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Digital Transformation Impact on Agility and Strategic Risk Management

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Abstract **Purpose** Egypt embarked ambitious strategic plans a few years ago to cope with the emerging new technologies and innovation. Therefore, the organizations operating privet sector working in Egypt is setting the Digital Transformation as a priority goal. Therefore, the main purpose of this study to examine the impact of digital transformation on the organizational Agility and the Strategic Risk Management. **Objective:** The aim of the study is to find out the impact and the relationships between the digital transformation, organizational agility and strategic risk management in the Egyptian SME working in the privet sector, in additional to investigating the role played by the Agility in the relationship between the digital transformation and the strategic risk management. **Hypotheses:** Based on empirical literature, the assessment of the variables in the is study were depending on several perspectives. For Digital Transformation the main capabilities used in evaluating the digital readiness of the organization were (strategic, leadership, market, operational, people expertise, cultural, governance and technology). For Agility the items used for agility measuring were (competency, flexibility, quickness, responsiveness). The Strategic Risk management were examined by (culture, process, experience, application, partnership). the study is examining a proposed model of a moderating role of Agility in the relationship between the Digital transformation and the strategic risk management. **Design/Methodology:** The study proposes a research model built on the basis of extensive research and a fully constructive literature review that simulates the variables and the relationships between all these variables. Based on this model, a research hypothesis is established, which is further explored through a survey considering primary data and analysis. The target audience is mainly the SME working in Egypt. Middle and upper management are the main target group of this study as they are involved in studying the subject. **Findings:** Based on the data collected and the analysis used by SPSS, and Smart PLS to analyze the data and test the hypotheses, the results were consistent with all of the hypotheses. And the results of data analysis showed that the Digital Transformation significantly influence the Agility and strategic risk management. Moreover, the Organization Agility is having a mediating Role between Digital Transformation and Strategic Risk management.

Keywords: *strategic Risk management, organizational agility, digital transformation, SME in Egypt*

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1. Introduction

Experts and professionals generally agree that digital transformation needs to be an integrated and ongoing component of any overall business strategy. There are numerous businesses setting up new digital departments and hiring digital expertise in a variety of fields to advance their digital transformation plan, the use of technology to radically improve the performance or reach of enterprises is becoming a hot topic for companies across the globe.

The concept of organizational agility is intricate and multifaceted. Unifying the notion and definition of organizational agility is one of the difficulties in doing research on it. An examination of the literature demonstrates that different frameworks and variables are utilized to evaluate organizational agility. The measurement of organizational agility is examined using a range and combination of capabilities, and practices.

Digital transformation is a strategic response to the trend of digital economy and technology and has thereby become the strategic priority for improving the leadership of top management team (TMT) [1,2]. Furthermore, using digital technologies, enterprises could improve their operation efficiency with office automation software and fundamentally refresh the corporate commercial strategy with profound changes in the product and service, organizational framework and the business model and processes [3,4,5].

Which can give explanation for that in the digital economy age, digitalization has now become a strategic management issue for enterprises rather than a technical issue [6,7]. According to the survey of American and

British enterprises, 90 percent of business leaders contended that IT and digital technology would increasingly contribute to developing the overall business of enterprises in the next ten years [8].

Digital Transformation is the application of digital capabilities to processes, products, and assets to improve efficiency, enhance customer value, manage risk, and uncover new monetization opportunities [9]. Today more than ever, incumbent firms in industries such as retail, telecom, banking, etc. are being forced to change due to disruption by new and innovative competitors. One way to respond to such disruption is to digitally transform.

1.1. Problem Definition

There is a gap in the area under study, which is not researched and practiced enough. This research aims to close this gap and get a clear definition of the Digital Transformation, Agility and strategic Risk Management.

Moreover, the study is aiming to investigate the impact of the utilization of the digital transformation on both of the Agility and the strategic Risk Management. Also the study is aiming to focus on the role played by the Agility affected by the digital transformation on the strategic risk management.

The research is putting the scope to study the above variables on the SME s (Small Medium Enterprise) working in Egypt. In developing countries, small and medium-sized businesses (SMEs) are typically seen as a powerful engine for long-term economic growth and jobs creation. Small and medium sized enterprises (SMEs) have usually been perceived as a dynamic force for sustained economic growth and job creation in developing countries. From a social viewpoint, SMEs secure livelihood for a large and ever expanding segment of the population. In Egypt, there are around 2.5 Million SMEs representing 75% of the total employed workforce and 99% of non-agricultural private sector establishments. Despite their importance, they are still facing several problems, in particular access to finance which a typical [10].

1.2. Research Questions

The researcher formulated the research questions for the SMEs working in Egypt:

1. How has digital transformation impacted the Agility?
2. How has the digital transformation impacted the Strategic Risk Management?
3. How has the digital transformation and agility impacted the strategic risk management?
4. What is the Role played by the Agility affected by the Digital Transformation on the Strategic Risk Management?

1.3. Research Scope

Small and Medium-sized Enterprises (SMEs) has become a cornerstone in national economies. They play a vital role in achieving economic development and eradicating unemployment. One can differentiate between small and medium-sized enterprises by measuring the number of employees and annual revenue. Looking at Egyptian SMEs, they have been growing since the 1990s. SMEs are defined by Egyptian laws as the enterprises whose capital ranges from EGP 50,000 to EGP 1 million with a maximum of 50 employees.

