DIGITAL TRANSFORMATION ENABLERS AND ORGANIZATIONAL PERFORMANCE EFFECTS: A STUDY OF GLOBAL CAPABILITY CENTRES

by

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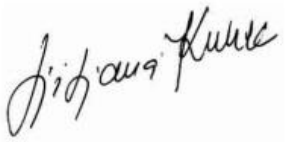

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Dedication

This dissertation is dedicated to my family, whose support and encouragement have been invaluable throughout this journey. To my parents, for their love and sacrifices, to my spouse, for her patience and supporting me in every step, and to my children, for their joy and inspiration.

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ABSTRACT

DIGITAL TRANSFORMATION ENABLERS AND ORGANIZATIONAL PERFORMANCE EFFECTS: A STUDY OF GLOBAL CAPABILITY CENTRES

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"Digital transformation" has become a critical driver of organizational success, particularly for Global Capability Centers (GCCs) operating in the IT sector. This study investigates the key factors enabling digital transformation through the lens of the "T-O-E (technological, organizational, and environmental) framework" and examines the "perceived risk" as moderator in this relationship. Additionally, it explores effect of digital transformation on GCC's organizational performance, considering both financial and non-financial outcomes.

Findings of study highlight the importance of "technological, organizational, and environmental factors" in shaping digital transformation outcomes. Technological factors, including infrastructure, readiness, and investment in advanced tools such as "artificial intelligence", "big data analytics", and "cloud computing", provide foundational support for digital transformation. Organizational factors, particularly leadership support and a culture of adaptability, play a pivotal role in ensuring successful technology integration and driving alignment with strategic objectives. Environmental factors, such as competitive pressures and regulatory requirements, serve as external catalysts compelling organizations to adopt digital solutions.

A key contribution has been identifying perceived risk as a significant moderator in the relation of technological factors and digital transformation. Concerns surrounding cybersecurity, financial feasibility, and system reliability weaken the positive influence of technological enablers, highlighting the need for robust risk management strategies. However, perceived risk does moderate the relations of organizational and environmental factors, suggesting that strong leadership, an innovation-driven culture, and external pressures can sustain digital transformation momentum despite uncertainties.

The study also affirms positive influence of “digital transformation” on “organizational performance”. Financially, digital initiatives enhance sales growth, operational efficiency, and profitability. Non-financially, they improve customer satisfaction, employee engagement, and retention by fostering a digitally enabled work environment. These insights emphasize the necessity of a balanced approach, where GCCs not only invest in cutting-edge technologies but also address risk perceptions through proactive management strategies.

By integrating digital transformation efforts with strategic objectives and mitigating perceived risks, GCCs can enhance their market positioning and long-term competitiveness. This research has valuable theoretical and practical implications, providing comprehensive framework for organizations to traverse digital transformation in IT sector.

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CHAPTER 1

INTRODUCTION

1.1 Background

In today's era of remarkable technological progress and swift digital evolution, businesses worldwide must adapt to remain relevant or face the threat of becoming outdated. During the past few decades, digital transformation has drastically changed enterprises all over the world. (Gong and Ribiere, 2021) provide a unified definition, describing digital transformation (DT) as a fundamental change process using digital technologies strategically to improve an entity and redefine its value proposition. This definition emphasizes that embracing emerging technologies alone is not enough; a comprehensive and strategic shift is required to redefine organizational culture and workflows, maximizing its potential through digital tools.

Initially, the introduction of computers in the 1970s and 1980s led to the adoption of digital technology for routine tasks like data processing and storage. Businesses started digitizing their documentation, which increased accuracy and efficiency. The advent of mainframes and early personal computers, which allowed companies to manage data more efficiently, defined this early phase. Nonetheless, the influence was primarily confined to back-office activities, with little integration into operations that interact with customers or strategic decision-making procedures.

The internet's growth in the 1990s and early 2000s was a major factor in the shift in the digital transformation process. Web technologies were used by organizations with the aim of improving sales, marketing, and communication (Taherdoost, 2018). The emergence of e-commerce platforms altered the way companies conducted business and engaged with their clientele. When ERP systems are introduced, internal procedures are completely transformed. However, these systems had the ability to integrate many departments such as supply chain management, finance and human resources. At this point,

digital technology was used in both ways to improve efficiency and generate new revenue streams and business models.

The early part of the 2000s generally saw organizations' huge embrace of internet technology and the first implementation on the digital tools in the business operations (Gaggioli, 2017). In the late 1990s and early 2000s, a huge wave of online business activities was fuelled by the dot-com boom, and companies started to increasingly realize the potential that digital technologies hold in terms of making businesses more efficient and engaging with their customers as well as more competitive.

It was an age of many organizations heading the path from analog to computerized procedures; these organizations exploited changes in the employs of computer technology, networking, and programming advancement. Due to the rise of Enterprise Resource Planning (ERP) systems, it became possible for businesses to consolidate and operate these core functions of a business on a common digital platform. It allowed real-time data access, better decision making and operations.

This also marked the beginning of e-commerce which was a means by which businesses interacted with customers (Mashalah et al., 2022). Digital marketplaces are viable and an advantage over physical marketplaces and companies like Amazon and eBay proved this with their pioneering in online retail. I believe that this created a push traditional brick-and-mortar businesses needed to make their online presence and take advantage of 'search engine optimization (SEO)' and 'email marketing' amongst other digital tools.

Moreover, at the commencement of the 21st century the 'Customer relationship management (CRM)' systems emerged, with which organizations are able to operate with the data collected on potential customers in a personalized way to raise the levels of customers' satisfaction, (Kimiloğlu and Zarali, 2009). At the same time, when it comes to internal and external communication, digital communication tools like email and instant messaging rose, transforming traditional and conventional methods of communication.

In the last ten years technology has advanced which include: ‘cloud computing, big data analytics, artificial intelligence (AI), and the Internet of Things (IOTh’ as these contributed greatly to the speed of digital transformation (Chatterjee et al., 2022). These technologies have enabled large-scale data to be collected and analysed that facilitates the enterprise companies’ decision making and provides a better consumer experience.

Cloud computing is a way suited to available and affordable solutions and small businesses can now have access to the most advanced IT infrastructure. AI and maching learning have multiplied the production and invention in business with the help of automation. IoT integration of physical assets with digital platforms has made it easier to run operations as well as explore new business avenues. These advancements, with their speed, security and processing capacity are what can potentially change the way in which organizations operate.

The emergence of the ‘COVID 19 pandemic’ has accelerated the transformation from face to face to remote or hybrid work patterns and is an example to the adoption and ‘digital resilience’ (Szumski, 2022). Now every organization all over the world view digital transformation as a strategic necessity towards improving agility, spurring innovation and maintaining competitiveness. The DT development contributes to the proof of high rate development technology and large influence on business environment development.

There is a plethora of reasons why global organizations across the world are compelled to integrate new technologies and practices in digital transformation (DT). Some of the main reasons are:

Increased Efficiency and Productivity: Digital transformation is driven only by the need to improve operational efficiency and productivity. ‘Automation’ and ‘digits’, for example, may rationalize processes, reduce human intervention and reduce errors. When networks are digitized and data analytics is used, workflow is optimised, costs are reduced and efficiency improved.

Enhanced Customer Experience: It is due to the rise of a digital consumer and Gartner's prediction is that it has also significantly influenced digital transformation efforts. At today's customers expect the Omnichannel experience to be seamless, personalized, and convenient. Digital technologies allow organizations to compile and analyse customer data which enables more nuanced and reactive interactions. "Customer relationship management (CRM) systems", "chatbots" and "mobile apps" play a supportive role for businesses in striking deals and exceeding customer expectations, leading to customer loyalty and satisfaction, and in customer retention and attraction.

Market Competitiveness and Innovation: The competitive environment is dynamic and often new entrants base their entry into an existing market on digital technology that allows them to disrupt traditional markets. Even if established organizations need to per se become relevant through the process, they ought to adapt them selves and innovate through digital transformation strategies. It involves innovating in terms of new business models, products and services that utilise digital capabilities. DT assists organizations in becoming agile and responsive to change as well as in better positioned to benefit from the emergence of new opportunities. In essence, competitiveness depends on its embracing innovation through the digital transformation.

Data-Driven Decision Making: Over the last decade, data explosion has brought the need of decision making based on data much to the fore. 'Big data analytics' is being increasingly used by organizations to have insights and take informed decisions. Digital transformation in the business is about the integration of data in all the functions and departments to create a holistic view of the business. 'Real time data' analysis and business intelligence tools allowed organizations to be able to identify trends, forecast outcomes and enhance its strategies. It helps in strategic planning and making operations efficient and more customer satisfaction.

1.2 Context of Study

The research examines Global Capability Centers (GCCs, also referred to as Global In-House Centers or Captives (GICs)), set up by companies to provide range of services for their parent organizations as offshores entities. These centers are internal units within the total corporate structure providing specialized services like IT support, research & development, customer assistance and others business functions.

Over the course of past couple of years, global corporations have been shifting towards an AI driven approach resulting in the reliance on GCCs to provide AI expert people of different types i.e. Data Engineers, Data Scientists, and Analytics experts, aiming to aid this transformation. GCCs and GICs also make the capitalizing on cost efficiencies, accessing to talent pools, and having collaboration between parent companies and their overseas subsidiaries possible.

These GCCs are gradually being transformed into centres of excellence for innovation as well as digital transformation, thereby elevating them in the overall value chain. The Information Technology sector is a key sector with highly dynamicity, and having GCCs, information technology is also undergoing a digital transformation at high speed. First of all it would be an interesting base for a study on digital transformation in the GCC's of IT sector organizations.

Over the last 20 years, global corporations' Global Capability Centres (GCCs) have grown from those basic operational units focused on cost cutting tactics to key digital transformation hubs in the respective global corporations. The first GCCs were set up in places like India and the Philippines, to utilize the cost arbitrage, performing such standard functions as IT support, finance and human resources. Generally, these centres would be seen as ways to lower the costs from higher than normal costs disciplines through outsourcing the mundane repetitive tasks to lower than normal costs locations. Digital transformation or strategic innovation was of no concern, rather it was about effectiveness and affordability.

At the same time as the development of technology and the rising competitive pressure on the global economic arena, GCCs have performed increasingly more complex and crucial roles. GCCs have expanded their array of offered services greatly, from high value service such as data analytics, digital transformation projects and research and development. Main forces behind this change were the availability of more and more skilled labour, as well as technological progress such as things such as “cloud computing, machine learning and artificial intelligence”. The onset of work in strategic projects that required creativity and specialist knowledge turned GCCs from being only ‘cost centres’ to become ‘value centres’, providing substantial support to the corporate strategic ends of their parent organizations. A set of important tools to continue working with digital projects, encourage creativity and good client relationships were developed.

At present, GCCs are in close partnership with corporate headquarters and other global offices and involved in taking crucial strategic decisions and operating in a fully integrated manner with the world operations of their parent firms. Integration with GCCs did become possible thanks to better communication and collaboration tools that have allowed GCCs to readily conform tovision of their parent organization. In addition, GCC countries have set up innovation labs and centres of excellence to explore the edge tech to invent new ways. These centres in their own right possess the capability to accelerate digital transformation by virtue of their competence in an advanced technology as well as in pursuing an always innovation culture.

Growing imperative of GCCs to become hubs of digital transformation speaks of the importance of GCCs as sources of efficiency, competitive advantage and growth in the global corporate environment. The developments some of which in fact have been taking place already in GCCs highlight the strategic importance of GCCs for digital transformation by improving the operational effectiveness and creating new income flows from digital goods and services.

Functioning of Global Capability Centers (GCCs)

"Global Capability Centers (GCCs)" are now the back office of multinational corporations and offer many services beyond the traditional back office. When first introduced, GCCs were initially intended to capitalise on the labour cost advantages available in these labour cost regions, although they have subsequently transcended from feeling like cost centres to these strategic hubs that brings innovation, digital transformation and value creation.

1) Evolution of GCCs

GCCs have evolved through several phases as under:

i. Cost Arbitrage Phase: From the early stages on GCCs were aimed at cost reduction. These were companies which set up the centers in countries like India and the Philippines due to lower labor costs. Main functions related to IT support, finance, human resources and other back-office functions.

ii. Capability Building Phase: In fact, as more and more skilled labor became more available and technology got more advanced, GCCs started performing more complex tasks. In this phase the high value operation like data analysis, R&D and digital transformation project started being integrated. The strategic goals of their parent organizations were starting to count on the contribution of GCCs.

iii. Innovation and Transformation Phase: Today GCCs are where digital transformation is taking place. They are not just cost centers, rather, they are value centers that are driving innovation and increasing the competitiveness. One of the main ways for GCCs to generate new revenue streams is to leverage the technologies such as 'artificial intelligence, machine learning, and cloud computing,' to enhance operational efficiency.

2) Key Functions of GCCs

i. IT and Digital Services: GCCs provide IT support from infrastructure management, including the development of applications and cybersecurity. Meanwhile, they are also engaged in a digital transformation initiatives by encouraging parent companies to adopt new technologies and digital processes.

ii. Research and Development (R&D): However, many GCCs have been pushing R&D with many innovation labs or centres of excellence. The projects in which they work are designing new products or improving old ones and exploring new technologies.

iii. Business Process Management (BPM): Business functions of finance and accounting, human resources, procurement and supply chain management are all managed by GCC. Such centralization of these functions also makes it easier for GCCs to maintain consistency and efficiency across the entire organization.

iv. Customer Support and Services: One of the supports services offered by GCCs includes call centers, technical support and customer relationship management. They contribute significantly in increasing the customer satisfaction and in building his loyalty.

v. Analytics and Data Management: Big data and analytics used by GCCs help in taking business decisions. They assist organizations to comprehend market patterns, buyer conduct and operational execution.

3) Strategic Importance of GCCs

GCCs have become strategic assets for multinational corporations. They enable organizations to:

i. Access Global Talent: A pool of diverse set of the skilled professionals is provided by GCCs. In this field, this talent pool is critical to drive innovation and keep the competition in a global market.

ii. Enhance Agility and Flexibility: GCCs help organizations respond immediately to the needs of market and the customer. Today, business is quick, and this agility matters.

iii. Drive Innovation: GCCs are hubs of innovation and GCCs' ability to come up with new technologies and business models for growth and competitiveness is notable. They create an environment of continual improvement and experimentation.

iv. Achieve Cost Efficiency: The topic has shifted from arbitrage of cost to creating value but cost efficiency persists as a great benefit of GCCs. GCCs reduce operational costs by reducing the cost of processes and using economies of scale.

4) Challenges and Opportunities for GCCs

While GCCs offer numerous benefits, they also face several challenges that need to be addressed to maximize their potential:

i. Talent Retention: The main challenge for GCCs is attracting and retaining skilled talent. To keep top talent an employer needs to offer competitive compensation packages, opportunities to grow, and a work environment worth coming to work.

ii. Cultural Integration: The corporate culture of the parent organisation can be integrated with local culture of the GCC. Successful integration requires effective communication and a level of cultural sensitivity.

iii. Regulatory Compliance: They have to steer themselves through complex systems of regulations from country to country. It's important to ensure that the compliance

with local laws and regulations to avoid legal issues and maintain operational continuity.

iv. Technological Advancements: Continuous investment in next new technologies as well as employees upskilling are needed to keep up with rapid technological advancements. Given that GCCs must stay ahead of the curve, then, it is obvious that they need to maintain a competitive edge.

v. Cybersecurity: A need for GCCs to protect sensitive data and security of their network. It is crucial for an organization to have strong security with measures to safeguard the organizational assets from cyber threats.

Despite these challenges, GCCs also have several opportunities to enhance their value proposition:

1. Innovation Hubs: Having corporate culture of creativity and experimentation can allow GCCs to position themselves as innovation hubs. Part of creating and adding to the innovation footprint in any industry is partnering with startups, academic institutions, and the industry.

2. Digital Transformation: Digital transformation initiatives can be facilitated by GCCs for their parent organisations. Using advanced technologies, GCC can use to increase operational efficiency, provide better customer experience, and facilitate the growth of business.

3. Sustainability Initiatives: GCCs represent ideal agitators for top down sustainability initiatives by their parent organisations. And the capabilities to implement green practices, as well as to use digital technologies to mitigate environmental impact, can increase the organization's reputation and succeed in the long run.

4. Global Expansion: The support of GCCs to global expansion of the parent organizations is possible because GCCs help in providing local expertise and support. It helps the organization to enter new markets and expand his global footprint.

1.3 Problem Statement

Less than a decade ago, the term “digital transformation” is shaping corporate structure, functions and interactions with key stakeholders in drastic manners. If there is a successful roll-out of this transformation, it requires an amalgamation of a set of essential elements that enables organizations to embark on this landmark change successfully. However, the whole process depends on a variety of critical factors, one of which is access to an advanced technology, adequate organizational frameworks, effectiveness of strong leadership, and of course to be able to respond promptly to external changes occurring (Alraja, Hussein and Ahmed, 2021; Ko *et al.*, 2022).

In today’s business environment, digital transformation is one of the main topics of the interest and investigation on how an organization performs. However, it covers many dimensions and has considerable impact (Khin and Ho, 2019). Digital transformation can help IT enterprises to improve their operational efficiency, promote growth, gain a competitive edge, improve customer experience and workforce retention.

This study attempts to analyse factors that enable GCCs of IT companies to undergo digital transformation, and analyse their influence on the firm’s performance. This study aims to make contributions by means of the findings, which will be helpful for any modern Multinational Enterprise seeking to perform enduringly in the era of digital through establishment of GCCs.

1.4 Significance of the Study

By exploring the impact of the enablers of digital transformation on the digital transformation of an organization and then to their impact on the performance of the organization, this study focuses on an important area in current organizational performance

factors. The outcomes of the surmised determination of objectives for the study are expected to provide an elaborate investigation of how these elements are linked to the dynamics of hypothesized relationships and the impression made by “technological, organizational, and environmental” enablers on “digital transformation” followed by its impact on organizational performance in GCCs of IT sector. This research is intended to provide a valuable contribution to academic and practical aspects of these relationship through analysis of these relationship.

Through the proposed study, the relative importance of different types of digital transformation enablers will be revealed, and recommendations will be made on which are the most important ones to be concentrated on to achieve success of digital transformation. Adding this would be included to literature providing an integrated framework of multiple factors that promote digital transformation alongside its impact on ‘organizational performance’ particularly in the context of GCCs in the IT sector, which are anticipated to be center stage for DT and creative changes for organizations.

