



Impact of Digital Transformation Adoption on Non-financial Performance Metrics in Egyptian Technology Firms

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Abstract: *In the digital age, companies are increasingly turning to digital transformation to remain competitive and meet evolving customer needs. This research aims to investigate the impact of digital transformation adoption on non-financial metrics in the technology sector in Egypt. The study focuses on customer satisfaction, process efficiency, and employee learning & growth as key indicators of non-financial performance. Drawing on both quantitative and qualitative methods, data was collected through online surveys distributed to employees in the technology sector, followed by semi-structured interviews with executives. The results indicate a positive impact of digital transformation on internal processes, customer satisfaction, and employee learning & growth. Practical recommendations are provided to help companies enhance their digital transformation strategies and improve overall performance in the dynamic digital landscape. This research fills gaps in the existing literature by focusing on the technology market in Egypt and examining the impact of digital transformation on non-financial indicators, offering valuable insights for businesses seeking to thrive in the digital era.*

Key Words: *digital transformation, digital era, customer satisfaction, employee learning and growth, internal processes, culture resistance.*

1. INTRODUCTION

Digitization, digitalization, and digital transformation are three distinct yet interconnected concepts that have emerged in response to the rapid advancements in digital technologies (Udovita, 2020). These terms represent different stages and aspects of leveraging digital capabilities to drive change, innovation, and value creation in various domains including business, society, and personal experiences. At its core, digitization involves the process of converting analog or physical artifacts into a digital format. It entails capturing analog information, such as documents, images, or audio, and transforming it into a digital form that can be stored, manipulated, and transmitted through digital devices and systems. Digitization enables companies to enhance the efficiency and effectiveness of their processes by facilitating efficient data management, accessibility, and analysis. It allows for improved productivity and informed decision-making through the availability of digital data (Tilson, 2010). Digitalization takes digitization a step further by integrating multiple digital technologies into all aspects of daily life that can be digitized (Varna, 2020). It encompasses the deployment and utilization of various digital tools, platforms, and systems to transform business processes, models, and operations. Through digitalization, companies can automate tasks, streamline workflows, and enhance operational efficiency. By leveraging data and analytics, adopting innovative business models, and creating new value propositions, digitalization drives innovation and disrupts existing business models. It represents a comprehensive approach that aims to harness the full potential of digital technologies to create sustainable value (Tilson, 2010). Digital transformation represents the most comprehensive and strategic approach to embracing digital technologies. It goes beyond the adoption of digital tools and processes and encompasses broader company and cultural shifts. Digital transformation involves reimagining business strategies, structures, and customer interactions to fully leverage the potential of digital technologies. Its objective is to drive significant and lasting changes in how companies operate, deliver value, and respond to evolving market dynamics (Matt et al., 2018). Digital transformation requires companies to embrace a digital-first mindset and create a culture of agility, adaptability, and continuous learning. The progression from digitization to digitalization and ultimately digital transformation reflects the increasing integration of digital technologies and their impact on various aspects of our lives. Digitization provides the foundation for digitalization by converting analog data into digital form, while digitalization leverages technical affordances to create socio-technical contexts and foster innovation (Rachinger et al., 2018). Digital transformation builds upon this foundation and explores the integration of digital technologies into all aspects of company operations, business models, and customer experiences. Digital transformation is not purely a technological upgrade; it necessitates fundamentally rethinking how companies create value. Companies Should adapt their strategies, structures, and processes to effectively utilize digital technologies and deliver exceptional customer experiences. Successful digital transformation initiatives involve engaging employees at all levels, providing them with the necessary training and resources, and fostering a culture of

collaboration, experimentation, and continuous improvement (Matt et al., 2018). It is a continuous journey that requires ongoing assessment, adjustment, and innovation to remain relevant and competitive in the rapidly evolving digital landscape.

2. LITERATURE REVIEW

Digital transformation may seem like a relatively recent concept, but its roots extend back several decades. It can be traced back to the late 1970s when businesses first started utilizing computer-aided design and manufacturing. This was followed by the introduction of enterprise resource planning in the 1980s and customer relationship management in the early 1990s. The primary goal of these technological advancements was to enhance efficiency and productivity by automating manual processes. In the late 1990s, we witnessed the emergence of eCommerce and online banking. Initially, these activities were conducted offline, but as internet speeds improved, they transitioned to the online realm. Subsequently, in the mid-2000s, the introduction of social media revolutionized communication and information sharing. Initially, when companies ventured into the digital landscape, their focus was primarily on connecting with customers. As time progressed, digital processes were developed to support these customer interactions. As businesses' digital aspirations expanded, it became evident that dedicated digital teams were necessary to oversee the management of new social and mobile channels (Truong,2022). The definition of digital transformation varies across different studies. The following table shows some of the definitions for digital transformation.

Source	Definition
(Morakanyane et al., 2020)	"Evolutionary process that leverages digital capabilities and technologies to enable business models, operational processes and customer experiences to create value"
Hinings et al. (2018, p. 53)	Digital transformation refers to the combined effects of various digital innovations that introduce new actors, structures, practices, values, and beliefs. These changes can either disrupt, replace, complement, or pose a threat to existing rules within organizations, ecosystems, industries, or fields.
(Li et al., 2017)	Digital transformation highlights the impact of IT on organizational structure, routines, information flow, and organizational capabilities to accommodate and adapt to IT".
(Nwankpa & Roumani, 2016)	Digital transformation is the changes built on the foundation of digital technologies, ushering unique changes in business operations, business processes and value creation".
(Matt et al., 2015)	Digital transformation strategy is a blueprint that supports companies in governing the transformations that arise owing to the integration of digital technologies, as well as in their operations after a transformation
(Piccinini et., 2015)	Digital transformation involves leveraging digital technologies to enable major business improvements, such as enhancing customer". experience or creating new business models.

Source	Definition
(Solis et al., 2014)	Digital transformation entails realigning or making new investments in technology and business models to effectively engage digital customers at every stage of the customer experience journey.
(Westerman et al., 2011)	Digital transformation involves using technology to radically enhance the performance or expand the reach of enterprises. Major digital transformation initiatives are centered on re-envisioning customer experience, operational processes and business models.

The aim of the paper to investigate how digital transformation adoption influences non-financial metrics within the technology sector in Egypt. Specifically, the study explores the effects on customer satisfaction, process efficiency, and employee learning & growth, considering these as vital indicators of non-financial performance. Employing a mixed-method approach combining quantitative online surveys distributed among technology sector employees and semi-structured interviews with executives. Over the past few decades, the phenomenon of digital transformation has gained considerable prominence, bringing about transformative changes in both societies and industries (Vial, 2019). Digital transformation has the potential to generate profits through the creation of new business opportunities and increased operational efficiency, while also leading to cost reductions and lower resource consumption (Hess et al., 2016). Furthermore, it catalyzes innovation (Hess et al., 2016; Hinings et al., 2018). Accordingly, The main aim of this research is to study the impact of digital transformation Adoption on the non-financial performance of companies.