In Egypt, there are around 2.5 million SMEs [10] the research population is the front-line managers and executives of organizations operating in Egypt in the privet sector.

2. Literature Review

2.1. Digital Transformation

Digital Transformation is the application of digital capabilities to processes, products, and assets to improve efficiency, enhance customer value, manage risk, and uncover new monetization opportunities [9]. Today more than ever, incumbent firms in industries such as retail, telecom, banking, etc. are being forced to change due to disruption by new and innovative competitors. One way to respond to such disruption is to digitally transform.

Digital transformation can be defined as “a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies [11]. It changes the landscape of businesses, industries and societies in a fast manner.

Digital transformation combines various technologies and processes to ensure better value creation for the benefit of customers and companies. For example, Netflix, the leading internet movie streaming service, booked $16bn in revenue in 2018, following the digital transformation that it started in 2000 [12].

Netflix was founded in 1998 as a DVD rental and sales business. It introduced subscription services in 2000, allowing customers to rent DVDs by paying a flat monthly fee. In the same year, it developed an algorithm for a DVD recommendation service on the company’s website based on customers’ previous movie choices, marking the start of its digital transformation process. Netflix’s digital transformation process is iterative, involving nonlinear episodes where the company introduced and explored the paths of transformation. [13]

In 2007, the company piloted its movie streaming service by offering combined subscriptions for DVD rental and internet streaming service to existing customers.

In 2010, Netflix went international by expanding to Canada and became the world’s first movie streaming service provider. The streaming service serves as the major contributor to Netflix’s annual revenue. The Netflix example shows that companies intending to transform themselves should gradually integrate new technologies into their value creation process. They should develop appropriate organizational designs [13].

In fact, digital transformation requires continuous evolution of existing business models and development of new hybrid business models [14]. In a hybrid business model, a company needs to manage two separate value creationpaths: exploitation and exploration [11]. Exploitation is the process of generating value from resources that already exist, whereas exploration is the process of generating new value through innovation. By

providing DVD rental services, Netflix first took advantage of the market that already existed. Then, it explored new markets by launching streaming services in both domestic and foreign countries.

Companies using a hybrid business model need to manage the tensions arising from exploration and exploitation efforts. A way to manage this is by phasing the digital transformation process and sequentially introducing the exploration process over time. For example, LEGO, the toy company, conducted its transformation in several phases over a period. It started by undertaking a series of initiatives aimed at increasing the effective use of a specific software to help decision-makers (first stage), followed by managing business processes between 2008 and 2012 (second stage), moving on to offering digitized products such as the Life of George game in 2011 that combines the physical LEGO and a mobile app (third stage) and finally becoming a digital enterprise in 2016 (fourth stage) [15].

Recently, the digital economy has stormed the whole world and has attracted considerable attention from governments worldwide. It is gradually becoming the new focus of competition among countries, industries and enterprises. Currently, one of the most pressing challenges for enterprises is the integration and use of digital technologies and no sector or organization is immune to effects of digital transformation [3].

2.1.1. Previous Studies on Digital Transformation

Digital transformation research has been supported mostly in practice with the emergence of numerous industry reports, but academic literature that tests what has been observed in practice is still in an early stage. Understanding this complex phenomenon that has challenged many organisations, however, is of paramount importance for the operations management and strategic management literature, mainly because of the high number of companies that have not been able to cope with the transformational requirements of new digital technologies [16].

[17] stated it makes more sense to integrate agile principles within heterarchical structures and to progress the organization step by step by continuously improving the structures within an organization. Through agility, a joint and step-by-step organization with changed acquired skills and the new developed team and leadership understanding as well as with a changed understanding of culture is developed. This agile new framework offers the opportunity to become an innovation in itself and mobilizes the entrepreneurial forces to exploit the opportunities of dynamic markets and new technologies in the company in the future.

[18] emphasize that for a digital transformation to be successfully adopted, it is important that the key technology: a) has relative advantage over its predecessor, b) is simple to use anddoes not require intensive learning, c) is compatible with the users' current habits, d) the benefits of using it are easily observable to adopters, and e) it can be used on a trial basis before committing to it permanently. It is important that the managers who are responsible for selection of the key technology keep these specific factors in mind as they review the various technology options in front of them and select a key technology to be used for the digital transformation.

Firms need to have the conditions, processes and skills in place that allow them to transform and reconfigure their resource base to maintain appropriate value in a fast-paced digital landscape. [16] confirm that one of the individual skills necessary to constantly execute a digital initiative is related to digital-savvy skills. It has been reported that senior leadership teams without digitalization experience are a significant barrier to business transformation managers with know-how and experience of digital are probably more equipped to perform the constant renewal required in the digital era. The changes needed to constantly digitally transform an organization and for the maintenance of ongoing operations require new skills.

2.1.2. Theoretical Models Critical Analysis

[19] propose that business growth includes three aspects of growth: pre-factors of growth, growth as a process and growth as an outcome. All of these factors may be impacted by digitalization, and strategic flexibility may have an impact on corporate expansion. research was to explore six Finnish growth companies in order to understand the relationship between digitalization and growth. By using qualitative data collection and the Digimat measurement test for analyzing patterns, themes and best practices to generate a deeper understanding of the impact of digital technologies on business growth and growth strategies in these companies.