1.5 Research Questions and Objectives

Using an extended Technology-Organization-Environment (TOE) framework, the study's primary goal is to identify the key enablers of digital transformation, analyze their impact on digital transformation, and assess the impact of digital transformation on organizational performance in IT sector GCCs. The study aims to answer below mentioned questions

RQ1: Which factors are instrumental in enabling successful digital transformation in GCCs and which of the factors out of technological, organizational, and environmental are relatively more important in exerting an effect on successful digital transformation in GCCs?

RQ2: Is there a moderating effect played by perceived risk in the relationship between the T-O-E factors and digital transformation in GCCs?

RQ3: Finally, what is the impact of digital transformation on the performance of the GCCs?

The study's objectives are as follows:

1. To discern the organizational, technological, and environmental factors conducive to fostering digital transformation within Global Capability Centres (GCCs).

2. To investigate the effect of technological factors on digital transformation in Global Capability Centres.

3. To investigate how organizational characteristics affect the digital transition in the Global Capability Centres.

4. To evaluate how environmental elements affect a company's digital transformation in the Global Capability Centres.

5. To look into the moderating effect through which perceived risk affects the way that environmental, organizational, and technological elements affect digital transformation in Global Capability Centres.

6. To evaluate the effect of digital transformation on organizational performance in Global Capability Centres.

1.6 Definition of Terms

1) Technological Factors

According to Tijan et al., (2021) technological factors are described as a range of digital technologies that assist in enhancing productivity, efficiency and sustainability.

These are the group of technologies mentioned above: automation, big data analytics, cloud computing, blockchain technology, Internet of Things (IoT) and artificial intelligence (AI). Where the TACs play an important role in adoption and implementation of technological innovation is how the firm (organization) possesses the internal and external, technological resources and capabilities (Jović *et al.*, 2022).

Often, technological factors in the Technology Organization-Environment (TOE) framework are composed of 'relative advantage', 'complexity', and 'compatibility' of a technology as its three main components and used to evaluate these issues (Zhang et al., 2023). The role of these elements is to understand how good or bad the organization can incorporate the new technology within the daily company's operations, which is connected with innovation, and green business practices. But for an organization, the aspects of these are more for individual users more than for the organization.

In the present study, we have described the technological factors depending on the technological attributes and characteristics that influence the degree of popularity and usage in an organization referred to as technological factors (Tijan et al. 2021). These are the features of the organization which specify how easily organization and technology infrastructure are available to utilize the technology (Tsakalidis, Gkoumas and Pekár, 2020).

2) Organizational Factors

According to Dadhich and Hiran (2022), an element could be classified as part of the organizational factors if it is largely determined within a movement's structure, its culture or its management practices and has a significant impact on its overall performance and on its capabilities to innovate. Encouragement for innovation and organizational culture as well as leadership principles as organizational factors are important. Other than the gender status, the complete set of attributes utilized to measure the qualities of great leaders comprise leadership which affects the organization's vision and direction (Malik et al., 2021) , the constructive atmosphere and creativity and risk taking (Malik et al., 2021) respectively. The organizational culture represents the common values, its conventions and

practices which influence employee attitudes and behaviour. Also, this affects the engagement and the level of commitment of the employees (Nguyen, Le and Vu, 2022). Digital transformation supports tools that employees receive (money, time, training on new things), so they can try things and also innovate.

According to Tijan et al. (2021), organizational factors are internal forces of influence for the adoption and success in digital transformation in maritime logistics. They are the organization's culture, change readiness, the vision and organizational commitment of the core leadership, the workforce skills and abilities as well as readily available financial resources.

Organizational factors (Jović et al., 2022) are internal characteristics and circumstances that determine the performance and operation of the organization. These factors constitute many elements (organizational structure, culture, rules, leadership philosophies, the way communication is conducted and resource availability) of these factors. However, these have a great impact on how choices are made, how well the company could adjust to the changes and how well they can meet the goals and objectives of the company. They also are an essential component in the formation of the internal environment of the organization.

3) Environmental Factors

In the environmental factors, we mean those that have an impact on the functioning and success of the organization as a whole, there are economic, technological, political, legal, social, cultural as well as ecological (Vidmar, 2021). They have significant impact on its ability to carry out goals andategic decisions because they define its external context in which it works (Sabherwal and Jeyaraj, 2015). The environment included in the "TOE Framework" 'of which external factors are those that can impact the organization's strategy of digital transformation and their decisions. Following are the discussed previously environmental factors of "TOE Framework" (Tijan *et al.*, 2021; Jović *et al.*, 2022):

Industry Characteristics and Market Structure: The competition and industry dynamics comprise level of competition that inspires an organization to adopt new technologies to be competitive and relevant.

Regulatory Environment: Technology adoption also depends on how the industry complies with the law and regulations, as a result of government incentives and support.

Technological Advancements: Since the availability and accessibility of technologies are featured by their change rate it has an effect on the ability of an organization to apply them.

Economic Conditions: Organizational investment in new technologies is influenced by the overall technological cost and the level of economic stability.

Socio-Cultural Factors: The need for technological advancement is due to the customer expectations, preferences, and workforce skills.

Competitive Pressure: Pressure to adopt the new technologies comes from peer adoption, industry practices and benchmarks.

Supplier and Partner Influence: Technology adoption decisions are influenced by integration of supply chain and collaborative networks with suppliers and partners.

4) Perceived Risk

Perceived risk is defined as the possible downsides or uncertainties the organizations underlie with the implementation of a technology that either an individual or an organization might perceive the technology and make a decision to move ahead in not certain circumstances (Rimal and Real, 2003; Chouaibi et al., 2022). The risks include areas of organizational readiness, technological problems, unpredictability of regulations, and, generally, stability and dependability of digital systems.

Research on IT adoption however identified that perceived risks, though being inversely related with new technology adoption intention and usage (Tan and Teo, 2000; Lu, Papagiannidis and Alamanos, 2019). In technology adoption, there are such

perceptions of risk (dimensions) as ‘performed risk’, ‘financial risk’, ‘time risk’, ‘physical risk’, ‘social risk’, ‘psychological risk’ and ‘privacy risk’. (Featherman and Pavlou, 2003; Lee, 2009).

Therefore, perceived risk is what the individuals deem the severity and probability of occurrence about a risk they could possibly face. Specifically, it is the likelihood of undesirable outcomes that people anticipate for a particular situation. For the sake of the present study, perceived risk is defined as employee’s security concerns as well as probability of failure to achieve digital transformation Malik et al. (2021).

5) Digital Transformation

Digital transformation (DT) is therefore defined as the use of technology for achieving substantial improvement of business performance and value creation (Vidmar, 2021). Digital transformation enables using contemporary technology platforms and system architectures in order to improve competitiveness and efficiency. In order to ensure system compatibility and data transmission, an efficient technology management is required in such a transition.

Organizations that go through digital transformation include cultural transformation through realizing continuous experimentation, failure as the only option, and continued questioning of the status quo (Riedl et al., 2023). To take the most advantage of our potential in digital, we do not only have to modernize technology, but also consider how the company procedures, business models and the way we interact with consumers (Morakanyane, O’reilly and McAvoy, 2020).

Not only does it require new technology but requires a radical rewrite of its operations which entails building a pool of digital talent and redefining business models and strategy. Taken as a whole, these viewpoints illustrate that digital transformation fundamentally reconsiders an organization in terms of its operations and interaction with its customers, employees and the wider ecosystem. Adequate doesn’t mean you simply adopt novel technology.

According to Jović et al. (2022), Digital Transformation is the full integration of digital technologies throughout a business' operations, and the way it serves its customers, to reshape. It is not just about new technology, but a need for a cultural change such that organizations begin to flourish and prosper by asking what it used to be, to experiment rather than enforce and to accept failure as part of innovation. What the core aim is is to use tools like 'AI, big data, cloud computing and IoT' to narrow operations, increase efficiency and create new business models.

6) Organizational Performance

' organizational performance' is defined by Khin and Ho (2019) as a means of a company's working based on effective utilization of resources, capabilities and processes for accomplishing the goals and objectives of a company. This is that they see organizational success not necessarily dollar based but other aspects of a company: internal processes; Internal learning and development; also customer happiness. Organizational performance as a multi facet construct consisting of various dimensions i.e financial performance, operational efficiency, market performance as well as general organizational effectiveness (Richard *et al.*, 2009).

Organizational performance according to the present study defines the subjective evaluation of an organization's performance based on its efficiency and effectiveness in accomplishing its goals (e.g financial or non financial (Singh, Darwish and Potočnik, 2016; Khin and Ho, 2019) . A main benefit is financial stability — a solid performance yields higher revenues and profits. Furthermore, high performing organizations provide better products and services, at the same time as leading to greater customer satisfaction and customer loyalty. Such performance also offers the advantage of being a competitive advantage thereby making the organization unique among its competitors and attract talents.

1.7 Organization of Thesis

The thesis is organized into six chapters focussing on the different stages of research process as follows:

1. Introduction

The introduction chapter provides an overview of the research topic, highlighting the importance of digital transformation in the context of Global Capability Centers (GCCs). It outlines the research objectives, questions, and significance of the study.

2. Literature Review

Second chapter critically analyzes existing research on digital transformation and its enablers. It discusses the "Technology-Organization-Environment (TOE) framework" and its relevance to GCCs. The chapter also identifies research gaps and establishes the need for the proposed study.

3. Research Methodology

The research methodology chapter outlines the research design, sampling approach, data collection methods, and data analysis techniques used in the study. It provides a detailed description of the measurement instruments and the process of hypothesis testing.

4. Results

The results chapter presents the findings of the study, including descriptive statistics, reliability and validity assessments, and the results of the "structural equation modeling (SEM)" analysis. It discusses the impact of "technological, organizational, and environmental factors" on "digital transformation" and the moderating role of "perceived risk".

5. Discussion

The discussion chapter interprets the findings in the context of the research questions and objectives. It highlights the critical role of senior leadership in enabling digital transformation and discusses the implications of the findings for theory and practice.

6. Conclusion

The conclusion chapter summarizes the key findings of the study and provides recommendations for successful digital transformation in GCCs. It also discusses the limitations of the research and suggests directions for future research.

The study provides valuable insights into the factors enabling digital transformation in GCCs and highlights the critical role of senior leadership. By understanding and leveraging the TOE factors, GCCs can navigate the complexities of digital transformation and achieve sustainable success. The findings have important implications for both theory and practice, offering actionable.

1.8 Summary

Digital transformation can add a significant value to the efficiency, customer experience, and innovation for the GCCs. Integrating the use of digital technologies can help firms to streamline processes, reduce the cost of operations, and improve the making of decisions as a result of utilization of data on analytics. This makes it possible for businesses to wallop their market and client activity, faster. Digital tools can also make it convenient for the customers by offering personalized services and make customer interactions better. Centralization of digital capabilities can enable organizations to accelerate the execution of digital strategies across the globe as well as to efficiently guarantee the consistency in quality and standardize processes. The purpose of this study is to find out key determinants of digital transformation of GCCs for organization to do well in complex world of digital transformation, stay competitive in international marketplace and to achieve long term expansion.

CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

A literature review, thus, refers to a critical summary and evaluation of extant research literature concerning a particular topic or research question. This is a systematic process that involves identification and reading of relevant scholarly articles, books and all kind of other available sources on the current state of knowledge on the subject. This is especially true in producing literature review in academic research which helps to give an idea of knowledge, identify gaps in the research, and generally provide the basis to the understanding of a topic.

In line with this, the impact of "digital transformation" to "organizational performance" is of utmost importance in the current business scenery; and among the effects of "digital transformation" toward organization, there are many diverse and extensive ones (Khin and Ho, 2019). Global Capability Centers (GCCs) of global corporations are playing an increasingly crucial role towards enabling their transformation and making them data driven and AI centric.

The purpose of this literature review is to critically evaluate all that literature related to the major enablers of 'digital transformation' and the effect that can play on the performance of a business organization. On the other hand, in this line, the reviews go over the major categories of enablers identified by different researches and place them into dimensions of "Technology – Organization – Environment framework".

This review also discusses the research that has been conducted on the issue that is evaluating the impact of "digital transformation" on the way by which the organization's work is improved through digital transformation. A review of the literature was also used to look for the research gap as well as to create the analytical model for the study to no only contribute to what is being researched but to fill the gap in the extant literature.

2.2 Inclusion Criteria

The literature review was conducted by searching for the relevant keywords on Google Scholar and Scopus Database. The keywords used for search included ""digital transformation"" AND "Factors" OR "Enablers"; ""digital transformation"" AND "Performance" OR "Success"; ""digital transformation"" AND "TOE" OR "Technology Organization Environment".

First the journal articles, book chapters, Conference papers, and dissertations documents selected out of the search result were short listed based on the subconscious perception of the researcher on the relevance of the title and then relevance of the abstract of the documents. This chapter consists of the review of previous literature, the major dimensions of the problem under study being outlined, the research gap and the need for the proposed study are also brought out and presented.

2.3 "digital transformation" Concept

It is one of the emerging research areas and terms related to "digital transformation" also changes with time and different researchers associated different tags to "digital transformation". (Morakanyane & O'Reilly, 2017) conducted a thorough analysis of the literature on what the "idea of digital transformation" has been about according to the studies from different authors but pointed out the differences in the way that the digital transformation has been defined by different researchers. The purpose of this work is to study the phenomenon of "digital transformation" (DT) and its effects on bodies of the organization. This introduction provides reason for why DT is currently becoming important as there are matters of speed of technology and competition in the corporate world. Systematic literature review of past research on DT is utilized to analyze important themes, concepts and framework of past research as previously published in 53 research publications that made the shortlist. These results suggest that 'digital transformation' (DT)

is the complex, comprehensive process of radical transformations of organizational strategies, procedures and structures. Successful "digital transformation" requires leadership commitment, an integrated use of new technologies, employee involvement and a clear vision.

There are several definitions of ""digital transformation"" in literature. As indicated by (Liu, Chen, and Chou, 2011), this concept is explored based on how the digital advancements and business functions are interrelated. On the other hand, (Bharadwaj et al., 2013) state that digital transformation is a thing that is being executed by the companies' strategic deployment of the digital assets to bring in the particular value of that company.

Scholars over time have proposed broader interpretations of digital transformation, such as Hess el sqal (2016), referring to the digital transformation as the fundamental change in the firm's business and design as a consequence of the digital innovation that is transforming at its key framework, offering, and operational modalities. Then, in a literature review, Gong and Ribière (2021) developed a comprehensive definition as "A process of fundamental change when digital technologies are harnessed through the innovative use of them and when leveraging of key resources and capabilities, with an objective to radically improve the whole entity and to redefine its value proposition for its stakeholders." (p. 12)

This particular definition gives us a clear idea that it is not the mere introduction of technology but a complete strategic shift to give a definition to culture, workflows and functions, and harness digital advances to create value.

2.4 Technology-Organization-Environment Framework

There has been wide acceptance of the "Technology – Organization – Environment (TOE)" framework (Tornatzky, A., & Fleischer, M., 1990) as a theoretical basis for the study of the intricacies of the relationship between technological capabilities,

organizational preparedness and external environment. Generally, these elements depict an entity's capacity to perceive technological innovations.

Within the TOE model, the technological aspect is fundamental as it indicates how emerging technologies is integrated by firms depending on the resources they have to the disposal (Alraja, Hussein & Ahmed, 2021). These two aspects of this dimension constitute evaluating the inherent attributes of the technology and how organizations perceive and react to new development (Rai, Lang & Welker, 2002).

The organizational component addresses organizational phenomenon impacting an entity ability to use and utilize new technologies. It refers to this dimension of organisation structure, corporate culture, and operational procedures together which contribute to organisation preparedness for technological integration (Zhu, Kraemer and Xu, 2006). However, organizing attributes with technological capabilities is necessary to see that innovations are adhering to broader strategic objectives (Bharadwaj, 2000).

The environmental perspective of the TOE model is that this external conditions are beyond an organization's direct influence however, are important factors in technology adoption decisions (Tornatzky and Fleischer, 1990). To understand both the challenges and prospects of new technology implementation, assessing the competition in market, the legal framework and the regulatory requirement (Xiao, Han and Zhang, 2022) is important. It provides that an organization's technological adaptation strategy is decisively shaped by external pressures including changes in regulatory policies, industry competition, and changing customer preferences (Sabherwal & Chan, 2001).

By providing a management perspective, the "TOE Framework" can help organizations understand the complex interaction between organisational dynamics and external environment with technological capabilities, as they need to ensure that the new technologies are properly implemented and translated to achievement of strategic objectives. The "TOE Framework" has recently been applied on the adoption of big data analytics (BDA) (Maroufkhani, Wan Ismail & Ghobakhloo, 2020) where it has been found that technological factors like BDA capabilities and infrastructure readines are key

determinants of successful BDA adoption. It was found that organizational characteristics, especially the organizational readiness, top management support and availability of skilled staff, influenced greatly the adoption of BDA. Additionally, regulatory framework and the coercion from competitors also play a very major role in deciding whether to adopt BDA technologies or not for a firm.

The study proposes how the technology, the capabilities of the organization and the external influences work together to help develop an organized system of understanding the complexities of "digital transformation" initiatives. Another remarkable application of the "TOE Framework" is the adoption of cloud computing among enterprises as examined by Sabherwal and Jeyaraj (2015). Their research points out that technological variables (such as perceived benefits and cloud technology maturity) explain most of the adoption. Organizational factors, including the readiness to change of the organization, top management support and the adaptability of IT infrastructure, significantly aided the adoption process. Alternate factors such as the competition in the industry and regulatory compliance also affected the organizations' use of cloud computing. The use of the 'TOE Framework' in this study provided useful insights regarding how organizations could strategically embrace the use of cloud computing technology to improve scalability, save cost and enhance the efficiency of operations, while also coping with the challenges of both the internal and external context.

Extensive use of "the 'TOE Framework' has been made in several technology adoption domains such as 'digital transformation' (Nguyen, Le and Vu, 2022; Li et al., 2023; Zhang et al., 2023)." The strength of the argument is that it depicts the interrelated influence of these dimensions that make it so strong in its capability to integrate the three fundamental dimensions, Technology, Organization and Environment. Premkumar and Ramamurthy (1995) have drawn attention to the fact that scholars have stressed the importance of taking these dimensions into consideration together to have a holistic view of how an organization adopts a new technology. The TOE model brings the structured approach to give us some idea that effective technology adoption requires alignment of

technology innovations with business strategies and external environmental dynamism (Zhu, Kraemer and Xu, 2006).

Therefore, that is why the Technology Organization Environment (TOE) framework is a significant conceptual framework for this nexus of 'technology – organization – external' factors and how the interplay of the three affects organizational ability for 'digital transformation' (Xiao, Han and Zhang, 2022; Mir and Dwivedi, 2024).