The digital era has witnessed extensive changes in people, technology, and processes, leading to a change in thinking in how companies manage their performance. This transformation encompasses two crucial elements: leveraging digital technologies to enhance existing processes and exploring digital innovation, which has the potential to fundamentally reshape the company's business model. Digital innovation involves integrating digital technologies with physical components to create novel digital products (Yoo et al., 2012). However, while digital innovation presents exciting opportunities, it can also be perceived as a potential threat, as it requires significant changes in strategy, processes, and products, prompting companies to reevaluate their fundamental approach to organizing themselves (Yoo et al., 2012). The growing importance of digital technology in companies is evident in the alignment between information technology (IT) and business functions. This alignment entails the integration of IT strategy and business strategy to form a unified digital business strategy (Bharadwaj et al., 2013). A digital strategy aims to consolidate and align the goals and initiatives of IT and business functions. However, a digital transformation strategy encompasses a broader scope, encompassing the vision, planning, and implementation of the company change process necessary to navigate and leverage digital transformation effectively (Matt et al., 2018). Digital technologies are causing a significant shift in the corporate landscape, bringing about profound changes in how businesses operate and compete. One of the key signs of this shift is the digitalization of products and services, driven

using these technologies. This global trend is rapidly transforming how value is created within companies. We have now reached a critical juncture where the impact of digital technologies is becoming apparent, enabling previously unthinkable possibilities. Accordingly, digital transformation is a technology-driven shift that permeates all levels of a company. It encompasses profound changes in business operations, processes, capabilities, and strategies, enabled by digital technologies (Daniel et al., 2018; Matt et al., 2018). The alignment of IT strategy and business strategy plays a crucial role in coupling the potential of digital technology. Digital transformation has become a strategic imperative for businesses, enabling them to adapt, compete, and thrive in the digital age. By leveraging digital technologies, companies can enhance their processes, explore digital innovation, and create value in novel ways. The impact of digital technologies is reshaping the corporate landscape, driving the digitalization of products and services and opening new possibilities. As companies embrace digital transformation, they position themselves to meet the evolving needs of customers, empower their employees, and seize opportunities for growth and success in the digital era (Roger, 2016; Daniel et al., 2018). Digital technologies have the remarkable capability to improve and even revolutionize business processes and models, leading to the development of innovative enterprise products and services. These technologies span across various realms, including the physical, digital, and social domains, and they are converging to shape the future of companies. The integration of multiple technologies is blurring the boundaries between these territories and presenting new opportunities for businesses to leverage their potential. This may involve adopting cloud computing, artificial intelligence, big data analytics, the Internet of Things (IoT), automation, and other cutting-edge technologies (Rachinger et al., 2018). Ziadlou (2021) identified the human-based factors contributing to the DT. The study has been recognized that leaders in the healthcare industry have the potential to promote the attainment of Sustainable Development objectives by implementing various measures such as enhancing knowledge, fostering innovation, boosting motivation, aligning global and local strategies, providing leadership support, and developing partnerships. The critical factors in digital transformation, as demonstrated by Ziadlou's literature review, are employee engagement, employee empowerment, culture development, and the cultivation of agents of digital transformation. According to the study findings and Based on the results of data analysis and interpretation, the study participants perceived digital transformation as a favorable advancement in the healthcare industry, which has led to enhanced communication, improved quality, strengthened decision-making support, facilitated knowledge sharing, and eliminated distance and geographical barriers.

Sabine and Andrea (2016) empirical data yields a set of common stages in the process of digital business transformation. The researchers opted to create a maturity model based on the dimensions of the digital maturity model (DMM) established in a prior study. The digital maturity model (DMM) encompasses nine dimensions that offer a deeper insight into the key drivers for managing digital transformation. The scope of digital transformation includes both process digitization, which prioritizes

efficiency, and digital innovation, which aims to enhance physical products with digital features. Kraus et al. (2021) study states that; It is feasible to transform an existing business model into a more innovative and novel one, but this may not always result in higher profitability than the traditional model. Additionally, successful companies tend to be averse to change and employees may resist digital transformation, leading to challenges in implementing DT within the company. Although DT can bring about improvements in efficiency, innovation, and competitiveness, the process should not be taken lightly since, like any corporate initiative. Also, this study emphasized on the competitive advantage of digital transformation that leads to a larger market share due to the differentiated products and services they can offer compared to their competitors. Accordingly, companies that introduce DT as a part of their strategy consequently obtain the respective benefits thereof and can advantageously remain in the market. Digital transformation involves the utilization of digital technologies to enhance existing processes and the exploration of digital innovation that has the potential to revolutionize the business model. The transformation requires reevaluation of their organizing logic to support the whole process and this in turn leads to significant changes in strategy, processes, and products. The integration of IT strategy and business strategy into a unified digital business strategy reflects the increasing importance of digital technology. Digital transformation has become a critical strategic initiative for businesses across various industries. It fundamentally changes how a company operates, delivers value to customers, and remains competitive in the digital age. Traditional approaches to operations, marketing, and customer engagement are no longer sufficient in today's rapidly evolving business model. Customers now expect seamless digital experiences, employees require efficient and collaborative tools, and businesses must adapt quickly to changing market dynamics. Digital transformation enables companies to address these challenges and unlock new opportunities (Daniel et al., 2018). According to previous studies, it is found that the process of digital transformation just like any journey requires a map to guide it to success. Having an updated digital strategy can drive the transformation towards success, and having a clear vision is essential to meet the complexities of digital transformation.

3. THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

To the best of our understanding, the academic exploration of Digital Transformation (DT) and its impact on firm performance remains relatively uncharted territory within Egypt. This is despite the country's notable growth and rapid adoption of digital transformation compared to other developing nations. Furthermore, previous research has emphasized the necessity of examining how DT affects firm performance across various contexts and industries (Martínez-Caro, 2020). Additionally, there's a significant interest in identifying the mechanisms through which DT influences firm performance. Proposed avenues include IT innovation and customer experience, both of which hold relevance in service-oriented sectors where delivery methods and customer satisfaction are paramount. According to American Productivity & Quality Center

(APQC's) 2019 report, 75% of companies are currently undergoing digital transformation. To achieve success in DT, companies must establish a robust foundation of people, processes, technology, and content. In the initial stages of change, it is crucial to select the right combination of strategies and engage stakeholders deeply to inform leaders and users about the reasons behind the transformation initiatives. Business and people are the primary drivers for digital transformation, as it aims to increase efficiency and productivity and optimize user experience with knowledge discovery, among other factors. Enterprises are rapidly adopting digital transformation to drive progress by embracing new business models and incorporating digital technology. This exponential rate of adoption is aimed at stimulating development and growth within companies (Lia et. al, 2023). Westerman et al. (2011) analyzed digital transformation as using technology to enhance enterprise performance significantly or expand its reach. Key digital transformation initiatives focus on reshaping customer experience, operational processes, and business models. Accordingly, we developed the following model shown in fig.1 to study the impact of Digital Transformation Adoption (as an independent variable) on Customers, Internal processes, employee learning & growth (as dependent variables). The aim is to evaluate the influence of digital transformation on companies.