The implementation of new technology is made possible by strategic flexibility, which is a function of both digitalization and strategic flexibility. depicting that digitalization seems to suit small- and medium-sized companies. This compatibility results mostly from the fact that these companies typically have constrained resources, a tendency to concentrate on a small number of projects, and the capacity to maintain a flexible approach to their business. Even in the start-up stage, the business might begin looking for development through digitalization, which would seem to have a direct bearing on the growth that occurs. The ecosystem perspective is particularly crucial, as businesses increasingly expand through networks, often with their customers, and access to these networks necessitates digital innovation or at the very least, pertinent digital capabilities.

2.2. Organizational Agility

[20] demonstrated that various elements of an organization's framework can have a direct impact on organizational agility. An entity's strategy, structure, capabilities, employees and leadership all play a role in affecting agility. The subsequent link between increased agility and business performance is also well demonstrated in the literature, highlighting the importance of enterprise agility in today's dynamic business environment. By reinforcing enterprise agility, firms react faster and more appropriately to unpredictable changes.

Over the past 30 years, we have worked to identify key capabilities which an organization must possess to succeed. We have defined the concept of organization capability [21].

As what an organization is known for and good at doing to deliver value to its key stakeholders. Having the right organizational capabilities leads to investor confidence, and we have created a leadership capital index to define them as intangibles that investors value over time [22].

Having the right organizational capabilities leads to improved customer commitment and revenue per customer, and we have worked to define the right internal culture and leadership behaviors [23]. Having the right organization capabilities also leads to employees having greater personal well-being and work productivity, and we have worked to define how to increase personal meaning at work [24].

However, the current situation should be expected to change soon. Today's digital or "fourth industrial revolution" is taking us beyond the era of so-called nimble or "agile" production [25]), where organizations pursue ever greater flexibility and global reach at greater speed, towards a world dominated by a search for organizational agility itself.

Digitization is transforming the business landscape at an exponential rate, shrinking the planning horizon, facilitating the rise of the virtual world, opening up new markets, increasing the range and nature of products and competition, as well as the expectations of customers for personalized products and services at low prices.

This means that business models must be continuously reinvented since yesterday's models of success are unlikely to help organizations thrive in the future. With sustainable competitive advantage elusive, organizations need to be capable of generating multiple transient advantages, and this comes with speed and innovation [26].

Digitization is propelling innovation in many areas. There are new types of business and service, such as digital marketing, and also new types of crime and its antidotes in the form of cyber-security. Many consumers now rely on one digital channel or another to interact with companies.

In global banking for instance, digitization is expected to penetrate nearly half of all European revenue pools by the decade's end, according to McKinsey analysis.

With multiple digital competitors emerging, traditional banks are under pressure to match disruptive new business models while maintaining valuable customer relationships.

The conventional components of business no longer apply, as Joe Gordon, boss of First Direct bank comments: In a world where the biggest taxi firm doesn't own any cars, where the biggest accommodation provider doesn't have any real estate, and where the biggest news website doesn't own any content we want to play a part in shaping what banking will look like in that world. [27]

For companies that wish to survive and thrive, speed and innovation are of the essence; hence in many sectors there are increasing calls for organizational agility. By agile I mean an organization's capacity to respond, adapt quickly and thrive in the changing environment [28].

In program management for instance, rather than the conventional "waterfall" planning (a relatively linear and sequential design approach common in engineering or software development in which activity flows down through phases of conception, initiation, analysis, design, construction, testing, deployment and maintenance) and intensive documentation of lengthy projects, there is now a greater emphasis on experimentation and short iterations involving the customer, with early releases of emerging products to gauge customer feedback and adjust accordingly.

2.2.1. Previous studies on Agility

AM is an operational strategy focussed on inducing velocity and flexibility in a make-to-order or configure-to-order production process with minimal changeover time and interruptions. Decision-making attributes, e.g. the category of DM (neutral, risk-averse and risk-taking), affect the quantitative evaluation of the overall agility degree, which is correlated with a predefined agility measurement scale. [29]

Manage the team and technology using Roadmaps Personas, and an Agile approach. The basic concept of Agile is to fail fast and then reinvent. Frequent iterations reduce project waste, and, over time, it will increase morale within the team and the company.

Showing progress on a project is often the best way to manage timelines while using the power of group think to surpass hurdles. [30]

[31] Illustrated moving beyond a search for greater flexibility at greater speed, towards a search for organizational agility itself. The dominant model of focusing on "hard" output measures (such as productivity, financial results and shareholder value) and enablement through internal alignment is being brought into question, as is the role of the HR discipline. Definitions of organization effectiveness will need a stronger focus on the "means" to a different set of "ends". The changes in the means are fundamental.

Constructs such as agile structures will mean changes in work processes, structures, skills requirements, management practices, technological elements and cultural practices.

[32] defined Agility as a breakdown of four characteristics: create a future, anticipate opportunity, adapt quickly and learn always. There are four stakeholders where agility characteristics apply (where): strategic, organization, leadership and individual. Agility is the ability to quickly respond to emerging market opportunities. Agility combines being able to change, learn continually, and act quickly and with flexibility for both organizations and individuals

Increased organizational agility increases the ability to respond proactively to unexpected environmental changes. The commitment to continuous transformation and agile strategies implies changes at all levels of the organization from its structure, through its leadership and decision-making dynamics, down to the skills and interpersonal relationships of the individuals implementing the agile mission [20].

