, Real Estate, Construction, Telecom
Obtain a Simple Random Sample	2-10 organizations per strata
Minimum Survey Sample	10 x 6 (Groups) = 60 participants

Table 1: Survey Sampling

The development process and rollout of the questionnaire was prepared with the assistance of a trusted group of subject matter experts, and some relevant studies (Deloitte, 2013). Consequently, a pilot questionnaire was floated to a close circle of professional and business contacts, who helped in exploring particular issues that may hypothetically have an opposed influence on the anticipated number of participations as well as survey results. Additionally, the pilot survey helped to verify the accuracy of survey's participation guidelines in addition to the volume of questions and their order, which assisted in measuring whether all the participants in the pilot version were capable of tracking the guidelines as specified. Furthermore, it was quite indicative of supplying a better perception on whether the form of the questionnaire was effective in achieving the aim of this study.

Regarding the validity of submitted and collected data, content validity was considered in order to help to recognize the spectrum of context coverage through focused survey questions, which handled the full range of problems and issues the research project is supposed to address. Furthermore, this study employed the principles of construct validity, which basically considered the consultation of trusted subject matter experts for

the sake to ensure that the applied measure is essentially quantifying what it is proposed to measure (Purpura et al., 2015). The group of subject matter experts helped to observe the items and determine what an explicit item is anticipated to measure.

While for the integration of both quantitative and qualitative data in the shape of a mixed methods study, then it has a major capacity to reinforce the uniformity and deepen the analysis and outcomes of any digital transformation evaluation. Through prudently choosing the mixed method design that most fits the research's raised questions and meets its resource restraints, the researcher can expedite deeper and more expressive learning concerning the efficiency and carry out of digitization strategy. For the intent of integrating the assembled data, it is recommended for the researcher to gather and analyze both qualitative and quantitative data in a progressive, concurrent and precise style that helps in effectively integrating the two sorts of data. While for the technique in which this data is merged will be subject to the characteristics of the analysis and the philosophical viewpoint of the researcher (Almalki, 2016).

Following up on the earlier discussion, Greene et al. (1989) provided four distinct justifications for the integration of quantitative and qualitative research data. Triangulation provides possibilities for merging and corroboration of results that are derived from diverse research methods. Complementarity pursues clarification, enhancement, elaboration and illustration of the outcomes from one method with the outcomes from another. Development sees researchers utilizing the results from one method to inform another method, which covers all aspects of the inquiry. Finally, the Initiation that involves the recognitions of contradictions or inconsistencies.

After the successful completion of data gathering, the subsequent action will be the analytical part. The purpose behind that is to get hold of practical and valuable information. Irrespective to the nature of data, whether it is qualitative or quantitative, the analysis might define and summarize the data, recognize connections concerning variables, compare them, categorize the variance amongst them and predict results. In view of that, and for the qualitative data, then it can be organized corresponding to classes and sub-classes identified through reading and re-reading the gathered data, which can be achieved electronically or manually.

While for the quantitative data, then the Statistical Package for the Social Sciences (SPSS) and Microsoft Excel tools were considered as part of this work, with both being very useful for the generated statistics and charts as part of generated research results (Onwuegbuzie & Teddlie, 2003). Finally, this work addresses a case study concerning the journey of cloud adoption with one of the large operating real estate companies in Qatar. The addressed endeavor is an integral part of company's overall strategic move towards adopting an agile and reliable digital framework. Accordingly, the case study discusses the background of the endeavor, the proposed solutions, considered alternatives as well as the overall recommendations.

1.7 Structure of the Study:

Whiteside (2004, quoted in Bach, 2015, p. 98) considers that a paper is a structured explanation of hypotheses, information, and conclusions, designed to direct the reader and highlight the significance of employing an outline in preparing papers. Following the earlier statement, the research outline or written design for the arrangement of this

paper will follow the IMRAD format. IMRAD (Introduction, Methods, Results, and Discussion) is a mnemonic for the main parts of the study. Bach (2015) discussed the four fundamental components as part of any research following the IMRAD format. First is defining the nature of explored problem or issue (introduction). Second is highlighting the adopted approach and carried process for analyzing the problem (methods). The third is listing down the set of generated results out of the study with interpreting them (results). Fourth is the exploration of research findings along with their association to research hypothesis (discussion).

Chapter 2: Review of the Literature

2.1 Introduction:

This chapter focuses on reviewing and evaluating a set of selected publications with direct relevance to the research subject, which helps in supplying a background to the study and a deep insight of what the digital transformation journey entails in terms of best-practice strategies as well as challenges. This section as well explores some of the prominent cases from various businesses and industries where they managed to overcome major transformation obstacles and successfully digitized their operations. In addition, this chapter discusses diverse options for formulating a digital transformation strategy and presents some globally recognized practices for commercializing disruptive technologies.

Moreover, business and IT executives can navigate through the experience of their global peers, witness their perception and discover their approach when they realized the need to digitize their business along with the imperative part of corporate leaders to make it as successful and operational as possible. Furthermore, this section reflects the techniques through which some leaders managed to shape the subconscious minds of their companies by successfully transforming their teams and inspire them to navigate through the journey of digital transformation. Apart from that, the literature review focuses on the present state of digital transformation in the latecomer industries, along with a group of lessons learned from selective case studies, which can help many of latecomer industries to digitize their businesses successfully.

2.2 Digital Transformation: Challenges, Strategies, and Examples:

The study by Achatz (2017) explored the influence of digital transformation on both public and private institutions that are stepping into the world of digital transformation. A digital world where real-time information is accessible regarding their operations and processes, functioning environments, services obtained from third-party suppliers, in addition to their chances of meeting their customers' demands. Such volume and wealth of information pave the path for new business prospects, yet it will subsequently increase the magnitude of faced challenges while executing a structure of technological solutions.

Accordingly, the significant challenge is to transform outdated technological solutions into smart and digital systems. These systems must be adequately responsive to manage promptly, forecast, and analyze the incremental and disruptive transformations across all relevant operations of the business. As a result, and from the revenue and profit perspective, the cited study helps IT decision makers to explore and evaluate how invested technology in business is currently becoming the crux for sustainability and innovation of any institution.

Additionally, Achatz (2017) discussed the implication of digital transformation innovation on consumer markets, which consequently influenced the lifestyles of consumers and technology users. While from the other side, at the business end, the pace of digital transformation happening across many global organizations is not going on closely comparable speeds. For a breakthrough, that concerns business's growth of revenue as well as for facilitating supplementary throughput earnings from the acceptance of

business digitization; the analytics will get the utmost encouraging prospect to expedite transformation process in addition to provide innovative or considerably improved services. Furthermore, and taking into account the constant decline of labor growth rate across the globe, the earlier cited study highlighted how new methods of increasing efficiency must be established and positioned across enterprises and industries for the sake to produce desperately desired economic growth.

Regardless of the fact that the majority of institutions in a particular industry sector have very comparable processes, and their diversity is moderately restricted to specific competencies, Achatz (2017) discussed how organizations have narrowed down their outsourced operations to some cross-industry competencies. Similar to human resources, customer contact centers, certain procedures in finance and accounting, and information technology (IT).

Moreover, during the time where the adoption and progress of digitization have considerably penetrated the lives of many, with the influence of diverse sectors in the Information and Communication Technology (ICT) segment along with new corporations that were incepted wholly digital, the certainty is that actual new incomes from business models did not meet the expected targets. For instance, in a time the majority of corporations in diverse consumer segments have devoted enormous energies to channels digitization, the pursued enhancements in customer experience continue to be deceptive (Achatz, 2017).

2.3 Tackling the Digitalization Challenge:

Päivi et al. (2017) had interviewed two large enterprises who encountered an immense challenge in adopting digital enterprise collaboration systems. The undertaken interviews had shown that the challenges both corporations had faced throughout the presentation and usage of such system to some extent do overlap. Both organizations just experienced a sub-set of the recognized challenges explored in various relevant publications, starting with the low quality of implementation procedures, the absence of explicit project objectives, the absence of activity benchmarking and minimal executive support. All (but not limited to) contributed to the formation of a giant obstacle, which was observed as largely harmful to accepting the enterprise collaboration system as a new administrative concept.

The organization that had presented one of the prominent collaboration and document management systems was noticed to miss configuration of structures, low relevant in-house experiences, knowledge, skills, as well as weak handling of multiple system/tool usage, which was deemed as extremely challenging. While the second company that had chosen one specific solution encountered a high time exposure, where most business users perceived the application as an efficiency destroyer due to inadequate understanding of overload, relevance, and increasing complication, with all being deemed as challenges of utmost attention. Remarkably, there was occasionally a discrepancy amongst the perceived challenges amongst the executive team and business users, which proved that diverse stakeholders might have dissimilar perceptions of the intended introduction and usage of technology.

Following the earlier said, and while an important internal stakeholder of the second interviewed company perceived the absence of functional procedures as a notable challenge, the CEO did not, which symbolized a serious misunderstanding of company's digital strategy and vision, in an indication that proved low transparency measures across the entire organizational hierarchy.

Based on the work performed by Päivi et al. (2017), we can notice the criticality of adopting a resilient change and project management methodology while looking after a smooth digital transformation. As a result, companies are strongly advised to set a considerable focus on preparing adequate training programs for the intended usage of digital systems, along with developing rules of conduct, transparent communication framework, as well as the necessity of considering all stakeholders and business users from early inception stage.

Nevertheless, driving change is a hectic task if not even impossible sometimes (if bureaucracy and culture are too difficult to overcome), and as highlighted by Sirkin et al. (2005), that in most organizations, 67% of transformation initiatives fail. Accordingly, and as part of good practice in planning and executing a digital transformation strategy, Boston Consulting Group (n.d.) came up with their renowned four factors based formula (DICE). The formula can be considered to help make the initial impression about the success rates of change initiatives, a one that effectively enabled BCG to accomplish hundreds of successful endeavors, through a set of factors that should be counted cautiously prior tackling the change:

1. Duration: In case of large projects, then it stands for the time span that separates reviews of critical milestones. While in case of smaller projects, then the parameter reflects the length of time up to change program completion.

2. Integrity: The capabilities and set of skills the project team has for the sake to achieve change objectives. This parameter is crucial since the success of change programs counts on the quality of teams. Enterprises frequently succeed by allocating their Grade A people to the endeavor.

3. Commitment: The bottom-up (C2) and top-down (C1) commitment towards the intended mission behind the change initiative.

4. Effort: The amount of additional effort employees should undertake in order to cope with change. Preferably, the workload for all concerned individuals must not go beyond 10%.
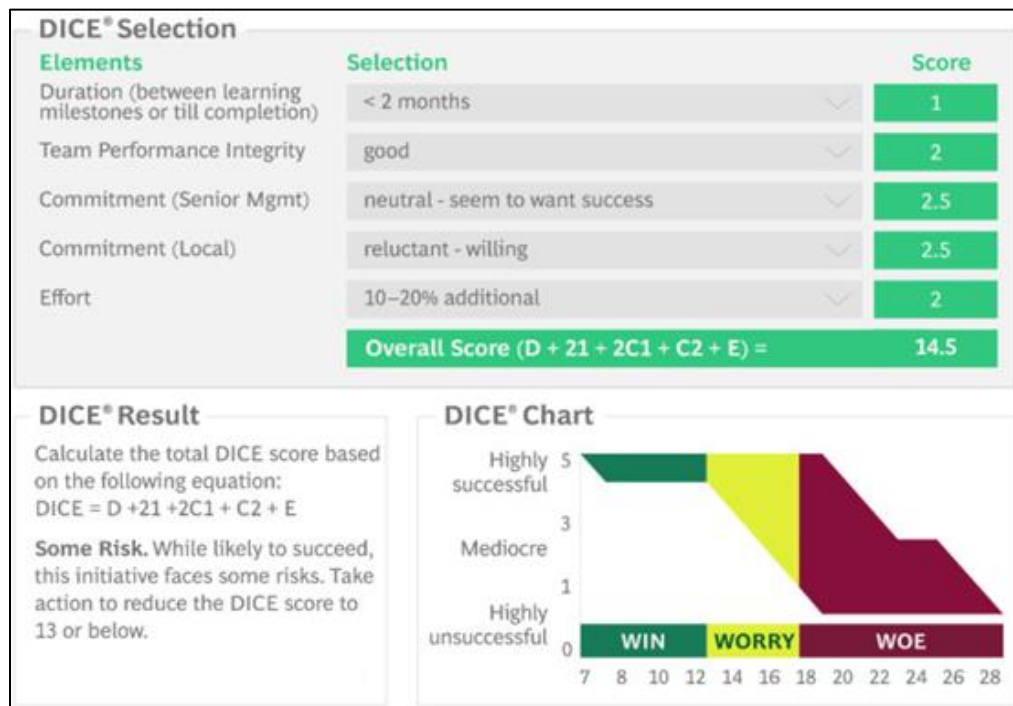
Figure 1: DICE Tool (Boston Consulting Group)

2.4 Options for Formulating a Digital Transformation Strategy:

Hess et al. (2016) highlighted how digital transformation has turned out to be the main concern with significant priority on leaders' agendas, with nearly 90% of business leaders in the U.K. and the U.S. are anticipating digital and IT technologies to set an accumulative strategic influence to their overall business in the upcoming decade. Accordingly, the question is not anymore when organizations should make the digital transformation as a strategic priority, but the way to use and adopt it as a competitive advantage.

The cited study advises IT and business leaders who are being confronted by the challenge of digital transformation, as well as the necessity to maintain their competiveness in the market, to draw up and implement strategies that adopt the consequences of digital transformation and command, improved functioning performance. Nevertheless, and despite the criticality of the subject, there are plenty of examples where companies that were incapable of retaining adequate momentum with the new certainty of digitization. Noticeable instances comprise the liquidation of the former movie-rental giant Blockbuster as well as the sale of the Washington Post to Amazon.

Hess et al. (2016) discussed as well the complexity of digital transformation and the way it influences plenty or all divisions within an organization. The study conveyed a clear message for all leaders to concurrently balance the exploitation and exploration of their companies' assets to accomplish organizational agility, which is a required provision for an effective digital transformation of their operations.

Presently, leaders are predominantly encountered with the absence of transparency regarding the various alternatives and components they require to observe in their digital transformation programs. Therefore, they compromise failing to examine significant components of digital transformation or ignoring explanations that are more positive to their companies' explicit circumstances, which might have unplanned and inconsistent consequences.

2.5 Commercializing Disruptive Technologies:

Carayannopoulos (2009) discussed in her study several cases where young, and startup companies turned to be outstanding at commercializing disruptive technologies at the expense of much stronger, larger and established competitors. The paper investigated this argument and discussed the aspects that encounter the survival of new technology-venture are as well probable bases of benefit when commercializing disruptive technologies. The developed hypothesis by the author had as well recognized the boundary circumstances for the benefits through scrutinizing the perspective of commercialization that was developed by four categories of disruptive technologies; radical, incremental, modular and architectural.

When a disruptive technology is initially introduced to the market, Adner (2002, quoted in Carayannopoulos, 2009, p. 422) discussed how it is at first being partially developed. Thus, the commercializing company should frequently bring it in a peripheral, smaller market. At the time that performance progresses, the product gets closer to fulfilling the demands of the mainstream and large market performance. It gets into the low-end segment of the associated market, progressing gradually upmarket as performance

endures to increase. Abernathy & Clark (1988, quoted in Carayannopoulos, 2009, p. 422) explained how disruptive technologies could vary from incremental to radical. Despite the fact that several valued perceptions were obtained through discovering these two dichotomies, several scholars have stated that more exploration must integrate the mid-range of innovations like modular and architectural. The mid-range has substantial competitive outcomes and bearing in mind only the modest difference amongst incremental and radical offers partial insights (Henderson & Clark, 1990). Accordingly, every form of these innovations is detailed hereunder.

The variance among radical, incremental, modular and architectural innovations is subject to how each adapts to present knowledge. The division of product knowledge can be put into two dimensions: the architectural knowledge of how these components are associated, and the modular knowledge of the fundamental components (Henderson & Clark, 1990). Table two below sums up how each of the four categories of innovations is differentiated along with the dimensions of modular and architectural knowledge.

	Module Challenged	Module Unchallenged
Architecture Challenged	Radical innovation (example: introducing the calculator compared to the earlier concept of slide rule).	Architectural innovation (example: introducing large high-speed computer (mainframe) compared to a desktop computer).
Architecture Unchallenged	Modular innovation (example: introducing the digital camera	Incremental innovation (example: image stabilization

compared to the earlier concept of a film camera).	feature introduced to digital cameras).

Table 2: Comparison of Radical, Architectural, Modular, and Incremental Innovation

2.6 CIOs and the Digital Transformation:

Bongiorno et al. (2017) described how CIOs could adopt and command the drive of digital transformation execution through embracing an innovative leadership that utilizes conventional skills in an innovative manner. In their book, the authors had navigated through several ways in which new factors will function a crucial part of this course and the way modern associations can be generated between people, data and things. Besides, they expressed how the structure of digital organizations and the execution of digital technologies should be prudently observed, in addition to multiple practices of how to design digital workspaces, organize them, and effectively use them.

Nevertheless, several IT executives are yet striving to get hold of a go-to benchmark that would support them to drive and take entire advantage of innovative digital opportunities through their transformational ride. This is partially attributable to the still inadequate cooperation amongst the two groups, managers and academics. Whereas academics are hypothetically obliged to focus on coming up with abstract concepts and theoretical representations of the modern and innovative digital certainty. While on the other hand, IT and business professionals appear to be mainly anxious with achieving functional and reliable answers to tangible problems (Bongiorno et al. 2017).

Following the earlier argument, new digital technologies are nowadays indubitably affecting both internal corporate processes as well as customers' engagement, through

empowering organizations to fundamentally influence and frame administrative decisions, transform the growth of new services and products, in addition, to discover innovative techniques to target customers through enhanced understanding of their needs. Besides, digital technologies improve the level of administrative decision-making, reasonably influence business structures, and strategic market positioning as well as customer experience. Accordingly, the IT executive in charge (CIO in particular) might be at the midst of this transformation and arise as one of the leading agents and actors of this definite change (Bongiorno et al. 2017).

At the very crux of CIO's accountabilities undergoes significant changes. The reason behind that is because, in their new defined function, CIOs are anticipated to steer through the large number of opportunities, recognize the precise route for their business and lead timely and sufficient change. To that extent, digital transformation carries as well a great deal of ambiguity for CIOs. Whereas conventional methods of running and operating IT is out of the modern framework of robust and agile operations and doesn't any longer apply nor fit in the digital industry era.

Simultaneously, any transformational attempt carried out by a CIO will not just influence IT functions, but will have a chain of consequences for the whole organization in addition to partners and customers. Justifiably, more frequently CIOs are watchful to consider any radical changes due to the price of having it wrong is in some circumstances too high (Bongiorno et al. 2017).

A good example that can be discussed here is the digital transformation that underwent at IKEA, world's largest furniture retailer, through successfully integrating both ends of

its traditional and digital worlds. Paolo Cinelli, the earlier CIO of IKEA Group who is presently the Digital Business Manager at the Inter IKEA (the Franchisor Company of IKEA), had initiated the digital transformation mission at IKEA, and yet is on top of it up to this date.

Bongiorno et al. (2017) had the opportunity to discuss Paolo Cinelli's journey of digitizing IKEA's business who firstly expressed the difficulty of running and operating under the continuous pressure resulted from the VUCA situation (Volatility, Uncertainty, Complexity and Ambiguity) which makes it nearly impossible to define an objective landscape, particularly down to the disruptive pace of technology development. Nevertheless, what significantly triggered the call for that digital transition was the answer to a simple question that cemented the path for a far more optimistic outlook: what is more easier, opening 300 physical large stores for an online retailer like Amazon, or for IKEA to scale up in the digital game and develop their own online channels?

Cinelli explored as well the main characteristics that a successful CIO should possess, with the one standing out as most fundamental is the capacity to link diverse perceptions, ambitions, and needs across the several domains of the business. The growing scale of digitalization grows the exposure of the CIO to nearly all of the business's processes, with the prominence of building that link increases with the complication of companies and their interactions. Furthermore, the resulted pressure from innovation and control intensifies the significance of prioritizing and allocating company's resources, so that the CIO can enable at least the clarity of

interdependencies, simultaneous initiatives, and associated opportunities. The earlier highlighted discussion can be deemed as overwhelming or as a privilege to the CIO, with the latter's reaction being greatly affected by her/his leadership.