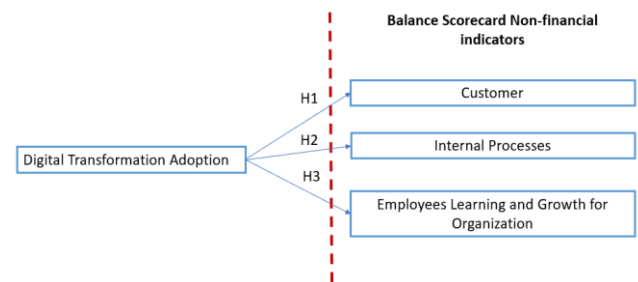


Fig. 1 Research Model

A. Digital Transformation and Customer Experience

In the customer perspective, managers aim to identify specific customer and market segments that the business unit intends to compete in and determine the measures that will gauge the business unit's performance within these targeted segments. This perspective encompasses core outcome measures, such as customer satisfaction, retention, acquisition, profitability, and market share, which serve as indicators of successful outcomes resulting from a well-formulated and implemented strategy (Kaplan & Norton, 1996). However, it is crucial to go beyond these generic measures and incorporate specific measures that reflect the value propositions intended to be delivered to customers in the targeted market segments. This perspective centers around the company's ability to meet customer needs effectively. It considers factors such as customer satisfaction, customer retention rate, and market share (. Research studies have provided evidence of the effectiveness of DT in enhancing customer perception. For example, Hilali et al. (2020) conducted a case study involving three companies that underwent DT and found that prioritizing the customer experience played a crucial role in increasing customer loyalty. By designing and offering more suitable solutions, these companies achieved

higher customer satisfaction. Placing customers at the core of their operations and fostering a genuine customer-centric culture emerged as key success factors (Hilali et al., 2020). The impact of digital technologies on consumer behavior is substantial, driving the need for digital transformation within companies and influencing their interactions with customers (Piccinini et al., 2015). With the increasing integration of digital technologies into consumers' lives, there is a higher level of digital immersion, providing access to extensive information about products and services and reducing reliance on intermediaries (Hinings et al., 2018; Piccinini et al., 2015). This global digital connectivity allows companies to reach potential customers anywhere and transcend traditional market boundaries. This hypothesis explores the transformative influence of digitalization on companies' interactions with their customers (Li, 2015). The hypothesis speculates that the strategic integration of digital technologies and practices can bring about significant improvements in customer relations, leading to increasing customer satisfaction, loyalty, and a more profound understanding of customer needs.

H1: The introduction of digital transformation within a company has a positive impact on customer relations.

B. Digital Transformation and Internal processes

In internal process perspective focuses on evaluating the internal processes that have the greatest impact on customer satisfaction and the achievement of a company's financial objectives. It allows managers to assess the effectiveness of their business operations and determine if products and services align with customer requirements (Sharma et al., 2011). Key measures in this perspective include the innovation process, operations process, and post-sales service, which help assess the efficiency and effectiveness of internal processes and ensure their alignment with strategic objectives and customer expectations. Once the company has identified its financial and customer perspectives, this perspective comes into play. It assesses how well the company performs its crucial internal operational processes. It seeks opportunities for enhancing critical processes to satisfy customers and achieve operational excellence, as stated by Abu Jabra (2022). In digital transformation, researchers indicate that companies have experienced standardization of operational processes (Bharadwaj et al., 2013). The emergence of technologies and the adoption of infrastructure and software as a service have allowed companies to reduce their reliance on physical resources and achieve cost-effectiveness (Bharadwaj et al., 2013). Additionally, digital transformation has addressed the limitations of one-way communication and knowledge sharing by enabling unrestricted collaborations and providing transparent performance data for improved performance management (Westerman et al., 2011). It has empowered executives to access extensive information, leading to more comprehensive strategic planning sessions that incorporate diverse perspectives from various business units (Westerman et al., 2011). The objective for Digital Transformation from internal processes perspective:

- Foster a culture of innovation by embracing emerging digital technologies and practices.

- Improve operational efficiency through the adoption of digital tools and automation in diagnostic and problem-solving processes.
- Enhance the quality and efficiency of the processes and products through digital optimization and continuous improvement practices.

The hypothesis acknowledges the pivotal role played by digital transformation in the modernization of processes, the dismantling of silos, and the establishment of a more cohesive and agile operational framework (Piccinini et al., 2015; Li, 2018). By leveraging the insights from these studies, the hypothesis recognizes the potential of digital transformation not only to realign internal processes but also to pave the way for the successful implementation of broader digital transformation initiatives. Through a targeted exploration of this hypothesis, the survey aims to capture participants' perspectives on the tangible impacts of digital transformation on internal processes, focusing on the extent to which it aligns with the overarching digital transformation roadmap within their company settings.

H2: The adoption of digital transformation in a company positively influences internal processes, aligning them with the roadmap of digital transformation.

C. Digital Transformation and Employee Learning and Growth

The learning and growth perspective of the Balanced Scorecard focuses on the infrastructure necessary for long-term growth and improvement. In contrast, the customer and internal-business-process perspectives identify key factors for current and future success. It is recognized that relying solely on existing technologies and capabilities will not enable businesses to meet their long-term targets, especially in the face of intense global competition. This perspective highlights the changes and improvements required for the company to realize its vision. According to Abu Jaber (2022), it pertains to a company's intangible assets and its ability to excel in the future. It includes measures related to employees' capabilities, satisfaction, motivation, and empowerment. Within the realm of strategy, the Education and development of new skills, Cultural and behavioral aspects, and Talent Strategy are considered as equivalent to the pillar of the strategy known as "Develop digital culture and skills" as discussed in the study by Brunetti et al. (2020). The development of a digital transformation strategy involves activities such as training, knowledge sharing, and fostering a collaborative environment between talents and businesses, as highlighted by Fachrunnisa et al. (2020). Furthermore, cultivating a mindset change is recognized as a crucial factor for cultural and behavioral development, as emphasized by Ziadlou (2021).

Like the customer perspective, employee-based measures in the learning and growth perspective include a combination of generic outcome measures, such as employee satisfaction, retention, training, and skills, along with specific drivers tailored to the business's particular needs in the competitive environment. Assessing information systems capabilities involves measuring the real-time availability of accurate and critical customer and

internal process information to front-line employees, empowering them in decision-making and actions. Company procedures can be examined to ensure alignment of employee incentives with overall company success factors and to measure rates of improvement in critical customer-based and internal processes. The objective for Digital Transformation from employees' learning and growth perspective:

- Foster a learning culture by leveraging digital platforms and tools to provide continuous training and upskilling opportunities for employees.
- Enhance the expertise and capabilities of employees through targeted digital training programs.
- Develop and implement digital communication channels and collaboration platforms to improve internal knowledge sharing and teamwork within the company.

Drawing insights from the work of Fachrunnisa et al. (2020), the hypothesis underscores the transformative potential of digital transformation in empowering employees through access to digital tools, resources, and targeted training opportunities. This integration is envisioned as a pivotal driver that not only equips employees with new competencies but also enables them to adeptly navigate and contribute to the company's goals within the dynamic landscape of evolving technologies. Through a comprehensive exploration of this hypothesis, the survey seeks to capture participants' perspectives on the tangible impacts of digital transformation on employee learning and growth within their company contexts.

H3: The integration of digital transformation within companies has a positive effect on the learning and growth of employees.

By implementing this framework and drawing insights from existing literature on digital transformation, this study puts forth these hypotheses to systematically explore the effects of digital transformation on customer relationships (Brunetti et al., 2020). These hypotheses are thoughtfully constructed to directly tackle the research questions initially posed at the commencement of this study and can highlight the important roles of human capability, collaboration capability, innovation capability, and technical capabilities in digital transformation have been highlighted by many scholars (Hess et al., 2016; Vial, 2019). The combination of these capabilities represents digital-related capabilities.