2.2.2. Theoretical Models Critical Analysis

[33] briefed a theoretical rational for analyzing the critical contribution of IT capabilities in building greater firm agility. Their study underscores the impact of IT capability on overall agility of privately-owned financial enterprises such as privately-owned banks, insurance companies, and other financial services providing groups functioning in the state of Odisha, in Eastern India and the scope of the study is limited to the IT and business executives working in the middle and senior level of management.

Around 495 numbers of branches of different private banks, and insurance companies were contacted for this research and a total of 930 structured questionnaires were distributed out of which 470 responses returned, but 300 were found to be useable for further analysis representing 32 per cent valid response rate.

It concludes that IT capability acts as an enabler for business process and market responsive agilities. The study also infers that, if IT spending is not properly translated into creating superior capability, huge IT investments will impede the overall organizational agility. As agility is the call for recent times, firms must concentrate on developing and cultivating efficient IT capabilities to foster superior agility without being trapped by the coarse effect of over IT investment.

2.3. Strategic Risk Management

To discuss strategic risk, we must first define the word strategy because "strategic" means according to [34] "pertaining to, characterized by, or of the nature of strategy". In business literature, there is abundant usage of the term "strategy" and it has become "… among the most sloppily used terms in business …" [35].

We prefer to adapt the definition of strategy found in On War, which according to Louise Wilmot has been described as "the only truly great book on its subject" (war) – see von Clausewitz (1997). Carl von Clausewitz defines strategy as "the employment of the battle as the means towards the attainment of the object of the war". This is a military definition. From that definition, but in a business context, we define strategy as "the employment of competition as the means to attain business objectives". In other words, a strategy outlines how an organization will compete with others to achieve its commercial objectives. Therefore, it is impossible to establish a strategy without also describing the competition. [36]

The term "competitive strategy" introduced by [37] is therefore strictly speaking a pleonasm in our opinion. The company is exposed to expected and unexpected feelings that are linked to risks as a result of competing with others to achieve goals. We refer to these dangers as strategic dangers. Consequently, we define strategic risks as "risks that arise in pursuit of business objectives" [36].

In other words, many strategic issues basically exist in a state of uncertainty from which strategic risks (and other business risks) can emerge as objectives are pursued.

Having defined strategic risks, we must decide how to measure such risks in order to operationalize our approach. Evidently, we hold that strategic risks are fuzzy and/or nonspecific ambiguous. This is further substantiated by the claim of [37] that; "firms are mutually dependent". Thus, strategic risks are not probabilistic because they are not necessarily all exhaustible nor mutually exclusive. The measure of risk discussed by [36] proposed that the Risk can be measured or evaluated as follow

Strategic risk=possibility x impact on business objectives

The concept of strategic risk relies on a central assumption that the strategic performance of firms is a consequence of a long-term change process. This process may be affected by various factors interacting with one another in an intricate, complex fashion. A strategic risk stands for not achieving a strategic outcome. It can be also defined as arising in pursuit of strategic objectives and then referring to risk of strategy [38].

The discussions on strategic risk should address the notion of uncertainty. Although risk and uncertainty are often used interchangeably, these two terms vary with regard to the known (risk) or unknown probability (uncertainty) of possible future outcomes. Therefore, some define uncertainty as "the inability to assign a probability to outcomes," and risk is regarded as the "ability to assign such probabilities based on differing perceptions of the existence of orderly relationships or patterns" [39].

However, the majority of reasonably complicated strategic interactions and circumstances lack the exact quantitative data needed to evaluate objective likelihood. Generally speaking, most strategic issues are in a condition of uncertainty where strategic risks might develop when objectives are pursued., which makes strategic risk "fuzzy and/or nonspecific ambiguous" [40].

Therefore, strategic risk analysis more often involves estimating subjective probabilities, where the distinction between uncertainty and risk becomes meaningless [41]. In strategic risk research, its measurement becomes often more important than its definition ([42]. Moreover, the risk associated with a firm's realized strategic behavior can hardly be determined by actual examination of its strategy vis a vis those of other firms.

Because of this, the vast bulk of strategy research that deals with risk is based on ex-post data that describes the shifting relative positions of a group of organisations over time. This approach is generally aligned with traditional concepts of industry and market analysis Despite this consensus among researchers, there are a variety of measures, mostly imported from finance, used as a proxy for strategic risk.

The sources of strategic risk lie both in the environment and inside the company. One typology of uncertainty, as a source of strategic risk, that takes into account this two-dimensional division is proposed by [43] and distinguishes between *firm-specific* and *market uncertainty*.

However, firms may reduce exposure to strategic risk and improve performance, through a process of effective management, but still face risks associated with obtaining the needed resources [44]. In reaction to uncertainty and reliance on outside resources, a corporation uses inter-organizational tactics. Examples of such strategies include forming strategic alliances, making acquisitions, or creating managerial ties between different organizations. Personal connections among members of management or supervisory bodies of various companies serve as more than just a conduit for acquiring access to outside resources (ideas, information or capital), but may also reduce environmental uncertainty, hence; minimize risk.