2.7 Shaping the Subconscious Minds of Organizations:

Leodolter (2017) offered a new framework for managing and conceptualizing organizations through employing innovative information and communication technologies, for the sake to back prompt and efficient decision-making. The author supplied some guidelines that can support managers to keenly command the digital transformation process within a company by utilizing its strong metaphor of the subconscious mind of companies. Through developing and designing the subconscious mind, future organizations will progress to sustainable and successful when applying hybrid intelligence with a substantial segment of artificial intelligence, yet with the clear superiority of the human element.

In this cited work, Leodolter (2017) discussed that for an organization to plan and execute an effective digital transformation program, then it must be addressing two crucial dimensions: first is by defining the intensity of targeting digital initiatives within the company, and second is through setting company's capacity to master the transformational change to ultimately deliver positive and operational results. That said, Kane (2015) observed that the growing digital businesses are concentrated on integrating digital technologies, like cloud, social, analytics, and mobile in their efforts to transform the way their businesses function. While in the case of companies that are

digitally less mature, then they were found to concentrate more on resolving individual business glitches with discrete digital technologies.

Additionally, Leodolter (2017) discussed the prominence of corporate culture in the overall process of digitizing the business, with Peter Drucker (management consultant guru) once said "culture eats strategy for breakfast", in a clear notion to the complete irrelevance of having a strong digital transformation strategy in place as long as the corporate culture is not ready to embrace it. Aguirre et al. (2013) discussed that there are four elements for defining and creating an organizational culture: perceptions, actions, language, and tangibles. All individuals within any given company trigger the first three. With the culture being a complex mixture of what the people say, how they behave, along with the fundamental ideas and assumptions behind it. Therefore, corporate cultures can be observed as dynamic ecosystems of behaviors, purpose, and values, which all need to be in a great level of harmony for the sake to ensure a successful transformational change and experience its positive difference.

2.8 How to Navigate Digital Transformation:

Sebastian et al. (2017) described how new digital technologies signifies both: game-changing opportunities and existential threats to those organizations whose success was structured on the pre-digital economy era. The work as well marked out some comprehensive findings from a study that involved twenty-five organizations (like LEGO, GE, and Philips), which were set to board on their digital transformation journeys. Out of that, Sebastian et al. (2017) identified two fundamental digital strategies, digitized

solutions and customer engagement, which help to supply IT decision makers with a clear path towards achieving a successful digital transformation.

In reference to the earlier highlighted study, eight organizations out of twenty-five were following a customer engagement strategy, while the remaining seventeen were following a digitized solutions strategy. Moreover, the work expressed three essentials factors that are crucial for implementing those digital strategies, especially when it comes to those successfully established companies seeking after a smooth digital transformation. First, is through having a strategy that outlines a SMACIT (Social, Mobile, Analytics, Cloud, and IoT) influenced value proposition. Second, is through having an operational backbone that expedites operational excellence. The third factor is through having a digital services platform that empowers responsiveness as well as speedy innovation to all new market opportunities.

Sebastian et al. (2017) supplied an extended definition to the digital strategy, through identifying it a business strategy that is energized by the competences of robust and readily accessible technologies, with a target to deliver unique integrated business capabilities that are resilient and reactive to continually shifting market circumstances. Nevertheless, it is not easy for big well-established companies to drop out their cultures, processes and legacy systems. Therefore, and for the sake to transform themselves into digital businesses, they must board on a prolonged journey that consists of the five major stages: defining the digital strategy, acting promptly on operational backbone investment, designing a resilient digital services architecture, involving all critical

stakeholders in designing the digital platform and finally is through embracing a services culture.
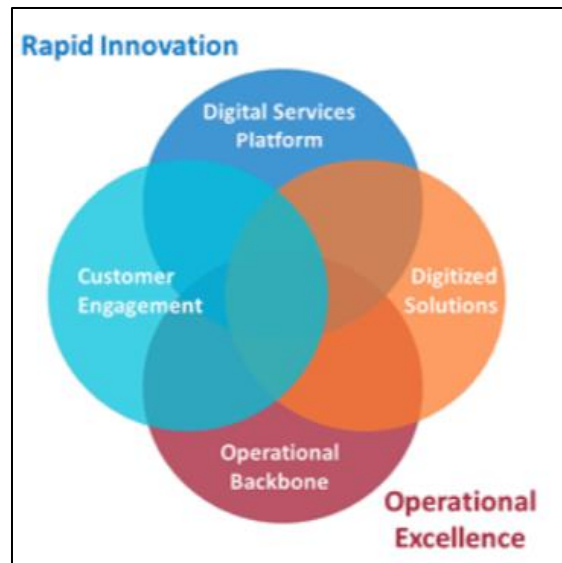
Figure 2: Features of Digital Transformation

2.9 Digital Transformation in Latecomer Industries:

In contrast to digitally shrewd retail and banking businesses, Kohli & Johnson (2011) discussed how oil and gas industries are late arrivals to digitization, with enormous capital employments are put into complex industrial operations. Thus, organizations in latecomer businesses are in the hunt for techniques to optimize expenses and come to be more adaptive and resilient to market demands. For that reason, Kohli & Johnson (2011) explained how decision makers in oil and gas firms are being challenged with unprecedented efforts to slash costs. The reason behind that is down to market instability and the necessity for prudent advice on the way to commence digital transformation, the required organizational changes, who is supposed to command the

digitization endeavor along with the overall function of the CIO in implementing the digital strategy.

In order to orchestrate the energies of digital transformation, CIOs in latecomer businesses should magnify their part of assisting back-office operations in supplying industry-tailored solutions (Preston et al., 2008). In light of that, Chen et al. (2010) discussed the findings of a research that emphasized the obstacles CIOs encounter in meeting the dual anticipations of examining innovative demand-side opportunities, as well as taking advantage of supply-side IT resources. Those roles treat two principal organizational constraints. First, is found in the rapidly shifting market circumstances that demand companies to swiftly bring their resources together (IT and other), in order to react with agility. The second constraint is primarily the increased competition, which employs a heavy load to decrease operational expenses and requires organizational efficiency. These dual requests are as enormous in the oil and gas business as in any other latecomer business.

Therefore, digital transformation in the oil and gas industry necessitates extensive IT investments, in addition to a significant technical proficiency for the sake to integrate several supply chain processes, which is an obligation that most oil and gas companies are not so far equipped with (Holland, 2011). For that reason, oil and gas firms should prudently assess their business objectives and assign the right organizational resources in advance of pledging to any digital investments. That said, and for the sake to effectively handle these challenges along with the constantly changing market conditions, business, as well as IT leaders, are obliged to define two organizational

objectives for digitization: first is to react efficiently to price instability and second is through decreasing production expenses by pursuing alternative sources of natural gas.

Kohli & Johnson (2011) concluded their analytical study with a comprehensive summary that highlighted the lessons learned for both CIOs and CEOs in latecomer industries:

	CIO
1	IT should not be deemed anymore as a sole workhorse function that facilitates supply chain, warehousing, accounting and corporate operational tasks without being a crucial part in shaping up business strategy. Whereas CIOs in latecomer companies should earn their position in the firm through signifying that technology marks a difference in the business is operated.
2	Root digital technologies in business operations and practices. CIOs must set an utmost priority of integrating the necessary operational processes to slash expenses and to develop digital systems ultimately.
3	CIOs should win the confidence and buy-in of business executives through concentrating on opportunities with high revenue or those that will fix critical business challenges while building their digital strategy, instead of responding to improvements with minimal business impact.
	CEO
1	Take the complete ownership as well as sponsorship of the digital transformation mission.
2	The success rate of digital transformation depends heavily on the close working relationship amongst the CIO and the CEO.
3	CEO's should not put an end to digital transformation efforts throughout economic recession or industry difficult times.

Table 3: lessons learned for both CIOs and CEOs in latecomer industries

2.10 Use Cases in Digital Innovation and Transformation:

Oswald & Kleinemeier (2017) elaborated on the tendency of both industry-specific as well as cross-industry in today's digital economy, through providing pertinent use cases in innovation and digital transformation. The study presented and in-depth how moving ahead towards turning into a digital enterprise is challenging and demanding. With the magnitudes of leadership and strategy, customer centricity, adopted business models, people and skills, technology stack, culture, governance and structure in addition to operational processes, are all crucial components throughout the progression of business digitalization.

The reality of the digital economy is undeniable, and it is here to stay. The world is witnessing an unequaled period in the history of business transformation and innovation. In a recent study by SAP (2015), the report highlighted how breakthrough technologies had developed significantly through enabling five crucial trends: cybersecurity, cloud computing, hyper-connectivity, smarter world, and supercomputing. The subsequent velocity of change is overwhelming, with the number stating that throughout the next decade, 40% of the corporations indexed today as Standard & Poor's 500 will not exist anymore, except if they carry on with these technology trends (Loannou, 2014). The same earlier cited report discussed how winning companies were found to be predominantly agile in three main capacities: reimagining work, reimagining business processes and reimagining business models.
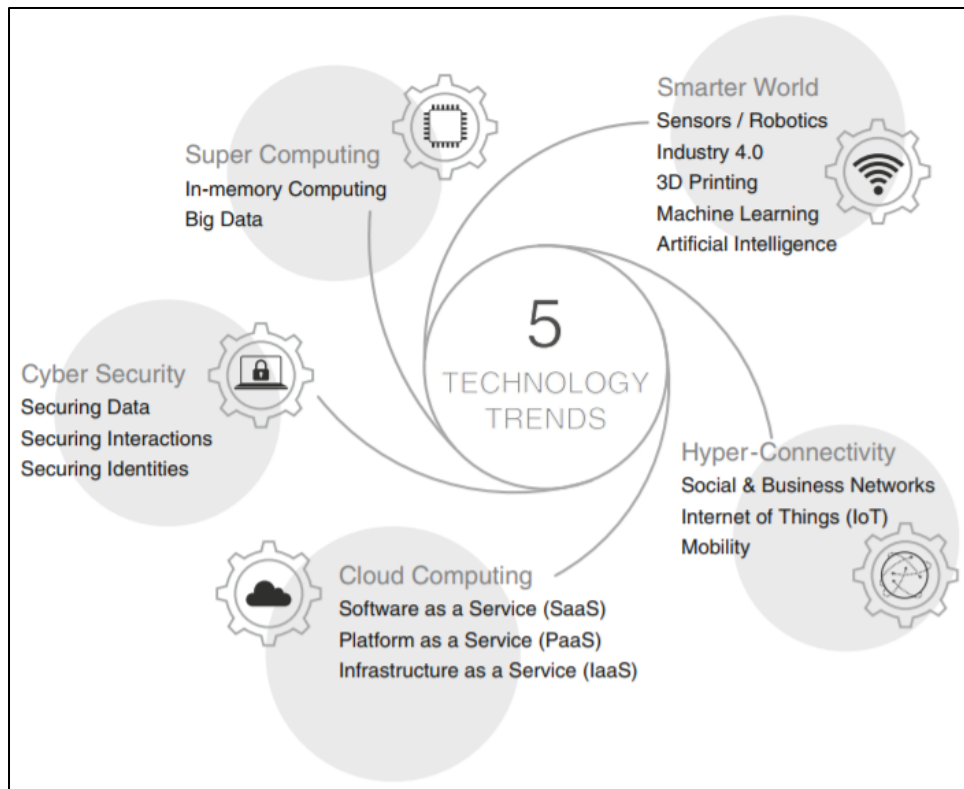
Figure 3: Top Five Technology Trends

SAP (2015) stated how present pioneers of the digital economy are rising apparently from out of nowhere. The prevailing concept of digital business models is very disruptive in nature, where we can notice how very established businesses like in the case of the automobile industry is being heftily affected by Tesla and their fully electric-powered cars. Moreover, Alibaba, for example, on top of being the biggest e-commerce firm, it is as well a technology and financial services company, in an indication that those lines that used once to define industries are simply blurring, with almost every business is nowadays a digital business.

SAP (2015) reported how several CEOs strongly believe that the digital economy will have a foremost influence on their industry, yet just a few hold a digital strategy in place and implement it. SAP's CEO, Bill McDermott, has lately announced a structured digital

business framework that enables organizations to blueprint the development and execution journey of their digital business strategy. That digital business framework consists of the subsequent five pillars:

1. Supplier collaboration (Business Networks).

2. Engaged workforce.

3. Assets and Internet of Things.

4. Core business processes.

5. Customer experience.

All companies can promote a digital strategy through considering the earlier listed pillars. In research by Westerman et al. (2013), companies that have incorporated the digital world and implemented their digital strategy are witnessing the real stakeholder and shareholder value. Value creation via digitization strategies was found very substantial, with an impact of 26% to profitability, 9% of profits creation, and 12% of market valuation.

2.11 Challenges in Digital Business Innovation:

Over the preceding decade, the Information and Communication Technology (ICT) industry has been massively transformed through breakthrough technologies that had radically improved the way we use technology, the way consumers live their daily lives, and how we retrieve and analyze information derived from ICT. This rapid progression equipped the ICT to become capable of covering further business domains and other

segments. Modern technologies can be effective in slashing costs through maintaining precise records of all the transactions taking place in the organization (Morabito, 2014).

Furthermore, business development has benefited from the ICT in various ways, for example through analyzing the market research results in more ways that are effective via employing the capabilities of Business Intelligence. What is more, is that the ICT has an imperative part in enhancing communications amongst the diverse business divisions and branches within the same organization, between other companies through using internet, emails, mobile phones, intranet and faxes, and amid the company and its customers (Morabito, 2014).

One significant new change in the ICT domain is the cloud computing, which emerged years ago with the rise of grid computing. The latter concept can be described as the provision of numerous computer systems in an analogous structure to resolve one problem (Song et al., 2011). Cloud computing is comparable to the grid, yet it differs in the logic, where it pursues to deliver on-demand access to an explicit service or pool of services across the network via virtualized servers similar to specific software solutions and data centers. The significant aspects of cloud computing can be summed up in the following fundamental features: the reduced total cost of ownership, resources allocation, and pooling, on-demand self-service, comprehensive network access, enhanced accessibility, agile structure, rapid deployment as well as controlled and measured services.

Nevertheless, cloud adoption comes with a set of concerns and risks, namely the information security, with the data and systems being hosted by a cloud service provider

is not anymore under company's management control and is subject to vulnerabilities. Hosting systems and data in multitenant based infrastructures escalates the probability of unauthorized access and increases concerns like identity management, privacy, integrity, compliance, encryption, authentication, availability of data, confidentiality in addition to network security and physical security (Carroll et al., 2011). Therefore, companies that plan to move to the cloud are advised to re-assess their governance practices (processes, policies, and procedures) to guarantee, from an organizational standpoint, that the current roles and responsibilities can function successfully in the perspective of privacy.

Additionally, CIOs have to develop new risk management procedures. Whereas risk assessments executed in a classical computing atmosphere where the company has additional control over the risks mitigations, might not be in a position to meet that while hosting its services on the cloud, and will alternatively demand high coordination with the cloud provider to guarantee that mitigations are properly managed and integrated. Therefore, the coherence amongst the organizations and the cloud providers' risk management process is crucial to assure that recognized risks are effectively prioritized and mitigated through selecting and implementing security controls that decrease the associated privacy concerns with the cloud-computing environment (Metheny, 2017).

Figure 4: Benefits of Cloud Computing

Figure 5: Risks of Cloud Computing

2.12 Theoretical Framework:

The prime objective of this research is to bridge the current gap in Qatari market between the present literature and actual practice of digital transformation on the ground, particularly that there is no dedicated study today that states the existing positioning of digital transformation among various business sectors in Qatar. Accordingly, many decision-makers might be already in a position to evaluate their business stand. However, they are not sure whether they are ready to move ahead with the digital transformation journey or to hold it back until further clarity and investigation. In view of that, this work focuses on the diverse verticals that digital transformation comprises of, how others tackled this challenge before, in addition to the role of their leadership in making it possible.

Nevertheless, the research encourages setting a rational and achievable strategy, through effectively addressing all the influencing factors of change and to efficiently control and manage them. Moreover, the strategy can consider the outcomes of this work, which are founded on the conducted analysis of received feedback from the participants of the shared questionnaire. The participants took part in reflecting the digital maturity state of their organizations through contributing to a group of questions that specifically covered the most relevant aspects of digital transformation that most companies should consider and weigh.

The survey questions were developed and organized thoughtfully to include four main parts. The first part is designed to gather some general information concerning participants' background. The second part concentrated on gathering participants'

feedbacks with reference to digital transformation strategies, challenges, and practices.

The third part targeted to bring together participants' responses with reference to

change management strategies, practices and challenges. While the last part focused

on weighing the level of participant's agreement or disagreement with a group of

administrative concepts and notions.

Chapter 3: Research Methodology

3.1 Introduction:

In research philosophy, there are multiple sources of knowledge, with epistemology being researcher's interpretation concerning what setups an adequate knowledge. That said, in a previous work (Alabbasi, 2017) stated that epistemology's main concern is to look after the imperative methods to scrutinize the essentials, outcomes, and hypotheses of various disciplines critically, for the intent to defining their source, their significance along with their objective area of attention and concern. However, and in the case of management research, then it is the course of inspecting, locating, planning and publishing relevant information, data, and awareness to decision makers through techniques that empower the corporation to settle on adequate decisions, which are crucial to help in, exploiting performance (Sreejesh et al., 2014).

In reference to the notion explored earlier, epistemology encompasses four assorted forms of problem classification. Alabbasi (2017) reflected the work of Silvia at al. (2015) who discussed the first form as the sense of discipline or the scrutiny and recognition of the problems of logic highlighted by the discipline and format of the logical principles (efficacy difficulties). The second form is the semantics of scrutiny or discipline and assessment of the models of demonstration, clarification, and reference, which are reflected to the methodical techniques (problems of implication, certainty, and relevance). The third form is the approach of discipline, especially the research of the overall methodical technique along with the concern of the subsequent presence of

procedures explicit of particular disciplines' problems of technique. The fourth and last form of problems is the philosophy of methodical awareness, explicitly the position of this category of understanding along with the concern of the demarcation amongst science and non-science (difficulties associated with the restrictions and to the significance of the methodical technique).

Following the earlier said, (Alabbasi, 2017) discussed how the researcher should be in constant motion. The more the researcher is flexible, curious and determined, the more probable the researcher is to discover something of an impact. As well, the researcher requires having an adapted intellect in addition to being prepared to perceive different connections and explanations. Accordingly, this implies being conscious of any previous studies that have been directed via examining the literature and speaking to other researchers (field experts), during which simultaneously being equipped to analyze beyond the boundaries of present knowledge and frameworks.

Moreover, Alabbasi (2017) reflected the work of Easterby-Smith et al. (2012) who expressed that there are necessities to be a personalized achievement. This indicates inspiring individual, even unconventional, interests, and routines. Especially, the researcher must attempt to consider a comprehensive concern in individuals along with further sciences. As a result, creativity is generally incepted through relations and connections developed through conventional horizons. In line with earlier discussion, researchers commonly pull from diverse epistemological and ontological hypotheses while creating their procedures for undertaking research. Occasionally they perform this

intentionally and purposely; more frequently they tail basically the practices handed over through those who taught and educated them.

Additionally, Easterby-Smith et al. (2012) expressed how the recognition and understanding of theoretical expectations might both support the inspiration of the scholar and boost the value and worth of the study. While speaking of the management discipline, then it has constantly established various philosophies that supplied the essential framework necessary to back the epistemology. A few philosophies are founded on the previous examination while others are founded on the investigational explorations, which are entirely groundbreaking and pioneering concepts that transformed into philosophies. Alabbasi (2017) highlighted the notion where the improvement and expansion of things are continually dependent on the advancement of the research as well as research expansion of the business, establishments or nation. In short, research occupies a crucial part in the growth of both, management practices and theories (Raut & Veer, 2014).

Subsequently and in any domain of science, business, profession or day-to-day action where awareness and knowledge demands are consistently made, epistemology plays a significant part in contribution through making clear what are the circumstances and boundaries of what is interpreted and perceived as justified knowledge, regardless of the case where engaged individuals do acknowledge this or not. Accordingly, nobody is in position to be situated beyond the boundaries of commonly practiced processes of epistemology, in case they happen to be managers or researchers (Johnson & Duberley, 2000).