4. RESEARCH METHODS

The research employed a cross-sectional approach, strategically selecting survey participants to gather insights from individuals who have passed through milestones in digital transformation. This study was conducted from October-23 till February-24. The focus was on individuals in specific companies recognized as leaders in the technology sector, ensuring a targeted and experienced perspective on the side of the digital transformation journey. Following this selection criteria, the research sought to create a well-rounded and representative dataset that could effectively address the research objectives. The combination of insights

from market leaders ensures a better understanding of the impact of digital transformation on various aspects of the Egyptian technology sector. Aligned with the research objectives, a twofold approach to data collection will be adopted. Firstly, quantitative data will be obtained through the distribution of an online survey to employees within the technology sector in Egypt, representing diverse companies. This survey aims to quantify the impact of digital transformation on various key aspects, such as customer experience, internal processes, and the learning and growth of employees. Following the quantitative phase, the research will transition to the qualitative realm. Semi-structured interviews will be conducted with senior managers and executives who hold leading roles in technology companies in Egypt. These interviews are designed to dig deeper into the dynamics of digital transformation and its influence on customer experiences, internal processes, and the professional development of employees. The insights garnered from these interviews will provide a qualitative dimension to the research, offering valuable real-world perspectives and recommendations for the successful implementation of digital transformation strategies.

A. Population and sampling

The research was conducted in the technology sector in Egypt for the technology key players. The research adopts a non-probability sampling method, which involves nonrandom selection of sample constituents. Although this method carries a lower probability of generating representative samples compared to probability sampling, it serves as a valuable tool for researchers. The rationale behind choosing this approach is twofold. Firstly, the limitation of comprehensive data in Egyptian market. Secondly, considering the specialized nature of the study involving experienced individuals in the technology sector, the use of non-probability sampling ensures that the sample is not dominated by a particular subgroup, thereby enhancing the diversity of perspectives. Most of the targeted sample is experienced and from the management level; to check the workflows and adaptation level from their perspective, for VP/CEOs/CTOs we targeted them in the semi-structured interviews to verify and have a wider view of what was collected from the lower management level. This makes more mature business insights about what are the real challenges and workarounds that can be beneficial for business. A total of 220 Participants completed the responses out of 250 sent invitations, also we excluded 24 of the replies as they were not relevant to all survey items.

B. Data Reliability and Validity

Before testing the hypotheses, the reliability and validity of the measures were checked. We investigated different aspects of the survey validity, including content, construct, criterion, and face validity based on the guidelines suggested by the literature (Bolarinwa, 2015). The reliability of the survey was evaluated also using Cronbach's alpha to assess the internal consistency of the items in each domain. Cronbach's alpha is considered a measure of scale reliability, not validity. It helps determine if a set of items consistently measures the same characteristic but does not confirm if the items measure the correct concept (Zakariya, 2022), therefore investigating the validity of the survey was complementary to the reliability analysis. Values above 0.7

were considered acceptable. The Cronbach alpha values of more than 0.7 are indicative of acceptable to excellent reliability across the different domains.

Domain	Cronbach alpha	Reliability accepted
Participant Digital Transformation Adoption Level	0.777	Yes
Digital Transformation Adoption from a Business Perspective	0.775	Yes
Improved Internal Business Processes	0.842	Yes
Enhanced Customer Experience	0.743	Yes
Enhanced Employees Learning and Growth	0.808	Yes
Overall survey	0.928	Yes

Tab.1: Assessment of the reliability of different domains of the survey

The reliability assessment indicates strong internal consistency for each domain, as evidenced by the Cronbach's alpha values. All domains, including Participant Digital Transformation Adoption Level, Digital Transformation Adoption from a Business Perspective, Improved Internal Business Processes, Enhanced Customer Experience, and Enhanced Employees Learning and Growth, meet the accepted threshold for reliability. The overall survey demonstrates high reliability, with a Cronbach's alpha of 0.928, indicating a robust and internally consistent measurement across all domains. Accordingly, these results affirm the reliability of the survey instruments, providing confidence in the consistency of responses within each domain and the survey. Researchers and practitioners can rely on the data collected from these domains to draw meaningful and valid conclusions.

5. SURVEY ANALYSIS

The questionnaire begins with a demographic section aimed at gathering background information such as gender, age, and company details. This is followed by sections focusing on digital transformation, its adoption within the company, its impact on business processes, customer experience enhancement, and employee learning and growth. Each section consists of a set of questions designed to assess different aspects related to digital transformation. The survey emphasizes participant anonymity and data privacy, ensuring objective evaluation of companies. This meticulous design reflects a commitment to methodological thoroughness to provide valuable insights into the impact of digital transformation on non-financial indicators in technology companies.

A total of 220 Participants completed the responses out of 250 sent invitations, also we excluded 24 of the replies as they are not relevant to all survey items. 196 respondents represent (Response Rate = 89%). The demographic analysis of the study sample demonstrated a predominantly male representation (86%) within the cohort.

A. Descriptive statistics of the study domains

The descriptive summary of the survey domains based on the mean scores for each domain is presented in Tab. 2. The participant digital transformation adoption level domain had the highest mean score of 4.45 ± 0.42 out of a maximum of 5, reflecting a relative weight of 89% and the highest relative importance among the domains. The composite score of adoption of digital transformation at both participant and business levels followed by a mean score of 4.29 ± 0.40 , a relative weight of 85.8%, and the second highest relative importance. Improved internal business processes had a mean score of 4.23 ± 0.50 , a relative weight of 84.6%, and the third highest relative importance. Enhanced employees' learning and growth showed a mean score of 4.16 ± 0.52 , a relative weight of 83.2%, and the fourth-highest relative importance. Digital transformation adoption from a business perspective had a mean score of 4.14 ± 0.50 , a relative weight of 82.8%, and the fifth highest relative importance. Finally, enhanced customer experience had the lowest mean score of 4.10 ± 0.53 , a relative weight of 82%, and the sixth highest relative importance.

Domain	Mean	Std. Deviation	Relative Weight	Relative Importance
Participant Digital Transformation Adoption Level	4.45	.42	89%	1
Digital Transformation Adoption from a Business Perspective	4.14	.50	82.8%	5
Composite Score of Adoption of Digital Transformation	4.29	.40	85.8%	2
Improved Internal Business Processes	4.23	.50	84.6%	3
Enhanced Customer Experience	4.10	.53	82%	6
Enhanced Employees Learning and Growth	4.16	.52	83.2%	4

Tab. 2: Descriptive summary of the survey domains (Based on mean of scores) (N=196).

In reference to the survey results the following potential business analysis can be concluded:

- Digital Transformation Adoption Levels:** As the average participant digital transformation adoption level is relatively high. Which means a strong commitment to DT among the Participants.