However, the "TOE Framework" can help with easier understanding of the dynamics ("digital transformation") of Global Capability Centers (GCCs). The adoption and utilization of innovative technology forms part of the technological factor in the "TOE Framework". Having the ability to understand the technological ecosystem gives GCCs the opportunity to evaluate their capabilities or to spot a technical gap and utilize emerging technologies to induce efficiency and innovation. In the "toe framework", there are examples of organizational elements; ie the company's organizational structure, availability of qualified employees, management support, and organization's readiness for "digital transformation".

The fact that these factors can have an effect on the way that GCCs can tackle issues of transformation and how they can develop an innovative culture and reflect digital activities with organizational goals. Environmental factors such as global economic trends, regulatory restrictions, market competitiveness are among the factors that can significantly influence the GCCs' methodologies on the subject of "digital transformation". The use of the Technology Adoption Framework (TOE) in our research is extremely helpful in that it provides a comprehensive method for studying that begets our research – the multifaceted factors on "digital transformation".

Interpreting the "'technological, organizational and environmental' aspects" has important information in relation to key 'digital transformation' elements which, in turn, are important for deriving organizational choices and results, being central to this study's theme. The addition of this comprehensive approach permits researchers to take account of how the degree of technological factors (e.g., relative advantage and complexity)

interrelate with the organizational facets (e.g., size, resources, culture), and the environmental aspects (e.g., marketplace, competition, and regulations.) Taking into account these many dimensions, the "TOE Framework" is especially helpful in studies designed to capture complexity of organizational decision-making processes, and gives a complete view of the factors that influence technology adoption.

The "TOE Framework" is also quite flexible and adaptable across situations and technologies. The framework is not tied to any one industry or type of technology, and is hence general enough for researchers to apply it to a wide range of technological advancements including information systems as well as industrial technologies. Its adaptability makes it a suitable device for comparative research and for detecting and tracking different patterns and variations of technology adoption in different settings. It also contributes towards the identification of the association of different dimensions and their direct effects, providing information on how organizational and environmental factors can either promote or hinder technological innovation by using the 'TOE Framework.' The 'TOE Framework' thus acts as a strong instrument for academic research as well as for practical application in strategic planning and policy development.

TOE factors related to GCCs

The Technology Organization Environment (TOE) frame work helps us to develop a broad lens which can help us to understand how digital transformation is impacted by 'Technology', in addition to 'Organization' and 'Environment'. In other words, this framework looks at the relationship between "technology, organization, and environment," and these form the pillars on which the so-called "digital transformation" takes place.

Technological Factors

Technological factors encompass the digital tools, platforms, and infrastructure that enable GCCs to drive “digital transformation”. Key technological factors include:

1. Advanced Technologies: “Digital transformation” depends on the adoption of latest technologies including artificial intelligence (AI), machine learning (ML), big data analytics, cloud computing, etc. These technologies assist GCCs to automate processes, acquire insights from data, and improve making selections.

2. Interoperability: Seamless ability of different systems and technologies to work together is indispensable to ‘digital transformation’. Interoperability of the IT systems of GCCs with those of its parent organisations and other stakeholders is demanded from them.

3. Scalability: “digital transformation” requires scalable technologies that can grow with the organization. GCCs need to invest in scalable infrastructure that can handle increasing volumes of data and transactions.

4. Security: Ensuring the security of digital systems and data is paramount. GCCs must implement robust cybersecurity measures to protect against threats and ensure compliance with data protection regulations.

5. Innovation and R&D: Investing in “research and development (R&D)” to explore innovative solutions is essential for staying ahead in the “digital transformation” pathway. GCCs should foster innovation and strive for continuous improvement.

6. Cloud Computing: Cloud computing offers GCCs the flexibility and scalability needed to support “digital transformation”. By leveraging cloud-based solutions, GCCs can enhance data accessibility, improve collaboration, and reduce IT infrastructure costs.

7. Automation: Automation technologies, such as robotic process automation (RPA), can streamline repetitive tasks, reduce errors, and improve efficiency. GCCs can

leverage automation to optimize workflows and free up employees to focus on higher-value activities.

8. Data Analytics: Advanced data analytics tools enable GCCs to derive actionable insights from vast amounts of data. By leveraging data analytics, GCCs can make informed decisions, identify trends, and drive strategic initiatives.
9. Internet of Things (IoT): IoT technologies enable GCCs to connect and monitor physical devices, gather real-time data, and optimize operations. IoT can enhance supply chain management, improve asset utilization, and drive predictive maintenance.
10. Artificial Intelligence (AI) and Machine Learning (ML): AI and ML technologies can transform GCC operations by enabling predictive analytics, natural language processing, and intelligent automation. These technologies can enhance decision-making, improve customer experiences, and drive innovation.

1) Organizational Factors

Organizational factors refer to the internal dynamics that influence “digital transformation”. These include leadership, culture, and resources:

2. Leadership Commitment: Strong leadership is critical for driving “digital transformation”. Leaders must articulate a clear vision, allocate resources, and foster a culture that embraces change and innovation.
3. Organizational Culture: Fostering a work environment that encourages creativity, experimentation, and ongoing learning is crucial for successful “digital transformation”. Global Capability Centers (GCCs) should create a culture where employees are motivated to innovate and confident in exploring fresh ideas.
4. Employee Skills and Training: The success of “digital transformation” depends on the skills and capabilities of the workforce. GCCs must invest in training and development programs to equip employees with the necessary digital skills.

5. Change Management: Effective change management practices are crucial for navigating the complexities of “digital transformation”. GCCs must have strategies in place to manage resistance to change and ensure smooth transitions.

6. Resource Allocation: Adequate allocation of financial, human, and technological resources is essential for successful “digital transformation”. GCCs must ensure that they have the necessary resources to support their digital initiatives.

7. Collaboration and Communication: Effective collaboration and communication are vital for successful “digital transformation”. GCCs must foster a collaborative environment where teams can work together seamlessly and share knowledge and insights.

8. Innovation Hubs: Establishing innovation hubs within GCCs can drive “digital transformation” by fostering creativity and experimentation. These hubs can serve as centers of excellence for developing and testing new technologies and solutions.

9. Performance Metrics: Establishing clear performance metrics and KPIs is imperative for measure of success of DT initiatives. GCCs must track progress and make data-driven adjustments to achieve their goals.

10. Employee Engagement: Engaging employees in the “digital transformation” journey is crucial for success. GCCs must involve employees in decision-making, provide opportunities for feedback, and recognize and reward contributions.

11. Leadership Development: Developing digital leadership capabilities within the organization is essential for sustaining “digital transformation”. GCCs must invest in leadership development programs to build a pipeline of leaders who can drive digital initiatives.

2) Environmental Factors

Environmental factors include the external pressures and opportunities that influence “digital transformation”. These factors encompass market dynamics, regulatory requirements, and industry trends:

1. Market Competition: Competitive pressures drive organizations to adopt digital solutions to stay ahead. GCCs must continuously monitor market trends and competitor activities to identify opportunities for innovation.
2. Regulatory Compliance: Compliance with regulatory requirements is a significant driver of “digital transformation”. GCCs must ensure that their digital initiatives align with industry standards and regulations.
3. Customer Expectations: The rise of the digital consumer has heightened customer expectations for seamless, personalized experiences. GCCs must leverage digital technologies to meet and exceed these expectations.
4. Technological Advancements: The rapid pace of technological advancements presents both opportunities and challenges. GCCs must stay abreast of emerging technologies and assess their potential impact on the organization.
5. Global Economic Trends: Global economic trends, such as shifts in trade policies, economic downturns, and geopolitical events, can impact the “digital transformation” journey. GCCs must be agile and adaptable to navigate these external factors.
6. Partnerships and Alliances: Building strategic partnerships and alliances with technology vendors, startups, and academic institutions can enhance GCCs' digital capabilities. These partnerships can provide access to new technologies, expertise, and resources.

7. Industry Standards: Adhering to industry standards and best practices is essential for successful “digital transformation”. GCCs must stay informed about industry developments and ensure compliance with relevant standards.
8. Sustainability Initiatives: Sustainability is becoming a key focus for many organizations. GCCs can drive sustainability initiatives by leveraging digital technologies to reduce environmental impact and promote sustainable practices.
9. Government Policies: Government policies and incentives can influence “digital transformation” efforts. GCCs must stay informed about relevant policies and leverage available incentives to support their digital initiatives.
10. Globalization: The increasing globalization of business operations presents both opportunities and challenges for GCCs. GCCs must navigate diverse regulatory environments, cultural differences, and market dynamics to succeed in a global landscape.

By understanding and leveraging the TOE factors, GCCs can wade the “digital transformation” and have sustainable success. The intertwined “technological, organizational, and environmental factors” highlight the need for a holistic approach that integrates internal capabilities with external opportunities and pressures.

2.5 Extensions to TOE – Perceived Risk

It is wide applicable of “TOE framework” to a number of many IT adoption situations, yet, it has over time developed to be more relevant and effective to explain the technology adoption and assimilation in various contexts (Baker, 2012). Studying the sector or type of technology studied determines what the variables used for extending TOE are. The framework has been extended using variables such as a firm’s age, size, competition among others (Nguyen, Le, Vu 2022). They emphasize the speed of modern digital innovation and the inability of the traditional model to handle the subtleties of such technological environments. According to them, a new framework is needed to better

address other dimensions influencing technology adoption. The methodology was applied to organizations that are ‘digital transforming’ and includes first, quantitative surveys and second, qualitative interviews with respondents from various industries. Other factors aside from just savings also come into play in whether a company will take on new technology: cybersecurity concerns; data analytics capabilities; digital culture. The researchers incorporate these new elements into the expanded “TOE Framework” suggesting that organizations need a more comprehensive navigational tool to successfully cope with the problems and opportunities arising from “digital transformation”.

To be specific, (Dadhich and Hiran, 2022) have inducted the environmental factors into a social and economic dimensions of using the TOE in light of the corporate environment sustainability context. The study contends that the original environmental component of the “TOE Framework” is not adequate to account for today’s complexities in the influence of external forces that include the exponential technological change, and increasing regulatory pressure. They then, conducted the empirical study including survey and interview with business executives and organizational decision makers; then carefully reviewed the previous research. In a sense, their results emphasize how important are new environmental factors, like market volatility, industry convergence, regulatory dynamics and ecosystem relationships to better understand what is going on out there in order to support a successful technology adoption.

Extension has been made in the studies of technology transformation studies in “Industry 4.0” context by incorporating such variables as trust (Raj and Jeyaraj, 2023). The “Industry 4.0” technologies they highlight have transformative effects, and these technologies are not well captured within the current “TOE Framework”. Instead, they take a “mixed methods approach” marrying “quantitative survey” responses from across various Industry 4.0 industry sectors together with “qualitative interview” responses from Industry 4.0 experts. The methodology is set to identify the novel technological element needed to adopt and implement Industry 4.0 technologies. In addition to the more traditional characteristics, which included technological readiness and compatibility, new factors that

also matter including IoT integration, real-time data processing, advanced automation, and interoperability standards, were found by them.

As part of the extension of the “TOE Framework” to the context of adoption and adoption of blockchain technology, Malik et al. (2021) found that cross included perceived risk in the context of adoption and adoption of technology, and it has a major effect on adoption in a negative way, which means its adoption depends if stakeholders believe that risk is high in adoption of a feature. According to them, standard “TOE Framework”s fall short on many points and discuss the role that risk perception plays in how companies make decisions to adopt new technology. An application of a mixed method approach is utilized with firms who are implementing various technologies. The adopted methodology is based around pinpointing how recognized TOE criteria influence the adoption decisions through risks perceived. The results show that for perceived risk, adoption rate is very dependent on the perceived risk and adoption rate is lower with higher perceived risk. Among these barriers, perceived risk is one identified in aspects as pointed out by Malik et al. who propose an extended 'TOE Framework' that incorporates perceived risk as a significant component and which better serves in the understanding of barrier to technology adoption.

Studies have extended the “TOE Framework” previously also with consideration of perceived risk factors with respect to IT innovation adoption at organizational level. They point out that even though the ‘TOE framework’ has typically paid great attention to organizational, technological and environmental factors, mergers and acquisitions are rarely initiated based on these factors to the neglect of their effects on perceived risks in adoption decisions (Hameed, Counsell and Swift, 2012). In their strategy they combine the results of several studies by means of a meta analysis to identify any relationships between organizational characteristics and perceived risks, and organizational adoption of IT innovations. The perceived risks that influence adoption attitudes are primarily financial risks, security concerns and uncertainty about the future of technology, as per their research. In addition to the standard TOE element, they highlight the importance of accounting for risk perception in order to develop more effective plans for managing and mitigating risks related to IT innovation adoption in organizations.

That is the case with “digital transformation” too. When the people involved in the “digital transformation” process don’t trust the process or apprehend that risks are high, they avoid the process. Hence, “perceived risk” can reduce the positive impact of enablers within the framework on “digital transformation,” and so has been incorporated in the extended framework to measure to what degree it can stifle the influence of enablers in the framework.

2.6 Digital Transformation Enablers

According to Osmundsen, Iden and Bygstad (2018), a systematic review of literature was present and their reasons why digital organizations chooses to “transform” to digital, the variables that contribute to the “success” of the transformation, and the effects on the organization. The authors emphasize the need for further understanding the dynamics shaping this change and ‘digital transformation’ in keeping competitive advantage. A qualitative methodology was used in the analysis of case studies of a wide range of organizations to gain full understanding in using this methodology. The researchers then undertake document analysis and interviews to identify factors that were critical to 'digital transformation'. Corporate culture, technology readiness, leadership commitment, as well as outside pressures such as competition and regulatory change are these factors. It was found that “digital transformation” is successful if organizational readiness and the external environment are taken into consideration, apart from embracing new technology. Finally, the study reaches the conclusion that in order to navigate through “digital transformation” effectively a holistic approach is not enough and we have to take into consideration all these variables.

In the manufacturing sector, for example, Vogelsang et al. (2018) offer a qualitative analysis by which they name the main success factors of “digital transformation” in the manufacturing industry. The study highlights the importance of organizations “transferring” from a digital to a digital organizational model. The authors point out how everything that makes it easier or harder to this transformation is key to be completely

aware. To achieve this, the mixed methods approach used in the study involved quantative surveys and qualative case studies. The survey data is used to identify common trends and correlations, and the case studies are used to get a more in depth understanding of specific organizational scenarios. For instance, they found that a good number of important factors including organizational culture, leadership support, technology capabilities, and the external environment play a significant role in determining the shape of a ‘digital transformation’ strategy.

In a rapidly evolving technological landscape, 'digital transformation' is significant due to its helping business to become more competitive and efficient according to significance of Mhlungu, Chen and Alkema (2019). Qualitative approach of qualifying factors influencing the 'digital transformation' in organizations was adopted in this study, and subsequently an exploratory factor analysis was conducted to determine four factors that influence the organisations’ success of 'digital transformation'. Several critical factors were identified by them like leadership commitment, employee skills and training, technology infrastructure as well as organizational culture.

According to Kraus et al. (2021), businesses need to adjust their product and service offerings to satisfy digital advancements to keep pace with evolving economic changes that have led to the necessity for business to be digital. The approach was a multi phase study in which they first did a comprehensive literature review to identify different facets of “digital transformation”. Then, they carried out a thorough survey out of the need to categorize companies as per their ‘digital transformation’ endeavours spanning a lot of industry. Sophisticated statistical techniques such as cluster analysis were used to distinguish several clusters of “digital transformation” activities. The results indicate that, certainly, there are a number of clusters, but each is distinguished with its own set of constituents: the organizational culture, the skills of employees, the focus of leadership, and the advancement in technology. The study illustrates that digital transformation strategies and challenges of organizations can be clustered into such groups that offer the possibility to tailor specific approaches to specific groups of organizations.

In addition, Cichosz, Wallenburg and Knemeyer (2020) conduct another study that focusses on the major DT drivers in orgnisations. However, the authors say that for businesses to remain competitive and satisfying changing demands of customers, the business has to live up to the digital era. The implementation involved the survey of senior managers of other industries and case studies based to provide in deeper understanding. The research boils down a number of key factors driving the so called ‘digital transformation’ such as customer expectations, competitive pressure, technological development and regulatory requirements. According to the study the successful management of “digital transformation” and consequently the benefit from such requires a strategic vision, strong leadership and flexibility in the culture.

The study in Morakanyane, O’Reilly and McAvoy (2020) relates the ‘growing imperative for businesses to undertake digital transformation so as to be competitive.’ The modal study was a review of literature, a thematic analysis of the exemplar cases of successful “digital transformation,” and the study identified seven success factors with 23 subfactors. Yet they expose a convoluted mix of elements, ranging from way of life technique, help, employee skillsets, and engineering readiness. Other subfactors are also emphasized, such as innovation culture, customer focus, data management, etc. Understanding such nuanced factor and subfactor is crucial for organizations for performing successful DT planning and execution.

Rueckel, Muehlburger and Koch (2020) call for “digitalisation” as a means of remaining relevant and competitive in a rapidly evolving array of ever changing digital factors. The technique used for the research design is qualitative and has used case study and interview of companies who have done the "digital transformation". To facilitate the development of a framework of factors that act as an enabler of a notion called “digital transformation” including such as management, the authors adopted design science. They also pinpoint the enablers: high leadership, a clear digital strategy, the adoption of technology and a culture that supports innovation and change. Additionally, they point to the significance of constant learning as well as adaptability and organizational collaboration across work units.

This is a study of Trenerry et al. (2021) which stresses the significance of ‘digital transformation’ as a means of bolstering organizational effectiveness, competitiveness, and adaptability in the digital world. This methodology is also using a mixed-methods approach. The first thing the researchers did to find out what could be the reasons for that was to carry out a thorough literature analysis. They then sent a quantitative survey to a wide spread of sectors in order to gain the broad views. In addition, industry leaders in the sector were interviewed in detail to validate the survey results. This results in some important elements like “organizational culture, employee engagement, leadership commitment, and technological readiness”. Further the study highlights the importance of taking a strategic approach towards “digital transformation” which emphasizes that using these factors in combination for successful innovation and adaptation is the route to create an environment that stimulates continuous innovation and adaptation.