2.3.1. Previous Studies of Strategic Risk Management

[45] added insights from the resource-based view provides practitioners with clear priorities for enterprise risk management implementation. The core competencies, according to the valuable (V), rare (R), inimitable (I) and non-substitutable (N) resources criteria, should be management's focus in the risk-management process. Nevertheless, managers should bear in mind that not all risks can be foreseen or managed. Setting the wrong

priorities can harm the firm's survival. It should be noted that although the right priorities are set, the number of risks for the set priorities still remains indefinitely high. Setting priorities is rather a pragmatic approach to restrict and direct the efforts of enterprise risk management.

Assessing and managing strategic risk is an inherently inexact process. It encompasses a com-bination of inputs, both material and moral, that defy empirical resolution. Weighing these in-puts, identifying possible outcomes, and planning for uncertainty should be done with the clear understanding that a complete solution is impossible to achieve but always striven for. Once a strategy is developed, the most important strategic skill and the true mark of strategic "genius" is accounting for potential change and recognizing actual change in a timely enough manner to ad-just the strategic variables and thereby ensure a valid strategic equation oriented firmly on achieving the political objectives at hand. [46]

[47] reveals that risk management effectiveness combines both the ability to exploit opportunities and avoid adverse economic impacts, and has a significant positive relationship to performance. This effect is moderated favorably by investment in innovation and lower financial leverage.

[48] established that an effective risk management process that assimilates risk tolerance, risk propensity and risk practices into a managerial mindset offers a sound solution for mitigating risk. By envisioning risk as a "conceptual model of thinking" and interpreting it as a "predictable business process", and by offering specific "decision enablers" that complement the corporate mindset, it creates a safety net against unsafe risk practices. As a result, it allows for an appreciation that current financial performance is a direct measure of management's risk decision capabilities.

2.3.2. Theoretical Models (Critical Analysis)

In today's volatile business world with a prospect of even more uncertainties in the future, risk management deserves executives' attentions at a strategic level. When a company seeks risk management capabilities from a strategic point-of-view, these capabilities can be leveraged to gain competitive advantage. This can be done by either being stronger in dealing with a disruption when it hits everyone, or seeking riskier businesses with higher potential profits, or dealing more effectively with day-to-day fluctuations during more stable times, or creating a resilient image [49].

2.4. Digital Transformation and Agility

[50] provide guidelines on how to adapt the Deming cycle and agile approach to modern process management and IT improvement and shape the agile business process management accordingly to meet the necessity of synchronizing major IT overhauls with business process improvement initiatives to avoid misalignment between services offered to customers and technologies underlying those services.

[51] highlight the role of such systems in increasing dynamism and reactiveness to the environmental changes of organizations and, consequently, organizational agility. Moreover, the achievement of market capitalization and operational adjustment agility have emerged as the principal results of the implementation of such business process management systems. Increased exploration and exploitation capabilities may also be considered related to implementing big data analytics-capable business process management systems within ambidextrous organizations the importance of big data analytics -capable business process management systems in fostering ambidextrous organization's agility, especially for companies – like consumer-goods companies – which are constantly dealing with a large amount of data.

Digital options and agility represent enterprise capabilities for competing in a digital economy. Therefore, firms should assess their IT investments and capabilities in terms of the overall quality of their digital options and agility. At the same time, the relationships between these dynamic capabilities and competitive actions help evaluate how well individual business units in large multidivisional firms leverage information technology in their competitive actions. Therefore, business unit executives can benchmark their entrepreneurial alertness in leveraging digital options and agility through the frequency and variety of their competitive [52].

[53] suggested that IT capability enables market capitalizing agility and operational adjustment agility. also revealed that IT capability is essential to achieve agility and that IT capability may offer a possible resolution to the conundrum of contradictory effect of IT on agility Also the conceptualization and measurement of IT capability as a latent construct reflected in its three dimensions: IT infrastructure capability, IT business spanning capability, and IT proactive stance. Our results suggested that IT capability enables market capitalizing agility and operational adjustment.

2.5. Digital Transformation and Strategic Risk Management

[52] focused attention toward IT and business capabilities for under- standing the strategic management of IT. They propose that these strategic processes are important because they visualize the dynamics of how firms continually develop their capabilities and shape their strategic conduct over time. Further, these processes capture the interactions among IT investments and capabilities, digital options, agility, and entrepreneurial alertness in shaping the competitive conduct of the firm

[16] provides evidence of the relationships between the first-order micro foundations and performance impact of digital transforming capability, which has not been explored in the academic literature. Thus, theoretically, this study extends the micro foundations of dynamic capabilities in a digital transformation context by revealing critical organizational and individual aspects of a digital transformation that, in turn, contribute to performance. The findings indicate that responding to digital disruption depends on holistic combinations of the constituent factors.

A study by [47] finds a significant positive. relationship between risk management effectiveness and performance. The positive performance effect of risk management is found to be enhanced by investment in innovation and low financial leverage the findings confirm the importance of

innovation policies and capital structure decisions in dealing effectively with environmental risk and uncertainty.

[54] showed by empirical research that Every business requires, at a strategic inflection point, a total re-anchor of how value is created and captured. Digital transformation comes nowadays as a saver from the predictability of red ocean business strategies and an immune system from the disruption risks of cutting-edge technologies. It is a way to perfect the customer experience, redefine competition, exploit the huge potential of big data, embrace innovation and redefine the value proposition.