2. **Business Perspective on Digital Transformation:** Participants generally perceive digital transformation from a business perspective. So, this high score indicates a substantial alignment of digital transformation efforts with business goals.
3. **Composite Score of Digital Transformation Adoption:** This composite score aims to serve as a key metric for tracking the overall progress of the digital transformation.
4. **Improved Internal Business Processes:** The internal business processes, indicate a significant positive impact on internal operations by enhancing efficiency and effectiveness of their internal processes.
5. **Enhanced Customer Experience:** there is still room for improvement. By focusing on strategies to further enhance customer interactions and satisfaction through digital initiatives.
6. **Enhanced Employees Learning and Growth:** showcasing a positive impact on workforce development. Businesses should continue investing in digital tools to support ongoing learning and skill development among employees.

B. Correlation analysis

The correlation analysis demonstrated a consistent pattern of positive associations among the study variables, suggesting an interlinked perception of digital transformation's impact on various organizational and individual levels. A significant positive correlation was observed between participant digital transformation adoption level and digital transformation adoption from a business perspective ($r=0.511, p<0.001$), improved internal business processes ($r=0.681, p<0.001$), enhanced customer experience ($r=0.457, p<0.001$), and enhanced employees learning and growth ($r=0.544, p<0.001$). These correlations suggest that the perception of digital transformation at an individual level is strongly associated with its perceived impact on business processes, customer experiences, and employee development. Similarly, digital transformation adoption from a business perspective showed significant positive correlations with improved internal business processes ($r=0.599, p<0.001$), enhanced customer experience ($r=0.502, p<0.001$), and enhanced employee learning and growth ($r=0.612, p<0.001$). These findings suggest that a higher perceived level of digital transformation adoption at the business level is associated with more favorable perceptions of its influence on internal processes, customer relations, and employee growth. The interconnection between improved internal business processes and enhanced customer experience ($r=0.556, p<0.001$), as well as enhanced employee learning and growth ($r=0.653, p<0.001$), highlights the mutual impact of these domains on each other. Enhanced customer experience also showed a significant positive correlation with enhanced employee learning and growth ($r=0.554, p<0.001$), further emphasizing the interrelated nature of these variables in the context of digital transformation., highlights the mutual impact of these domains on each other

(Fig. 2). This suggests that improvements in internal business processes due to digital transformation are perceived as positively affect both customer experiences and employee learning and growth. All correlations are statistically significant and greater than 0.5, suggesting moderate to high correlations. This indicates that the items have a good level of shared variance and likely reflect the same construct (reflective framework). All P-values are less than 0.001, indicating a very low probability that the observed correlations occurred by chance.

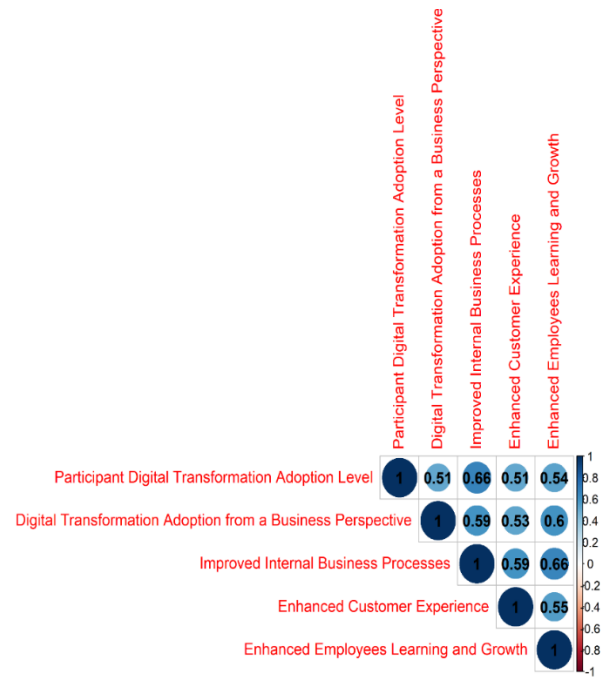


Fig.2: Heatmap summarizing the correlations between the adoption of digital transformation, improved internal business processes, enhanced customer experience, and enhanced employee learning growth. The darker the blue circles, the higher the magnitude of correlations.

Accordingly, the correlation analysis reveals robust and positive relationships among key study variables. Higher levels of digital transformation adoption by participants are consistently associated with positive outcomes in business perspective, improved internal processes, enhanced customer experience, and increased employee learning and growth. These findings highlight the interconnected nature of different facets of digital transformation within the surveyed organizations, emphasizing the holistic impact on various aspects of business operations and employee development. The strong correlations underscore the potential synergies and mutual reinforcement among these dimensions, showcasing a comprehensive and integrated approach to digital transformation's influence on organizational success.

C. Regression analysis

The univariate linear regression models demonstrate a significant impact of the composite adoption of digital transformation on three dependent variables: improved business internal processes, enhanced customer experience, and enhanced employee learning and growth (Tab.). For the model assessing the impact on improved business internal processes, a substantial adjusted R² of

50.2% indicates that approximately half of the variability in the improvement of business internal processes can be explained by the adoption of digital transformation. This model is highly significant, with an F-statistic of 194.3 and a p-value of less than 0.001. Similarly, the model exploring the impact on enhanced customer experience shows an adjusted R² of 35.3%, with an F-statistic of 105.9, again indicating a significant relationship at a p-value of less than 0.001. This leads to that over a third of the variability in enhanced customer experience can be attributed to the adoption of digital transformation. The impact on enhanced employee learning and growth is also significant, with an adjusted R² of 43.0%, an F-statistic of 145.9, and a p-value of less than 0.001. This indicates that nearly half of the variation in enhanced employee learning and growth can be explained by digital transformation adoption.

Model	Adjusted R2	F	P	Significance
Improved Business Internal Processes	50.2%	194.3	<0.001	Significant
Enhanced Customer Experience	35.3%	105.9	<0.001	Significant
Enhanced Employee Learning and Growth	43.0%	145.9	<0.001	Significant

Tab. 3 Univariate linear regression models for the impact of Composite Adoption of Digital Transformation (independent variable) on Improved Business Internal Processes, Enhanced Customer Experience, Enhanced Employee Learning and Growth (dependent variables).

1. Improved Business Internal Processes:

- The univariate linear regression model reveals that the adoption of digital transformation significantly impacts the improvement of business internal processes.
- The substantial **adjusted R² of 50.2%** indicates that approximately **half of the variability** in this improvement can be attributed to digital transformation.
- The **F-statistic of 194.3** and a **p-value less than 0.001** underscore the statistical significance of this relationship.
- According to McKinsey (2018) research corroborates this finding, emphasizing that streamlined processes, automation, and digitization lead to operational efficiency and effectiveness.

2. Enhanced Customer Experience:

- The model exploring the impact on customer experience demonstrates an **adjusted R² of 35.3%**.
- This suggests that over a **third of the variability** in enhanced customer experience can be attributed to digital transformation.
- The **F-statistic of 105.9** further supports the significance of this relationship.

- According to Forsta (2023), the study has consistently shown that digital transformation positively affects customer satisfaction, personalization, and seamless interactions across channels.

3. Enhanced Employee Learning and Growth:

- The impact on employee learning and growth is also **significant**, with an **adjusted R² of 43.0%**.
- Nearly **half of the variation** in enhanced employee learning and growth can be explained by digital transformation adoption.
- The **F-statistic of 145.9** and a **p-value less than 0.001** reinforce this finding.
- The research underscores that digital tools, continuous learning, and a digital-first mindset empower employees to develop new skills and thrive in a transformed work environment (Velyako,2023)

In summary, these results align with existing literature, emphasizing that successful digital transformations positively impact both organizational processes and the experiences of both customers and employees. By embracing digital culture and leveraging technology effectively, organizations can drive growth, innovation, and overall success. These results suggest the acceptance of all three study hypotheses including the positive association between the adoption of digital transformation and improved business internal processes, enhanced customer experience, and enhanced employee learning and growth.