Following the previously mentioned argument, it trails that each procedure, involvement, and each management strategy, explicitly or implicitly, expresses an epistemological stand that permits knowledge statements that validate its authentic and functional subject. Thus, the plain action of labeling an object as proof is to assess and weigh it epistemologically and grant it some form of epistemic position. Therefore, Alabbasi (2017) highlighted the work of Johnson & Duberley (2000), where if we consider passionately the controversy that a significant talent, which any decision-maker must have, is the capability to replicate judgmentally upon the methods of connection they arrange in building significance of their knowledge. Moreover, the prominence of epistemology to researchers is merely too obvious since analyzing epistemology discloses a serious examination that is frequently unobserved and perceived as settled for hypotheses and principles which affect the way varieties of authenticity are publicly assembled, and subsequently impact actions.

Succeeding the earlier discussion, the floated questionnaire as part of this work had addressed the previously highlighted research questions (in Chapter 1), and hereunder is a mapping table of the corresponding relationship:

#	Research Questions	Questionnaire Questions
1	How is digital transformation leading the journey of change in businesses?	• Where do you think business should start with digital transformation? • What is the primary strategy behind your organization's investment in data analytics products, technologies, and people?

2	Why is marketing a paramount factor to drive digital transformation inside organizations?	• Do you have effective internal communication procedures that would help to deliver the value behind change and continuous updates regarding the digital transformation progress? • Do you have a clear change management methodology that is being adopted across the organization? • Do you have a dedicated Project Management Office (PMO) within the organization?
3	How would it be easier to execute the digital transformation in small and big organizations? Which are the preferred techniques?	• To what extent your company's leadership is making digital transformation as a top priority. • To what extent is the executive team diverse, open and multigenerational with expertise in business and technology topics? • What has limited the success of previous change projects within your organization? • What are the barriers that you might think are usually blocking the path to digital transformation? • How much do you agree with this statement: managing expectations is a decisive factor in the change cycle?
4	What are the key features of digital transformation in the modern business information?	• Where do you think business should start with digital transformation? • Does your company primarily use mobile applications to change how it interacts with customers?

5	What is the needed culture for undertaking a successful digital transformation endeavor?	• How much do you rate the role of corporate culture towards the success of change projects within your organization? • How much do you agree with this statement: The extent of employees' engagement in change execution is subject to the level of leadership's support to the change endeavor?
6	How digital transformation disrupts business processes, customer experience, and operations?	• To what extent is your organization using cloud software, infrastructure, and/or platform services? • How your company is taking advantage of IoT (Internet of Things)?

Table 4: Association between research and questionnaire questions

3.2 Research Participants:

The participants of research questionnaire were targeted to be among the trustworthy business contacts from the local Qatari market with whom I had a direct business relationship over the course of my role in the domain of Information Technology management. The participants are majorly coming from diverse market segments, like construction, real estate, hospitality, banking, retail, information technology suppliers/vendors, oil and gas and telecom.

The functional roles of participants were based on as much diverse managerial, administrative and technical roles as possible, covering functions like finance/accounting, information technology experts, corporate administration, operations, sales, and engineering. Table five below gives an overview of all invited 85 participants, representing 56 companies, out of which 78 had partially participated, and

60 (70 % of invited participants) had fully answered the survey. All partially completed responses were excluded from the final assessment and analysis.

Invitations for questionnaire participation were namely sent to participants' business email addresses, explaining the nature of the survey, number of questions, estimated time for completion and a direct URL for accessing the questionnaire. The questionnaire was set up not to accept multiple contributions per participant and not to capture nor store any personal or confidential data, except participants' IP addresses, for the sake to ensure that he/she is located in Qatar, in addition, to minimize the probabilities of duplicate responses. The identity of participants is completely anonymous, and the personal details were not recorded neither by the online survey service provider nor by me.

	Company's name	Company's business domain	Participant's role in the company
1	Tanween	Property and Facility Management	IT Engineer
2	VCE (Qatar)	Information Technology	Senior Manager
3	eClick	Information Technology	Senior Manager
4	eClick	Information Technology	Sales Manager
5	Cisco (Qatar)	Information Technology	Sales Manager
6	i4	Information Technology	Account Manager
7	Vodafone (Qatar)	Telecom	Account Manager
8	Vodafone (Qatar)	Telecom	Account Manager
9	Microsoft (Qatar)	Information Technology	Technical Consultant
10	Microsoft (Qatar)	Information Technology	Territory Manager
11	Ooredoo	Telecom	Technical Consultant
12	Ooredoo	Telecom	Technical Specialist
13	Ooredoo	Telecom	Sales Manager
14	Ooredoo	Telecom	Account Manager
15	Ooredoo	Telecom	Technical Account Manager
16	Ooredoo	Telecom	Account Manager
17	Ooredoo	Telecom	Technical Consultant
18	Zscaler (Qatar)	Information Technology	Sales Manager
19	Mannai	Information Technology	Deputy Manager
20	Mannai	Information Technology	Technical Consultant

21	Mannai	Information Technology	Technical Consultant
22	Mannai	Information Technology	Technical Consultant
23	Mannai	Information Technology	Project Manager
24	Mannai	Information Technology	Vice President
25	Mannai	Information Technology	Account Manager
26	Mannai	Information Technology	Technical Consultant
27	Mannai	Information Technology	Technical Consultant
28	Mannai	Information Technology	Account Manager
29	Mannai	Information Technology	Technical Consultant
30	Mannai	Information Manager	Division Manager
31	Qatar Project Management	Construction	Technical Consultant
32	Qatar Project Management	Construction	Technical Consultant
33	Qatar Project Management	Construction	Technical Consultant
34	Qatar Project Management	Construction	Technical Consultant
35	Qatar Project Management	Construction	IT Manager
36	Qatar Project Management	Construction	Finance Manager
37	Qatari Diar	Construction	Information Systems Manager
38	Bayt Al Mashoura	Financial Services	IT Manager
39	Oracle (Qatar)	Information Technology	Account Manager
40	Qatar University	Education	Head of IT PMO
41	PwC (Qatar)	Audit and Consultancy	Technical Consultant
42	QIB	Banking	Credit Officer
43	Malomatia	Information Technology	Business Analyst
44	HPE (Qatar)	Information Technology	Sales Manager
45	NetApp (Qatar)	Information Technology	Sales Manager
46	Masraf Al Rayan	Information Technology	Head of IT
47	Gulf Warehousing	Logistics	Logistics Officer
48	Link Dot Net (Qatar)	Information Technology	Country Manager
49	Huawei (Qatar)	Information Technology	Sales Manager
50	TechnoQ	Media and Technology	Account Manager
51	GBC	Information Technology	Account Manager
52	Emdad	Construction	Administration Manager
53	ForeScout (Qatar)	Information Technology	Pre-Sales Manager
54	Salam Technology	Information Technology	Account Manager
55	KPMG (Qatar)	Audit and Consultancy	Partner
56	Capital Technology	ICT	Project Manager
57	Dell-EMC (Qatar)	Information Technology	Account Manager
58	Dell-EMC (Qatar)	Information Technology	Territory Manager
59	Evosys Global (Qatar)	Information Technology	Delivery Manager
60	i4	Information Technology	Deputy General Manager
61	Al Mana Group	Auto Dealer	Sales Manager
62	Nassir Bin Khaled	Auto Dealer	Sales Executive

63	Q-Auto	Auto Dealer	Sales Executive
64	Al Aqariya	Construction	IT Manager
65	Waseef	Property and Facility Management	IT Manager
66	Palo Alto (Qatar)	Information Technology	Sales Manager
67	Qatar Petroleum	Oil and Gas	Senior Research Engineer
68	Supreme Committee for Delivery & Legacy	Government	Senior Communications Officer
69	Ezdan	Construction and Hospitality	Senior Director
70	Al Jabber	Construction	IT Manager
71	Millennium hotels (Qatar)	Hospitality	IT Manager
72	Ministry of Economy and Commerce	Government	IT Manager
73	Chedid Capital	Investment	Audit Manager
74	Consultative Assembly	Government	Systems Engineer
75	Manateq	Construction	IT Manager
76	Manateq	Construction	Project Manager
77	Barwa Bank	Banking	Head of IT
78	PORR (Qatar)	Construction	IT Manager
79	Meeza	Information Technology	IT Engineer
80	ICT	Information Technology	Account Manager
81	Woqod	Fuel Retail	Accountant
82	Global Knowledge	Education	Account Manager
83	Barwa Real Estate	Construction and Investment	Assistant Manager
84	Barwa Real Estate	Construction and Investment	Assistant Manager
85	Barwa Real Estate	Construction and Investment	Technical Consultant

Table 5: Invited Participants

3.3 Role of Researcher:

The role of the researcher in pure unadulterated quantitative studies is hypothetically

absent. Whereas in the pure quantitative study, contributors perform independently

regardless of the presence or the availability of the researcher over the course of

participation. In studies of experimental nature, a double-blind placebo managed study

is the premium criterion, where it is utilized to seek and eliminate prejudices and

subjective analysis from the research. While in studies of correlational nature, the

collection of data is performed without care or concern for the contributing participants

or individuals gathering the data. That said, in ideal conditions, quantitative studies must

produce same outcomes once performed by other researchers, as long as the same circumstances are applied (Barnham, 2015).

In the event of qualitative studies, the function of the researcher is relatively distinctive. Whereas the work is deemed as a tool for data gathering (Denzin & Lincoln, 2003). This implies that data is arranged out of that human tool, instead of machines, questionnaires or inventories. Therefore, to live up to that role, users of the research must have an understanding concerning that human tool. As a result, Greenbank (2003) discussed how the qualitative researcher should define pertinent features of self, counting any prejudices, expectations, any assumptions, and capabilities to back his or her eligibility to run the research. As well, it is beneficial for the qualitative researcher to retain a research paper explaining personal considerations and reactions, perceptions of self and past, in a different paper, and how connection carries out.

Subsequent to the earlier argument, the qualitative researcher must as well clarify if his/her function is emic or is being more etic from an outer observation, more of an objective observer. In addition, there must be a considerable arrangement of differences in between, since occasionally, a researcher commences as a nonmember to consequently come to be a participant of the contributing batch. Alternatively, the opposite can happen, the researcher commences as a participant of a group before becoming a more objective observer (Punch, 1998). That said, a qualified qualitative researcher inquires exploratory queries, then pays attention, then reasons, then raises additional inquisitive queries to reach to more profound levels of the discussion. An

efficient qualitative researcher pursues to develop a depiction through utilizing theories and notions from an extensive selection of sources.

In line with the earlier discussion, the adopted role in this mixed-method research had excluded any probable biases or subjective analysis that would have influenced in a way or another the course of data gathering and its subsequent analysis. The shared questions in the floated survey were solely based on industry's generic topics, issues and concerns, with a focus to have them as broad and comprehensive, yet relatively short and digitally oriented, as possible.

In addition, and whenever the survey was asking the participants to respond regarding the effect of project and change management practices to effectively drive digital transformation in their organizations, then those questions were mostly done based on my own practical and technical experience. The reason for that is in order to measure the magnitude of influence, positive or negative, and subsequently match the generated outcomes with the earlier stated hypothesis in chapter one.

3.4 Data Collection Methods and Techniques:

Alabbasi (2017) had discussed that regardless of the form of science being targeted social or physical, business, humanities, marketing, or other fields of discipline or study, data occupies an extremely significant part, serving as their corresponding initial points. Thus, across all of those procedures that involve the practice of knowledge and information, data collection comprises one of the very initial stages. On top of that, data collection is defined as the method of measuring and gathering information on variables

of concern, in a proven methodical style that empowers the researcher to respond to questions, specified research queries, assessment theories as well as to assess results.

Alabbasi (2017) reflected the work of Easterby-Smith (2012) who highlighted that based on the study field or discipline, the kind of the pursued information, and the aim of researchers or objectives, the used set of methods for data collection will differ. Additionally, the methodology to employing the methods might as well differ, tailored to fit both the dominant conditions and target, without jeopardizing the dependability, accuracy, integrity of the data

Following the preceding argument, we can settle for the notion that data collection supports in the pursuit for resolutions and answers, simplifies and enhances the procedures of decision-making, along with the value of the choices selected. Furthermore, the information gathering process helps in refining the worth of anticipated output or results, which will consequently support in guaranteeing the reliability and correctness of collected data. That said, researchers find themselves handling with and having to gather two key forms of data (Easterby-Smith, 2012).

The first form of data collection is the quantitative, the one that works with figures, values or quantities, and having them quantifiable. As a result, they are generally communicated in statistical and numerical form. For example, duration, amount, size, length and price. The use of statistics to produce and successively explore this form of data, supplements credibility or confidence to it. Thus, quantitative data is largely perceived as more objective and consistent.

The second form of data collection is qualitative, which primarily works with quality. Thus, they are categorized as descriptive instead of statistical or numerical. Dissimilar to the form of quantitative data, qualitative data are mostly not quantifiable in nature, and are solely obtained - generally - via observation. In line with that, descriptions regularly rely on adjectives and further narrative words for the sake to indicate to data on texture, color, look, and further qualities.

In line with the argument mentioned above, Alabbasi (2017) highlighted the work of Palinkas et al. (2015) who discussed how the practiced methods for the collection of qualitative data are investigative in nature. The methods are mostly involved in attaining understandings and perceptions on fundamental motivations and reasons. Thus they head for a deeper dig. Because they cannot be measured, the researcher will be encountered with the measurability of data issue. The absence of the quantifiable variables will drive to the tendency for tools or methods that are mostly unstructured or, in some circumstances; it could be structured yet merely to a very limited or small magnitude. Commonly, the used methods for collecting qualitative data are expensive and lengthy activities to perform. Therefore, researchers attempt to minimize associated expenses through reducing the size of a number of participants or analyzed samples.

The practiced methods are mainly: personal interviews (the most commonly used method), surveys (questionnaires that are open-ended in nature and without pre-defined set of possible answers), focus groups (interviews that generally take a form of group discussion), documental revision (comprises the usage of formerly published and trustworthy literature as a source of information). Additionally, the researcher can

consider observation and case studies methods, with the latter one can be adjusted to concentrate on an organization as a whole, group of individuals or an individual as a case for investigation and analysis.

Moving to the range of performed methods for collecting quantitative data, Alabbasi (2017) referred to Paula and Bruce (1990) who discussed how they can be easily generated and measured to produce a numerical form, to be consequently processed and transformed into mathematically important information. The output is commonly statistical and meaningful, which will automatically mark it as very valuable and useful.

Different from the practiced methods while collecting the qualitative data; quantitative methods are predominantly working with a bigger size of analyzed samples, since it's quantifiable in nature, and thus makes the task straightforward to manage and attain. The practiced methods can be the quantitative surveys (having limited number of questions with a pre-defined set of possible answers), interviews (more structured compared to the interviews performed as part of qualitative data), observation, experiments (natural, field or lab experiments).

3.5 Data Analysis Methods and Techniques:

Heumann & Schomaker (2016) described statistics as a collection of techniques that support researchers to interpret, describe, analyze, and summarize data, which subsequently help in defining conclusions that are crucial in business, administration, and research. Accordingly, and when the researcher starts collecting data, he/she might inquire the possibility to simplify the process in detail as well as the volume of data that

has to be collected. From the technology perspective, a variety of statistical software

packages are available to assist researchers in their associated tasks of data gathering,

control, and most significantly analysis. In this work, I have utilized both IBM's Statistical

Package for Social Sciences (SPSS) as well as Microsoft Excel for producing the data

analytics, with the outcome being presented in the form of graphical, statistical and

quantitative formats.

Through the utilization of aforementioned software packages, I was able to present the

following statistical transactions, which are discussed in detail in chapter five:

1. Responses' frequencies and percentages.

2. Pearson's Chi-Squared test, which was selected for this work since all measured values are nominal. This test helps in identifying the connection between two conclusive responses (Shih & Fay, 2017). The association amongst tested variables will be deemed strong once the significance of the Pearson Chi-Square is less than 0,05.

The invited group of participants in this study had used an online (internet-based)

survey, which helped to offer the preliminary foundation for data analysis, through

supplying various data filter options, participation trend recognition in addition to multiple

data export templates and views. As a result, those outputs formed a crucial input for

the analytical software packages addressed earlier, and helped to produce meaningful

statistical and quantitative data, which was fundamental to assess the validity of

research hypothesis and the stand of digital transformation in Qatar.

3.6 Research Validity:

Validating research hypotheses is a helpful and a crucial component of the research. It is as well a useful concept for researchers' self-development since the process familiarizes them to the subject and helps them to avoid running into the risk of empirical contradiction between the theory and research results (Kirk & Miller, 1986). That said, and since the instrument of data collection as part of this research is based on questionnaire responses from various stakeholders representing different Qatari business sectors, it is worth mentioning that questionnaires are the most commonly applied data gathering method in the evaluation and educational research. Particularly that they assist in collecting data on opinions, attitudes, knowledge, facts, behaviors, and other information.

Following the earlier argument, and in a review of more than 700 research studies carried on extension education and agriculture, Radhakrishna (2007) observed that 64% of them had applied questionnaires as a primary data collection instrument. However, he noticed that nearly 30% of all reviewed studies did not state any procedures for forming validity or reliability, which would considerably influence the credibility of the work.

Therefore, developing an effective and trustworthy questionnaire is necessary to decrease any measurement faults. Groves (1987) explained the measurement error as the inconsistency between participants' attributes and their questionnaire answers. Accordingly, the process of developing a reliable and valid questionnaire consists of multiples stages that generally consume a significant amount of time, which were all

carefully addressed within the scope of preparing and analyzing the applied questionnaire as part of this research.

In the first stage, the researcher has to set the right background, through identifying and examining the intention, goals, hypothesis and research questions. Defining the targeted respondents, their background, particularly their technical/administrative levels, information access, and the applied method for choosing the audience are all as well part of this stage. That said, the researcher must have a detailed and a broad perception of the problem, which is attained through extensive literature reading and preferably a practical practice in the domain of study. As a result, a proper understanding and preparation of this stage cement the foundation needed for originating the one after (Czaja & Blair, 2005).

Subsequent to the development of the detailed perception of the research, the following stage is to produce questionnaire questions and statements. At this stage, extracted content from literature context is converted into questions. Furthermore, the researcher works on establishing a connection between research goals and their transformation into content. For instance, the researcher should specify the measured criteria out of intended questionnaire, which comprises of perceptions, attitudes, knowledge, opinions, behavior change, and recalling facts. Foremost variables (dependent, independent, and mediator) are recognized and specified at this stage.

Moving to stage three, where the concentration is set on writing down the questions, deciding on the suitable scales of measurement (procedures that are applied to measure a subject's response on a specific variable), preparing questionnaire's outline

and setup, deciding the proper order of questions and lastly is determining the data analysis technique. Accordingly, we can relate here that understanding the connection amongst the scale of measurement and the suitability of data analysis is imperative (Czaja & Blair, 2005).

The outcome of earlier addressed stages is a draft questionnaire that is set for starting validity. Kirk & Miller (1986) referred to validity as the volume of systematic or built-in inaccuracy in the measurement. Where it is formed through utilizing a group of subject matter experts and in some cases (if applicable) a field trial. Accordingly, and in order to pick the proper form of validity (criterion, construct, content, and face), Litwin & Fink (1995) discussed that this phase counts on the purposes of the research, with the subsequent questions to be considered in the fourth stage, which once joined with performing a readability trial, will improve the validity of the questionnaire:

1. How valid is the questionnaire in measuring what it was originally anticipated to measure?

2. Does the questionnaire illustrate the content?

3. Is the questionnaire suitable for the selected sample?

4. Does the data collection instrument appear similar to a questionnaire?

5. Is the questionnaire sufficiently inclusive to gather all the required data to handle the intent and objectives of the research?

Moving to the final stage of preparing a valid questionnaire is through considering its reliability of it by running a pilot trial. Kirk & Miller (1986) referred to reliability as a procedure of recognizing the random fault in measurement, in addition to specifying the precision of the applied measuring instrument and consistency of survey responses.