In the study by Feliciano-Cestero et al. (2023), the authors study the factors that either threaten or enable “digital transformation” in organizations. The authors focus on the issues of ‘digital transformation’ as highly complex and, the increasing importance of this phenomenon, as a tool for maintaining and increasing competitive advantage. They applied “mixed methods approach” to obtain thorough insights. Results suggest that such a “digital transformation” can be facilitated by the existence of a culture that welcomes change, strong strategic vision and good leadership. One the other hand, there are risks of poor investment in technology, lack of digital capabilities and objection to change. By concluding there are both human and non human aspects of inhibitors or enablers of “digital transformation”, they were right.

In “digital transformation”, Gilli, Nippa & Knappstein (2022) focus on leadership competencies and emphasize especially innovation and initiative. The research indicates that leadership can greatly help firms improve through the arduous and dynamic path of “digital transformation”. Leaders have a burden to have a set of competencies to effectively navigate through these changes. The methodology involves literature review, empirical analysis in terms of surveys and interviews with executives of many organizations, and finally applying statistical regression and correlation analysis to make the appropriate

relationship examined. It identified some of the key leadership qualifications which include creating a creative organizational culture, having strategy, digital literacy and change management. The findings of research suggest that bringing these competencies to bear significantly improves the likelihood that a leader will successfully execute “digital transformation” projects and enhance organizational efficiency and prestige.

Unlike Jović et al. (2022), who focus on the discussion of the various aspects of DT in Croatian maritime transport sector, driving and hindering this process, many aforementioned studies are providing only empirical empirical empirical research on specific sector DT. However, they also stress the importance of an organization’s “digital transformation,” or its need to change in order to be competitive and rise to the speed of technological advancements. They integrated ‘quantitative survey’ in collecting ‘a wide range of data’, in association with ‘qualitative case study’ of how businesses are undergoing ‘digital transformation’. The quantitative surveys approach use a “PLS-SEM” approach to obtain data and expand variety of employees from different sectors while the qualitative case studies utilises in depth interview of key stakeholders. In other words, the study results indicate that a lucid strategic vision, a commitment to invest in digital skills and technology, and present management leadership are foundational variables that lead to success with a 'digital transformation'. But on the other hand, the chief problems found are a lack of digital competence in the staff members, inadequate infrastructure and the core opposition to change. What they suggested is that organizations should have an integrated strategy when it comes to adopting technology and the human beings.

Xiao, Han and Zhang (2022) study on the Chinese local government’s need to accept “digital transformation” to remain competitive, where TOE is comprehensive enough to address the multifaceted influences of this process. The methodology includes case studies, questionnaires, statistical analysis, and so on. A detailed case studies of organizations at varying stages of their ‘digital transformation’ along with surveys of large numbers of employees were carried out to measure technological, organizational, and environmental conditions. Finally, these factors were then statistically analysed to determine the relationships and impacts on each. What they discovered is that a ‘digital

transformation' goes well depending on a company's culture, technology readiness and external factors. Market dynamics, legal frameworks, available and accepted modern technologies, leadership support and innovative culture are the environmental variables; and technological aspects, such as available and accepted modern technologies, are the technological aspects.

Nikopoulou et al. (2023) investigated determinants that determine adoption of digital technology in the hotel sector of Greec but only this adoption, not "digital transformation" as a more comprehensive concept of strategic orientation. This paper explored how digital TOE factors influence the green innovation intentions in the construction industry of China, while introducing a set of subdimensions to the "TOE Framework" in the context of "digital transformation". In 2023, Zhang, Xu, and Ma (2023) studied the impact of senior leadership in IT investment linkage to the "digital transformation" of an organization and found that senior leadership moderates the impact of various factors to the transformation process.

The focus of present study is to investigate the enablers of "digital transformation" in GCCs which has not been studied in the literature so far and hence this study aims to fill this gap.

2.7 Effect of "digital transformation"

In today's business landscape being driven by technology, it is equally important to analyze the impact of 'digital transformation' on the organizational performance and its effects are considered to be diverse and wide. Khin and Ho (2019) explored the mediator role of digital innovations in digital parlance and ability and organizational success. The researchers conducted both methodologically, by a comprehensive literature review to take insights from the existing studies, and resulted in it with empirical research. They used a quantitative approach in collecting data from the surveys that were distributed to a small number of diverse organisations across different SMEs in Malaysia. The study had the

main objective of examining how digital technologies such as artificial intelligence, big data analytics and digital platforms are used and the consequences on important organizational performance indicators such as profitability, efficiency, and competitiveness at the market. Strategically using digital technologies enables companies to implement strategies that deliver significant performance improvements compared to those that don't use such technologies.

Theoretical research investigating the effect of 'digital transformation' on organizational performance has taken place by researchers who conduct qualitative studies via systematic review, interview or case study approach. In a nutshell, Zhou et al. (2023) imply the rising espousal of ‘digital transformation’ as a strategic move alongside technological advancement for enhancing financial result drastically. A multi-phase study included literature review of a detailed nature, which was then followed by applying text mining and network analysis techniques to create a theoretical framework in this literature, that was missing. So, we proceed to the empirical analysis of the data of publicly traded companies, for example, financial reporting and indices of the “digital transformation,” among others. The use of sophisticated statistical techniques, such as panel data regression and fixed effects models, allow the researchers to evaluate the connection between financial performance metrics includes revenue growth, profitability, and market value to ‘digital transformation’ initiatives. In fact, increased financial success had a strong positive relationship with the ‘digital transformation’. In businesses that use digital technologies in their operations and spent a lot in terms of investment, profit margins improve, revenue growth rate increases, and the value put on the company increases.

Chen et al’s (2016) study points to how SMEs across Taiwan have seen the growing significance of “digital transformation” to their survival and competitiveness in the course of rapid digitization of the economy. The study establishes a conceptual framework to set the context with a review of literature. Next, a quantitative study based on the data obtained through survey from SMEs of different industries is conducted. The surveys assesses scope of “digital transformation” projects and their influence to some performance measures — market reach, financial efficiency, operational efficiency. In turn, one of the statistical

techniques that the researchers use to examine the connection between SME's performance and 'digital transformation' is regression analysis. The research indicates that "digital transformation" plays a role in SME success by allowing it to become more operationally effective, more broadly reach the market and better achieve its financial results. The research points the need for leadership support and employee training for successful digital transformation in SMEs but it is based on specific digital processes of the SMEs and not an overall digital transformation strategy.

Second, the effect of 'digital transformation' on a firm's performance has also been empirically studied but lightly. In "digital transformation" wins the battle: enhancing competitive advantage and financial success in current business environment, Shanti et al. (2023) study the vital role played by digital transformation in shaping competitive edge and financial success of a modern business. Starting with a comprehensive literature review of the 'digital transformation' and then a quantitative analysis of profitability based on secondary data, the authors performed a total of four tests.

Researchers examine the influence that "digital transformation" has on financial performance measures of "revenue growth, profitability, and return on investment" using structural equation modeling (SEM). Yet they found that the businesses that aggressively take on digital maneuvers such as adopting booking new technology and streamlining operations have seen their revenues grow, their profit margins rise and the financial fitness of the organisation improve.

Chouaibi et al. (2022) study how "digital transformation" negatively affects organizational performance based on information collected from the managers of Tunisian businesses. The researchers used a mixed methods approach using in depth case studies and quantitative analysis of the complex effects of the task system. In order to assess performance changes, they first identified companies that were "digitally transforming". Afterwards, they evaluated financial data, operational measures as well as employee feedback. First, key findings point to a normal occurrence of employee resistance and initial inefficiencies in "digital transformation" as a continuous disruption to current

procedures. Additionally, there can be budgeting impropriety and implementation costs often exceed initial projections. The weaknesses in cybersecurity and the gap in the skills to work with new technology make these issues even worse posing a threat to organizational effectiveness and strategy coherence. The point of the study is that in order to mitigate the negative consequences of “digital transformation” on organizational performance, you need to have a strategic strategic, and enough resources and talent development.

While 'digital transformation' is viewed as important for organizational performance assessment in a holistic manner, not many studies have looked into the relationship between 'digital transformation' with performance in terms of a multidimensional aspect including financial performance as well as other dimensions such as employee turnover and customer satisfaction.

2.8 Summary

The literature review undertaken to identify the research problem and fill the gap in the area of research found that the area of study in relation to digital transformation is still in its infancy. Most of this research is exploratory relying very much on qualitative approaches or literature reviews that do require more empirical and theory driven studies. Additionally, there are few empirical studies on the factors that act as enablers for practicing the 'digital transformation' in an organization as well as empirical studies on the effect of 'digital transformation' to various aspect of 'organizational performance'.

There is lacking a model of “digital transformation” enablers and its effect on organizational performance at the Global Capability Centres, and apart from the studies by Mathews and Zutshi (2006) and Yahya and Fan (2014), no study frameworks are integrated that incorporate analytic assessments of how enabling factors influence “digital transformation” and what impact it creates on GCC performance grounded on an empirical setting. Most previous studies regarding “digital transformation” depend on a qualitative

or review articles approach. Although those that have adopted a quantitative approach have not paid much attention to Global Capability Centres, they have ignored most of the factors that support “digital transformation”, and still again they have failed to include both enablers and impact of “digital transformation”.

To address this gap in existing knowledge base, this study has an aim to close this and create a whole thorough framework incorporating all the most major enablers according to a thorough review of existing literature. Additionally, the present analysis is unique in that it examines the association of enablers with the actual “digital transformation” in GCCs regarding perceived risk as a moderator instead of on intention to transform. This is crucial since effect of enablers is better understood while coming from organizations that have adopted ‘digital transformation’ and have experience of same instead of organizations that haven’t yet started with ‘digital transformation’.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The research methodology planned to conduct the study is outlined in this chapter. A chosen methodology fits the objectives of the research and is based on thorough review of the available literature of methods which could be applied to this study's context. A descriptive analytical approach is adopted in the study to examine complex relationships between 'Digital Transformation (DT)' and its factors of influence as well as analyse the impacts of DT with a specific focus on Global Capability Centre (GCC).

An extensive literature review was made, and the research framework was developed, as with the suggestions of measures of latent constructs using adapted scales that fit the same. The details of the research design, sampling approach, instruments, procedures, techniques of data analysis, and ethical consideration are presented in the subsequent sections.

3.2 Research Design

Quantitative method is used for the research design for the study due to the fact that it is the conceptualized factors determining success of DT have already been investigated in the past by many researchers who were mentioned in the Literature Review Chapter. Empirical research, which combines factors mentioned in qualitative studies, is lacking in most of the existing research on "digital transformation", which uses mostly qualitative methods and literature reviews. The studies review a quantitative approach, none of which has attended to "digital transformation" in Global Capability Centres.

It is a quantitative research study, which adopts descriptions and analytical designs. According to descriptive research design their purpose is to describe or detail the characteristics or functions of a phenomenon or a group, giving a full factual description

of what is existing now. It aims to watch, describe and record elements in a situation in the actual course of happenings. Thus, as a means of achieving this objective, the study is first designed descriptively which means to understand 'the technological, organizational and environmental' aspects of research from employee perception of GCCs that have adopted some form of 'digital transformation'. To accomplish this, descriptive statistics are used – mean and standard deviation – to give a tacit idea of data concerning these constructs.

Further, in this, the study switches from a descriptive research design to an analytical research design, where it looks to predict the effect of T-O-E (Behaviors in terms of Technological, Organizational and Environmental) on "digital transformation" and how "digital transformation" affects organizational performance. Analytic research tries to find out the reasons, the pattern of occurrence, and the relationships underlying phenomena. The purpose for this approach is to generate deeper insights and dependence relationship between variables by testing hypothesis. To do the dependence relationships analysis, "Structural Equation Modelling (SEM)" is used.

3.3 Research Framework and Hypotheses

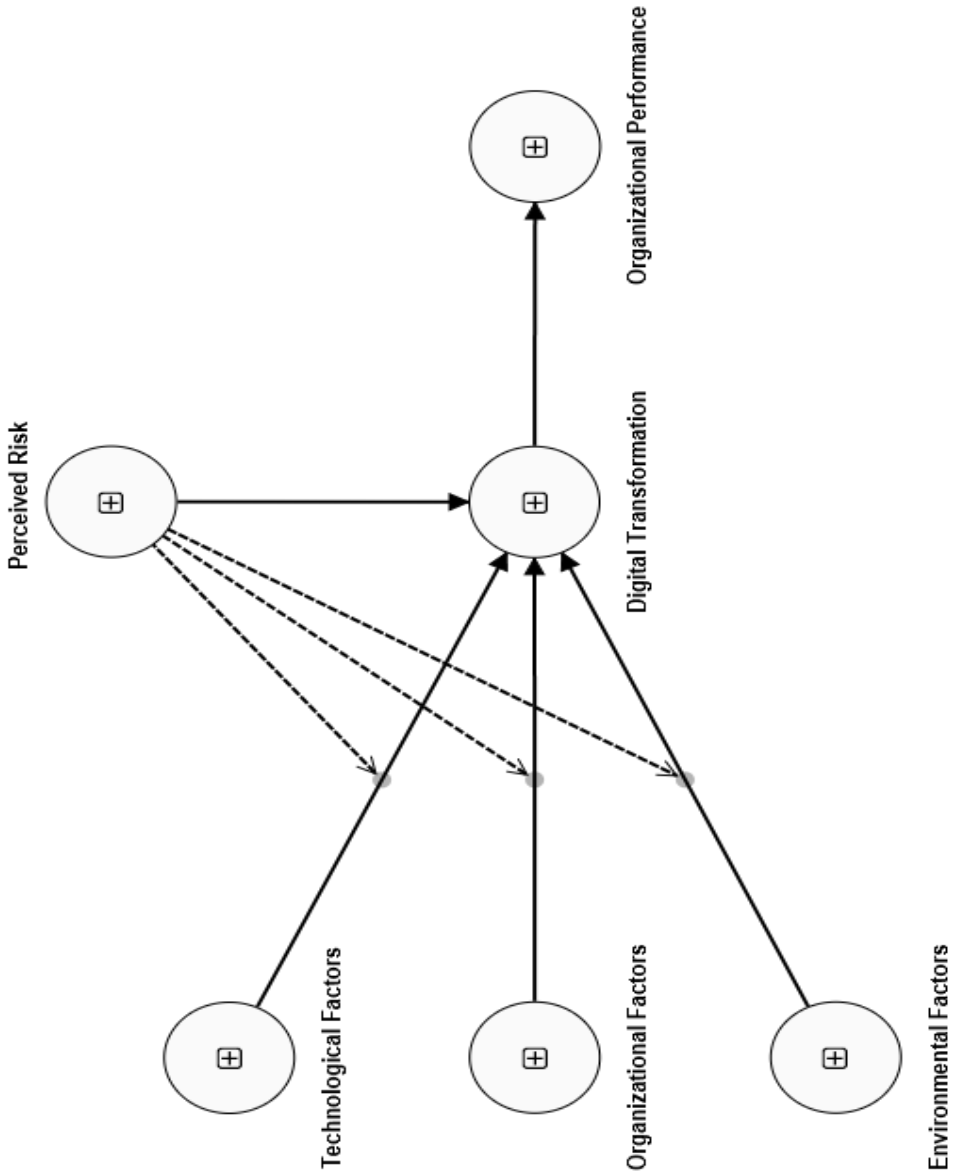

Figure 3.1 Proposed Research Framework

It is a quantitative research, and it is simultaneously a descriptive and analytical research design. The resultant conceptual model is grounded from "T-O-E framework" framework that consists of relevant variables identified through the review of literature and make an attempt to fill gap in the current literature by exploring the "technological, organizational, and environmental factors" that facilitated "digital transformation" of organizations of IT sector in GCCs and assess the impact of "digital transformation" upon performance of the "GCCs".

In this section, it is presented the model of the study proposed in figure 3.1 with the hypothesized relationships to be studied. Formulated hypotheses, in line with research objectives and a framework, are formulated for examining the direct effect of the independent variables, as well as the hypothesized moderation effect:

Effect of Technological Factors

The procedure of doing a successful 'digital transformation'' strategy consists of 4 main key elements, namely usage of new technology, value generation, structural adjustments, and finance aspects (Ko et al., 2022). To successfully pass location and complexity of digitalization, it requires the formation of a comprehensive digital strategies (Hess et al., 2016).

Studies have highlighted that creating digital marketplaces and keeping pace with the ever changing needs of the consumers are important factors that companies should adopt technology to ensure productivity and competitiveness. Research in extant literature draws an importance on creating an innovative environment, spending resources on technology investments and committing time for updating technological breakthroughs (Morakanyane, O'reilly and McAvoy, 2020; Zhang, Xu and Ma, 2023).

Therefore, following hypothesis was framed for this study:

$H0_1$: "There is no effect of technology factors on "digital transformation" in GCCs."

H1: “Digital transformation in GCCs is affected positively from favourable technology factors.”

Effect of Organizational Factors

Success of DT projects is reported in literature and depends on top management support, employee skills, and digital strategy alignment with business objectives (Zhang, Xu and Ma, 2023). The inevitability of having an offering based on competition in this environment and the propensity of technology to develop fast has compelled the convergence of business and IT strategy if not a number of critical success factors to do with responsible leadership, a clearly articulated strategic vision, individuals committed to the vision, and use of modern technologies.

The results of the research assumed that corporate culture and change management capacity are prerequisites for successful DT (Gong and Ribiere, 2021). To be successful in the digital transformation it is necessary to have a solid alignment between digital initiatives and business objectives and that needs a clear vision and strong leadership (Riedl *et al.*, 2023).

Following hypothesis were thus framed for the study:

$H0_2$: “There is no effect of organizational factors on “digital transformation” in GCCs.”

H2: “Favourable organizational factors have a positive influence on “digital transformation” in GCCs.”

Effect of Environmental Factors

External factors such as the industry competition and regulatory compliance also have an effect on the organization choices regarding "digital transformation" (Sabherwal and Jeyaraj, 2015). This is important because it helps in evaluating the external environments that include the competition, legal mandates and the regulatory guidelines (Xiao, Han and Zhang, 2022) for the challenges and opportunities of taking new

technologies. As per the 'TOE Framework', the external forces such as regulatory shifts, competitive market dynamics, and customer expectations make a significant impact on the adoption of innovative technology by the organisations (Sabherwal and Chan, 2001).

Therefore, the hypothesis as under was framed to be tested:

$H0_3$: "There is no effect of environmental factors on "digital transformation" in GCCs."

H3: "Conducive environmental factors have a positive influence on "digital transformation" in GCCs."

Moderating Effect of Perceived Risk

Whereas, "TOE Framework" has been proven to be inadequate for the goal of technology adoption studies as it takes into consideration only "technological, organizational and environmental factors", but the key role played by perceived risks in the decision of adoption of technology must be considered (Hameed, Counsell and Swift, 2012).