6. INTERVIEWS' FINDINGS

Based on the provided interviews, a thematic analysis reveals several key themes related to digital transformation within organizations:

1. Importance of Comprehensive Training and Change Management:

- All interviews emphasize the significance of providing thorough training and implementing change management strategies to empower the workforce in adopting digital tools and fostering adaptability.
- Interviewees stress the need for continuous learning initiatives and upskilling programs to bridge skills gaps and cultivate a digitally proficient workforce.
- There's a consensus on the importance of fostering a culture of adaptability and innovation to overcome resistance to change and ensure the successful implementation of digital initiatives.

2. Executive Leadership and Organizational Culture:

- Strong executive leadership and organizational culture are highlighted as crucial factors for successful digital transformation.
 - The role of leadership support in breaking down organizational silos, aligning business and digital goals, and nurturing a culture that complements digital aspirations is emphasized.
 - Maintaining a delicate balance between tradition and digital evolution while preserving organizational heritage is recognized as essential for success.
3. **Agile and Iterative Approach to Digital Transformation:**
- Interviews stress the importance of adopting an agile and iterative approach to digital transformation, emphasizing the identification and prioritization of key processes.
 - Flexibility in tools and technologies to align with evolving needs and swift response to market dynamics are highlighted.
4. **Data Governance, Cybersecurity, and Innovation:**
- Establishing robust data governance and cybersecurity measures is seen as crucial for the secure management of digital assets.
 - Creating innovation hubs, leveraging external partnerships, and fostering collaboration among key players are recommended to accelerate the pace of innovation.
 - Embracing challenges as catalysts for innovation and viewing them as stages to navigate successfully through the complexities of digital transformation are emphasized.
5. **Strategic Planning and Road mapping:**
- Strategic planning, alignment of short-term business goals with long-term digital visions, and the creation of comprehensive roadmaps for digital transformation are recommended.
 - Centralization of financial oversight within the IT department, adoption of customer-centric approaches, and strengthening communication channels are suggested strategies for success.
6. **Continuous Improvement and Customer Centricity:**
- Embracing a culture of continuous improvement and innovation is deemed

essential for thriving in the dynamic digital landscape.

- Prioritizing customer-centric processes to enhance experiences and satisfaction is highlighted as crucial for success.

These themes collectively underscore the multifaceted nature of digital transformation, highlighting the importance of leadership, culture, strategy, agility, and continuous learning in navigating the challenges and harnessing the opportunities presented by the digital landscape.

7. INTER-RELATION BETWEEN QUANTITATIVE AND QUALITATIVE ANALYSIS

H1: Digital transformation has a positive impact on Customer Relation.

Collaboration and cross-functional teams play a pivotal role in enhancing customer experience through personalized interactions and improved customer-centric processes. By working together, teams can overcome obstacles such as resistance to change and upskill the workforce, ultimately leading to the implementation of innovative solutions and more effectively addressing customer needs. Furthermore, identifying and prioritizing key processes integral to digital transformation directly impacts customer experience by aligning digital initiatives with customer expectations and enhancing overall customer satisfaction. Strategic alignment is crucial to ensure that digital transformation efforts contribute effectively to enhanced customer experience by aligning with customer-centric strategies and initiatives. By strategically aligning these efforts, organizations can better meet and exceed customer expectations, ultimately leading to improved satisfaction. Moreover, promoting a culture that fully embraces digital transformation and innovation is essential. This fosters a customer-centric approach, which in turn leads to improved customer experiences and interactions. When employees are encouraged to embrace digital transformation and are empowered to innovate, they are better equipped to meet evolving customer needs and deliver exceptional experiences.

H2: Digital transformation has a positive impact on internal processes.

Emphasizing the alignment between business and digital goals is crucial for driving improved internal processes through streamlined operations and optimized workflows. Collaboration across departments and stakeholders further strengthens digital transformation efforts, enhancing internal processes by harnessing diverse insights and expertise. Overcoming obstacles such as resistance to change and upskilling the workforce plays a significant role in improving internal processes. By optimizing workflows and facilitating smoother transitions, organizations can navigate through changes more effectively. Moreover, identifying and prioritizing key processes integral to digital transformation directly impacts internal processes, resulting in enhancements in operational efficiency and

effectiveness. Strategic alignment ensures that digital transformation efforts are in harmony with broader business objectives and goals, thereby contributing to improvements in internal processes. Cultivating a digital-ready culture and promoting employee learning and growth are essential components for enhancing internal processes. By fostering adaptability and innovation within the organization, employees become better equipped to embrace digital transformation and drive continuous improvements in internal processes.

H3: Digital transformation has a positive impact on the learning and growth of employees.

Collaboration is crucial in promoting employee learning and growth by facilitating knowledge sharing and skill development across different departments and functions. Overcoming obstacles such as resistance to change and upskilling the workforce further fosters employee learning and growth through targeted training and development initiatives. Identifying and prioritizing key processes integral to digital transformation not only drives organizational change but also provides valuable opportunities for employee learning and growth. Involvement in digital initiatives and participation in skill development programs empower employees to enhance their competencies and adapt to evolving technologies. Strategic alignment ensures that digital transformation efforts contribute effectively to employee learning and growth by aligning with organizational goals and values. By promoting a culture of continuous learning, organizations can nurture employee development and drive innovation. Moreover, cultivating a digital-ready culture and prioritizing employee well-being are essential for enhancing employee learning and growth. By fostering adaptability, innovation, and skill development within the organization, employees are better equipped to navigate digital transformations and drive long-term success.

By integrating the qualitative insights from each theme with the accepted hypotheses, we can see how the various aspects of digital transformation contribute to improvements in business internal processes, customer experience, and employee learning and growth.

8. DISCUSSION

The statistical analysis presented revealed a positive correlation between variables. This correlation was further supported by the thematic analysis conducted on interviews with CEOs of technology market leaders in Egypt.

H1: Digital transformation has a positive impact on customer Perception.

Osmundsen et al. (2019) conducted a thorough review of literature surrounding digital transformation within the Information Systems (IS) field, aiming to uncover its drivers, objectives, success factors, and implications. They identified both external and internal triggers driving digital transformation, such as the need to adapt to digital shifts within industries and changing customer behaviors. This aligns closely with the insights gathered from interviews, which emphasized the importance of customer satisfaction and the evolving competitive environment as driving forces

behind organizational change (Fichman et al., 2014). The findings of Osmundsen et al. (2019) provide valuable context for understanding the motivations and strategies behind digital transformation initiatives. Which is aligned with the thesis results. The thesis findings align closely with the insights presented in Ivancic et al. (2019), particularly from the customer perspective. Just as they emphasize the importance of considering the end-to-end customer journey in designing digital solutions, our research underscores the significance of prioritizing customer-centric approaches in digital transformation endeavors. The findings resonate with the notion that fostering a culture of knowledge-sharing and collaboration within the organization is pivotal for achieving digital transformation goals. By aligning this thesis results with the emphasis on customer-centricity and organizational culture highlighted in Ivancic et al.'s, the findings can emphasize on the importance of these factors in navigating the complexities of digital transformation effectively.