The floated pilot trial as part of this research aimed to answer the main concern of whether the questionnaire with its proposed structure of design and order will be beneficial in measuring the state of digital transformation in Qatar. In this work, both internal reliability and reliability coefficient were used to measure the level of association amongst multiple assessed variables.

Chapter 4: Presentation of Results & Analysis of Data

4.1 Introduction:

This chapter focuses on exploring research's survey questions along with the applied categorization. Moreover, it presents the high-level findings resulted from the study, through tabulating the gathered data in a statistical representation through disclosing the percentage of occurrences, along with their associated graphical representations. Every table will signify one question, and consist of a range of possible answers from which the participants had to choose, along with the frequency of selected choices and their corresponding percentages.

Subsequently, and in order to conclude this work appropriately, it will be essential to analyze the collected data to validate the hypothesis and answer the research questions. Accordingly, this chapter as well analyzes and interprets the set of collected data in two main sections. The first section will highlight the correlational analysis amongst multiple variables (questions) and consequently indicate their level of association (relevance), along with their relationship with research's main problem and hypothesis. The second section will look after a thorough interpretation of survey responses, through pragmatically reflecting the answers to the current state of digital transformation in Qatar, and map them to some of the globally conducted studies and surveys (Wang & Mull, 2015).

4.2 Survey Questions:

The floated survey was designed and structured cautiously to cover four major parts. The first part was designed to gather some general information concerning participants' background. The second part focused on gathering participants' inputs concerning digital transformation strategies, challenges, and practices. The third part targeted to collect participants' responses with reference to change management strategies, practices and challenges. The fourth part concentrated on assessing the level of participant's agreement or disagreement with a group of administrative statements.

The first part consisted of the following group of questions:

1. Participant's description of his/her industry.
2. Participant's description of his/her job function.
3. Participant's position within his/her company.
4. Participant's organizational hierarchy of his/her company.

The second part consisted of the following collection of questions:

1. Where does the participant think that his/her business should start with digital transformation?
2. To what extent is participant's leadership making digital transformation as a top priority?
3. What is the primary strategy of participant's company behind the investment in data analytics products, technologies, and people?
4. Does the participant's company primarily use mobile applications to change how it interacts with customers?

5. To what extent is participant's organization using cloud software, infrastructure, and/or platform services?

6. To what extent is participant's executive team diverse, open and multi-generational with expertise in business and technology topics?

7. How participant's company is taking advantage of the IoT (Internet of Things)?

8. What are the barriers that the participant might think are usually blocking the path to achieve digital transformation.

The third part comprised of the subsequent group of questions:

1. Does the participant's company have a clear change management methodology?

2. Does the participant's company have a dedicated Project Management Office (PMO)?

3. Does the participant's company have effective internal communication procedures that would help to deliver the value behind change and continuous updates regarding the digital transformation progress?

4. Based on participant's experience, what has limited the success of previous change projects within his/her organization?

5. How much does the participant rate the role of corporate culture towards the success of change projects within his/her organization?

The fourth part consisted of the following collection of statements:

1. How much does the participant agree/disagree with the notion that the availability of change team within the company has a constructive influence on change executions?

2. How much does the participant agree/disagree with the notion that the extent of employees' engagement in change execution is subject to the level of leadership's support to the change endeavor?

3. How much does the participant agree/disagree with the notion that the effectiveness of digital transformation change depends on the availability of change agents inside business unit?

4. How much does the participant agree/disagree with the notion that managing expectations is a decisive factor in the change cycle?

4.3 Survey Results:

Question #1:

<table>
<tr><td colspan="3">Which Industry Are You Working In?</td></tr>
<tr><td>Participants' Choices</td><td colspan="2">Responses</td></tr>
<tr><td></td><td>Frequency</td><td>Percentage</td></tr>
<tr><td>Banking</td><td>4</td><td>6.67%</td></tr>
<tr><td>Hospitality</td><td>3</td><td>5%</td></tr>
<tr><td>Real Estate</td><td>10</td><td>16.67%</td></tr>
<tr><td>Construction</td><td>5</td><td>8.33%</td></tr>
<tr><td>Oil & Gas</td><td>2</td><td>3.33%</td></tr>
<tr><td>Technology</td><td>31</td><td>51.67%</td></tr>
<tr><td>Public Utility</td><td>1</td><td>1.67%</td></tr>
<tr><td>Telecom</td><td>4</td><td>6.67%</td></tr>
<tr><td>Total</td><td>60</td><td>100%</td></tr>
</table>

Which industry are you working in?

Legend:
- Banking
- Hospitality
- Real Estate
- Construction
- Oil & Gas
- Technology
- Public Utility
- Telecom

Values shown: 6.67%, 6.67%, 5.00%, 1.67%, 16.67%, 51.67%, 8.33%, 3.33%
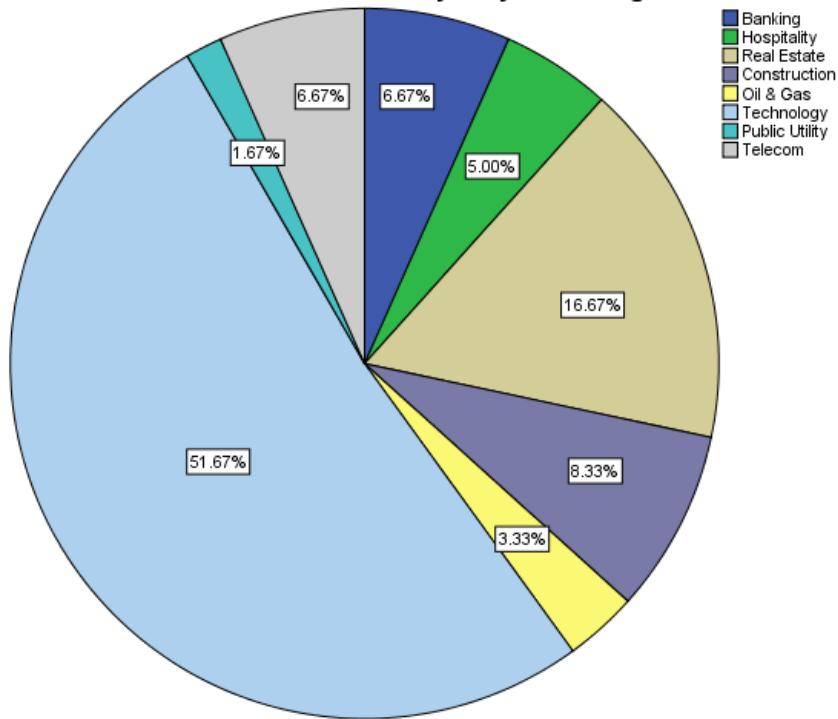
Comments

Nearly 52% of respondents are working in the technology industry, followed by real estate with a percentage of 17%.

Question #2:

Which One of The Following Best Describes Your Job Function?

Participants' Choices	Responses	
	Frequency	Percentage
Finance/Accounting	2	3.33%
Information Technology/MIS	39	65%
Administration	3	5%
Operations	4	6.64%
Sales	10	16.67%
Engineering	2	3.33%
Total	60	100%

Which one of the following best describes your job function?

Legend:
- Finance/Accounting
- Information Technology/MIS
- Administration
- Operations
- Sales
- Engineering

Pie chart values: 65.00%, 16.67%, 6.67%, 5.00%, 3.33%, 3.33%
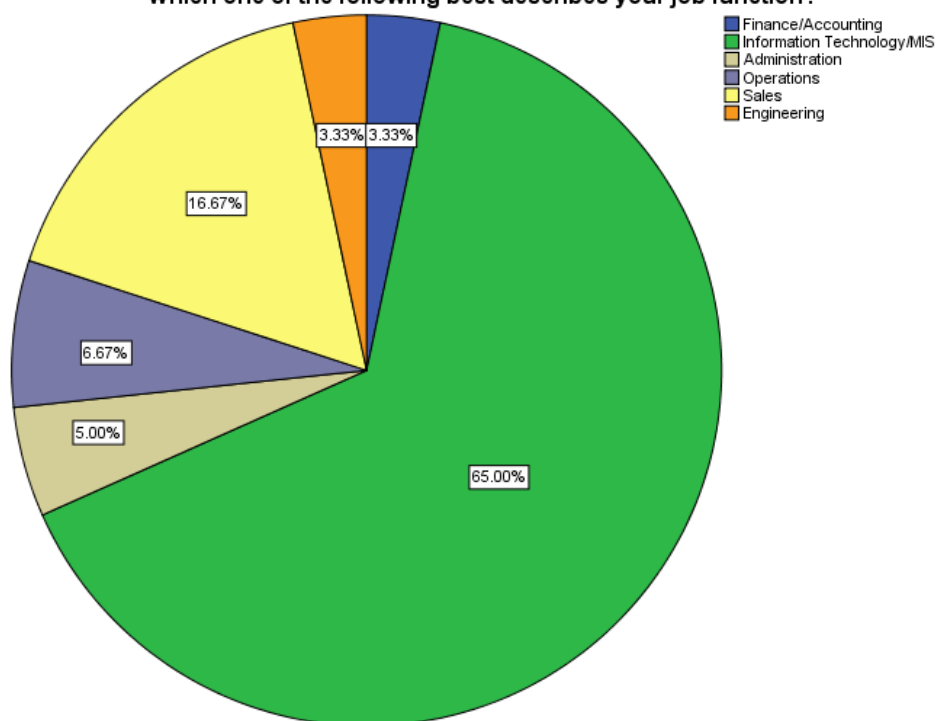
Comments:

65% of respondents described their job function as Information Technology / MIS specialists, followed by sales with a percentage of 17%.

Question #3:

Which One of The Following Best Describes Your Position Within the Company?

Participants' Choices	Responses	
	Frequency	*Percentage*
Salaried Employee	19	31.67%
Assistant Manager	9	15%
Manager	19	31.67%
Director / Senior Manager	10	16.67%
Executive	2	3.33%
Vice President	1	1.67%

	Total	60	100%

Which one of the following best describes your position within the company?
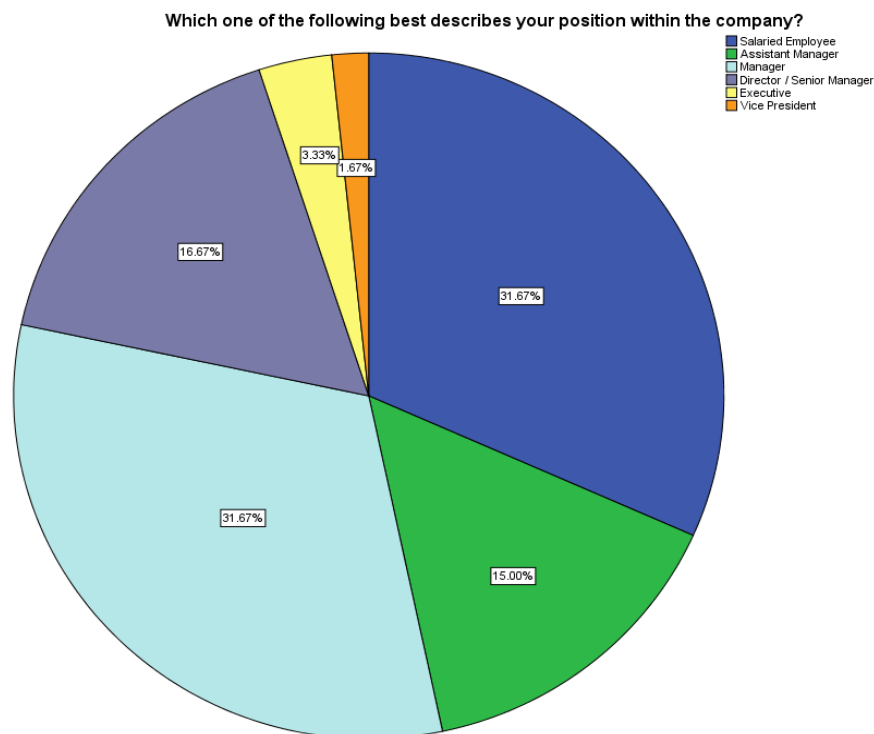
Comments:

32% of respondents described their positions in their respective companies as non-managerial. The exact same representation was for the participants with the managerial occupation, followed by directors / senior managers with a percentage of 17%.

Question #4:

What Is the Organizational Hierarchy of Your Company?

Participants' Choices	Responses	
	Frequency	*Percentage*
Flat (Decentralized)	4	6.67%
Vertical (Bureaucratic - Centralized)	46	76.67%
I don't know / no response	10	16.67%
Total	**60**	**100%**

What is the organizational hierarchy of your company?

Legend:
- ■ Flat (Decentralized)
- ■ Vertical (Bureaucratic - Centralized)
- ■ I don't know / no response

Pie chart values:
- 6.67%
- 16.67%
- 76.67%
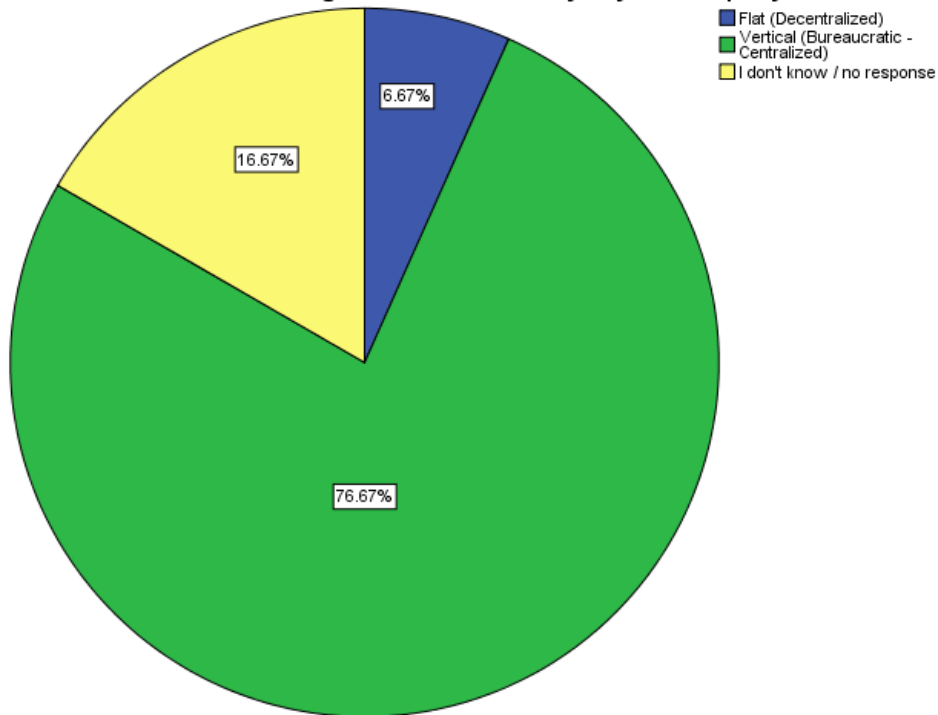
Comments:

The majority of respondents 77% described their working environments as vertical (bureaucratic / centralized).

Question #5	Where Do You Think Business Should Start with Digital Transformation? (Participants Could Select Multiple Choices)		
Participants' Choices	**Responses**		
	Frequency of Responses	*Percentage of Cases*	*Valid Percentage of Cases*
Improve employees' engagement	47	78.33%	78.33%
Improve suppliers' and customers' engagement	32	53.33%	53.33%
Improve operations	43	71.67%	71.67%
Total frequency of responses	**122**		
Total respondents	**60**		

Comments:

Nearly 78% of respondents expressed that their companies and as part of any forthcoming digital transformation endeavors should start with the mission of improving employees' engagement, followed by 72% of votes to improve business operations.

To What Extent Your Company's Leadership Is Making Digital Transformation as A Top Priority.

Participants' Choices	Responses	
	Frequency	*Percentage*
We have a dedicated committee led by Chief Digital Officer	11	18.33%
Our CEO is working closely with the CIO	4	6.67%
We are making digital investments in certain business departments	27	45%
Our nature of business needs no heavy involvement from the leadership	8	13.33%
I don't know / no response	10	16.67%
Total	**60**	**100%**

To what extent your company's leadership is making digital transformation as a top priority?

Legend:
- We have a dedicated committee led by Chief Digital Officer
- Our CEO is working closely with the CIO
- We are making digital investments in certain business departments
- Our nature of business needs no heavy involvement from the leadership
- I don't know / no response

Values: 18.33%, 6.67%, 45.00%, 13.33%, 16.67%
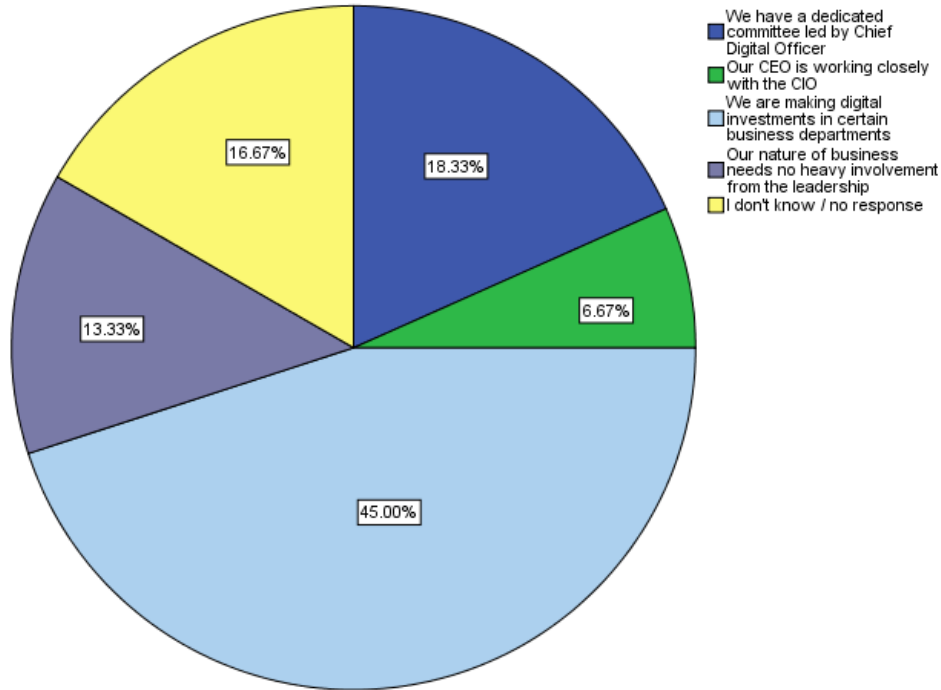
Comments:
45% of respondents had expressed that their companies are undertaking digital transformation efforts but in specific business functions. While nearly 18% had indicated that they have a dedicated committee to look after the digital transformation process.

Question #7	What Is the Primary Strategy Behind Your Organization's Investment in Data Analytics Products, Technologies, And People? (*Participants could select multiple choices*)		
Participants' Choices	**Responses**		
	Frequency of Responses	*Percentage of Cases*	*Valid Percentage of Cases*
Understand and anticipate the needs of our customers better	36	60%	60%
Get a better handle of our internal processes to improve efficiency	45	75%	75%

|			
Analyze data gathered from our products and services	28	46.67%	46.67%
The analytics/big data movement isn't a strategic priority	12	20%	20%
I don't know / no response	2	3.33%	3.33%
Total frequency of responses	**123**		
Total respondents	**60**		

Comments:
75% of choices reflected that the prime purpose behind the digital investment strategies of their companies is to get better handling of internal business processes in order to improve efficiency. Followed by 60% that expressed the need to better understand and anticipate the needs of their customers.

Question #8:

Does Your Company Primarily Use Mobile Applications to Change How It Interacts with Customers?