Studies in technology adoption context (Malik et al., 2021) have extended the variable of perceived risk in "TOE Framework" and in these studies, perceived risk has negatively moderated the positive effect of positive TOE factors on the adoption of technology as stakeholders perceive higher risk of adopting technology, their intention to adopt technology gets weak.

Digital transformation is also same. Put differently, DT occurs when people in fact perceive high risks to process or its outcome and refrain from it. Therefore, the following is hypothesized:

$H0_4$: "There is no moderating effect of perceived risk on "digital transformation" in GCCs."

H4a: "Perceived risk has a moderating effect on relationship between technology factors and digital transformation in GCCs."

H4b: “Perceived risk has a moderating effect on relationship between organizational factors and digital transformation in GCCs.”

H4c: “Perceived risk has a moderating effect on relationship between environmental factors and digital transformation in GCCs.”

Effect of Digital Transformation

According to the findings, the organizational performance can be significantly raised through DT through promoting innovation, improving decision making process and operation streamlining (Shanti et al., 2023). Secondly, DT increases customer relationships by better customer service, more personal marketing and better engagement (Portes, N’Goala and Cases, 2020). Use of digital technology in business operations in order to develop new income streams and business models (Bharadwaj et al, 2013). The key elements of a successful ‘digital transformation’ of a business remain customer centric, data driven, agile and a collaborative culture. Therefore the following was hypothesised:

$H0_5$: There is no effect of “digital transformation” on organizational performance in GCCs.

H5: Organizational performance is improved by “digital transformation” in GCCs.

3.4 Population and Sample

For this study the population consists of the employees of Global Capability Centres of the employees of the IT sector organizations, where digital transformation has taken place in some way in the organization and they could answer the questions regarding digital transformation in the organization. Considering the purpose of the study, the complete sampling frame was not available and hence the researcher used purposive sampling as a non probability method of sampling a representative sample from the population (Neuman, 2014). The number of IT sector GCCs in India during the study period is 100 or more than 100 of which have been established for at least 3 years prior to

the study period. The average length of a GCC is 500 associates. According to these numbers, sample size was worked out based on Cochran's formula as follows:

Number of GCCs: 100

Average number of associates per GCC: 500

Total population: 100 GCCs * 500 associates = 50,000 associates

Using a 95% confidence level (z-value = 1.96), an estimated proportion of the population (p = 0.5), and a margin of error (E) of 5% (0.05), the sample size calculations using Cochran's formula are as follows:

Initial Sample Size: $n=z^2 \cdot p \cdot (1-p)/E^2$

$= (1.96)^2 \times 0.5 \times (1-0.5) / (0.05)^2 = 385$

Adjusted sample size for finite population:

$n_{adj} = n/\{(N+n-1)/N\}$

$=385/\{(50000+384) / 50000\}=382$

Minimum sample size required for the study has also been determined by conducting "power analysis" using "G* Power software" (Faul *et al.*, 2009). For a significance level of 5% and power of 95% assuming a small effect size of 0.05, the minimum sample size required is 262.

The study had a final sample of 411 respondents which is reasonably high and very far from the suggested minimum of 262 to provide the desired power of the tests as well as the 382 respondents on the sample size derived from Cochran's formula.

Associates working at middle and senior level in GCCs of IT sector organizations that started the journey of digital transformation in business were used as sample. Such organizations with GCC employees having an experience of at least 2 years with same GCC were selected for using the purposive sampling method by contacting the selected

GCC employees from such organizations through specified groups, social media platforms, and personal connections in the IT sector GCC.

3.5 Data Collection and Instrumentation

Data was collected through the process of online survey after designing a structured questionnaire covering the questions related to the adoption of the organization's digital transformation, the position of the respondents in the organization in terms of experience and their position in the organization, demographic questions such as the age and gender of the respondents, and Likert Scale items used to assess the constructs which constitute the model. We include informed consent statement in the beginning of the survey which only those participants, who agree to participate in the survey, will be considered.

The survey instrument was two screening questions about respondents' experience in the present organization and whether their organization started "digital transformation" or parts of it. Only those participants who reported that their organization has been doing "digital transformation" of some type and that they (the participant) have been associated with the organization for at least 2 years were forwarded to the next segment of the survey.

In the second part there were 4 questions related to demographics (i.e. age, gender, total work experience, and designation level in current organization) which are also asked by the applicant's online partner. The questions were demographic and followed by 36 statements to be marked on "five point Likert scale." The pilot testing was done with a sample of 70 respondents and all the items were adapted from validated existing scales from the literature. "Cronbach's Alpha" found to be satisfactory on all constructs (> 0.7). The 6 items for the final instrument were Technological factors, Organizational factors, Environmental factors, 3 items each for Digital Transformation and Perceived Risk and 5 indicators for Organizational Performance. Table 3.1 shows the survey items to determine reliability, with their origins, and reliability coefficient "Cronbach's Alpha" obtained in the pilot test for each construct.

Table *3.1*

Survey Instrument

Construct	**Items**	**Reference**	**Cronbach's Alpha (Pilot Test)**
Technological Factors	T1: "ICT systems within the organization are interconnected" T2: "The organization uses standards for electronic data interchange (e.g., EDIFACT, XML, etc.)" T3: "The organization has available funds for the implementation of new digital technologies" T4: "The organization systematically manages the risks of the implementation of new digital technologies (for example, risks related to the quality of project implementation by the contractor)"	(Tijan *et al.*, 2021; Jović *et al.*, 2022)	0.933

	T5: “The existing technology in the organization allows for the upgrade of modern digital technologies” T6: “The organization has provided prerequisites for interoperability with external information systems, i.e., with systems managed by other stakeholders (for example, by sharing the interface specification to which external systems can be connected)”		
Organizational Factors	O1: “The organization has a clearly communicated vision toward all employees in the context of “digital transformation””	(Tijan *et al.*, 2021; Jović *et al.*, 2022)	0.927
	O2: “Managers are motivated when it comes to the “digital transformation” of the organization (for example, encouraging the adoption of digital technologies)”		

	O3: “The organization has sufficient financial resources to introduce new digital technologies”
	O4: “The organization has sufficient human resources to introduce new digital technologies”
	O5: “Managers possess sufficient digital skills needed to digitally transform an organization”
	O6: “Employees possess sufficient digital skills for the “digital transformation” of the organization”
	O7: “The organization invests in employee knowledge in the context of digitalization and “digital transformation””
	O8: “The organization conducts the continuous training of employees in the field of digitalization and “digital transformation” Interview”

	O9: “There is an awareness in the organization of how “digital transformation” can affect the business of the organization” O10: “The organization has introduced new leadership roles to improve digitalization and “digital transformation”” O11: “The organization is actively developing “digital transformation” strategies” O12: “Employees in the organization have the opportunity to participate in the development or adaptation of digital technologies”		
Environmental Factors	E1: “The organization feels the pressure of competition on business due to digitalization and “digital transformation” of competition (“digital transformation” can significantly disrupt existing markets	(Tijan *et al.*, 2021; Jović *et al.*, 2022)	0.932

	and recombine existing products and services)”
	E2: “The organization feels the pressure of business partners and other relevant stakeholders on the business (due to the emergence of new technologies, the expectations of business partners may increase)”
	E3: “The business of the organization is tightly regulated or subject to special legal regulations”
	E4: “The organization cooperates with research institutions in the development of new digital solutions (startups, faculties, etc.)”
	E5: “There is the compliance of the organization with standards (for example, ISO standards) and conventions”
	E6: “The organization conducts socially responsible business with the

	help of digitalization and "digital transformation""		
"digital transformation"	D1: "The organization cooperates with new partners with the aim of developing new digital solutions" D2: "The organization has digitalized internal business processes" D3: "The organization has digitalized external business processes"	(Jović *et al.*, 2022)	0.887
Perceived Risk	PR1: "Digital processes are not secured." PR2: "Private information will be compromised while using digital processes." PR3: ""digital transformation" will not provide its expected benefits"	(Malik *et al.*, 2021)	0.759
Organizational Performance	"Please indicate your level of satisfaction with your company's performance post "digital transformation" in terms of: i. Sales	(Khin and Ho, 2019)	0.964

ii. Net profit

iii. Cash flow

iv. Customer satisfaction

v. Market share

vi. Employee turnover”

Appendix C includes the complete questionnaire used for the study including the screening questions for respondent selection, demographic questions, the Likert Scale items used for measurement of constructs in the model as adapted from pre-existing scales.

3.6 Data Analysis Methods

Descriptive Statistics

Stats that describe summary of the information in a sample or population are called descriptive statistics that provide a simple view of the data. These metrics were of help in making the data understand, it basically helps in making the data understandable and thus help to get a perspective on the main aspect of the data. Further, Core Descriptive Statistics consist of “Measures of Central Tendency” like “Mean”, and, “Measures of Dispersion” which reflects the variation of values from the mean.

Descriptive statistics are convenient for quick summary especially with long datasets. They help in searching for data, finding patterns and trace trends between variables under study.

Structural Equation Modelling

“Structural Equation Modelling (SEM) method involves providing the relationships between the construct represented by several indicators, with path coefficients showing

strength of relationships between these constructs." It enables study objectives and research questions to be met.

SEM can be developed as "Covariance based SEM" (CB-SEM) or "Variance based or also known as PLS SEM". In the case of formative measurement and also when the population distribution assumptions are not met, the PLS SEM is preferred because of its predictive capability (Chin, 1998; Hair et al., 2012).

Correlated indicators assess reflective constructs (Jarvis, Mackenzie and Podsakoff, 2003), while driven by indicators composing them, formative constructs are assessed (Diamantopoulos and Winklhofer, 2001). However, data did not meet Multivariate Normal criteria, as the "Mardia's multivariate skewness and kurtosis" was significant, involved the use of 'PLS-SEM,' as opposed to CB-SEM. Using PLS-SEM's predictive strength, the prediction model attempts to improve success of digital transformation in GCCs. The hypotheses were thus tested through 'PLS-SEM' using the SmartPLS 4.1 (Ringle, Wende, and Becker, 2024).

i) Measurement Model Assessment

The "measurement model assessment" begins the evaluation process. The following assessed the reflective constructs in the study.

Item reliability was first ensured by computing item loadings to ensure that each construct contributes at least 50% of indicator variance. Typically, indicator loadings over 0.708 are recommended (Hair et al., 2022).

It then tested "internal consistency reliability" of constructs by "check if composite reliability (CR) and Cronbach's Alpha" values were between 0.70 and 0.95. Composite reliability is liberal and Cronbach's Alpha is conservative (Dijkstra & Henseler, 2015); that is, we have 'Rho A' (ρA) as a reliability range.

Next, the “convergent validity” of the reflective constructs were yet measured through “Average Variance Extracted (AVE)” and AVE should be greater than 0.5 which symbolizes that construct accounts for more than 50% of the item variance (Becker et al., 2023; Hair et al., 2022).

To assess discriminant validity, each construct’s AVE was determined to exceed Fornell & Larcker’s (1981) criterion of the ‘shared variance’ between constructs, i.e. squared inter-construct correlation.

The “Heterotrait-Monotrait (HTMT) ratio” is superior to the “Fornell-Larcker method” and is the ratio of “geometric mean of the average correlations over constructs to mean value of item correlations across constructs.” The discriminant validity is confirmed if HTMT values are less than 0.90 (Henseler, Ringle, and Sarstedt, 2015).

ii) Structural Model Assessment

The assessment of structural model is done in order to evaluate its predictive relevance by parameters like ‘Coefficient of determination (R2)’, significance and relative sizes of ‘path coefficients’ and ‘Q square’ values derived from ‘PLSpredict’ (Shmueli et al., 2016).

Step 1: Collinearity Assessment

Independent variables were checked for collinearity as collinearity can cause regression output biases. Calculation of VIF values for independent constructs with regards to their respective endogenous variables was done and the values, well below 5, ensured no considerable collinearity problems.

Step 2: Assessment of Path Coefficients

“Path Coefficients” are the magnitude of dependence of independent variables on the dependent construct. As “PLS-SEM” is non parametric, we run significance tests of

path coefficients by bootstrapping (5000 subsamples) so to get significance estimates from resampling.

Step 3: Explanatory Power

In fact, the R2 refers to the percent of variance in the dependent variable that is explained by the independent variables, with values nearer 1 being a better model explained in your terms. Since R2 increases as there are more independent variables, the Adjusted R2 was calculated in order to take into account the number of predictors and sample size to see what contribution of each variable to the model.

Step4: Model Fit

In "PLS-SEM," fit is evaluated by considering the "Standardized root mean square residual (SRMR)" that reflects the "squared discrepancy between observed and estimated correlations of indicators" (Hair et al., 2022). Ideal is SRMR values less than 0.08 and values up to 0.10 are acceptable (Kock, 2020).

Step 5: Predictive Power

Q2 from "PLSpredict" was further used for calculating the SEM model predictive accuracy. The Q2 values are positive for "out-of-sample predictive power" (Shmueli et al., 2019), and Q2 values greater than 0, 0.25, 0.50 define small, medium and large predictive power levels (absent of total predictive power) (Hair et al., 2019). The 'PLSpredict' method runs over the training data using '10 fold cross validation', and as per Shmueli et al. (2016) 10 data folds repeated for estimation 10 times.

3.7 Ethics Related to Human Subjects

This research is excluding minors, individuals with disabilities, or any other specific demographic groups of participants and does not pose any foreseeable risk to the participants in the study.

Consent has been given by the participants upon recognizing that it is entirely voluntary to take part in the research. In addition to the questionnaire, participants were given an informational document which informed them of the aims of the study and that the collected data will be used only for academic research purposes. In addition, in order to preserve respondent privacy, none of the personal identification information was captured and all responses are completely anonymous.

3.8 Summary

In other words, the study is based on the quantitative approach with descriptive and analytical research design. Purposive sampling method will be used for collecting primary data as it is a survey of employees with over an experience of 2 years in the same GCC having middle and senior level in GCCs which have started the digital transformation. Adapting established scales to the context of the proposed study led to the devising of a measurement instrument for the various construct in question. “The ‘Partial Least Square – Structural Equation Modelling (PLS’) technique’ is proposed to be used to assess the proposed hypothesized model with SmartPLS 4.1.”

CHAPTER 4
RESULTS

4.1 Introduction

To meet the objectives of the study, data gathered from a structured questionnaire filled up by 411 from the employees across Global Capability Centres (GCC) of IT sector organizations that have undergone digital transformation was analyzed. The described data was subjected to descriptive statistics and "Partial Least Square Structural Equation Modelling ("PLS-SEM")" implemented using "SmartPLS 4.1" by Ringle, Wende and Becker 2024) was used to determine effect of exogenous factors on "digital transformation" in organisation and then its effect on organisation performance with perceived risk as a moderator.

In Section 4.2 the sample demographics are provided while in section 4.3 the results of descriptive statistics on variables assessed through summative scales are provided. Finally, Section 4.4 provides the findings of the 'PLS-SEM' model that is tested, and Section 4.5 concludes with a discussion of the inferences made from test of all formulated hypotheses. Section 4.6 concludes the chapter finally, by recap a recap of the analytical methods used and the main finding of the study.

4.2 Sample Demographics

Sample's demographic profile in terms of percentile distribution of sample categories is provided in Table 4.1. The table data gives a diverse demographic composition to a respondent representation.

Table 4.1 shows the sample demographically as well as professionally very diverse. Regarding gender, the sample sample is heavily male – 80.8% of respondents are male and 19.2% are female. Although this distribution has an insufficient number of females in the

sample it is in concurrence with the population of employees in the GCCs where males outnumber females in higher numbers.

It turns out that the age distribution indicates that the respondents are mainly aged between 36 - 45 years, representing 47.4 percent of this sample. In the order of size, this is followed by percentage of 30.9% of people 26-35 and 11.7% of people 46-55. There are only 2.9 percent respondents in the age group of 18 - 25 years old and 7.1 percent respondents in the age groups between 56 and above, making an insufficiency in the representation of the youngest and oldest age group.

Of the 46.8 percent of participants who have been with the present organization an average of 2-5 years, this category was the most common. People with 5–10 years of tenure make up 32.8%, it has a substantial share of the experienced professional also it is 20.4% of those with more than 10 years of tenure in their current organization.

Table 4.1

Sample Characteristics

Characteristic	**Frequency**	**Percent (%)**
Gender		
Male	332	80.8
Female	79	19.2
Age Group (Years)		
18-25	12	2.9
26-35	127	30.9
36-45	195	47.4
46-55	48	11.7
56 and above	29	7.1
Experience in Present Organization		
Between 2-5 years	192	46.8
Between 5-10 years	135	32.8

Above 10 years	84	20.4
Overall Work Experience		
Below 5 years	22	5.4
5-10 years	69	16.8
10-15 years	141	34.3
15-20 years	79	19.2
Above 20 years	100	24.3
Designation Level		
Entry level	24	5.8
Middle level	201	48.9
Senior level	186	45.3

In general, the work experience distribution indicates that the largest base of respondents (i.e. 34.3%) have respectively 10 to 15 years of professional experience. 24.3 percent of the sample has more than 20 years of experience, 19.2 percent have 15 to 20 years, 16.8 percent have 5 to 10 years and 5.4 percent have less than 5 years; this on the whole indicates that the sample is dominated by mid-career and senior employees.

Regarding the designation level, the majority of the sample takes part at the middle-level professional or senior professional level, 48.9% and 45.3%, and at the entry level, 5.8%. The sample on this distribution consists of experienced and leadership level individuals.

4.3 Descriptive Statistics

It fits with the primary goal of the study: to summarize and provide insights into distribution of data, which " descriptive statistics " serve in this regard. The values of these are displayed in Table 4.2 for all variables under investigation. It represents a snapshot of participants' responses and what kind of variation you will find in their perspective. They are technological, organizational and environmental factors in the organizations they

belong to, risks perceived of bringing DT to such organizations, level of DT implementation and organization's performance after digital transformation.

This means the mean score of "Technological Factors" is 3.943 (mostly on the positive side, especially towards the the upper side of the scale). The observed values are all in-between 1.000 and 5.000, thus covering the full spectrum of values of very low to very high. Moderate variability is represented by the standard deviation of 0.860 which declares that although the perceptions are for the most part positive.