Similarly, Imran et al. (2021) examined the factors propelling digital transformation initiatives and their impact on operational performance within industrial organizations. Through a qualitative multiple case study involving prominent industrial organizations, they uncovered significant insights. Their findings highlighted the pivotal role of customer-centricity in driving digital transformation, with approximately 66% of interviewees emphasizing its significance. This aligns seamlessly with the thematic emphasis on customer importance observed in the interviews, reinforcing the notion of customers as key drivers for digital transformation. Additionally, Imran et al. (2021) noted a strong correlation between digital transformation adoption and customer satisfaction, further underlining the importance of meeting customer needs. Moreover, their research revealed that 50% of participants perceived digital transformation as enhancing operational efficiency, mirroring the emphasis on overall performance observed in the interviews. The alignment between the findings of Imran et al. (2021) and the thematic insight from the interviews suggests consistency in the significance of customer satisfaction and operational efficiency as outcomes of digital transformation initiatives. Digital transformation, when combined with a focus on customer experience, can lead to a 20-30% increase in customer satisfaction and economic gains of 20-50% (Forsta, 2023). Masoud et al. (2023) conducted an empirical study to explore the influence of digital transformation on firm performance, focusing on the capabilities needed for digital transformation, customer experience, and IT innovation. They utilized a structured questionnaire to gather data from 164 representatives of service sector firms in Saudi Arabia. The results indicate a significant positive effect of customer experience on firm performance. Moreover, there is a strong correlation between customer experience and firm performance, suggesting that customer experience serves as a crucial determinant of firm performance. These findings closely align with the conclusions drawn in the thesis.

H2: Digital transformation has a positive impact on internal processes.

Smith (2008) emphasizes that introducing information technology alone does not guarantee improved company performance, echoing Venkatraman and Ramanujam's (1986) assertion regarding the multifaceted nature of organizational performance. Instead, Smith underscores the importance of refining business processes, fundamental to any company's operations, to achieve enhanced efficiency and overall performance. This perspective aligns with the statistical analysis presented in Table 4.14, which revealed a positive correlation between variables, indicating the significance of streamlined processes in achieving organizational objectives. Moreover, the integration of suitable information technology into these refined processes can facilitate productivity and serve as a drive for employees to adapt to digital transformation. Martínez-Caro et al. (2020) further interpret that failure to garner acceptance within the organizational culture can render investments in new technologies futile. Therefore, the seamless integration of digital technologies into workflows, coupled with their ingrained presence in daily routines, holds the potential for companies to enhance their profitability by leveraging the advantages offered by these technologies. These findings resonate with the insights gleaned from interviews (sub-themes 3.2 and 7.2), reinforcing the importance of cultural acceptance in the success of digital transformation initiatives, as highlighted in the statistical analysis. Moreover, the emergence of technologies and the adoption of infrastructure and software as a service have enabled companies to reduce their reliance on physical resources and achieve cost-effectiveness (Bharadwaj et al., 2013). This observation aligns remarkably well with both the statistical and qualitative analyses conducted in the study, showcasing consistency between the theoretical underpinnings and the empirical findings. The statistical analysis presented a positive correlation between digital transformation and organizational performance, while qualitative insights from interviews further underscored the importance of technological integration in optimizing resource utilization and driving cost-effectiveness. Identifying and prioritizing key processes using an agile and iterative approach ensures sustained relevance and impact. The most common objective for digital transformations is digitizing the organization's operating model, emphasizing alignment between business goals and digital objectives. Also, establishing robust data governance and cybersecurity measures ensures secure management of digital assets (McKinsey, 2018). Organizations that prioritize operational capabilities over customer-oriented capabilities suffer from increased work complexity during digital transformations (Van, 2020).

H3: Digital transformation has a positive impact on the learning and growth of employees.

Smith (2008) underscores the importance of ensuring that organizational business processes effectively leverage the advantages provided by digital systems. This involves communicating these benefits to employees and ensuring they receive sufficient training to adapt to digital transformation. The integration of digital technology into business processes not only enhances efficiency but also

contributes to the learning and growth of employees within the organization. Moreover, automated processes sustain productivity, serving as a catalyst for employee adaptation to digital transformation. Aligning with the findings of Piccinini et al. (2015), effective communication and strategic planning are pivotal not only for managing digital transformation challenges but also for fostering sustainable development within healthcare organizations, as evidenced by Ziadlou's (2021) study. Healthcare leaders, like leaders in automotive organizations, play a critical role in driving transformational change. Ziadlou's research underscores the importance of aligning learning and growth strategies with organizational objectives to realize sustainable development goals. Healthcare leaders are tasked with fostering knowledge enhancement, nurturing innovation, and enhancing motivation among their teams which is aligned with technology sector leaders' highlights. These efforts are essential for adapting to digital innovations and addressing the managerial challenges associated with them. Furthermore, aligning global and local strategies, garnering leadership support, and fostering partnership development are crucial elements identified in Ziadlou's study, mirroring the need for collaboration and alignment across various stakeholders emphasized by Piccinini et al. (2015). Thus, effective communication and a clear roadmap not only facilitate digital transformation but also contribute to the alignment of learning and growth initiatives with organizational goals, ultimately driving sustainable development within healthcare organizations. Martínez-Caro et al. (2020) support this hypothesis through their study involving 93 production centers across 10 countries. Their research emphasizes the significance of fostering a digital organizational culture to facilitate business digitization and enhance organizational performance through effective utilization of digital tools. The findings underscore that while firms prioritize investments in digital technologies, successful outcomes depend on their effective adoption and utilization within the organizational culture. Fachrunnisa et al. (2020) conducted a study on enhancing digital transformation within small and medium-sized enterprises (SMEs) across ASEAN countries. Their findings highlight the importance of workforce transformation and dynamic capability in facilitating effective management of digital transformation. The study aligns with the hypothesis by revealing the positive impact of workforce transformation and dynamic capability on strategic flexibility, which, in turn, influences the ability to undergo digital transformation. Imran et al. (2021) further support the importance of culture alignment and adoption, with 25% of their study participants viewing digital transformation as a cultural change. Their research also emphasizes the role of leadership in driving digital transformation initiatives, particularly in navigating the cultural shift. These findings carry implications for practical applications, particularly in markets like Egypt, where leadership agility and adaptability are crucial for successful digital transformation initiatives. Saranya et al. (2023) conducted a study focusing on digital transformation within the HR field, identifying factors contributing to its adoption and its impact on employee

performance. Their research underscores the challenges organizations face in embracing digital transformation due to misconceptions, inadequate knowledge management, and a lack of awareness. The study highlights the importance of embedding HR analytics within a conducive way, providing the necessary opportunities, and motivating organizations to utilize such strategies. These insights have practical implications for enhancing employee satisfaction and well-being through digital transformation initiatives, directly impacting employee growth and development within the organizational context. Empowering the Workforce and culture improvement which is aligned with McKinsey survey results (2018) by Prioritizing comprehensive training and change management initiatives empowers the workforce to embrace digital tools and foster adaptability. Redefining individuals' roles and responsibilities to align with transformation goals clarifies the capabilities needed for success. Viewing challenges as opportunities for growth fosters a culture of continuous improvement and innovation.