Participants' Choices	Responses	
	Frequency	*Percentage*
The organization is heavily dependent on mobile applications interfacing with our customers	13	21.67%
The organization is partially dependent on mobile applications interfacing with our customers	13	21.67%
The organization has no mobile applications for public interaction	31	51.67%
I don't know / no response	3	5%
Total	**60**	**100%**

Does your company primarily use mobile applications to change how it interacts with customers?
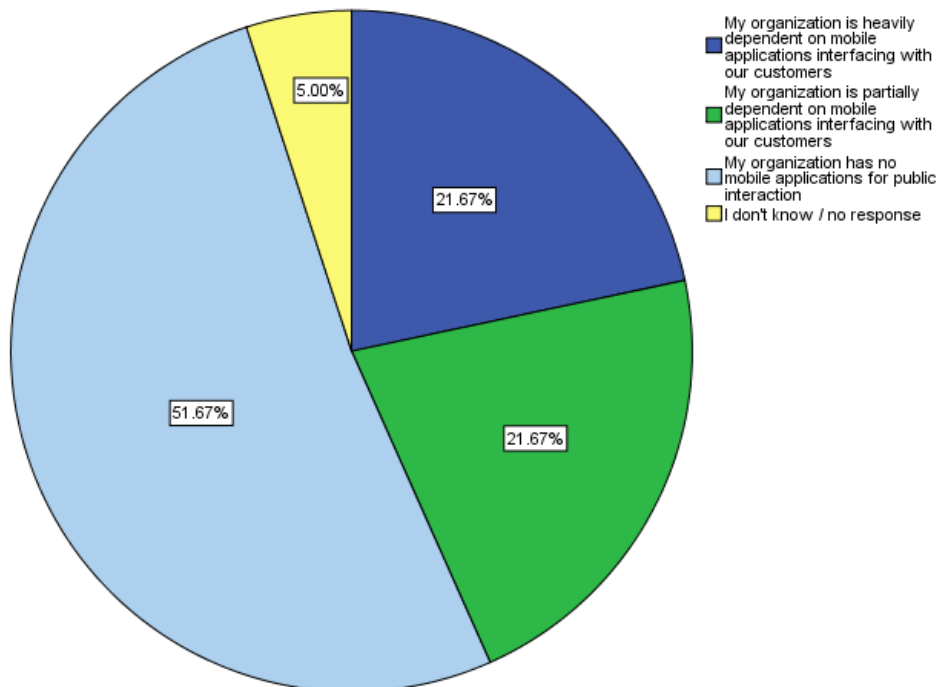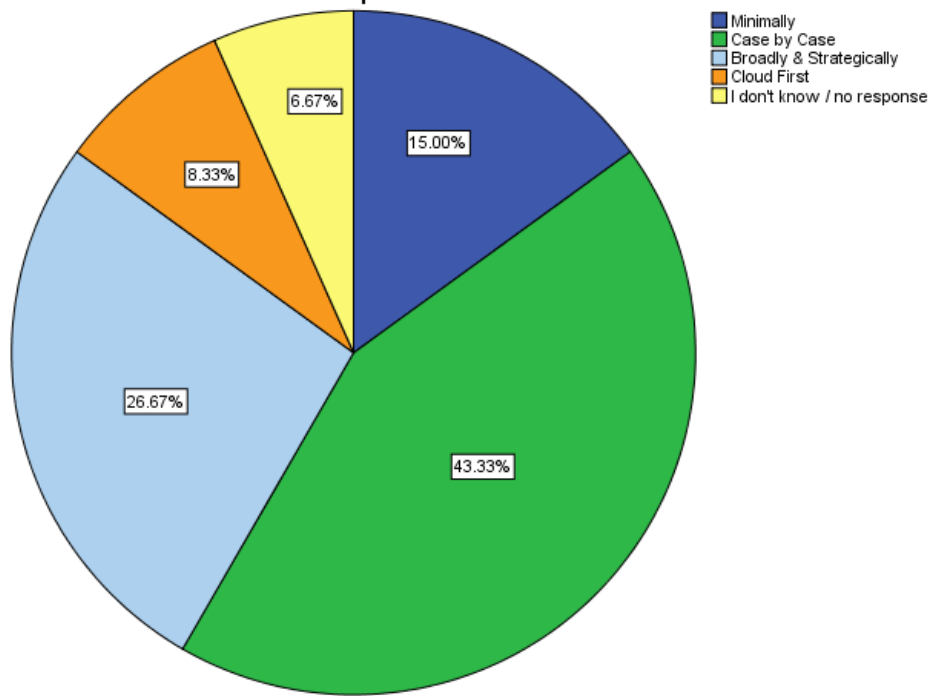
Comments:

52% of participants stated that their companies have no dedicated mobile interfacing applications with their clients/customers.

Question #9:

To What Extent Is Your Organization Using Cloud Software, Infrastructure, And/Or Platform Services?

Participants' Choices	Responses	
	Frequency	*Percentage*
Minimally	9	15%
Case by Case	26	43.33%
Broadly & Strategically	16	26.67%
Cloud First	5	8.33%
I don't know / no response	4	6.67%
Total	**60**	**100%**

To what extent is your organization using cloud software, infrastructure, and/or platform services?

43% of respondents reflected that their companies are adopting cloud-computing models on a case-by-case basis, while 27% stated that they are taking advantage of cloud broadly & strategically.

Question #10:

To What Extent Is the Executive Team Diverse, Open and Multigenerational with Expertise in Business and Technology Topics?

Participants' Choices	Responses	
	Frequency	*Percentage*
Very diverse and open	25	41.67%
Relatively diverse and open	13	21.67%
Progressively picking up the pace of modern technologies	18	30%
I don't know / no response	4	6.67%
Total	**60**	**100%**

To what extent is the executive team diverse, open and multi-generational with expertise in business and technology topics?

- The executive team is very diverse and open
- The executive team is relatively diverse and open
- The executive team is progressively picking up the pace of modern technologies
- I don't know / no response
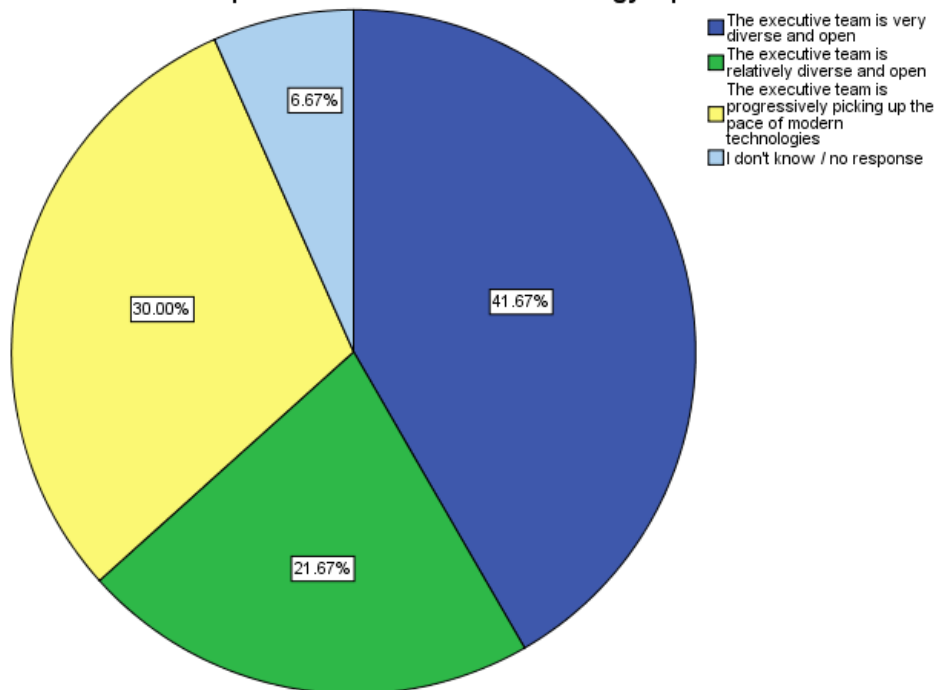
Comments:
42% of participants expressed that their executive teams are diverse, open and multigenerational with expertise in business and technology topics, while 22% reflected that their executive teams are relatively diverse and open.

Question #11:

How Your Company Is Taking Advantage of IoT (Internet of Things)?

Participants' Choices	Responses	
	Frequency	*Percentage*
We do not have IoT in our operations, but it is part of future	11	18.33%
We do not have any substantial IoT plans	14	23.33%
We are actively developing an IoT Strategy	19	31.67%
We are operating most/all of our operations and internet-connected	10	16.67%
I don't know / no response	6	10%
Total	**60**	**100%**

How your company is taking advantage of IoT (Internet of Things)?
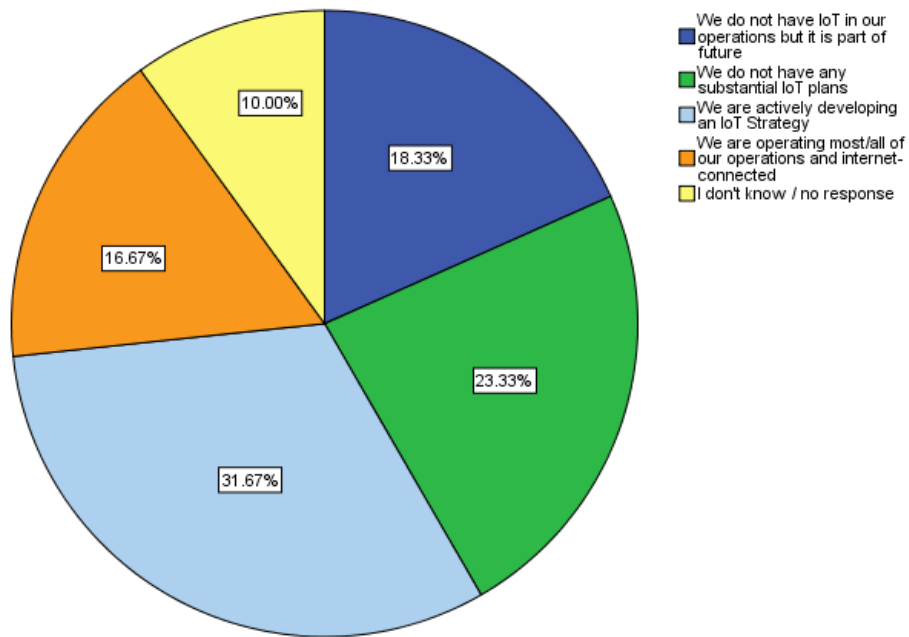
Comments:

32% of respondents stated that their companies are actively developing IoT strategies, while 23% reflected that they do not have any substantial IoT plans.

Question #12	What Are the Barriers That You Might Think Are Usually Blocking the Path to Digital Transformation? (*Participants could select multiple choices*)		
Participants' Choices	**Responses**		
	Frequency of Responses	*Percentage of Cases*	*Valid Percentage of Cases*
Management's hesitance	22	36.67%	36.67%
Users' resistance	33	55%	55%
Complexity of implementation	24	40%	40%
Cost of implementation	33	55%	55%
Total frequency of responses	**112**		
Total respondents	**60**		

Comments:

55% of participants expressed that both users' resistance, as well as the cost of implementation, are the main blocking barriers towards achieving an effective digital transformation in their companies.

Question #13:		
Do You Have A Clear Change Management Methodology That Is Your Organization?		
Participants' Choices	**Responses**	
	Frequency	*Percentage*
We have a dedicated Change Management Office (CMO) that looks after the adopted change management methodology	11	18.33%
Our change projects are mainly monitored on the departmental level	31	51.67%
The organization forms a temporary CMO over the lifetime of change project	6	10%
I don't know / no response	12	20%
Total	**60**	**100%**

Do you have a clear change management methodology that is being adopted across the organization?

Legend:
- We have a dedicated Change Management Office (CMO) that looks after the adopted change management methodology
- Our change projects are mainly monitored on departmental level
- The organization forms a temporary CMO over the lifetime of change project
- I don't know / no response

Pie chart values: 18.33%, 51.67%, 10.00%, 20.00%
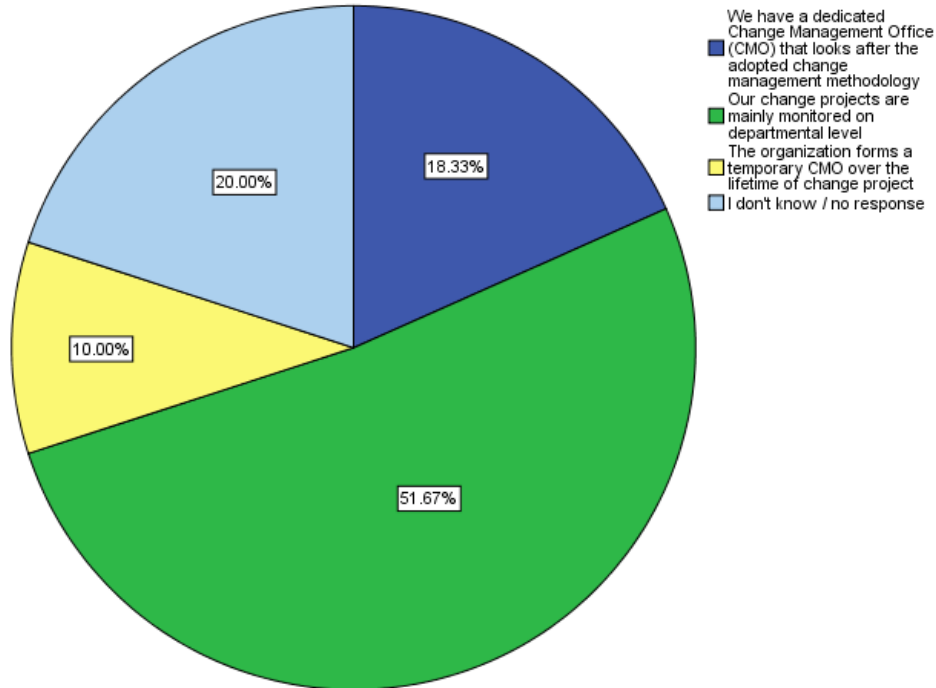
Comments:

52% of respondents reflected that their change projects are mainly monitored on the departmental level, while 18% indicated to have a dedicated CMO. 20% did not know about the availability of change management methodology in their companies.

Question #14:

Do You Have A Dedicated Project Management Office (PMO) Within the Organization?

Participants' Choices	Responses	
	Frequency	*Percentage*
Yes we have a PMO	29	48.33%
Our projects are mainly managed on departmental level	22	36.67%
The organization forms a temporary PMO over the lifetime of change project	7	11.67%
I don't know / no response	2	3.33%
Total	**60**	**100%**

Do you have a dedicated Project Management Office (PMO) within the organization?

Legend:
- Yes we have a PMO
- Our projects are mainly managed on departmental level
- The organization forms a temporary PMO over the lifetime of change project
- I don't know / no response

48.33%
36.67%
11.67%
3.33%
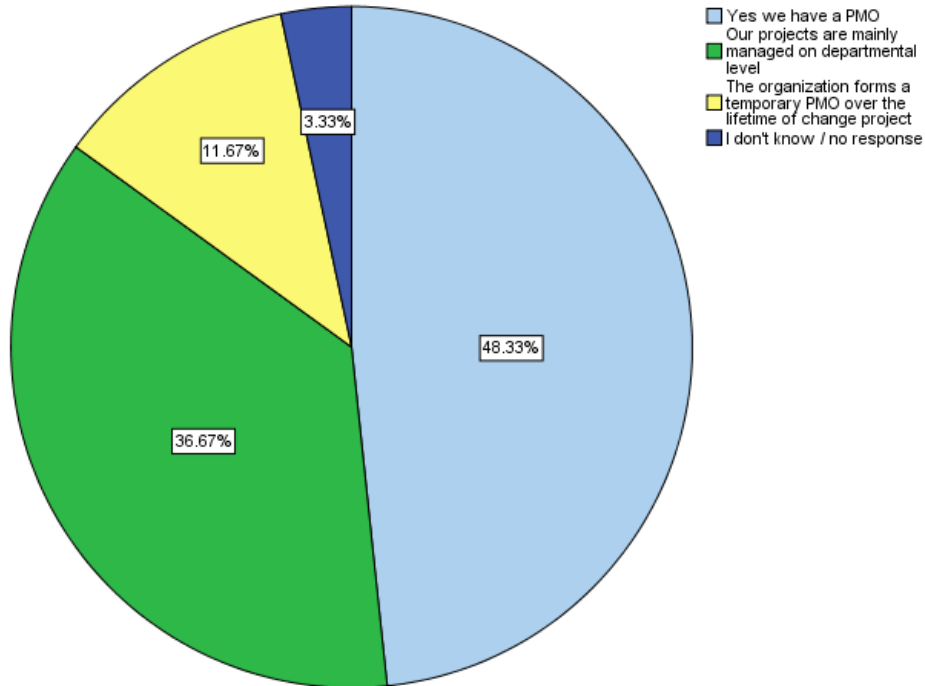
Comments:

48% of respondents expressed that they have a dedicated PMO, while 37% reflected that their projects are managed mainly on the departmental level.

Question #15:

Do You Have Effective Internal Communication Procedures That Would Help to Deliver the Value Behind Change and Continuous Updates Regarding the Digital Transformation Progress?

Participants' Choices	Responses	
	Frequency	*Percentage*
We have an internal communications team that looks after spreading the awareness of change progress	30	50%
The project manager in charge is usually handling this part	17	28.33%
In my organization the change progress is rarely shared across	9	15%
I don't know / no response	4	6.67%
Total	**60**	**100%**

Do you have effective internal communication procedures that would help to deliver the value behind change and continuous updates regarding the digital transformation progress?

Legend:
- We have internal communications team that looks after spreading the awareness of change progress
- The project manager in charge is usually handling this part
- In my organization the change progress is rarely shared across
- I don't know / no response

Pie chart values: 50.00%, 28.33%, 15.00%, 6.67%
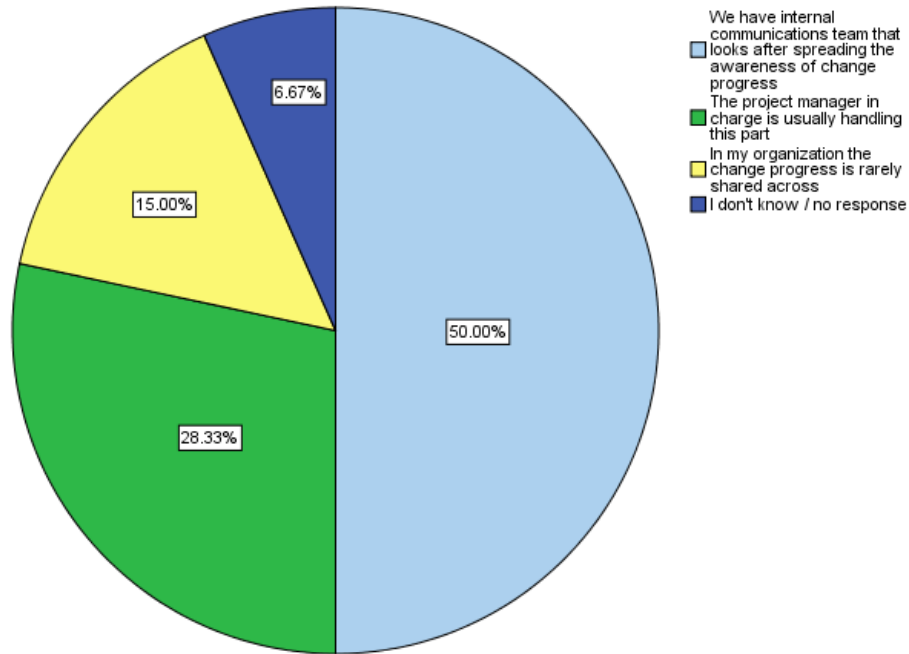
Comments:
50% of participants reflected that they have internal communications team that looks after spreading the awareness of change progress, while 28% emphasized that the project manager in charge is usually handling the internal communication part.