The information age has changed the way enterprises manage risk in fundamental ways. Successful risk management strategies of this decade are being developed holistically across multiple business operations, and tailored to accommodate the different types of exposure specific to an individual business or operation. Corporations are applying these new approaches to strategically manage risk with virtually every new initiative, whether it is internal transformation where direct control of risk factors is very high but technology is new, with partners where direct control over risk factors is shared, or with other stakeholders where direct control over risk factors is often very low. [55]

Assessing and managing strategic risk is an inherently inexact process. It encompasses a com-bination of inputs, both material and moral, that defy empirical resolution. Weighing these in-puts, identifying possible outcomes, and planning for uncertainty should be done with the clear understanding that a complete solution is impossible to achieve but always striven for. Once a strategy is developed, the most important strategic skill and the true mark of strategic "genius" is accounting for potential change and recognizing actual change in a timely enough manner to ad-just the strategic variables and thereby ensure a valid strategic equation oriented firmly on achieving the political objectives at hand. [56]

2.6. Agility and Strategic Risk Management

Agility management is an operational strategy focused on inducing velocity and flexibility in a make-to-order or configure-to-order production process with minimal changeover time and interruptions. Agility management products compete directly with standard products, providing a customer with a configurable opportunity to specialize a product. Agile system modeling and the corresponding agility assessment forum have been attempted, and are well documented in literature, while the influence of decision makers s' risk bearing attitude and the effect of the decision-making environment on estimating the overall agility degree has rarely been attempted. In this context, the present study explores an extended agility model in a specific organization's hierarchy and reflects how decision-making attitudes alter organizational agility [57].

2.7. Research Hypothesis

In the research, three main hypotheses have been developed to be tested. The hypotheses were developed based on the previously presented literature and the previous research studies conducted in different contexts related to Digital transformation relation to Agility, the impacts of Digital Transformation on strategic risk management and the mediating role of Agility between the independent variable Digital transformation and dependent variable strategic risk management

H1 Digital Transformation significantly and positively impact the Agility

H2 Digital transformation significantly and positively impact the strategic risk management

H3 Digital Transformation and agility significantly and positively impact the strategic risk management

H4 The Agility is a mediator factor connects the independent variable of Digital transformation and the dependent variable of the strategic risk management.

2.8. Research Conceptual Model

The following serves as an illustration of the proposed conceptual model the researcher intended to test through this empirical research. The model includes the Digital Transformation as independent variable and its impact on both Agility as mediating factor and Strategic Risk Management as dependent variable.