Table 4.2

Descriptive Statistics

	Observed min	**Observed max**	**Mean**	**Standard deviation**
Technological Factors	1.000	5.000	3.943	0.860
Organizational Factors	1.000	5.000	3.793	0.878
Environmental Factors	1.000	5.000	3.648	0.884
Perceived Risk	1.338	4.363	2.570	0.612
Digital Transformation	1.000	5.000	3.676	0.933
Organizational Performance	1.000	5.000	3.957	0.818

The organization factors are lower than techno factor but also still positive as evinced by a mean of 3.793. The response is distributed all the way across the scale with scores from 1.000 to 5.000. An estimate of moderate variability of 0.878, indicates that participants' views are not uniformly positive but rather mid around a mean somwhat divided with regards to organizational factor.

Environmental Factors has a mean of 3.648; this indicates an average rating slightly lower than technological and organizational factors but still more than halfway. The range observed (1.000 to 5.000) includes all the scale, and is throughout a broad range of perspectives. The 0.884 standard deviation is fair variance, which verifies that there are some differences in what a respondent believes about environmental factors.

Mean rated 'Perceived Risk' is 2.570, which was very lower than other factors, and hence the perceived risk is moderate to low. Risk perception observations range from 1.338 to 4.363, which suggests that the level of overall risk perception is not extremely high, but on the contrary some cases of IT risk perception is high. Less variability, meaning standard deviation of 0.612 shows us that there is less variation of risk in perception among respondents.

It is found that the mean for "Digital Transformation" is 3.676, which indicates that perception regarding the item is moderately positive. The observed values reach from the lower bound 1.000 up to the upper bound 5.000, that is, while some participants detest digital transformation totally, others find it highly positive. With moderate to high variability demonstrated by the standard deviation of 0.933, experiences or opinions on digital transformation initiatives vary and the level of continuity is moderate.

The highest mean score of 3.957 refers to 'Organizational Performance', this suggests that there is a relatively positive perception of how organizations are performing. Observed range from 1.000 to 5.000 shows a great spread of opinions on very low end to very top end. It was found that there is moderate variability with the standard deviation of 0.818 which indicates that there is a general consensus towards positive organizational performance although there are some diversity in the response.

4.4 PLS-SEM Analysis Results

Measurement Model Evaluation

The measurement model is analyzed in a first SEM assessment. The PLS-SEM algorithm was performed using the SmartPLS 4 for the purpose and their outcomes are following: i) Reliability and Convergent Validity of Constructs

Then, "Cronbach's Alpha", "Rho_A", and "Rho_C" were used to evaluate reliability and the Average Variance Extracted (AVE) was used to assess "convergent validity" for the respective construct indicators (Hair et al., 2018). In Table 4.3, detailed results for indicator loadings, reliabilities, and convergent validity for the measurement model are provided, and Figure 4.1 provides a graphical representation of those results.

It is seen that most of the item loadings are greater than 0.708 benchmark except one item from Technological Factors, which is at 0.7. This item was retained since the AVE exceeded the threshold of 0.5 for the construct. All internal consistency reliability measures are the same to the recommended minimum of 0.7. This proves that all constructs in the model have reliability (Hair *et al.*, 2019).

All constructs are proved to have convergent validity, as the values of AVE are more than 0.5 for each, which means that each of the constructs accounts for more than 50% of the variance in the indicators for the constructs (Hair *et al.*, 2022).

Table *4.3*

Reliability & Convergent Validity

Construct	**Item Loading**	**Cronbach Alpha**	**Rho A**	**Rho C**	**AVE**
Technological Factors		0.927	0.933	0.943	0.736
T1	0.700				
T2	0.872				
T3	0.863				
T4	0.902				
T5	0.895				
T6	0.898				
Organizational Factors		0.968	0.970	0.972	0.741
O1	0.869				
O2	0.844				
O3	0.822				
O4	0.842				
O5	0.855				
O6	0.849				
O7	0.872				
O8	0.883				

O9	0.858				
O10	0.861				
O11	0.881				
O12	0.887				
Environmental Factors		0.912	0.929	0.931	0.693
E1	0.742				
E2	0.802				
E3	0.838				
E4	0.852				
E5	0.873				
E6	0.879				
Perceived Risk		0.762	0.765	0.863	0.678
PR1	0.835				
PR2	0.839				
PR3	0.795				
Digital Transformation		0.916	0.920	0.947	0.857
DT1	0.898				
DT2	0.926				
DT3	0.953				
Organizational Performance		0.957	0.959	0.966	0.824

OP1	0.913				
OP2	0.928				
OP3	0.941				
OP4	0.871				
OP5	0.928				
OP6	0.861				

Strong reliability and validity of the construct Technological Factors are shown from the item loadings which lie within the acceptable levels of construct validity (0.700 to 0.902). All the internal consistency reliability of 0.927 (Cronbach's alpha), 0.933 (Rho A), and 0.943 (Rho C) exceeds the minimum recommended of 0.7. This good convergent validity comes out of the result; it beats out the 0.5 threshold with an 'Average Variance Extracted' (AVE) of 0.736.

Item loadings are consistently high, from 0.822 to 0.887, thus providing excellent construct validity for the term 'Organizational Factors.' These reliability metrics are exceptional with a "Cronbach's Alpha" of 0.968, "Rho A" of 0.970, and "Rho C" of 0.972 all over the required thresholds. The convergent validity of the construct is further substantiated by the AVE of 0.741 which suggests that the proportion of variance in the indicators is explained by the construct.

Other solid reliability and validity is demonstrated in the construct 'Environmental Factors'. Indicator performances are sufficient as item loadings fall within the range of 0.742 to 0.879. Confirmation of the high internal consistency proved by the "Cronbach's Alpha" of 0.912, "Rho A" of 0.929, and "Rho C" of 0.931. Convergent validity of the construct is supported by an AVE of 0.693 indicating that the construct includes more than half of the variance of its indicators.

The reliability and validity of “Perceived Risk” are acceptable. The construct validity passes, for the item loadings ranges from 0.795 to 0.839. The results of “Cronbach’s Alpha” = 0.762, “Rho A” = 0.765 and “Rho C” = 0.863 are of moderate to high reliability. The convergent validity is confirmed beyond threshold of 0.5 as the AVE of 0.678 is above the threshold.

The reliability and validity of the construct "Digital Transformation" are shown to be high with item loadings from 0.898 to 0.953. ‘Cronbach’s Alpha’ is 0.916, ‘Rho A’ is 0.920 and ‘Rho C’ is 0. 947 and are robust relative measures. The convergent validity was very high as it was determined via AVE of 0.857 which means that it accounted for a good deal of variance in its indicators.

Secondly, the construct ‘Organizational Performance’ has been found to be highly reliable and valid with item loadings ranging from 0.861 to 0.941. These are shown to have Cronbach’s Alpha 0.957, Rho A 0.959 and Rho C 0.966 all markedly greater than the recommended thresholds of internal consistency. The convergent validity of the AVE of 0.824 further supports the construct, since a high AVE means that a good portion of variation in different indicators will be explained.

ii) Discriminant Validity

The discriminant validity of the measurement model was then verified using the classic "Fornell Larcker criterion" (Fornell & Larcker, 1981) as well as with the most recently advocated "Heterotrait monotrait (HTMT)" criterion (Henseler, Ringle, & Sarstedt, 2015). Tables 4.4 and 4.5 detail the outcomes.

Table 4.4 depicts that the Fornell-Larcker criterion approves of discriminant validity of the latent variables. According to this criterion, all pairwise correlations in the table should be higher than the “square root of AVE” for each construct (diagonal entries in the table).

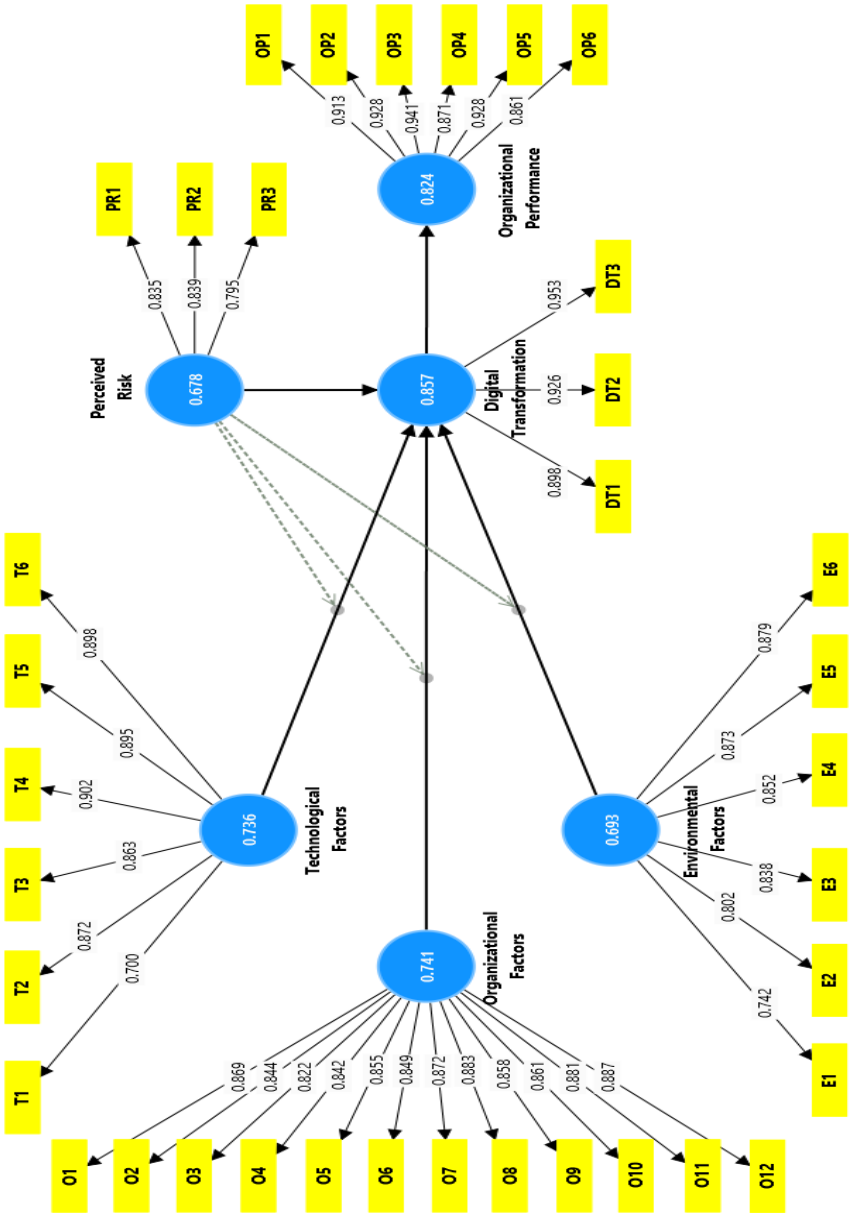

Figure 4.1
Measurement Model Results

Table 4.4

Discriminant Validity (Fornell Larcker)

	DT	**EF**	**OF**	**OP**	**PR**	**TF**
Digital Transformation	0.926					
Environmental Factors	0.609	0.833				
Organizational Factors	0.720	0.654	0.861			
Organizational Performance	0.516	0.457	0.565	0.908		
Perceived Risk	-0.654	-0.401	-0.478	-0.280	0.823	
Technological Factors	0.593	0.492	0.740	0.518	-0.396	0.858

Table 4.5

Discriminant Validity (HTMT)

	DT	**EF**	**OF**	**OP**	**PR**	**TF**
Digital Transformation						
Environmental Factors	0.650					
Organizational Factors	0.758	0.671				
Organizational Performance	0.549	0.472	0.585			
Perceived Risk	0.781	0.471	0.548	0.327		
Technological Factors	0.642	0.518	0.782	0.549	0.471	

Table 4.5 demonstrates that HTMT criterion provides further evidence on the discriminant validity of construct as it should maintain below 0.85 or less than or equal to 0.90 (Hair et al 2019; Henseler et al 2015) for similar conceptual construct (Henseler et al 2015). Therefore, the discriminant validity of the constructs in this study have been

validated by both criteria, and hence are supported that the constructs are empirically separate, as avoiding the finding of the latter would leave structural equation modelling with unreliable results.

Structural Model Assessment

Second, the structural model is evaluated in the second phase of SEM, where measurements are made on the model. "PLS-SEM" algorithm has been then used to achieve this, after which the Bootstrapping was performed for 5000 sub-samples to verify path coefficients significance and SmartPLS 4 has been used. Summary of the results obtained are as follows:

i) Multicollinearity Assessment

Table 4.6 shows that few of the inner VIF value for most constructs are above the threshold of 3, indicating there is no collinearity issue. VIF value of Organizational Factors is slightly higher than 3 but considerably less than 5 indicating there is no such severe multicollinearity within the model (Hair *et al.*, 2022).

Table 4.6

Inner VIF Values

INDEPENDENT -> DEPENDENT	**VIF**
Digital Transformation -> Organizational Performance	1.000
Environmental Factors -> Digital Transformation	1.833
Organizational Factors -> Digital Transformation	3.221
Perceived Risk -> Digital Transformation	1.347
Technological Factors -> Digital Transformation	2.725

Table 4.7

Path Coefficients and their Significance

Path	Path Coefficient	T Statistic	p-value	Confidence Interval (Bias Corrected)	
				5%	95%
Technological Factors -> Digital Transformation	0.176*	3.717	0.000	0.100	0.257
Organizational Factors -> Digital Transformation	0.317*	5.800	0.000	0.227	0.407
Environmental Factors -> Digital Transformation	0.182*	3.489	0.000	0.096	0.266
Perceived Risk -> Digital Transformation	-0.386*	7.640	0.000	-0.466	-0.301
Digital Transformation -> Organizational Performance	0.516*	9.402	0.000	0.424	0.604
Perceived Risk x Technological Factors -> Digital Transformation	-0.134*	3.201	0.001	-0.202	-0.065
Perceived Risk x Organizational Factors -> Digital Transformation	0.032	0.549	0.292	-0.063	0.126
Perceived Risk x Environmental Factors -> Digital Transformation	0.049	1.068	0.143	-0.023	0.120

*Note: * shows significant at 5%*

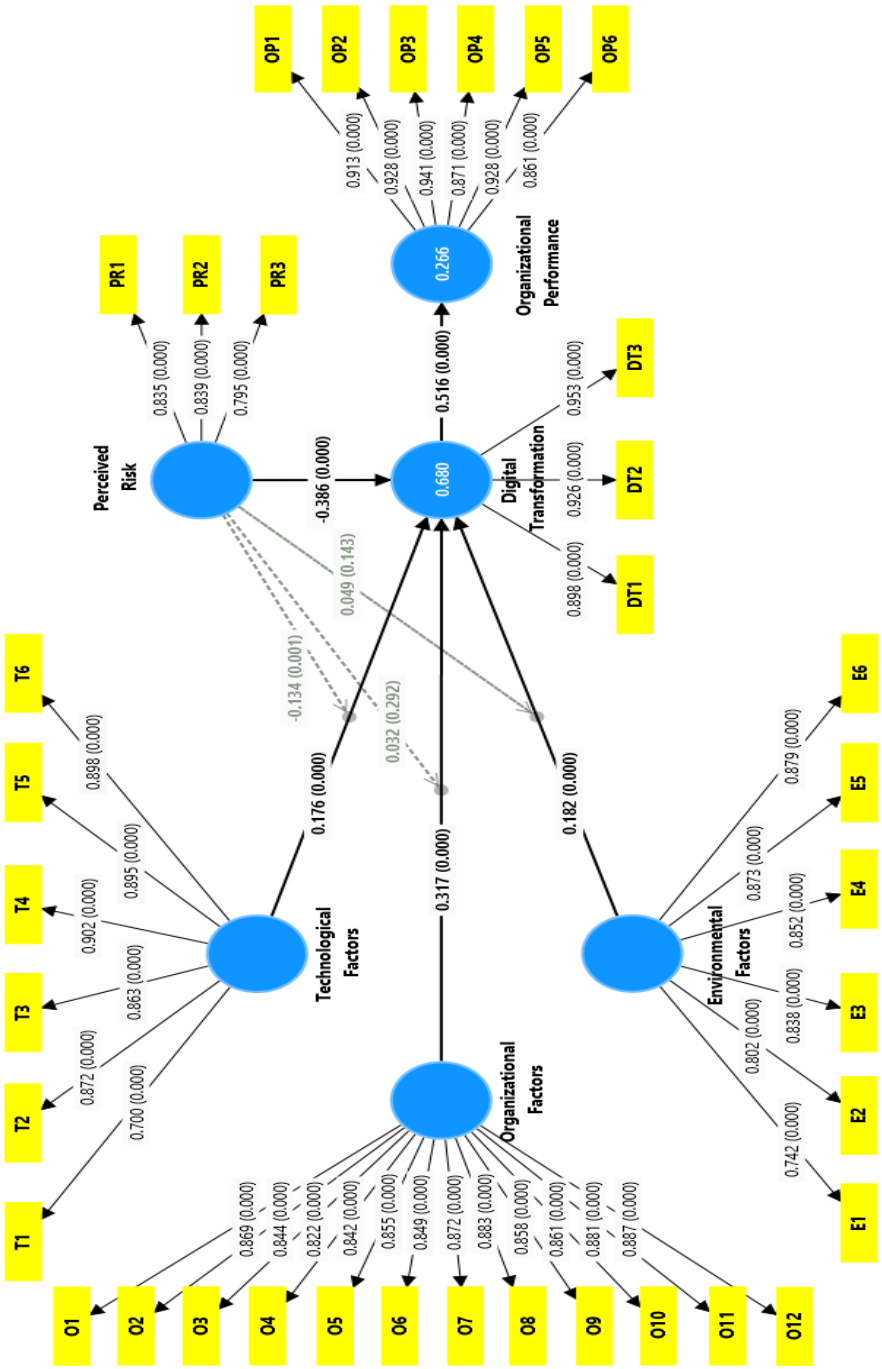

Figure 4.2

Bootstrapping Results

ii) Path Model Estimation

The results of the bootstrapping procedure are presented in Table 4.7 and visually illustrated in Figure 4.2.

Path coefficients, p values, and confidence intervals of path coefficients were estimated with 5000 subsamples and used to evaluate the relative significance of path coefficients. The findings suggest the path relationships between the constructs in the model.

The causal path between "Technological Factors' to 'Digital Transformation' has a positive path coefficient of 0.176 (p=0.000) with the 95% confidence interval of (0.100;0.257). With this being the case, we can suggest that digital transformation initiatives are technology driven. The result that technology progression or the use of innovative tools and platforms have a huge positive effect on moving to a digital transformation process. In order to improve OIT efforts, organizations should focus on preparation for and investment in technology.