Question #16	Based on Your Experience, What Has Limited the Success of Previous Change Projects Within Your Organization? (*Participants could select multiple choices*)		
Participants' Choices	**Responses**		
	Frequency of Responses	*Percentage of Cases*	*Valid Percentage of Cases*
Lack of management and business support	20	33.33%	33.33%
The absence of internal subject matter experts	22	36.67%	36.67%
Weak implementation team from implementer's side	19	31.67%	31.67%
I don't know / no response	21	35%	35%
Total frequency of responses	**82**		

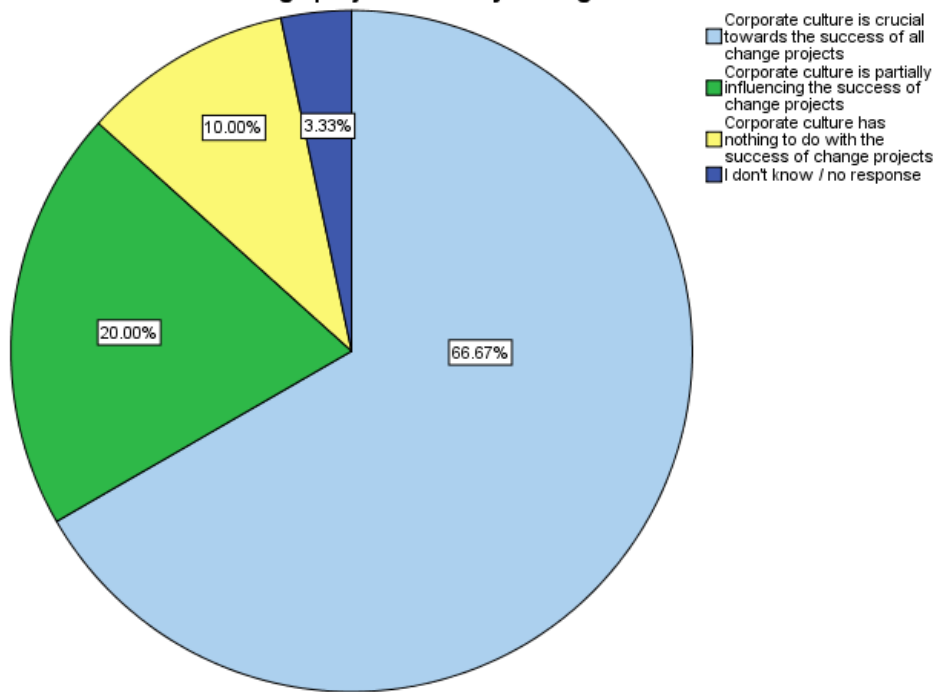| Total respondents	**60**

Comments:
37% of participants indicated that the absence of internal subject matter experts had limited the success of previous change projects in their organizations, while 33% was due to the lack of management and business support.

How Much Do You Rate the Role of Corporate Culture Towards the Success of Change Projects Within Your Organization?

Participants' Choices	Responses	
	Frequency	*Percentage*
Corporate culture is crucial towards the success of all change projects	40	66.67%
Corporate culture is partially influencing the success of change projects	12	20%
Corporate culture has nothing to do with the success of change projects	6	10%
I don't know / no response	2	3.33%
Total	**60**	**100%**

How much do you rate the role of corporate culture towards the success of change projects within your organization?
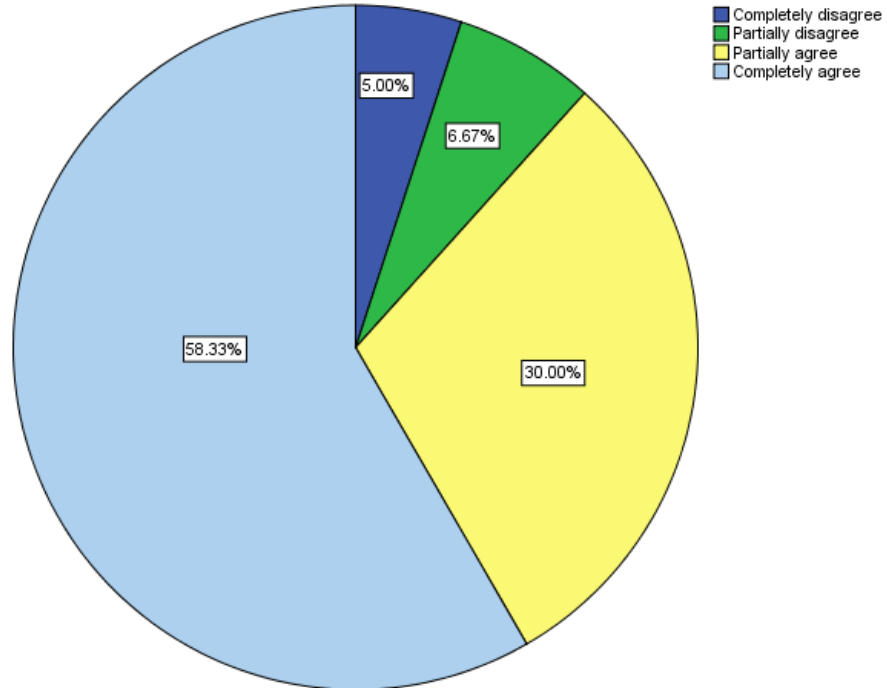
Comments:

67% of respondents stated that corporate culture is crucial towards the success of all change projects, while 20% reflected that culture is partially influencing the change.

Question #18:

The Availability of Change Team Within the Company Has a Constructive Influence on Change Executions.

Participants' Choices	Responses	
	Frequency	*Percentage*
Completely disagree	3	5%
Partially disagree	4	6.67%
Partially agree	18	30%
Completely agree	35	58.33%
I don't know / no response	0	0%
Total	**60**	**100%**

The availability of change team within the company has a constructive influence on change executions

Legend:
- Completely disagree
- Partially disagree
- Partially agree
- Completely agree

Pie chart values:
- 5.00%
- 6.67%
- 30.00%
- 58.33%

Comments:

58% of respondents highlighted that they completely agree with the positive impact on change implementations while a change manager or change team is present inside the organization, in a time 30% had partially agreed with the statement.

The Extent of Employees' Engagement in Change Execution Is Subject to The Level of Leadership's Support to The Change Endeavor.

Participants' Choices	Responses	
	Frequency	*Percentage*
Completely disagree	0	0%
Partially disagree	4	6.67%
Partially agree	10	16.67%
Completely agree	46	76.67%
I don't know / no response	0	0%
Total	**60**	**100%**

The extent of employees' engagement in change execution is subject to the level of leadership's support to the change endeavor
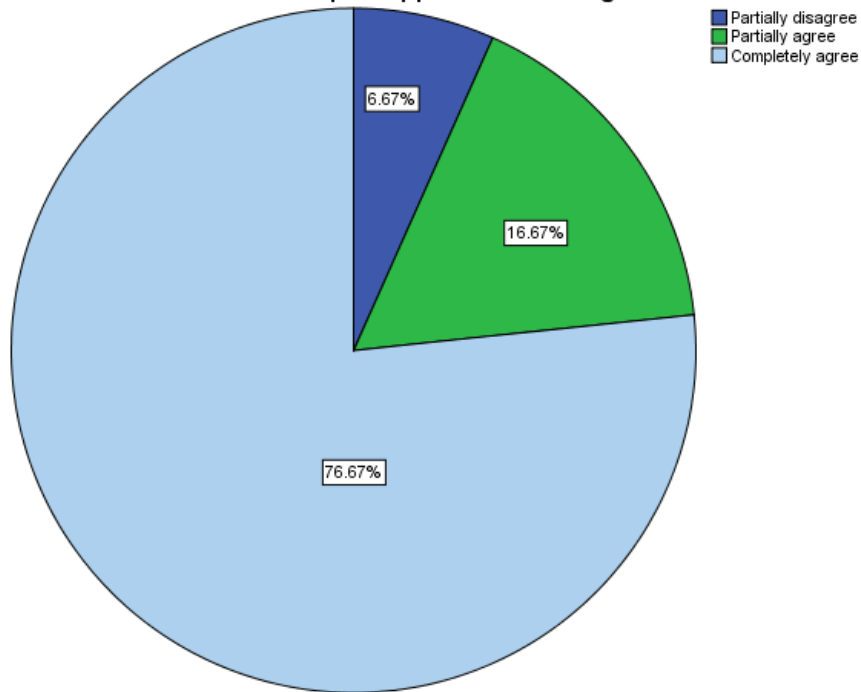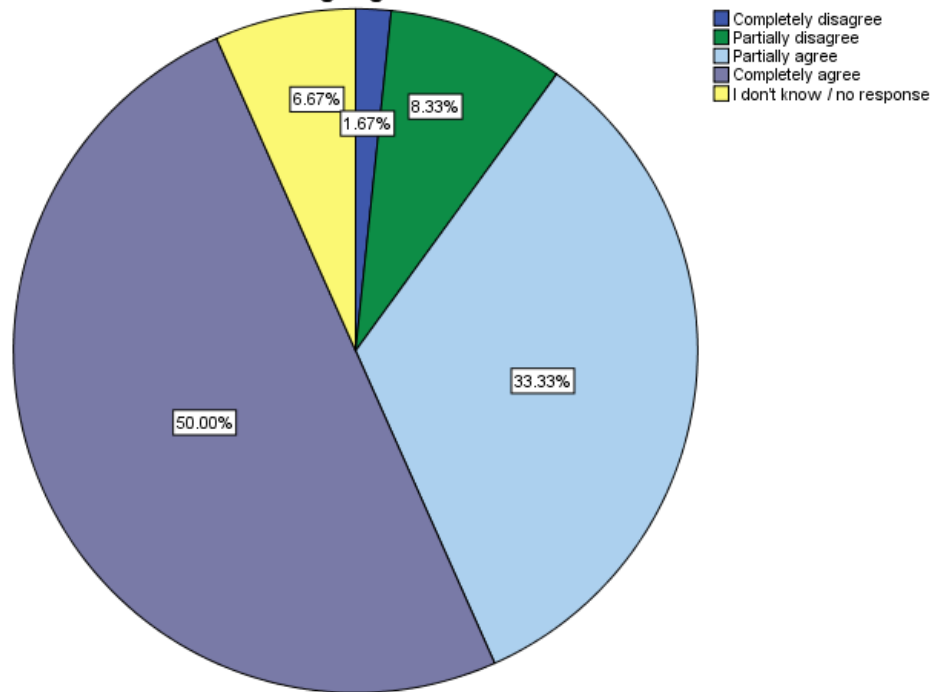

Comments:

77% of participants had completely agreed that the level of employees' involvement in change implementation directly depends on the level of leadership commitment to project support, while 17% had partially agreed with the statement.

The Effectiveness of Digital Transformation Change Depends on The Availability of Change Agents Inside Business Unit.

Participants' Choices	Responses	
	Frequency	*Percentage*
Completely disagree	1	1.67%
Partially disagree	5	8.33%
Partially agree	20	33.33%
Completely agree	30	50%
I don't know / no response	4	6.67%
Total	**60**	**100%**

The effectiveness of digital transformation change depends on the availability of change agents inside business unit.

Legend:
- Completely disagree
- Partially disagree
- Partially agree
- Completely agree
- I don't know / no response

6.67% 1.67% 8.33% 33.33% 50.00%

Comments:

50% of the respondents had completely agreed that the effectiveness of digital transformation change depends on the availability of change agents inside the business unit, while 33% had partially agreed with the statement.

Managing Expectations is a Decisive Factor in The Change Cycle

Participants' Choices	Responses	
	Frequency	*Percentage*
Completely disagree	0	0%
Partially disagree	4	6.67%
Partially agree	9	15%
Completely agree	44	73.33%
I don't know / no response	3	5%
Total	**60**	**100%**

Managing expectations is a decisive factor in the change cycle
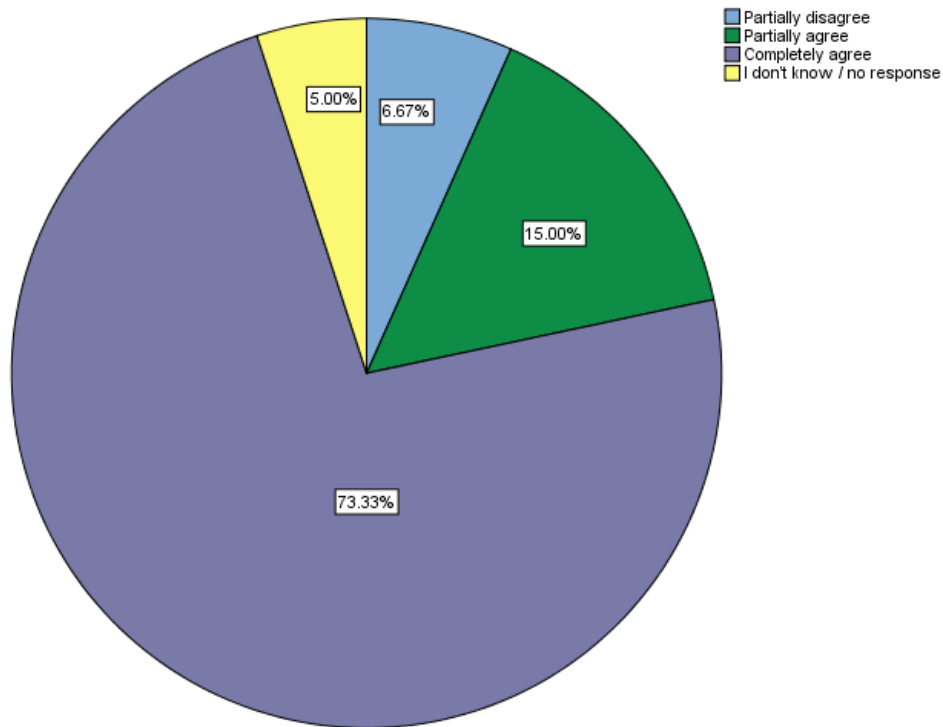
Comments:

73% of the participants had completely agreed that managing expectations is a decisive factor in the change cycle, while 15% had partially agreed with the statement.

4.4 Key Findings:

Following up the earlier high-level representation of results hereunder is a summary of

the key findings:

1. The greater part of survey contributors agreed with the notion that increasing employees' engagement is the utmost priority for firms to note while launching their digital transformation journey.

2. About one-third of questionnaire respondents agreed that they do not truly recognize what restricted the success of preceding change projects within their companies.

3. The majority of survey participants stated the foremost target behind business intelligence enablers is to have an improved command over internal processes and to increase efficiency.

4. More than half of questionnaire respondents had reflected that their firms do not have mobile applications for public or customers' interaction.

5. Most of the survey participants stated that the bad experience, users' resistance as well as the cost of execution were the main obstacles on the way to adopting change.

6. The majority of questionnaire respondents acknowledged that corporate culture is a decisive element of change management process. Additionally, most of the participants decided that the extent of employees' engagement in change execution is subject to the level of leadership's support to the change endeavor

7. Half of the participants settled with the notion that the effectiveness of digital transformation change counts on the availability of change agents inside business units.

8. Most of the survey contributors had completely backed the prominence of managing expectations as a crucial element of change cycle.

4.5 Correlational Analysis:

Following the performed analysis through the SPSS tool, hereunder is a series of generated connections that highlights Pearson's Chi-Squared tests, which helped in identifying the statistical correlation significance. Bearing in mind that if the significance of the Pearson Chi-Square is greater than 0.05, then there is no statistically significant correlation amongst both measured variables. If the value is less than or equal to 0.05, then this indicates a statistically significant correlation between both variables (Shih & Fay, 2017).

In light of the earlier discussion, the first strong correlation was found to be between the availability of change team within the company and the extent of employees' engagement in change execution. Test results proved that the presence of a change manager during digital transformation would influence employee's awareness and involvement during the execution stage.

Chi-Square Tests

	Value	Degrees of Freedom	Asymptotic Significance (2-sided)
Pearson Chi-Square	14.647[a]	6	**.023**

There is a strong association between the extent that company's leadership is making the digital transformation as a top priority and company's usage for mobile applications to change the way it interacts with customers. The test results proved that the more digital transformation is treated as a strategic priority, the more the company will count

on innovative techniques like employing mobile applications to interact with their customers.

Chi-Square Tests

	Value	Degrees of Freedom	Asymptotic Significance (2-sided)
Pearson Chi-Square	22.463[a]	12	.033

There is a strong connection between the role of corporate culture towards attaining the success of change projects and the extent of employees' engagement as part of projects' execution. The test results proved that corporate culture has a direct influence on the level of employees' engagement as part of change projects.

Chi-Square Tests

	Value	Degrees of Freedom	Asymptotic Significance (2-sided)
Pearson Chi-Square	31.710[a]	6	.000

There is a strong association between the usage of mobile applications to interact with customers and the extent of using cloud solutions. The test results proved the more the company is open to using dedicated mobile applications to interact with its clients; the chances are higher that it is using innovative technologies like cloud solutions.

Chi-Square Tests

	Value	Degrees of Freedom	Asymptotic Significance (2-sided)
Pearson Chi-Square	24.590[a]	12	.017

There is a strong connection between taking advantage of the Internet of Things (IoT) and operating effective corporate communication procedure. The test results proved that adopting major changes as part of the digital transformation, similar to taking advantage of the IoT, is directly associated with having robust internal communication procedures.

Chi-Square Tests

	Value	Degrees of Freedom	Asymptotic Significance (2-sided)
Pearson Chi-Square	39.774a	12	.**000**

There is a strong relationship between having a clear change management methodology and running a Project Management Office (PMO). The test results proved that through having a PMO within the organization, the chances are higher to have a clear change management methodology that is being adopted across the corporate.

Chi-Square Tests

	Value	Degrees of Freedom	Asymptotic Significance (2-sided)
Pearson Chi-Square	20.459a	9	.**015**

There is a strong correlation between the corporate culture and having a Project Management Office (PMO). The test results proved that through having a PMO, the chances are higher for having a mature corporate culture that embraces change.

Chi-Square Tests

	Value	Degrees of Freedom	Asymptotic Significance (2-sided)
Pearson Chi-Square	22.425a	9	.**008**

4.6 Survey Findings:

This section covers major survey's findings, trends, and associations. The findings transparently reflect participants' perception of digital transformation state in their organizations and help in addressing the relevance of those outcomes to the main hypothesis addressed earlier in this work. Accordingly, the start will be with the point that nearly above half of all participants are working in the technology sector, followed respectively by real estate and construction, banking and telecom, and lastly comes Oil & Gas along with public utilities with feeble representation. Moreover, nearly two-thirds of participants are Information Technology specialists, followed respectively by sales representatives, operations, administration, finance/accounting and engineering.

Additionally, nearly 30% of participants are holding managerial positions within their companies, and the same participating proportion was by non-managerial individuals. Senior Managers / Directors had a representation of nearly 17% while assistant managers are represented by 15%. The C-Suite represented nearly 5% of the participating base. Furthermore, the majority of participants, a dominating three-fourths,

are working for companies with vertical (bureaucratic / centralized) organization structure, with only 7% are working for companies with flat (decentralized) structure.

Moreover, almost 78% of participants agreed that improving employees' engagement is the highest priority for companies to observe when considering to start their digital transformation journey, to be respectively followed by improving business operations and enhancing suppliers' and customers' engagement. From the latter point, it is quite prominent how employees are eager to be part of the decision-making cycle and to demolish the bureaucratic boundaries that block them from innovation, efficiency, and creativity.

There was a very controversial finding when 35% of respondents acknowledged that they do not actually know what limited the success of previous change projects within their corporations. This is quite alarming, and signals inquiries regarding the transparency levels in their organizations, along with the level of awareness that the management is concerned for their employees to have. On the other hand, 36% of participants made it quite straightforward and highlighted that the root cause of earlier change failures was due to the absence of internal subject matter experts, which can hold two sides: business users and technology enablers, mainly the IT team.

Moving to a more specific change subject, which particularly discussed the primary strategy behind considering data analytics tools and technologies, where 75% of participants, had made it loud and clear that the main target behind business intelligence enablers is to have better control over internal processes and to improve efficiency. While 20% had highlighted that their organizations are not considering data

analytics as a strategic priority, which is something that needs to be seriously looked after.

As part of the mobility adoption, then more than 50% of respondents had reflected that their companies do not have mobile applications for public or customers' interaction. This is quite a concern particularly if we relate to a recent survey by Adobe (2016), which declared that nearly 60% of participants believe that if a corporation has not set up enterprise mobile applications, they are at a competitive drawback, with the business risks losing efficient operations. On the other hand, not every business might be in a desperate need for mobility solutions to interface with their customers. However, every business is in definite need for enterprise mobility solutions that would boost up operations and employees' engagement.

Moving to another interesting subject and that is the cloud adoption. Where the survey results had pointed out that nearly 43% of targeted participants confirmed that their organizations are progressively moving towards cloud technologies adoption, on a case-by-case basis. Which implies a gradual shift and acceptance to the concept as a whole. While another batch of participants, nearly 27% confirmed that cloud technologies are being strategically adopted.