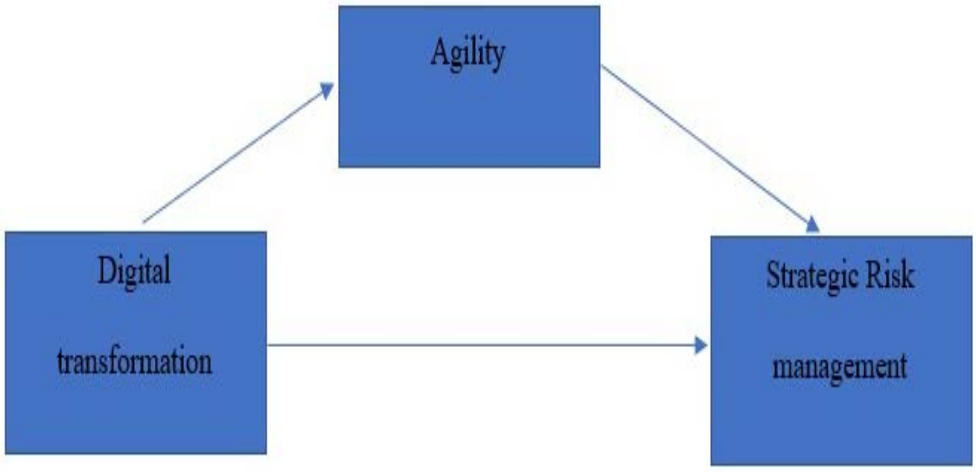

Figure 1. The proposed model

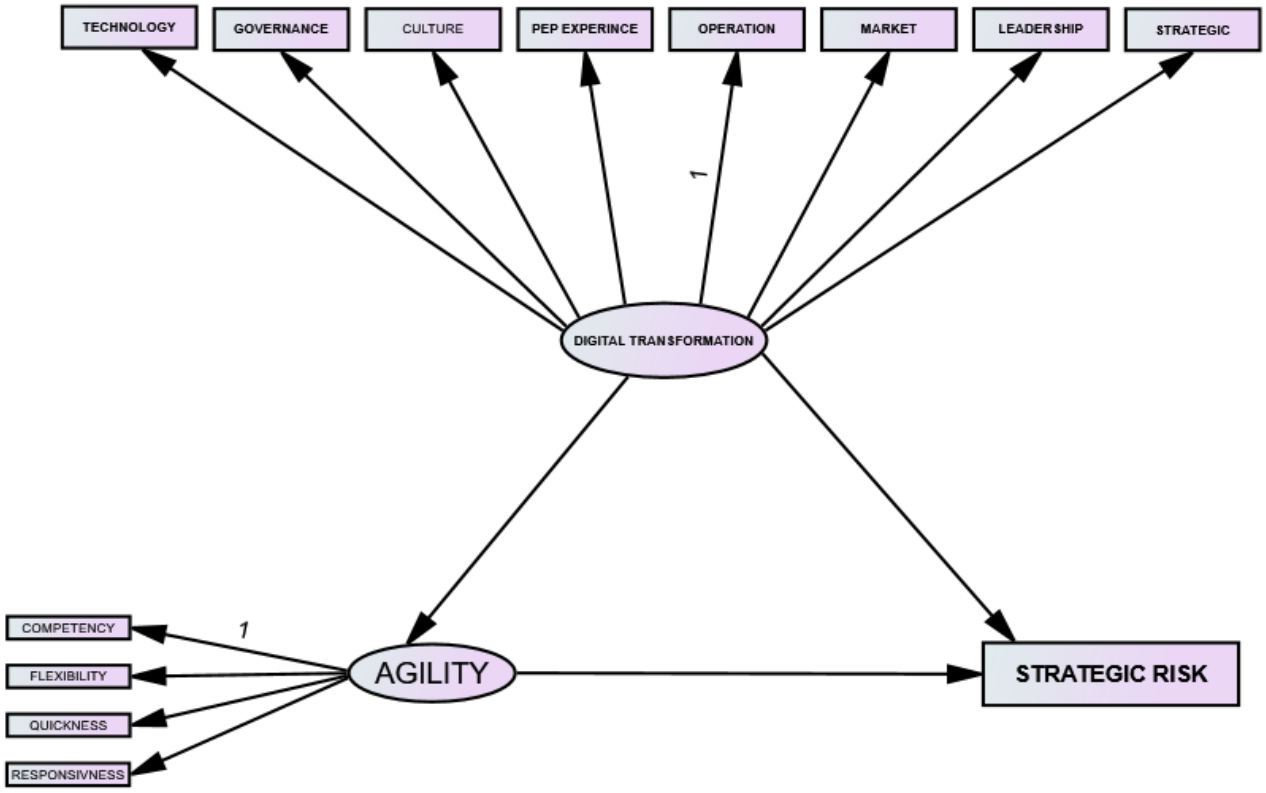

Figure 2. The detailed model including the components of the independent and the mediator

As demonstrated by Figure 1, the diagram is showing the main variables and the Hypothesis under the study.

Figure 2 is showing the detailed components of the independent and the mediator, the Agility variable which includes 4 components (Competency, Flexibility, Quickness, Responsiveness). The Digital transformation variable which is including 8 Capabilities (Strategic, Leadership, Market, Operational, People expertise, Cultural, Governance, Technology).

3. Research Methodology

3.1. Population

The dissertation will use a a descriptive quantitative analysis using questionnaires distributed to specific samples of first line managers and executives of a private sector organizations working in EGYPT. The aim of the questionnaire is exploring the relations between different dependent and independent variables and their sub-dimensions and the examining the existence of the mediating variable. where information will be converted into numbers and amounts to analyze the data using statistical techniques.

The questionnaire is consisted of 4 parts, each part of the questionnaire will evaluate the one variable of the 3 variables involved in our study. First part is a questionnaire is testing the Strategic Risk management capability of the respondent's organization. The second part of the questionnaire is investigating the level of Managerial Agility of the respondent's organization and the third part of the questionnaire is evaluating the respondent's organization digital maturity.

3.2. Sample Size

Using a sample size formula that is used for an unknown population size or a very large population size

Necessary Sample Size

$$= (\mathbf{Z-score})^2 \ \mathbf{xStdDev} * (\mathbf{1-StdDev}) / (\mathbf{margin\ of\ error})^2$$

Sampling confidence level: A percentage that reveals how confident you can be that the population would select an answer within a certain range, where the research use confidence level 95% and confidence interval ± 5%.

Using the Z-score table to get the Z-score for a specific confidence level. The Z-scores for the most common confidence levels 95% – Z Score = 1.96.The margin of error is the percentage that tells you how much you can expect your survey results to reflect the views of the overall population. The smaller the margin of error, the closer you are to having the exact answer at a given confidence level. With a 95% confidence level, 0.5 standard deviations, a margin of error (confidence interval) of +/-5%, and a Z Score of 1.96 at a 95% confidence level, = $((1.96)^2$ x .5(.5)) / $(.05)^2$ = (3.8416 x .25) / .0025 = .9604 / .0025 = 384 respondents are needed.

3.3. Data Collection

The survey was conducted in English language. It consists of 4 sections. The first section (dependent variable) strategic risk management which includes five attributes variables (Culture, Process, Experience, Application, Partnership). The second section is for the Agility variable which includes 4 sub variables (Competency, Flexibility, Quickness, Responsiveness). The third section is the Digital transformation variable

which is including 8 Capabilities (Strategic, Leadership, Market, Operational, People expertise, Cultural, Governance, Technology). The last section "demographic variables" (Age - Gender - Educational level – years of experiences – sector).

The survey is developed on Google forms and distributed randomly through emails and shared links.

The questionnaires were collected through an online survey using Google forms. Out of the 443 questionnaires answered, 405 were completed and fulfilled the selection criteria.

IBM SPSS 21 will be used to analyze the data to test the reliability of the questionnaire (Cronbach's Alpha) for every variable and component. Also, will be used to test the correlation for the components of all the variables. In additional to checking the regression between the variables to test the hypothesis of the study.

Smart PLS is used to draw the model and measure the significance of the total, direct and indirect effect of the Digital transformation, Agility and strategic risk management.