From an examination of "Organizational factors impacting Digital Transformation", the path from "Organizational Factors to Digital Transformation" shows a stronger positive effect than the path coefficient 0.317 (p = 0.000) is, and confidence interval is 0.227 to 0.407. This underlines the essential nature of organizational factors like leadership seized up, employee skills, and a conducive culture for drive digital transformation. This implies that creating a suitable internal environment such as good change management practices and leading leadership to be able to implement digital strategies should be a priority for organizations.

It has a positive and significant relationship between both paths path coefficient of 0.182 (p = 0.000) and with a confidence interval of 0.096 to 0.266. It confirms how external environment, especially market competition, regulation, and technological trends, are shaping digital transformation. These external factors make it incumbent upon the organizations to stay vigilant, and even respond, to these external factors as catalysts to speed up their digital transformation process.

The path from “Perceived Risk to Digital Transformation” is highly negatively related to a path coefficient of -0.386 (p=0.000) and with confidence interval between -0.466 and -0.301. It implies that perceived risk such as fear of data security, uncertainty over finances and challenges of implementation, acts, as a barrier to digital transformation. The study results indicate that organizations need to proactively reduce these risks through risk management strategies, well structured security protocols and clear communication to help quell anxieties and thus advance.

Through the path "Digital Transformation to Organizational Performance', we were able to show a strong and positive effect with path coefficient 0.516 significant at p = 0.000 and confidence interval for 0.424 and 0.604. Through this, the successful digital transformation is proved by showing that this result has a positive impact on organizational performance in the form of both financial and nothing financial as measured in the variable for this study.

According to the interaction between “Perceived Risk and Technological Factors on Digital Transformation”, the path coefficient is significant negative (-0.134, p = 0.001), whose confidence interval is [-0.202, -0.065]. This suggests that technological factors have a positive impact on digital transformation, but only up to a point, when risks are perceived as high, they attenuate technological factors’ positive effects. To fully reap the potentials of technological enablers, organizations ought to concentrate on reducing the perceived technological risks, for example, reliability of systems and adequate training.

There is no statistical significance in the interaction between “Perceived Risk and Organizational Factors on Digital Transformation”. This implies that organized factors have a far greater impact on digital transformation rather than the perceived risk. Whether or not risks are perceived as high, it may also be the case that internal readiness and supportive structures continue to be robust drivers of digital transformation.

There is no significant effect from ‘Perceived Risk and Environmental Factors on Digital Transformation’. mean that environmental factors have little effect on the determinants of digital transformation, when perceived risks are not large. We can

independently motivate digital transformation efforts under the impacts of external pressures including competition and regulations even though it seems that risks perceived by.

iii) Explanatory Power and Model Fit

The table below, Table 4.8, displays the predictive power of each of the variables within the model, by showing the value of the R^2 and its adjusted R^2. You can also get an evaluation of overall goodness of fit of the model using post actualization: SRMR.

Table 4.8

Explanatory Power & Model Fit

Explanatory Power:		
Endogenous Variable	**R Square**	**R Square Adjusted**
Digital Transformation	0.680	0.674
Organizational Performance	0.266	0.264
Model Fit		
SRMR	0.060	

The "R^2 and adjusted R^2 values" of the endogenous variables are used to assess the "explanatory power" of the model. The R^2 value of 0.680 for "Digital Transformation" implies that 68.0% of the variance is explained by the predictors for this variable. This explanatory power is robust since the adjusted R^2 value of 0.674 takes into account the number of predictors.

Also for the "Organizational Performance", the R^2 observed to be of 0.266 implies that 26.6% of variation in organizational performance is explained by digital transformation, and the adjusted R^2 value of the same is 0.264 revalidating this moderate strength of explanation (Hair *et al.*, 2022).

The overall fit of the model fit is good as measured by the SRMR value of 0.060. If the model fits the data such that SRMR is below the threshold value of 0.08 (Hu and Bentler, 1999), then the model can adequately describe the relationships among variables and is suitable for deriving meaningful conclusions from it.

iv) Predictive Power Assessment

The study model was assessed by the degree of predictive power using "PLSpredict" (Shmueli et al., 2016), implemented in SmaartPLS 4. The 'k fold cross validation' technique is applied by the PLSpredict procedure. For this analysis, we applied the recommended value of k=10, the number is controversial, but in this case it was a number of sub folds of 10 and 10 models were run to check the results (Shmueli et al., 2019).

Table 4.9

PLSpredict Results

Latent Variable	**Q^2 predict**	**Measured Variable**	**Q^2predict**
Digital Transformation	0.663	DT1	0.519
		DT2	0.575
		DT3	0.606
Organizational Performance	0.277	OP1	0.248
		OP2	0.225
		OP3	0.237
		OP4	0.208
		OP5	0.236
		OP6	0.208

From the Table 4.9, it can be observed that all dependent latent variables as well as their indicators or measured variables have values for the Q2 greater than 0, which implies the model has adequate predictive power in an out of sample prediction (Hair et al. 2019).

4.5 Hypotheses Testing Inference

Hypotheses tested are evidenced, and the estimates from path model offers insights into the hypotheses tested, which aligns with research questions and objectives of study. Table 4.10 summarizes the results of the hypothesis tests with all except two related to the moderating effect of Perceived Risk on relationship of Organizational and Environmental factors with Organizational performance supported at the 5% level of significant.

The research hypothesis testing's result presents insightful relationships within the model of digital transformation in GCCs. Digital transformation in GCCs is positively influenced by the favourable technological factors (H1). The importance of technological advancements and readiness in smoothly achieving the success of any digital transformation initiative is signified in this.

Additionally, H2 is supported, and thus organizational factors that favor digital transformation efforts appear to be very fruitful in GCCs. In particular, this speaks to the extent that internal organizational dynamics like leadership support and a culture of change are important in the development of digital.

Gives same support to the H3 that the favorable environment factors contribute positively for the digital transformation. Considering that, it implies that market competition, both regulatory and industry, play crucial role in digital transformation in the GCCs.

Table 4.10

Hypotheses Testing Inference

Hypothesis	**Inference**
H1: "Digital transformation in GCCs is affected positively from favourable technology factors."	Supported
H2: "Favourable organizational factors have a positive influence on digital transformation in GCCs."	Supported
H3: "Conducive environmental factors have a positive influence on digital transformation in GCCs."	Supported
H4a: "Perceived risk has a moderating effect on relationship between technology factors and digital transformation in GCCs."	Supported
H4b: "Perceived risk has a moderating effect on relationship between organizational factors and digital transformation in GCCs."	Not Supported
H4c: "Perceived risk has a moderating effect on relationship between environmental factors and digital transformation in GCCs."	Not Supported
H5: "Organizational performance is improved by digital transformation in GCCs."	Supported

Results consistent with H4a also support for the moderating effects of perceived risk whereby perceived risk can significantly moderate the relationship of technological factors and digital transformation. This implies that both technological factors and perceived certainty could affect the effectiveness of technological factors under high perceived risks such as security concerns or operational uncertainties.

However, H4b is not supported, implying that there is no considerable influence of perceived risk on the relationship between organizational factors and digital transformation. If the perceived risk has lowered, organizations are still very sensitive to strong organizational readiness and support in digital transformation.

Finally H4c does not support, which means perceived risk does not influence a significant enough amount to make positive relationship between environment factors and digital transformation. Digital transformation seems to happen irrespective of how much risk digital transformation efforts own.

H5 result is finally proved that digital transformation to a large extent enhances an organization performance in GCCs. This finding points to the strategic importance of digital transformation as a lever to improve operational efficiency, improve competitiveness, increase organization success.

4.6 Summary

As a process, the study undertook a very rigorous validation process of a comprehensive integrated model of digital transformation impact on ICT sector organisations in the global capability centres when risk perceived is the moderator of the effect. Finally, it also studied the effect that digital transformation would have on the performance of the organisation in terms of financial as well as non financial outcomes. Using “PLS-SEM” approach in the study, it estimates the effect of different antecedents on digital transformation in GCCs of IT organizations and the subsequent performance after digital transformation.

The reliablity and validity of the construct were verified by means of Confirmatory Composite Analysis, which showed all recommended thresholds. In addition, all reliability measures of the findings exceeded 0.7 and “Average Variance Extracted” (AVE) values were above 0.50. The Heterotrait-Monotrait (HTMT) ratio was used to confirm the discriminant validity and all values were less than 0.85 (Henseler, Ringle and Sarstedt, 2015).

While consistent with the hypothesized relationships, the results of the calculation of the significance and relevance of the values of the direct path coefficients obtained by the bootstrapping procedure indicated that the effects of the moderating influence of perceived risk was valid only in respect of technological factors. This also emphasizes the major determinants of digital transformation issued in GCCs. There is the role of technological factors and they clearly highlight that advancement and readiness in technology are important in the digital transformation implementation. Finally, organizational factors have a significant positive effect as an indication of the strong impact of internal dynamics, like leadership, culture, and employee capabilities, on successful progress in implementing digital. Similarly, digital transformation efforts are intensely driven by environmental factors, such as market competition and regulatory requirements external to the firms, which are usually welcomed for some time and are gradually exit.

The relationship between technological factors and digital transformation is moderated by perceived risk that, at the same time, negatively influences the relationship between technological factors and digital transformation making perceived risk such as security or implementation concerns negatively influencing the relationship between technological factors and digital transformation. Despite that, perceived risk does not moderate the influence of the organizational or environmental factors on the digital transformation, suggesting that internal readiness and external pressures continue to drive digital transformation regardless of perceived risks.

Moreover, digital transformation plays a significant strategic role in enhancing organizational performance by advancing this practice positively and significantly in terms of efficiency enhancement, competitiveness, and overall success. Understanding of the interplay between technological, organizational and environmental factors that drive digital transformation and its effect on organizational outcomes is offered by these findings.

The model showed satisfactory explanatory and fit power, as the moderate to high R^2 values and the SRMR value below threshold 0.08 (Hair et al., 2022). Moreover, out of sample predictive power calculated using PLS Predict (Shmueli et al., 2019) showed that

this model had sufficient predictivity. By providing valuable insights to both practice and theory, these findings are contributed. The results are consistent with prior research in that they help to better understand the studied variables and relationships. The next chapter, drawing detailed conclusions and implications from the analysis, goes further to focus on contributions and applications of the study.

CHAPTER 5

DISCUSSION, CONCLUSION, AND IMPLICATIONS

5.1 Introduction

With the advancement in the technology and the need for Digital innovation, the GCCs in IT have dramatically been restructured to work on the basis of operational framework. It is now digital transformation for organizations willing to achieve both financial and non financial performance. This paper focuses on the factors influencing the digital transformation in GCCs on the technological, organizational and environmental dimensions. As well, it also conducts a moderating role investigation based on perceived risk and examines how digital transformation affects organisational outcomes. By using "Partial Least Squares Structural Equation Modeling (PLS-SEM)", the research attempts to analyze these relationships in details to inform the processes in transforming IT organization and how it positively affects organizational performance.

Findings further show the important role of 'technological, organisational and environmental factors' in the realisation of digital transformation, since outstanding digital transformation entails a moderating linkage between perceived risk and the effect of technological factors on digital transformation, and how DT impacts performance of organisation. The implication of these findings for practitioners and policymakers, when discussed in this chapter, is what strategic actions they need to take to leverage digital transformation. It also discusses the limitations of the research and suggests some ways forward to more fully consider the enablers of digital transformation in IT organizations.

5.2 Discussion of Research Question One

The first question written in the study was to identify the factors which are influential in enabling digital transformation in GCCs and which of the factors are relatively relatively more important in assisting digital transformation in GCCs among

technological, organizational and environmental. Interesting lessons can be learned from the results of how technology plays with organisational and environmental factors that make or break a digital transformation within the GCCs. Each factor has a special and unique role to play to the broader transformation process. The findings point out to the complexity of the digital transformation and the necessity of balance in providing attention to different dimensions to have success.

The support for H1 also stands for the fact that technological factors play a critical role in enabling DT in GCCs. This corresponds to the more general idea that basic readiness, infrastructure, and improvements are basic to digital change (Vial, 2019). Advanced technologies like "cloud computing, artificial intelligence, and big data analytics," not only increase the internal and external operational efficiency to that will meet new business demands but also give the flexibility and scalability in GCCs context. Because GCCs have the advantage of robust technological infrastructure, they are able to employ digital tools well, to innovate and gain competitive advantage in the global marketplace.

Technology enables GCCs to enhance workflow optimisation, decision making process and provide value added services. This fits with earlier research presenting the importance of technology as a means for developing digital ecosystems allowing for smooth integration and interaction between different actors (both inside and outside the organization) (Mergel, Edelmann and Haug, 2019). This results point out that for organizations to achieve the successful digital transformation, investments in high-tech have to be prioritized and properly integrated into existing systems. However, if the readiness for such is not present, digital initiatives will face quite a number of roadblocks and this is the strategic importance of technology in the effects of successful digital transformation.

H2 is supported to suggest that digital transformation is heavily influenced by organizational factors and thus, the internal structure, culture and dynamics within the organization play a crucial role in digital transformation. The leadership support of digital

transformation is key enabler, as leaders have particularly crucial role in setting the vision of digital transformation, obtain resources as well as fostering the culture of change (Kane et al., 2015). Digital initiatives can only be effective when they are aligned with strategic goals and organizational priorities change to fit technological advancements.

The innovation and adaptability culture is also an important organizational factor. The workforce with a mindset for change and the readiness for continuous learning is useful for GCCs working in dynamic environments. Successful digital transformation (Weber and Tarba, 2014) is founded in a culture that facilitates experimentation and tolerance of failure, and rewards innovation. Organizational agility, which is understood as the capacity of an organization to swiftly respond to emerging challenges of opportunities, also turns out to be essential to overcoming barriers toward digital transformation.

This finding indicates that GCCs must concentrate on providing an environment that facilitates digital advancement through supporting change management skill sets with or without a dedicated change management function and integrated cross functional teams to perform jobs in digital. Organizational readiness helps leverage technology to the best of the company's ability in operations and processes.

As seen in H3, the positive influence of environment factors refutes that digital transformation within GCCS is being externally forced and somewhat market dependent. As market competition intensifies, GCCs are no longer effective without the adoption of digital solutions; To this end, they pay the price of foregoing competitiveness and the provision of superior value to clients. It also has a share to play when it comes to regulatory requirements as compliance to digital standards and frameworks accelerate the adoption of advanced technologies (Bharadwaj *et al.*, 2013).

Second trend is the industry trends, such as the increasing focus on sustainability and the reshaping of customer-centric business models, which push the transformation to the digital one. Such GCCs demonstrate competitive edge and become leaders in innovation in its respective industries, by leveraging the following trends in digital strategy. This finding is in line with previous research and points to the importance of environmental

dynamics in shaping the organization's response to the pressure from digital disruptions (Porter and Heppelmann, 2014).

The results indicate that GCCs need to maintain merely vigilant monitoring of the external developments, interacting with regulatory players and adapting to changing market needs. In this way, they may turn environmental factors that can hinder their progress as the digital transformation journey picks up into opportunities to accelerate their digital transformation journey.

The findings collectively highlight the significance of considering a DT perspective in GCCs in terms of technological, organizational as well as environmental factors. Organizational dynamics enable the proper use of the digital strategies made available by technological readiness, and the environmental factors present a flurry of possibilities for an organization to transform itself. This interplay calls out that GCCs need to balance internal and external drivers in their quests for digital transformation success and a multifaceted and adaptive approach.

For practitioners, these are insights that these point to the need for making strategic investments in technology, leadership development and environmental scanning. The findings have potential for researchers to open avenues to explore interdependencies of such factors for a better understanding of the digital transformation landscape. In an increasingly digital world, these factors will continue to play a pivotal role in GCCs future as Hubs of Innovation and Efficiency.

5.3 Discussion of Research Question Two

This research tries to answer the second question of how perceived risk would moderate between the T-O-E factors and digital transformation in GCCs. This lends itself to the understanding of how perceived risk moderates an important role in the relationship between technological, organizational and environmental (T-O-E) factors and digital transformation in Global Capability Centres (GCCs). The impact of technological factors

on perceived risk-based digital transformation process is perceived to be critical and organizational and environmental factors have far less impact.

Having perceived risk as high creates great implication for the negative direct effect of perceived risk on digital transformation. Barriers of this kind, however, involve data security, financial uncertainties and implementation difficulties. This matches previous research that is emphasizing the risk perception can prevent technological adoption and digital innovation can spawn fear of possible negative results (Im, Kim and Han, 2008; Culot et al. 2020). In case of GCCs the perceived risks of cybersecurity breaches and system failures can debase confidence in digital initiatives (where operations tend to be global and data intensive).

The findings show that perceived risk significantly moderates the relationship between the technological factors and the digital transformation process attenuating its positive influence on the outcome when the perceived risks are high. The implication is that while advanced technologies that constitute the infrastructure and inherent capability of digital transformation, their presence alone does not guarantee realization of their full potential when the employees perceive such technologies as unreliable, complex, or prone to failure.

This aligns with the technology acceptance model which states that the perception of risk is a negative predictor to users' attitude to use technology (Gefen, Karahanna and Straub, 2003; Yoo et al., 2021). Consequently, for GCCs technological investments are not always effective if concerns about system reliability, technological compatibility with existing processes, or potential downtime are present (Martins, Oliveira and Popovič, 2014). To reduce the associated risks organizations should focus on user training, strong testing, and clear demonstration of the reliability and benefits that the technology provides. Reduction in perceived risk and increase in confidence in digital transformation efforts can be achieved by finding ways to make the technological systems intuitive and user friendly.

Given that perceived risk does not have a significant moderating effect on the relationship between organizational factors and digital transformation, it appears that

internal dynamics, such as leadership support and cultural readiness, do not weaken as enablers to transformation in the face of perceived risks. This finding is in line with the literature that has been emphasizing that strong leadership and a supportive culture can sustain digital initiatives despite uncertainties (Kane et al., 2015). Leaders who clarify the vision of digital transformation and culture of trust and innovation, can develop resilience to external and subjective risks (Wang et al., 2019). Thus, the readiness and commitment to change on the part of the organization are indicated as the relative stable drivers of digital transformation. They should use their internal strengths to map their digital strategy to organizational goals and make their employees feel supported and engaged throughout the transformation process.

Similarly, the lack of a large moderating effect of perceived risk on the relation between environmental factors and digital transformation suggests that external drivers, like competitive pressure and regulatory requirement, provide essentially decoupled with risk perceptions. Consequently, this finding implies that external forces have a very strong impact on the digital transformation and forcing the organizations to innovate and respond to internal apprehension (Bharadwaj et al., 2013). For example, market competition or compliance mandates may occasionally force GCCs to leapfrog perceived risks to make changes to their digital agenda. This indicates the powerful catalysts of the external pressure in the driving of the digital transformation. To keep up with the industry trends, and changers in the regulations, the GCCs must monitor these external forces as opportunities to boost competitiveness and innovation.