The earlier cloud adoption findings are relatively close to a recently conducted research by Intel regarding the state of cloud adoption and security, where Columbus (2017) discussed those findings following the participation of almost 2,000 subject matter experts across the globe. The results demonstrated a great interest in cloud adoptions with 57% of global organizations are considering hybrid cloud adoption, with GCC (Gulf

Cooperation Council) are leading the global adoption of private cloud solutions with 30%, 54% of hybrid cloud and only 15% of public cloud adoption.

Concerning the digital diversity and openness of participants' leaders, along with their expertise in business and technology topics, then 42% stated that their executive teams are very diverse and open, while 30% marked that their executive teams are progressively picking up the pace of modern technologies. This marks an important input to the point where 32% of participants highlighted that their companies are actively developing IoT strategies, while 23% of participants highlighted that their companies do not have any substantial IoT plans. Nevertheless, and on the other side regarding the barriers that the participants experienced in the past and negatively influenced the path towards digital transformation, 55% correlated the bad experience with users' resistance and cost of implementation, while 40% highlighted that it was due to the complexity of implementation and finally comes the management's hesitance.

Speaking of the presence of a corporate standard change management methodology, 52% of participants stated that corporate change projects are monitored mainly on the departmental level, with 18% indicated the presence of a dedicated Change Management Office (CMO) in their companies that look after the compliance with change management methodology. While surprisingly, 20% stated that they are not sure or aware about the availability of change management methodology, a number that would definitely raise many questions and prove the value that the corporate communications team can deliver through keeping everyone aware concerning essential policies, procedures, protocols and best practices.

On the other hand, and regarding the availability of Project Management Office (PMO), 48% of participants indicated that they have a PMO, 37% stated that their projects are managed mainly on the departmental level. These numbers reflect a positive attitude towards the significance of having a governing entity that looks after the successful execution, control, and delivery of projects.

For the point related to the availability of effective corporate communications procedures, which are essential to ensure transparency, increase awareness and boost operational effectiveness amongst all employees (Ni, 2008), 50% of respondents declared that they have an internal communications team that looks after spreading the awareness of change progress. While 28% stated that the project manager in charge is usually handling this part, and 15% indicated that change progress is rarely shared across the employees or stakeholders. These findings signify a very good and mature understanding of the criticality of the subject, particularly when we analyze the report published by (PMI, 2013), which revealed that for every US$1 billion spent on a project, US$135 million is at risk, out of which 56% is at risk because of ineffective communications.

Moving to another critical aspect, as part of the digital transformation and that is the role of corporate culture towards the success of change projects, with 67% of participants stressed upon the prominence of corporate culture over the entire change cycle. 20% indicated that it is partially influencing the change process, and 10% surprisingly stated that it has nothing to do with the success of change initiatives. Mota et al. (2014)

discussed how a resilient culture helps in forming a company's decision models, leads actions, and motivates the individual performance of all members.

As a result, project leaders who lack cultural awareness might end up constrained by the beliefs and values of the base company's culture. They might be in a position to encounter struggle while attempting to blend-in the system or adjust to diverse behaviors and standards across the company. Therefore, corporate culture is a fundamental factor as part of change adoption, and the majority of respondents acknowledged the same.

The final part of the survey was the assessment of overall agreement or disagreement with four statements, and the results were as following. 58% of participants agreed that the availability of change team or manager inside the organization has a positive impact on change implementations, while 30% partially agreed, 7% partially disagreed, and 5% completely disagreed. These findings prove the prominence of assigning a dedicated change management team that can look after the success and health of the whole change implementation.

Besides, out of all survey contributors, 77% agreed that the level of employees' involvement in change implementations directly depends on the level of leadership commitment to project support. While 17% partially agreed and 7% partially disagreed. As a result, the surveyed group conveyed a strong message for their belief in the importance of leadership's commitment to the success of change initiative, which would consequently influence their involvement.

Additionally, 50% agreed with the notion that the effectiveness of digital transformation change depends on the availability of change agents (champions) inside business units. While 33% partially agreed with the concept and 8% partially disagreed. In this point, half of the respondents stated the magnitude of having key stakeholders in every function and domain within the organization who would help to spread the buy-in and support amongst their colleagues, and consequently across the whole organization. Furthermore, and regarding the prominence of managing expectations as a crucial element of change cycle, 73% of survey contributors had completely agreed, while 15% partially agreed and 7% partially disagreed. The results demonstrated the significant weight of managing expectations and its direct influence towards the success or failure of any change initiative.

4.7 Answering Research Questions:

4.7.1 How digital transformation is leading the journey of change in businesses:

Survey results had demonstrated how digital transformation helps in increasing employees' engagement, getting an enhanced grip on business's internal processes to improve efficiency and having a more adaptive culture for change. The bond amongst business transformation and the digital transformation was reflected in survey responses, where participants indicated how digital transformation helps in analyzing the data gathered from company's products and services, in addition to better understand and anticipate for the needs of company's customers. Respectively, that would help in improving corporate operations and assist the business to come up with better and innovative portfolio of products and services.

4.7.2 Why is marketing a paramount factor to drive digital transformation inside organizations:

The majority of survey respondents had expressed their agreement with the great value that both the change management team along with the effective corporate communication procedures would contribute to change endeavors. The reason behind that is because this will help in marketing the change (getting stakeholders' buy-in), conveying its necessity, added value, impact as well as keeping all stakeholders well informed about the progress of change.

4.7.3 How would it be easier to execute the digital transformation in small and big organizations? Which are the preferred techniques:

For the point to undertake a well-managed digital transformation effort across diverse business segments, regardless of it being a small or enterprise, the collected responses reflected the necessity to have the adequate support from management, qualified internal subject matter experts as well as to make sure that the implementer is deploying a skillful and experienced team. Nevertheless, things can become challenging with the increase of users' resistance, the complexity of implementation, cost of execution and with the lack or absence of management's support.

4.7.4 What are the key features of digital transformation in the modern business information?

We can comprehend and derive from the collected responses that some of the key features are the hyper-attention on the customer experience, transparent, modernized and well-defined operational processes as well as the strong integration between business processes and data. Accordingly, the generated benefits for businesses are enormous, as innovative technologies will help in improving efficiency, optimizing the decision-making process, improving profitability, boosting competitiveness and empowering employees to work smarter, faster and better (Puthiyamadam, 2017).

4.7.5 What is the needed culture for undertaking a successful digital transformation endeavor?

In line with the collected responses, participants had reflected that the necessary culture for undertaking a successful digital transformation endeavor is the one that is resilient enough to accept constant challenges, through embracing change with a clear strategic vision that is empowered by strong leadership and innovative technology. Moreover, the needed culture has to take on a critical set of values that considers employees' involvement as an integral part of the digital transformation and embraces transparent channels of internal communications for increasing the awareness and contribution (Mackenzie & Alpern, 2017).

4.7.6 How digital transformation disrupts business processes, customer experience, and operations?

Technology had already re-shaped and changed the way business is running its operations, with everything becoming digital, faster, more data-dependent and customer-centric. As a result, digital transformation has disrupted the classical practices of running the business, and forced new trends that are more social, innovative, efficient, and competitive (Kerschberg, 2017).

4.8 Case Study Analysis:

4.8.1 Introduction:

This section addresses the cloud adoption journey of a Qatari real estate development company (Barwa Real Estate), the one that developed a digitally versatile and resilient IT strategy, in a process that began back in the mid of the year 2015. The main target was to achieve a highly robust technology hub of services that would advance in parallel along with Barwa's business growth and development strategy, through employing innovative and smart technologies that can improve the operations and boost shareholders' investment through increasing profit, optimizing expenses and achieving higher levels of customers' satisfaction.

Within the scope of this project, and as the main orchestrator of this journey, I will explicitly cover the progressive and staged expedition of cloud adoption and the way I have worked with the IT team internally to build up the confidence gradually, steadily

and securely. The main mission comprised of four crucial elements over the course of five years.

The first element was to assess the present capacities of the technology stack and classify those that can sustain business growth from those that cannot. The Second element focused on creating an action plan to develop initiatives that must be prioritized in alignment with business strategy, in order to help drive operational efficiency, reduce costs and improve the portfolio of offered services.

The third element was to work on a digital standardization plan that would unify the adopted technologies, procedures and practices across the group. While the fourth and last element was to restructure the IT workforce in order to meet the anticipated demand and workload of the new digital strategy. This process did not consider any downsizing rather than resources' optimization, reallocation, and skills transformation to match the level of anticipated technologies.

4.8.2 Background:

What actually triggered the consideration of cloud technology was the high total cost of ownership for operating on-premise hardware (servers, storage, network, and security appliances), in terms of maintenance, technology refreshment, power and cooling consumption as well as the physical occupancy. At Barwa like the case with any other business that maintains its own expensive Data Center, reached to a point where other options must be explored without compromising the performance, information accessibility, security and the confidentiality of data.

Accordingly, a series of partnerships were established with local partners and vendors to assess current workloads, compatibility of present technology stack – software - to run on the cloud, evaluate the initial investment and produce the overall anticipated TCO, through forecasting savings, improved operational expenses, projected enhancements and projected resources consumptions. As a result, the preliminary findings were promising, with approximately 40% of the physical space occupancy was supposed to be achieved, 20% decrease of power consumption, and most importantly the relief of expensive hardware refreshments cycles, which are usually due every 4-6 years following the deployment of the appliance.

4.8.3 Proposed Solution:

Barwa's IT team worked on preparing the business case, and the actual plan was put with a clear roadmap of activities and associated deliverables. The first stage was to select the right technology provider, which in Barwa's case was Microsoft Office 365 (SaaS) and Microsoft Azure (IaaS). The decision was made following four months of extensive Proof of Concept (POC) usage of Microsoft's platform, through multiple scenarios that were tested and executed, particularly in servers' management, administration, data replication and WAN optimization.

The second stage was to start a project that would look after building a cloud-ready infrastructure, where all physical hosts and machines to be converted into virtual. By that, Barwa IT guaranteed a very smooth migration to the cloud due to the compatibility nature between the infrastructure of both; on-premise and cloud environments. The third stage was to choose the right set of workloads to be moved and migrated as SaaS, and

the workloads that need to be moved and hosted as IaaS. The selection criteria were based on services' nature along with the offered capacity and maturity of both cloud-hosting options: SaaS and IaaS. Therefore, services that require constant changes and customizations (like the case with CMS and DMS) were migrated as IaaS. The on-premise Microsoft Exchange was chosen to run on Office 365 as SaaS, while the Dev-Test and Disaster Recovery were migrated to the Microsoft Azure IaaS.

The fourth stage was to progressively start moving the main workload from on-premise to Azure IaaS over a time span of 12 months, to consequently shut down the on-premise services and rely entirely on the cloud-hosted services. The first service to be moved was the corporate website, followed by the intranet and archiving system. Few workloads were kept on-premise similar to the ERP, due to the extensive nature of testing and concept validation for the offered cloud alternatives, in an exercise that is anticipated to endure over the course of this year, 2018.

4.8.4 Alternatives:

Barwa considered a range of cloud technologies from leading global providers, like Google Compute Engine, Amazon AWS, and Rackspace. However, and despite the close call between them and Microsoft Azure/Office 365 in terms of competitive pricing as well as their strong, secure and highly available infrastructure services; the final decision was built mainly on the fact that Microsoft has a better on ground representation in terms of qualified partners and highly trained solution experts.

Moreover, the decision took into the consideration the magnitude of cloud adoption and how it might hamper business operations – if mismanaged - especially in working environments where management would express minimal levels of tolerance towards any significant failure. As a result, such change initiative should be only executed following thorough planning, assessment, and analysis of all incorporated factors, from stability, support, security and future expansions.

4.8.5 Recommendations:

Following the earlier discussion, moving to the cloud should not be a cost-driven decision only, with the IT executives in charge must not start offloading their on-premise services to cloud due to some projected ROI and TCO reports without effectively validating their selected cloud options through successive Proof of Concept (POC) iterations. Regardless of the assurance that many organizations assume to have that cloud offers the highest information security standards, agility and cost-effectiveness, which is essential to support the progress of digital transformation across many industries, yet there continues the absence of awareness of the many associated risks as part of cloud computing within the circle of senior decision makers (KPMG, 2016).

At Barwa, the decision was not taken before evaluating cloud provider's available service level agreements, performance management, data and application management and control, quality of service, change control practice, workload management and availability of service. As a result, the decision makers must prudently consider the availability of management and monitoring tools, disaster recovery procedures, compliance with laws and regulations, transparency, portability and interpretability,

standards and auditing, uncontrolled viable expenses and the unverified concept of cloud computing.

Additionally, and while CIOs work on designing their digital and cloud strategies, they must work on arranging a risk mitigation plan that is adequate to verify mitigation of security risks and protection of systems and data on the cloud. However, the appropriate protection and safeguarding of critical business applications and data continue to be the accountability of management, irrespective of whether or not the systems and data are hosted on the cloud (Carroll et al., 2011).

Chapter 5: Conclusions and Recommendations

5.1 Introduction:

It is not possible to envisage the digital future of Qatar without embracing technology to produce a more competent, accessible, efficient, and transparent government that fulfills the necessities of individuals and businesses, declared the Qatari Ministry of Transport and Communication (MOTC, 2014). The state of Qatar has been considering the ICT, and for a while, as one of the crucial pillars that would help in offering a sustainable growth for all major business sectors in the country. Accordingly, that vision was supplemented with the e-Government 2020 digital strategy to capitalize on the 2012 achievement where Qatar was ranked 48th out of 190 countries that took part in the United Nation's survey for measuring the index of e-government development (UN, 2012). In 2016, Qatar was ranked as the 10th best Asian nation that employs e-government services (UN, 2016).

The 2020 Qatar e-Government strategy presents a blueprint for progressing onwards, through setting three key targets. The first is to develop an improved platform and ICT infrastructure to serve business entities as well as individuals through bringing online a comprehensive range of government services to guarantee an inclusive online experience of e-services. The following target is to supply efficient administration through introducing innovative technologies to help to automate common functions, over a mutual ICT infrastructure that enriches the user experience, increases information security and saves money. The last objective is to enhance the partaking of citizens and

residents with a line of developed and offered government e-services, in addition, to provide enriched access to necessary data, which will support to stimulate economic diversification and to embrace innovation (MOTC, 2014).

From the earlier discussion, we can notice that the need, desire as well as the developed ICT infrastructure is already there for both public and private Qatari sectors, which can assist them to move ahead and adopt the best out of the digital transformation. In line with that, this work has come to shed light on various Qatari business sectors and to measure their preparedness as well as willingness to take on this challenging journey. Accordingly, this chapter focuses on supplementing the addressed findings earlier in chapter four with a set of conclusions and recommendations that would supply a solid roadmap while planning for and implementing digital transformation endeavors.

5.2 Conclusions:

This research explores from one side a group of associated challenges as part of various digital change and transformation projects. While from the other, the work aims to introduce practical methods to overcome most of the associated challenges. Whereas several projects bump into cost overrun, a one of numerous concealed, but a very deceptive challenge that typically is associated with the highest risk. That challenge consists of cost underestimations in preliminary digital transformation strategies accompanied by the escalation of obligation to projects when initial effective costs turn out to be greater than projected.

Furthermore, there is the organizational culture and opposition to change by employees, which in various cases lead to insecurity, an encounter to their identity or function, and probably the loss of a job. Besides, the absence of an evident vision for the digital journey, ineffectual assembly and gain of information, an obstinate stack of technology and development processes along with the hesitancy to disconnect from the legacy business models, can all lead to a bumpy and mostly unsuccessful transformation (Tiersky, 2017).

The ultimate message that this work focuses on delivering throughout the preceding chapters is that digital transformation is inevitable and is necessary for building and sustaining business growth, regardless of it being a long-established or a start-up. In the twenty-first century, technology is already the main dictating factor in the world of business and the digital economy, with everybody being expected to abide with and master.

To date, the majority of most successful and biggest digital transformations took place in Asia and the U.S. (Hottges, 2017). On the other hand, and in Europe, the pace was comparatively slower, with less appetite in rushing after this growing technological hype of transforming the way Europe's solid and longer performing establishments used to perform for decades. Nevertheless, Otto - a German mail order firm – is a great example of successfully employing digital transformation. The company had successfully managed to transform from its conventional business model and to become one of the major players in the online retailing business. Otto nowadays is one of the world's largest online retailers, and second to Amazon in the European territory

(Reuters, 2017). The company announced that their projected growth for the fiscal year 2016/2017 had exceeded the initial estimates and rose to nearly € 7 billion (Otto, 2017).

In the GCC (Gulf Cooperation Council), the governments recently had set an estimate to allocate a budget that would exceed US$15 billion in the form of digital transformation technologies' enablement. As part of the digital government progress, GCC countries are increasingly working towards building on top of the global best practices and are taking the maximum out of available opportunities to help achieve that target. The digital journey of national transformation in the GCC classifies six high impact subjects that are connected to the public sector in Qatar, KSA, UAE, and Kuwait. Smart Government, Next Generation Care, Future of Mobility, Smart Tourism, Smart Cities, and Classroom of the Future. (Durou & Nazir, 2017).

Despite the fact that several programs in the GCC had stood up due to the necessity to handle new challenges; digital transformation programs required substantial investments to empower in addition to bolster the successful supply and management of the forthcoming major events across the region. Explicitly the Qatar 2022 FIFA World Cup and the Dubai Expo 2020. Furthermore, GCC education initiatives across Qatar, KSA, UAE, and Kuwait are concentrating on switching the cultural model of education from the conventional paradigm of textbook-based classes and fixed curriculum to applying innovative techniques of improving the classroom experience and learning process. That said, Qatar already substituted textbooks with gadgets and tablets for the sake to enrich the education systems and have them more digitally-focused (Durou & Nazir, 2017).

Following up the earlier discussion, concerned entities in attaining the best out of

digitalization are obliged to reconsider their present practices and processes;

particularly that digital transformation would offer growth to utterly innovative and disrupt

conventional practices. What several prosperous start-up businesses have in common,

is their constant concentration on customer value and the usage of advanced

technologies, which empower them to attract a large base of customers rapidly. That

said, we can take Airbnb as an example, a young firm that managed to turn out to be

the biggest online hospitality service provider, and without owning any lodging. The

same goes for Uber, the one that successfully become the world's biggest taxi

enterprise, without owning a single vehicle (Hook, 2017).

Business digitalization is not just the concern of the IT executives; it is strategically

significant and serious to business leadership that should take a strong stand through

adjacently running both the operations and technology. Considering this, once things

are concerned with digitizing business processes, company's leadership is generally

accountable for managing and controlling the transformation. As a result, digital

transformation is becoming more of a management concern, which where it should be.

Digital transformation at the same time shall consider agility and speed as fundamental

factors whenever business processes are being evaluated and re-engineered. Business

operations and processes are supposed to be transformed radically and operate faster,

become more secure, and more resilient (Hottges, 2017).

From the personal perspective, I have enjoyed a significant experience throughout all

stages of this work. Managing the change was always a challenge I was looking up to

as the ultimate battle inside corporations, where successful businesses know exactly when and how to accept and operate change; hence, they succeed in standing out from the crowd. I had the opportunity to witness and experience the momentum and appetite for change acceptance in Qatar, to realize the potential that most of the surveyed companies have to achieve the best out of digital transformation. Yet, there remains the maturity of business leadership and its willingness to live up to the expectations of the twenty-first-century dynamics, with innovative technologies being the main dominant factor for attaining the sought success.

On the other hand, and if I ever had the opportunity of undertaking this job again, then I will definitely seek for a larger base of participants, along for the support from influential public institutions and ministries that can help to furnish the necessary communication mediums with respective stakeholders. The second iteration of this work will additionally consider gaining access to participants with more executive roles in their organizations, which can help in amplifying this research with further insights.

5.3 Recommendations:

In a time that it is strongly recommended for companies to root digital transformation as an integral element of their main business strategy, there are incidents where organizations are trapped in the middle. Somewhere in the middle of enhancement and transformation, there appears to be an absence of clearness as to what to perform. In light of that, Accenture (n.d.) encourages senior managers in charge of creating the digital strategy, mainly CIOs, to consider some decisive factors profoundly to perceive in what way their companies can closely align them with the overall digital transformation

process. Those factors must address four verticals: competition, corporate, customer and leadership.