So it is concluded from the interviewees that the mix of factors is impacting the overall performance of companies. The impact of digital transformation on employees' learning and growth, internal processes, and customer satisfaction is overwhelmingly positive based on the analyzed data and insights from the Survey and interviews. Firstly, digital transformation optimizes internal processes, leading to increased efficiency, effectiveness, and operational excellence within organizations. By leveraging digital tools and technologies, businesses streamline workflows, automate tasks, and enhance collaboration across departments. This positive impact on internal processes is evidenced by the acceptance of Hypothesis 1, which suggests a positive association between digital transformation adoption and improved business internal processes. Secondly, digital transformation initiatives have a significant positive impact on customer satisfaction. By focusing on enhancing the customer experience through personalized interactions, efficient service delivery, and innovative solutions, organizations can build stronger relationships with their customers and foster loyalty. This aligns with the acceptance of Hypothesis 2, indicating a positive association between digital transformation adoption and enhanced customer experience. Lastly, digital transformation initiatives facilitate employee learning and growth by providing opportunities for skill development and adaptation to new technologies. The emphasis on continuous learning fosters a culture of innovation and empowers employees to navigate the evolving digital landscape effectively. This is supported by the acceptance of Hypothesis 3, which posits a positive association between digital transformation adoption and enhanced employee learning and growth.

9. RECOMMENDATIONS AND LIMITATIONS

To shape a successful digital transformation journey, businesses should foster a culture of innovation and continuous improvement. Encouraging collaboration among different departments and stakeholders ensures

diverse perspectives are leveraged, leading to more robust digital strategies. Overcoming resistance to change and upskilling the workforce are critical aspects addressed in the interviews, highlighting the importance of change management strategies and investment in training programs. Additionally, organizations should prioritize key processes integral to digital transformation, ensuring alignment with overarching business objectives. Regularly reviewing and adjusting digital strategies to remain aligned with evolving business priorities is essential for sustained success. By incorporating these practical insights into their digital transformation strategies, organizations can enhance their chances of success and realize the full potential of digital technologies in driving business growth and innovation. These Recommendations can be summarized by simple steps: Sustain a proactive approach to technological advancements. Foster collaboration among key players, Embrace challenges as catalysts for innovation, Continuously invest in workforce readiness, infrastructure enhancements, and cultural alignment, and View challenges as stages in the journey toward thriving in the dynamic digital landscape. While this research can contribute insights into the impact of digital transformation on organizations, it is essential to acknowledge certain limitations and future works that may have influenced the scope and generalizing of the findings.

1. The study primarily focused on the technology industry and may not be fully representative of diverse industries.
2. Due to the dynamic nature of technology, the study's cross-sectional design may not capture the evolving impact of digital transformation over an extended period. A longitudinal approach could provide a more in-depth understanding of long-term effects.
3. Organizations differ in terms of culture, readiness, and strategic priorities. Exploring the impact of digital transformation on a more diverse set of organizations could provide a better understanding of its effects, especially on cross-functions.
4. The study faced limitations in terms of resources, including time and access to a broader array of organizational settings. Future research endeavors with larger samples and diverse contexts may enhance the depth and breadth of the study.

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Appendix A : Questionnaire

Section (1) Participants Demographics:

1. Gender:
 - Male
 - Female
2. Educational Qualification:
 - Diploma
 - High Diploma
 - Master's degree
 - PH.D degree
3. Years of Experience:
 - Less than 5 years
 - From 5 to less than 10 years
 - 10 years or more
4. Job Position:
 - Senior Manager (manager/Director)
 - Middle Manager (General/Division)
 - Front-line staff (Employees/Supervisor)
5. Company Size
 - Fewer than 100 employees
 - 100-1000 employees
 - More than 1000 employee

Section (2) The dependent and independent variables:

Indicate the degree of agreement or disagreement that fits the situation in your company best:

Please circle one choice for each of the following statements. (1 = strongly disagree, 2 = disagree, 3 = nor disagree nor agree, 4 =agree, 5 = strongly agree; X = do not know)

Overview

6. Digital transformation is a natural part of our business.
7. Customer experience, Business process maturity, and People are critical prerequisites for achieving digital business success.
8. The most significant challenges in our DT journey include internal processes, Cultural resistance, and Lack of the right in-house skills.
9. Digital transformation leads to increased revenue, increased productivity, and improved customer experience.
10. The DT was driven by Customer Experience, Cost reduction, Competitive advantage, and Innovation opportunity.
11. Digital transformation has become an important part of our business operation.

DT Adoption from a Business Perspective

12. The management supports the utilization of DT.
13. The company is familiar with DT tools.
14. Digital transformation enhances our business.

15. The management has a clear vision for utilizing DT in the future.
16. The company Routinely seeks cost reductions through digitalization.
17. The company is Digitally mature.
18. There is a strategy to build a digital culture.

Improved Business Processes

19. Internal processes have been one of the most challenging aspects for our company during the DT journey.
20. Utilizing new technologies to automate and streamline business processes.
21. Digitalization is used within our company to enhance operational efficiency across existing and new processes and platforms.
22. Digitalized business processes are a source of competitive advantage for our company.
23. The value of digitalized processes for both employees and the overall business.
24. Digitalization is effectively leveraged to foster business innovation.
25. The digitalization of internal processes has improved the quality and timely delivery of our company's products/services.

Adopting Digital Technology to enhance customer experience

26. Information technology enables our company to serve new market segments and anticipate customer needs in a responsive manner.
27. A Platform was launched to continuously measure the lifetime value of customer relationships.
28. Customers' needs and wants are included when designing a new product or service.
29. Customer data are analyzed and acted on in real-time in our organization.
30. Digitalization Increases customer acquisition/Attracts new customers.
31. Digitalization Increases customer satisfaction/meets customers' needs.

Adopting Digital Technology to Enhance Employees Learning and Growth

32. Culture resistance has been a significant challenge for the company during the DT process.
33. Information technology improves internal communication within the Company.
34. Digitalization provides better coordination among functional areas in the Company.
35. Employees are empowered using new technologies.
36. The management allocates a budget to enhance Employees' qualifications and skills learning and growth.
37. Training enhances employees' skills and performance throughout the digitalization journey.
38. The company regularly provides awareness sessions on the DT roadmap.
39. Digitalization increased employee satisfaction and productivity.

Appendix B: Interview guide

Questions:

1. The Necessity for Corporates to Adopt DT
What factors contribute to the overall necessity for corporations to adopt and execute DT?
2. DT Journey Key Players
who are the key players or departments actively driving the DT journey, and how do they contribute to its overall direction and success?
3. Main Obstacles For DT Internally And Externally
What are the main obstacles and challenges that Meta encounters both internally and externally in the process of DT?
4. Challenges mitigation
How to mitigate these challenges?
5. Identification of Key Processes for DT
How does your company identify and prioritize key processes integral to its DT journey?
6. Alignment of Business and Digital Goals
how is the alignment between business goals and its overarching digital goals achieved and Are there specific instances where business and digital goals complement each other?
7. Cultural Alignment for DT
How does the organizational culture influence the success of DT initiatives?