5.4 Discussion of Research Question Three

This research, finally, wanted to know that what ever is the impact of digital transformation on the GCCs. The research confirms the major positive contributions of digital transformation for organizational performance; both financial and non financial at Global Capability Centers (GCC). Digital technologies have this potential to transform into

relationship that become operational efficient, driving innovations, and making organizations more sustainable.

By doing so, DT has a positive effect on the financial performance of the company and thus it is very important in generating sales growth and increasing a company's profitability. Digital transformation allows for the use of advanced technologies in order to compress operational processes and proficiency in decision making. With these technologies available, GCCs can make use of them to enhance market trends understand, discover new business opportunities, and provide personalized experience to customers and consequently boost revenue streams. This echoes results that digital programmes, including predictive analytics and customer relationship management tools, have a transformative effect on a firm's sales performance as they help carry out a prediction of customer's needs and possess the capability of offering personalised solutions (Huang *et al.*, 2017).

Also, digital transformation increases cost efficiency as the routine tasks are automated and supply chain is better optimized. This results in higher profit margins resulting from decrease of operational costs and increase in resource utilization. This feasibility is consistent with existing research showing that digitalisation diminishes the inefficiencies and allows the organizations to be able to achieve economies of scale and strengthen their financial positions (Verhoef *et al.*, 2021).

As it concerns digital transformation, it also plays very big role in non financial performance metrics like customer satisfaction, employee retention etc. The use of digital tools helps GCCs to better serve customers and strengthen their customer relations. Organizations can also use advanced analytics to gather real time feedback and findings for monitoring the behaviour of customers to deliver the opportune innovative offerings enhancing customer experience and to solve the issues as soon as possible. It is supported by the study that digital solutions such as AI driven chatbot or personalized marketing approach can substantially increases customer's satifaction by giving seamless and engage experience (N. Bolton *et al.*, 2014).

From an employee point of view, digital transformation contributes to the solution of a more agile and innovative workspace. Flexible work technologies, in conjunction with adopting collaborative tools, promotes productivity as well as employee satisfaction that is lain in the innovativeness and inclusivity which these tools help foster. According to research, organizations going through DT experience lower employee turnover due to access to skills enhancing, career development, and improved work life balance via digital tools (Mergel, Edelmann and Haug, 2019). Given that GCCs are unable to afford to lose their skilled employees, which is required to maintain operational continuity and provide high value products to global clients, this is particularly relevant.

5.5 Conclusion

This thesis studied all the factors that make the digital transformation successful, the moderating role of perceived risk in the T-O-E framework (technological, organizational, and environmental), and the impact of the digital transformation on the organizational performance of Global Capability Centers (GCCs). What the findings reveal is important, as it details how each digital transformation condition relates to what determines the success—reliability—of the outcome.

A description of technological, organizational, and environmental factors while giving ack to their significance, yet their understudy roles in the digital transformation. Infrastructure, readiness, and technological progress were seen as technological factors that played a role in the beginning and sustenance of digital transformation. GCCs have advanced tools that include AI, big data analytics, and cloud computing which help the process of operations, innovation and maintain competitiveness. Robust enablers were identified from organizational factors such as leadership autonomy and organisational culture that enable the best utilization and integration of technology. Leadership is the key to change the culture to get aligned with the strategic objectives. External catalysts are environmental factors like the market competition and the regulatory requirements that compel the organizations to adopt digital solutions to stay relevant and in conformation.

These findings are important in that they suggest the champion of such a holistic approach that takes into account technological advancements as well as external pressures and the readiness of the organization to implement it. To achieve the sustained digital transformation success, GCCs need to make sure they are investing into cutting edge technologies, fostering innovation driven cultures and responding quickly to external demands.

A significant case of moderating factor has been perceived risk, especially in its relationship to the factors of technological and digital transformation. The positive effect of technological enablers is weakened by concerns of data security, financial uncertainties and implementation challenges. This emphasizes the significance of a robust risk management strategy that includes sophisticated security protocols, user education, and open communication to minimize uncertainties and reinforce faith in digital endeavors. Indeed, the organizational and environmental factors did not significantly interact with perceived risk. Regardless of perceived risk, digital transformation proved to be resilient to both internal and external drivers, including strong leadership, supportive culture and the competition and regulatory mandates. Overall these findings suggest that even in the face of uncertainty technological, there might be internal and external mechanisms that can sustain the momentum no matter what.

The study confirm the positive influence of the digital transformation on the organizational performance, both economically and in non economic aspect. Digital transformation proves to be financially beneficial to the organization as it facilitates sales growth and profitability by enabling the organization to utilize its advanced analytics, seek to streamline operations and personalise customer interactions. It also aids in both non financial and financial growth in terms of customer satisfaction and retention. GCCs can use digital tools for service delivery improvement, customer loyalty, agile and innovative workplaces that help employee engagement and cut down turnover.

The implications of the results are that digital technologies have potential in generating sustainable value across organizational domains. However, on the condition of

aligning digital transformation with the strategic objective, solving barriers like perceived risk can enable GCCs to maximize these benefits and see both operational excellence and stakeholder satisfaction.

5.6 Implications

i) Theoretical Implications

The study is of great contribution to the existing literature dealing with the T-O-E (Technological, Organizational, and Environmental) framework and digital transformation by the way of addressing perceived risk as a moderating factor. The T-O-E framework is widely used to explain the antecedents of technological adoption and innovation, but the perceived risk is a useful addition, especially in IT sector GCCs. The findings reveal the way that perceived risk exhausts the influence of technological enablers on the digital transformation, thus demonstrating the interplay between technology enabled opportunities and risk related limitations. However, this gives insight into the additional barriers organizations create within the context of implementing advanced technologies in complex and data intensive environmental contexts such as GCCs.

This also contributes to the digital transformation research by providing a comprehensive model that links both antecedents (technology, organizational and environmental environment factors) and outcomes (organizational performance) of the digital transformation. The model fills a gap in the literature by not only identifying the drivers of digital transformation but also explaining its tangible effect on organizational performance through a subjective construct which includes items related to the financial as well as the nonfinancial performance aspects, such as market share, profit, customer satisfaction and employee retention.

In addition, perceived risk as a moderator offers clarity on the challenges organizations encounter with regard to digital transformation. Technological factors are typically considered as enablers, whereas environmental factors, yet security related

perceived risks, post adoption uncertainty, and system reliability factors also were found significant deterrents (Thong, Hong and Tam 2006). These results are consistent with and contribute to technology adoption literature (Featherman and Pavlou 2003; Gefen, Karahanna and Straub 2003; Martins, Oliveira and Popovič 2014; and Khedmatgozar 2021) which suggests that addressing perceived risks is crucial for reaching its full potential from functional and environmental enablers. Consequently, the study provides a strong theoretical background to comprehend the intricacies involved in digital transformation in GCCs.

ii) Practical Implications

The model of digital transformation with antecedents and effects provides horsemeat for GCC leaders. For GCCs to capitalize on the benefits of digital transformation, they must fit their pieces of technological progress with internal enablers, such as strong leadership and innovative culture and with external drivers, such as regulatory compliance and market competitiveness. It is essential that organizational goals are aligned with the strategies of the digital business, and the assurance of sufficient resources and support to the employees to adopt new technologies seamlessly.

This highlights the role of perceived risk as a moderating factor from the perspective of the IT sector GCCs to include uncertainty in any digital transformation initiative. Technological readiness and advancement are important, but are greatly mitigated when risk perception are not managed effectively. To pacify fears regarding data security, system reliability and fiscal viability, GCCs need to shell out for advanced security protocols, implore and train users, and boost a culture of trust. In particular, these measures are important in IT driven GCCs, where the outcomes are quite severe on account of the quantity and level of hassle of data managed.

The study shows tangible benefits of digital transformation in improving the organizational performance. GCC of the IT sector can increase their operational efficiency and employ innovation by utilizing digital tools such as AI, data analytics, & cloud

platforms. The key is that managers should rank digital transformation projects based on how clearly they tie to both client need and internal capacity building.

Finally, the findings regarding the ineffectiveness of perceived risk in influencing organizational and environmental factors brings reassurance to GCC leaders that a strong external pressure and internal structure remain reliable drivers of transformation, notwithstanding, the uncertainty. GCCs can withstand the changes caused by digital transformation, and still compete, if they invest strategic approach in developing advanced technologies and working environment that is based on collaboration and adaptability.

iii) Recommendations for successful Digital Transformation in GCCs

The results covers an effective root analysis of the factors, such as technological, organizational and environmental and as well as its moderating influence of perceived risk on the digital transformation success, that can strategically lead the implementation of digital transformation for GCCs in the IT sector with the findings of the study.

In view of this, GCCs must invest in bold new digital tools such as AI and big data analytics, the cloud and IoT to improve efficiency and scale. Perceived risk will moderate over the timeliness of the GCC methodology so they must address technological uncertainties by implementing robust cybersecurity measures, conducting regular system audits and ensuring system reliability in the GCC methodology. It will lower the employee's apprehension and trust upon digital tools. Training its employees in how to use the most advanced technologies can equip them with the skills needed to maximize the benefits of technological investments.

GCC leaders should be actively promoting digital transformation by clearly establishing goals, allocating budget and ensuring that those shaping the reality of the future are adaptable for change. The focus of leadership development programs should be on the digitization and strategic thinking. For these reasons, organizations should promote experimenting and innovation by building an environment that fosters an environment

where employees feel comfortable to test out new ideas and technologies. More importantly, this also encourages recognition and reward of contributions to digital initiatives. Additionally, the flexible processes and cross-functional teams to quickly adapt to the changes in the digital environment could help in successfully implementing the digital processes.

However, GCC companies required to keep a close watch on the industry trends and the regulatory changes that will enable them to synchronize its digital strategy along with the external demands. If the organizations benchmark against industry leaders and identify gaps where DIT can help them become competitive, these can prove to be a driver for innovation.

Technological factors work only when perceived risks to data security, operational reliability and financial uncertainties are low. Proactive communication should be made by GCCs regarding what mitigating theses risks entails, including real time monitoring and incident response systems. In order to reduce complexity and build employee confidence of usability, digital solutions must be well thought out and intuitive to use (Venkatesh, 2022). This can establish comprehensive risk management policies in order to identify, assess and address the digital risk environments in digital transformation efforts in order to reduce risk perception and increase confidence in digital technologies.

To facilitate digital transformation in organizations, measurable outcomes and written performance metrics must be set for digital transformation initiatives, including financial metrics like ROI or the non-financial metrics such as customer satisfaction or employee engagement (Richard *et al.*, 2009).

An organization that uses digital tools to obtain firsthand feedback of customers will increase customer retention and loyalty, adoption of collaborative tools and flexible work technologies to create a supportive interesting workplace will enable people to learn new skills and grow their careers, thereby lower employee turnover (Egan, Yang and Bartlett, 2004).

5.7 Limitations and Recommendations for Future Research

This paper studies the digital transformation and the effects of it on the performance of the GCC sector IT organizations. The results of this study are not generalizable to all types of organizational set up since all of them are GCCs, so the scope of this study is based on GCCs. The model can be tested in other sectors for other types of organisations to assess its generalizability to other sectors.

Secondly, the fact that this research is carried out during a limited time frame, implies that the approach used in this study is the use of cross sectional data, hence the findings so derived apply to the moment of time and changes that may arise as a result of structural changes in the organization, or the macro environmental factors cannot be accounted for as time goes on. More studies of the effects of different enablers on digital transformation and its impact on the performance can be made at different stages of organizational and technological developments with time.

5.8 Summary

Critical enablers of digital initiatives turned out to be technological factors such as infrastructure, financial investment in technological upgradation and readiness to adopt innovative tools. The key factors were organizational leaders, culture, and competencies of the workforce that contributed significantly to the successful digital advancements. Similar to this, environmental factors, which included market dynamics, competitive pressures and regulatory requirements, were found as well as important external drivers.

The study finds that high perceived risk, for example, cybersecurity concerns, suppresses the relationship between technological factors and digital transformation. On the whole however, organizational and environmental factors are not found to have a significant impact on perceived risk and thus internal readiness and external forces continue to be evident despite the perception of risk. In addition, the effect of digital transformation on organizational performance turned out to be positive as well thus proving

the significance of digital transformation in boosting organizational performance improving its effectiveness at the organizational level, positioning the company in the market as well as ensuring the company's long term succes.

As a whole, the outcomes highlight the importance of GCCs implementing a balanced approach to the management of the perceived risks from the T-O-E factors driving digital transformation. Organizational and environmental factors maintain their resilience with respect to perceived risks, and technological factors are significantly moderated by them, which serves as evidence to multidimensional nature of Digital Transformation. Organizations have to proactively reduce technological uncertainties by risk management and investments in digital tools should pay back. At the same time, the GCC can employ strong internal structures and external motivations to give a reliable base for digital transformation.

The implications of the results are important for GCCs to improve their competitive advantage in the fast changing global market. GCCs should embrace digital transformation not only to achieve better financial, but also create better non financial outcomes, which in turn, will bring them on the path to position themselves as innovation hubs. However, it is important to approach these benefits in a strategic manner, i.e. investing in high tech, promoting a digital first culture within the organization, and having strong leadership facilitation of the transformation process. Findings based recommendations are addressed in order to allow GCCs in the IT sector to sail over the complexities involved in digital transformation. Finally, the findings show that though technological, organizational, and environmental factors are important enablers, so are their perceived risks and alignment with organizational objectives of transformation effort. By embracing better practices through such roadmaps, GCCs would boost their performance, retain their competitiveness and continue to be able to grow sustainably.

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APPENDIX A

SURVEY COVER LETTER

Dear Sir/Ma'am

Greetings of the day

I am conducting a research study on "DIGITAL TRANSFORMATION ENABLERS AND ORGANIZATIONAL PERFORMANCE EFFECTS: A STUDY OF GLOBAL CAPABILITY CENTRES" for which I seek your valuable responses to my questionnaire. I would be grateful if you could please spare few minutes to participate in this survey. The survey does not collect any personal identification information and your response will be completely anonymous. The data collected will be used solely for academic research purposes.

Thank You,

Sunil Devagupthapu

Email: sunildev.pm@gmail.com

APPENDIX B

INFORMED CONSENT

Statement included at the beginning of online survey form:

Informed Consent:

I have gone through the information provided regarding the scope and objectives of this research and I am willing to participate in the survey. I understand that by completing this questionnaire I am consenting to be part of the research study.

I Agree ☐

APPENDIX C

QUESTIONNAIRE

Informed Consent:

I have gone through the information provided regarding the scope and objectives of this research and I am willing to participate in the survey. I understand that by completing this questionnaire I am consenting to be part of the research study.

I Agree ☐

Screening Questions:

1. "How many years have you been associated with your present organization:

i) Less than 2 years

ii) Between 2-5 years

iii) Between 5-10 years

iv) Above 10 years"

2. "Has your organization adopted digital transformation in some form (Digital transformation may include any step for transforming an organization's business model through the use of digital technologies, which can result in changes to its structures, products, and business processes):

i) Yes

ii) No"

Demographic Questions:

3. "To which age group do you belong (consider completed years of age):

i) 18-25 years

ii) 26-35 years

iii) 36-45 years

iv) 46-55 years

v) 56 years and above”

4. “Please mention your gender:

i) Male

ii) Female”

5. “What is your total work experience:

i) Below 5 years

ii) 5-10 years

iii) 10-15 years

iv) 15-20 years

v) Above 20 years”

6. “What is your present role in the present organization:

i) Lower level

ii) Middle level

iii) Senior level”

Please rate your degree of agreement or disagreement with the following statements on a scale of 1 – 5 where:

1= Totally Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Totally Agree

T1: "ICT systems within the organization are interconnected."

T2: "The organization uses standards for electronic data interchange (e.g., EDIFACT, XML, etc.)."

T3: "The organization has available funds for the implementation of new digital technologies."

T4: "The organization systematically manages the risks of the implementation of new digital technologies (for example, risks related to the quality of project implementation by the contractor)."

T5: "The existing technology in the organization allows for the upgrade of modern digital technologies."

T6: "The organization has provided prerequisites for interoperability with external information systems, i.e., with systems managed by other stakeholders (for example, by sharing the interface specification to which external systems can be connected)."

O1: "The organization has a clearly communicated vision toward all employees in the context of digital transformation."

O2: "Managers are motivated when it comes to the digital transformation of the organization (for example, encouraging the adoption of digital technologies)."

O3: "The organization has sufficient financial resources to introduce new digital technologies."

O4: "The organization has sufficient human resources to introduce new digital technologies."

O5: “Managers possess sufficient digital skills needed to digitally transform an organization.”

O6: “Employees possess sufficient digital skills for the digital transformation of the organization.”

O7:” The organization invests in employee knowledge in the context of digitalization and digital transformation.”

O8: “The organization conducts the continuous training of employees in the field of digitalization and digital transformation.”

O9: “There is an awareness in the organization of how digital transformation can affect the business of the organization.”

O10: “The organization has introduced new leadership roles to improve digitalization and digital transformation.”

O11: “The organization is actively developing digital transformation strategies.”

O12: “Employees in the organization have the opportunity to participate in the development or adaptation of digital technologies.”

E1: “The organization feels the pressure of competition on business due to digitalization and digital transformation of competition (digital transformation can significantly disrupt existing markets and recombine existing products and services)”

E2: “The organization feels the pressure of business partners and other relevant stakeholders on the business (due to the emergence of new technologies, the expectations of business partners may increase)”

E3: “The business of the organization is tightly regulated or subject to special legal regulations”

E4: “The organization cooperates with research institutions in the development of new digital solutions (startups, faculties, etc.)”

E5: “There is the compliance of the organization with standards (for example, ISO standards) and conventions”

E6: “The organization conducts socially responsible business with the help of digitalization and digital transformation”

D1: “The organization cooperates with new partners with the aim of developing new digital solutions”

D2: “The organization has digitalized internal business processes”

D3: “The organization has digitalized external business processes”

PR1: “Digital processes are not secured.”

PR2: “Private information will be compromised while using digital processes.”

PR3: “Digital transformation will not provide its expected benefits”

“Please indicate your level of satisfaction on a scale of 1 – 5 (1= Highly dissatisfied, 5= Highly satisfied) with your company’s performance post digital transformation in terms of:

i. Sales
ii. Net profit
iii. Cash flow
iv. Customer satisfaction
v. Market share
vi. Employee turnover”