From the competition perspective, companies shall work on recognizing the techniques where others in the business utilize to observe the benefits of digital transformation. Additionally, they need to classify the threats that digital cause to their business, as well to the methods competitors can employ against them. Furthermore, organizations need to reflect on how digital capacities can drag them at the fore of their competitors, which will encourage them to recognize the line of new competitors who are benefiting out of digital capabilities to target their customers, along with those who are achieving this, with the set of employed techniques to do so. Lastly, organizations shall start examining the range of new products and services that they should develop through digital technologies.

From the corporate standpoint, the company has to explore what are the latest business trends, models and innovative technologies that it requires most in order to take advantage of and excel. Furthermore, it is recommended to look after the latest commercial frameworks that possibly will fast-track digital investments, as well as to start working on the essential practices and measures to help to shape up for success, effectively distributing resources, and assigning duties. Lastly, is to pick up the right partner (consultant, implementer and system integrator) with whom the business shall collaborate over the course of digital transformation mission.

From the customer perspective, the business shall evaluate whether it will explicitly concentrate its digital strategy on innovative growth prospects or digital is nothing more

than another efficiency or marketing program. Moreover, the business needs to establish mechanisms for recognizing new markets and esteeming migration in its domain. While from the leadership position, the company is required to identify the group of digital leaders (executives and senior managers) in charge, to command and control the entire cycle of business digitization. In addition, leadership must identify the magnitudes of accountability sharing, the adopted communication plan with employees, suppliers, customers and the board of directors.

Nevertheless, the change itself remains the main catch in this whole lifecycle of the digital transformation. Change must be effectively articulated, passionately owned, and persistently driven to completion (Tichy & Charan, 1989). Employees must be part of the change, know exactly where the company is heading, why it is going there and what is in it for them once they get to the final stop. People usually hate the change. Thus they shall be encouraged and enlightened about the overall journey the company is willing to take (JWMI, 2015). Change management is the course that helps employees embrace new practices of doing business, and it is certainly not an easy path.

In line with the earlier said, further research can augment both the discussed findings in chapter four and previously mentioned conclusions. The scope of research in this work has a limitation of not covering a bigger portion of business segments in Qatar, which was due to logistical issues as well as the associated bureaucracy in reaching out to senior executives in larger organizations. Nevertheless, this work can lay the necessary foundations to gain the needed support from influential research institutions inside the country, which can offer the needed support to enrich the findings further and have a

broader perspective for the state of digital transformation in Qatar among both, public as well as private sectors.

6. Bibliography:

Abolhassan, F. (2017) *Drivers Of Digital Transformation: Why There's No Way Around The Cloud.* Switzerland: Springer, (Accessed: 25 January 2018).

Accenture (n.d.) *Digital Transformation: How Far Will Leaders Leap Ahead?* [Online]. Accenture. Available at: https://goo.gl/KsbYyq, (Accessed: 14 February 2018).

Achatz, R. (2017) *Digital Transformation Conference: Challenges, Strategies and Examples.* Switzerland: Springer, (Accessed: 16 November 2017).

Adobe (2016) *Driving Competitive Advantage with Enterprise Mobile Apps* [Online]. Adobe. Available at: https://goo.gl/5GJSS8, (Accessed: January 7 2018).

Aguirre, D., Von Post, R. & Alpern, M. (2013) *Culture's Role in Enabling Organizational Change* [Online]. Booz & Company. Available at: https://goo.gl/frjPrs, (Accessed: November 29 2017).

Alabbasi, B. (2017) 'In What Ways Does the Choice of an Epistemological Perspective or Stance Influence the Formulation of a Management Research Problem?', *LAUR-907,MBA Research Methods Training.* University of Liverpool. Unpublished assignment.

Alabbasi, B. (2017) 'How Does The Adoption of a Particular Methodology Affect the Researcher's Choice of Methods For Data Collection and Analysis?', *LAUR-907,MBA Research Methods Training*. University of Liverpool. Unpublished assignment.

Almalki, S. (2016) 'Integrating Quantitative and Qualitative Data in Mixed Methods Research-Challenges and Benefits', *Journal Of Education And Learning*, 5 (3), pp. 288-296, ERIC, [Online] EBSCOhost, (Accessed: 12 November 2017).

Bach, M.P. (2015) 'How to Write and Publish A Scientific Paper: A Closer Look to Eastern European Economics, Business and Management Journals', *Business Systems Research*, 6(1), p. 93, Complementary Index, [Online] EBSCOhost, (Accessed: 14 November 2017).

Barnham, C. (2015) 'Quantitative and Qualitative Research', *International Journal of Market Research*, 57 (6), pp. 837-854, Business Source Complete, [Online] EBSCOhost, (Accessed: 19 December 2017).

Bongiorno, G., Rizzo, D. & Vaia, G. (2017) *CIOs and the Digital Transformation: A New Leadership Role*. Switzerland: Springer, (Accessed: 27 November 2017).

Boston Consulting Group (n.d.) *The Significance of the DICE Methodology* [Online]. BCG. Available at: https://goo.gl/mRYDh3, (Accessed: 20 November 2017).

Carayannopoulos, S. (2009) 'How Technology-Based New Firms Leverage Newness and Smallness to Commercialize Disruptive Technologies', *Entrepreneurship: Theory &*

Practice, 33 (2), pp. 419-438, Business Source Complete, [Online] EBSCOhost, (Accessed: 22 November 2017).

Carroll, M., Van Der Merwe, A. & Kotzé, P. (2011) *Secure Cloud Computing Benefits, Risks and Controls* [Online], The Institute of Electrical and Electronics Engineers (IEEE). Available at: https://goo.gl/7GS5vu, (Accessed: 6 December 2017).

Chen, D., Preston, D. & Weidong, X. (2010) 'Antecedents and Effects of CIO Supply-Side and Demand-Side Leadership: A Staged Maturity Model', *Journal of Management Information Systems*, 27 (1), pp. 231-271, Business Source Complete, [Online] EBSCOhost, (Accessed: 3 December 2017).

Columbus, L. (2017) *2017 State Of Cloud Adoption and Security* [Online]. Forbes. Available at: https://goo.gl/m9EV8j, (Accessed: 8 January 2018).

Czaja, R., & Blair, J. (2005) *Designing Surveys: a Guide To Decisions and Procedures*. California: Pine Forge Press - Sage, (Accessed: 24 December 2017).

Dehmlow, M. (2016) 'Editorial Board Thoughts: The Importance of Staff Change Management in the Face of the Growing "Cloud"', *Information Technology & Libraries*, 35 (1), pp. 3-6, Computers & Applied Sciences Complete, [Online] EBSCOhost, (Accessed: 5 November 2017).

Deloitte (2013) *Change Management in Project Work* [Online]. Deloitte & Touché Regional Consulting Services. Available at: https://goo.gl/QudqQo, (Accessed: 4 October 2017).

Denzin, N. & Lincoln, Y. (2013) *The Landscape of Qualitative Research*. London: SAGE, (Accessed: 14 December 2017).

Durou, E. & Nazir, S. (2017) *National Transformation in the Middle East* [Online]. Deloitte & Touche. Available at: https://goo.gl/N46rpG, (Accessed: 21 February 2018).

Easterby-Smith, M., Thorpe, R. & Jackson, P. (2012) *Management research*. London: SAGE Publications. (Accessed: 10 December 2017).

Edmead, M. (2016) *Digital Transformation: Why It Is Important To Your Organization* [Online]. CIO. Available at: https://goo.gl/V6R5eV, (Accessed: 8 November 2017).

Enderle, R. (2016) *How Ford's Approach to Innovation Could Help Apple* [Online]. CIO. Available at: https://goo.gl/GT25iD, (Accessed: 22 November 2017).

El-Masri, M.M. (2017) 'Introduction to Research Sampling', *Canadian Nurse*, 113 (1), p. 20, CINAHL Plus, [Online] EBSCOhost, (Accessed: 9 November 2017).

Greenbank, P. (2003) 'The Role of Values in Educational Research: The Case for Reflexivity', *British Educational Research Journal*, 29(6), pp. 791-801, JSTOR Journals, EBSCOhost, (Accessed: 14 December 2017).

Greene, J.C., Caracelli, J.V. & Graham, F.W. (1989) 'Toward a Conceptual Framework for Mixed-Method Evaluation Designs', *Educational Evaluation and Policy Analysis*, 3, p. 255, JSTOR Journals, EBSCOhost, (Accessed: 12 November 2017).

Groves, R.M. (1987) 'Research on Survey Data Quality', *The Public Opinion Quarterly*, 15 (2), pp. 156-172, JSTOR Journals, [Online] EBSCOhost, (Accessed: 21 December 2017).

Henderson, R. & Clark, K. (1990) 'Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms', *Administrative Science Quarterly*, 35 (1), pp. 9-30, Business Source Complete, [Online] EBSCOhost, (Accessed: 27 November 2017).

Hesse-Biber, S.N. (2010) *Mixed Methods Research: Merging Theory with Practice*. New York: Guilford Press, (Accessed: 9 November 2017).

Hess, T., Matt, C., Benlian, A. & Wiesböck, F. (2016) 'Options for Formulating a Digital Transformation Strategy', *MIS Quarterly Executive*, 15 (2), pp. 123-139, Business Source Complete, [Online] EBSCOhost, (Accessed: 21 November 2017).

Heumann, C. & Schomaker, M. (2016) *Introduction to Statistics and Data Analysis*. Switzerland: Springer, (Accessed: 20 December 2017).

Holland, D. (2011) *Your IT Department Is Not Ready* [Online]. Digital Energy Journal. Available at: https://goo.gl/i7srJM, (Accessed: 4 December 2017).

Hook, L. (2017) *How Uber and Airbnb Changed The Rules* [Online]. Financial Times. Available at: https://goo.gl/d4P4J7, (Accessed: 12 February 2018).

Hottges, T. (2017) 'Digital Transformation Is a Management Issue', Abolhassan, F. (ed.) *The Drivers of Digital Transformation*. Switzerland: Springer, p. 8. (Accessed: 12 February 2018).

JWMI (2015) *What is the role of a leader?* [Online]. Jack Welch Management Institute. Available at: https://goo.gl/BNanBL, (Accessed: 11 March 2018).

Johnson, P. & Duberley, J. (2000) *Understanding Management Research: An Introduction to Epistemology.* London: SAGE, (Accessed: 10 December 2017).

Kane, C. (2015) *Are You Ready For the Certainty of the Unknown?* [Online]. MIT Sloan Management Review. Available at: https://goo.gl/FQvL2c, (Accessed: November 29 2017).

Kerschberg, B. (2017) *How Digital Disrupts Operations, Business Processes And Customer Experience* [Online]. Forbes. Available at: https://goo.gl/x5Si8A, (Accessed: 21 January 2018).

Kirk, J. & Miller, M. (1986) *Reliability and Validity in Qualitative Research*. London: SAGE, (Accessed: 21 December 2017).

Kohli, R. & Johnson, S. (2011) 'Digital Transformation in Latecomer Industries: CIO and CEO Leadership Lessons from Encana Oil & Gas (USA) Inc', *MIS Quarterly Executive*, 10 (4), pp. 141-156, Scopus®, [Online] EBSCOhost, (Accessed: 3 December 2017).

KPMG (2016) *Moving to the Cloud - Key Considerations for Decision Makers* [Online]. KPMG. Available at: https://goo.gl/5XBw3p, (Accessed: 16 January 2018).

Litwin, M.S. & Fink, A. (1995) *How to Measure Survey Reliability and Validity*. California: Sage, (Accessed: 24 December 2017).

Leodolter, W. (2017) *Digital Transformation Shaping the Subconscious Minds of Organizations: Innovative Organizations and Hybrid Intelligences*. Switzerland: Springer, (Accessed: 29 November 2017).

Loannou L. (2014) *A Decade to Mass Extinction Event in S&P 500* [Online]. CNBC. Available at: https://goo.gl/fooJjR, (Accessed: 5 December 2017).

Mackenzie, D. & Alpern, M. (2017) 'Culture Devours Digital Strategy', *AMA Quarterly*, 3 (2), pp. 3-5, Business Source Complete, [Online] EBSCOhost, (Accessed: 21 January 2018).

McCafferty, D. (2016) 'How CIOs Can Lead a Digital Transformation', *CIO Insight*, p. 1, Business Source Complete, EBSCOhost, (Accessed: 25 January 2018).

Metheny, M. (2017) *Federal Cloud Computing: The Definitive Guide for Cloud Service Providers*. Amsterdam: Syngress, (Accessed: 16 January 2018).

Morabito, V. (2014) *Trends and Challenges in Digital Business Innovation*. Switzerland: Springer, (Accessed: 6 December 2017).

Mota, C., Chipulu, M., Ojiako, U., Gardiner, P., Williams, T., Mota, C., Maguire, S., Shou, Y., Stamati, T. & Marshall, A. (2014) 'Exploring The Impact Of Cultural Values On Project Performance The Effects Of Cultural Values, Age And Gender On The Perceived Importance Of Project Success/Failure Factors'. *International Journal of Operations & Production Management*, 34 (3), pp. 364-389, Social Sciences Citation Index, [Online] EBSCOhost, (Accessed: 10 January 2018).

MOTC (2014) *Qatar e-Government 2020* [Online]. Ministry of Transport and Communications. Available at: https://goo.gl/Xc5622, (Accessed: 24 January 2017).

Ni, C. (2008) 'Internal/Employee Communication and Organizational Effectiveness: a Study of Chinese Corporations in Transition', *Journal of Contemporary China*, 17 (54), pp. 167-189, Humanities International Complete, [Online] EBSCOhost, (Accessed: 10 January 2018).

Olleros, F. & Zhegu, M. (2016) *Research Handbook on Digital Transformations*. Cheltenham, United Kingdom: Edward Elgar Publishing, (Accessed: 13 November 2017).

Onwuegbuzie, A.J. & Teddlie, C. (2003) 'A Framework For Analyzing Data In Mixed Methods Research'. *Handbook of mixed methods in social and behavioral research*, 2nd ed., pp. 397-430. [Online], (Accessed: 13 November 2017).

Oswald, G. & Kleinemeier, M. (2017) *Shaping the Digital Enterprise: Trends and Use Cases in Digital Innovation and Transformation*. Switzerland: Springer, (Accessed: 5 December 2017).

Otto (2017) *Otto Group – Growth Beats Plan, Profitability Improves* [Online]. Available at: https://goo.gl/jAqkFb, (Accessed: 5 April 2018).

Palinkas, L., Horwitz, S., Green, C., Wisdom, J., Duan, N. & Hoagwood, K. (2015) 'Purposeful Sampling For Qualitative Data Collection And Analysis In Mixed Method Implementation Research', *Administration and Policy in Mental Health and Mental Health Services Research*, 42 (5), pp. 533-544, PsycINFO, EBSCOhost, (Accessed: 14 December 2017).

Paula, A. & Bruce A. (1990) 'Social Work Practice: Integrating Qualitative and Quantitative Data Collection Techniques', *Social Work*, 35(5), pp. 452-458, JSTOR Journals, EBSCOhost, (Accessed: 14 December 2017).

Päivi, P., Maarit, T., Jukka, K. & Susanna, T. (2017) 'Tackling the Digitalization Challenge: How to Benefit from Digitalization in Practice', *International Journal of Information Systems and Project Management*, 5 (1), pp. 63-77, [Online] EBSCOhost, (Accessed: 20 November 2017).

PMI (2013) *The High Cost Of Low Performance: The Essential Role Of Communications* [Online]. Project Management Institute. Available at: https://goo.gl/80pqnA, (Accessed: 10 January 2018).

Preston, D., Leidner, D. & Chen, D. (2008) 'CIO Leadership Profiles: Implications Of Matching CIO Authority And Leadership Capability On IT Impact', *MIS Quarterly Executive*, 7 (2), pp. 57-69, Business Source Complete, [Online] EBSCOhost, (Accessed: 3 December 2017).

Punch, K.F. (1998) *Introduction to Social Research: Quantitative and Qualitative Approaches*. London: SAGE, (Accessed: 14 December 2017).

Purpura, J., Brown, J. & Schoonen, R. (2015) 'Improving the Validity of Quantitative Measures in Applied Linguistics Research', *Language Learning*, 65 (1), pp. 37-75, MLA International Bibliography, [Online] EBSCOhost, (Accessed: 12 November 2017).

Puthiyamadam, T. (2017) *What Digital Transformation Really Means* [Online]. Harvard Business Review. Available at: https://goo.gl/13cCFg, (Accessed: 30 January 2018).

Radhakrishna, R. (2007) 'Tips for Developing and Testing Questionnaires/Instruments', *Journal of Extension*, 45 (1), Scopus, EBSCOhost, (Accessed: 21 December 2017).

Raut, U. & Veer, N. (2014) 'Management Research: To Understand The Role Of Epistemology In Management Research'. *Journal of Management and Science*, 4, Available at: https://goo.gl/HSYfD9. (Accessed: 10 December 2017).

Reuters (2017) *Germany's Otto Sees Strong Online Sales of Furniture* [Online]. Available at: https://goo.gl/4JjeZo, (Accessed: 5 April 2018).

SAP (2015) *Value Creation in a Digital Economy: Adapt or Die in a Digital World Where the Consumer is in Charge* [Online]. SAP. Available at: https://goo.gl/m3HDyZ, (Accessed: 5 December 2017).

Sebastian, I., Ross, J., Beath, C., Mocker, M., Moloney, K. & Fonstad, N. (2017) 'How Big Old Companies Navigate Digital Transformation', *MIS Quarterly Executive*, pp. 197-213, Business Source Complete, [Online] EBSCOhost, (Accessed: 30 November 2017).

Shih, J. & Fay, M. (2017) 'Pearson's Chi-Square Test and Rank Correlation Inferences For Clustered Data', *Biometrics*, 73 (3), pp. 822-834, EBSCOhost, (Accessed: 25 March 2018).

Silvia, I, Constanţa, P, & Ana Lucia, R. (2015) 'The Role of Epistemological Paradigms in Research in Social Sciences and Humanities', *Theoretical and Applied Economics*, 22 (4), pp. 247-252, Directory of Open Access Journals, EBSCOhost, (Accessed: 10 December 2017).

Sirkin, H.L., Keenan, P. & Jackson, A. (2005) *The Hard Side Of Change Management* [Online]. Harvard Business Review. Available at: https://goo.gl/OuMhPL, (Accessed: 20 November 2017).

Song, J., Junfeng, Y. & Chengpeng, W. (2011) *Cloud Computing and Its Key Techniques* [Online], International Conference on Electronic & Mechanical Engineering and Information Technology (IEEE). Available at: https://goo.gl/TBouy4, (Accessed: 6 December 2017).

Sreejesh, S., Anusree, M. & Mohapatra, S. (2014) *Business Research Methods: An Applied Orientation.* Switzerland: Springer, (Accessed: 10 December 2017).

Tichy, N. & Charan, R. (1989) *Speed, Simplicity, Self-Confidence: An Interview with Jack Welch* [Online]. Harvard Business Review. Available at: https://goo.gl/5OCc24, (Accessed: 11 March 2018).

Tiersky, H. (2017) *Five Top Challenges to Digital Transformation in the Enterprise* [Online]. CIO Portal. Available at: https://goo.gl/LTX92p, (Accessed: 1 November 2017).

Van der Voet, J. (2014) 'The Effectiveness and Specificity of Change Management in a Public Organization: Transformational Leadership and a Bureaucratic Organizational Structure', *European Management Journal*, 32, pp. 373-382, ScienceDirect, [Online] EBSCOhost, (Accessed: 2 November 2017).

Wang, V., & Mull, J. (2015) *Handbook of Research on Scholarly Publishing and Research Methods.* Hershey, Pennsylvania: IGI Global, (Accessed: 21 January 2018).

Westerman, G., Tannou, M., Bonnet, D., Ferrais, P. & McAfee, A. (2013) *The Digital Advantage: How Digital Leaders Outperform Their Peers in Every Industry* [Online]. Capgemini Consulting. Available at: https://goo.gl/VdU2tP, (Accessed: 5 December 2017).

UN (2012) *E-Government Survey 2012* [Online]. United Nations. Available at: https://goo.gl/ZwMsjK, (Accessed: 24 January 2017)

UN (2016) *United Nations E-Government Survey 2016* [Online]. United Nations.

Available at: https://goo.gl/5L4Asx, (Accessed: 24 January 2017).