4. Data Analysis and Findings

4.1. Reliability Check

The coefficient alpha, or Cronbach's alpha, is the usual measure of internal consistency of all model variables and the set of variables of the constructed model. Cronbach's alpha determines how all items that measure a specific variable are related to all other items and how all variables are related to each other to construct a model to get stable, consistent data to represent the research model. Cronbach's alpha reliability varies from 0 to 1, and a value of 0.6 or less generally indicates unsatisfactory internal consistency reliability (Malhotra, 2010), and a value of 0.7 or higher indicates good reliability for the overall model variable's consistency.

Table 1. Cronbach's Alpha Coefficient for components of strategic risk management

Items	N	Cronbach's Alpha
Culture	4	0.937
Process	4	0.954
Experience	4	0.949
Application	4	0.944
Partnership	2	0.885

Ranged from 0.885 to 0.954. So the results confirm the reliability and consistency rate of each component.

Table 2. Cronbach's Alpha Coefficient for components of Digital transformation

Items	N	Cronbach's Alpha
Strategic capability	4	0.975
Leadership capability	4	0.961
Market capability	4	0.969
Operation capability	4	0.978
People expertise capability	4	0.964
Culture capability	4	0.965
Governance capability	4	0.976
Technology capability	4	0.973

Cronbach's Alpha Coefficient for components of Digital transformation Ranged from 0.961 to 0.978. So the results confirm the reliability and consistency rate of each component.

Table 3. Cronbach's Alpha Coefficient for components of Agility

Items	N	Cronbach's Alpha
Competence	6	0.954
Flexibility	15	0.978
Quickness	4	0.939
Responsiveness	9	0.960

Cronbach's Alpha Coefficient for components of Agility Ranged from 0.939 to 0.978. So, the results confirm the reliability and consistency rate of each component.

Table 4. Cronbach's Alpha Coefficient for the 3 main variables

VARIABLE	Reliability (Cronbach's Alpha)
Digital transformation	0.995
Agility	0.989
Strategic Risk Management	0.983
Overall	0.993

The measurement of the reliability is displayed in the Table 4 for the variables under study. The Cronbach's Alpha of the Digital Transformation is 0.995, Agility is 0.989 and Strategic Risk Management is 0.983. While the overall Cronbach's Alpha of all variables is 0.993. Based on these results, all variables, and the overall model over 0.7 have a good value for reliability.

4.2. Validity Check

Firstly, Measure of Sampling Adequacy (MSA) is a measure of how data is adequate for the check, MSA which derived from the Kaiser-Meyer-Olkin (KMO) that measure the proportion of variance among variables that might be common variance and how suited your data is for factor analysis. The test measures sampling adequacy for each variable in the model and for the complete model. High values (close to 1.0) generally indicate that factor analysis may be useful with your data. KMO – MSA values more than 0.6 are adequate, and higher between 0.8 and 1 indicate the sampling is more adequate. If the value is less than 0.50, the results of the factor analysis probably won't be very useful (Malhotra, 2010).

Table 5. KMO of the variables

VARIABLE	KMO
Digital transformation	0.923
Agility	0.867
Strategic Risk Management	0.941

4.3. Demographic Data Analysis

Analyses of demographic data is a basic method that helps to understand the composition of the sample, demographic information, and the characteristics of survey respondents. All demographic data analysis is displayed in Table 6.

Table 6. Demographics of the respondents

		Count	Table N %
GENDER	**Female**	130	32.1%
	Male	274	67.7%
	Total	**405**	
AGE	**less than 30 years**	31	7.7%
	30-40	73	18.0%
	40-50	162	40.0%
	50-60	103	25.4%
	more than 60	35	8.6%
	Total	**405**	
EDUC	**Bachelor's degree**	207	51.1%
	Doctor degree	78	19.3%
	Master's degree	112	27.7%
	Total	**405**	
EXPER	**0-10 years**	35	8.6%
	10-20years	112	27.7%
	20-30 years	179	44.2%
	More than 30 years	76	18.8%
	Total	**405**	
SECTOR	**Commercial**	182	44.9%
	Industrial	93	23.0%
	Services	129	31.9%
	Total	**405**	

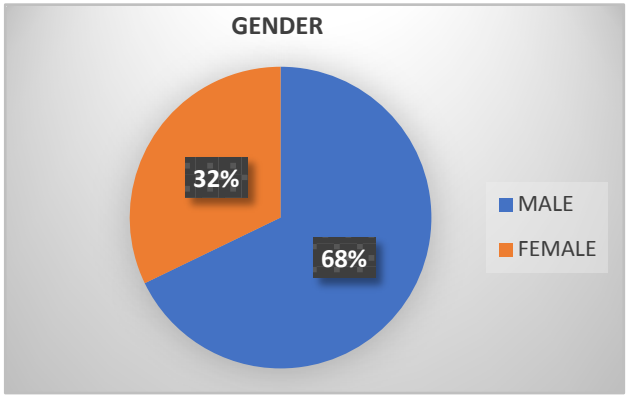

Figure 3. Demographic: Gender

As shown in Figure 3, 67.7% of the survey participants are males and 32.1 % are females. This shows the gender balance.

While Figure 4 shows that the age composition of the respondents shows 7.7 % of the respondents are aged less than 30 years, 18% are between 30–40 years, and 40% are over between 40-50 years old, 25.4% are aged 50-60 years, and8.6 % are above 60 years.

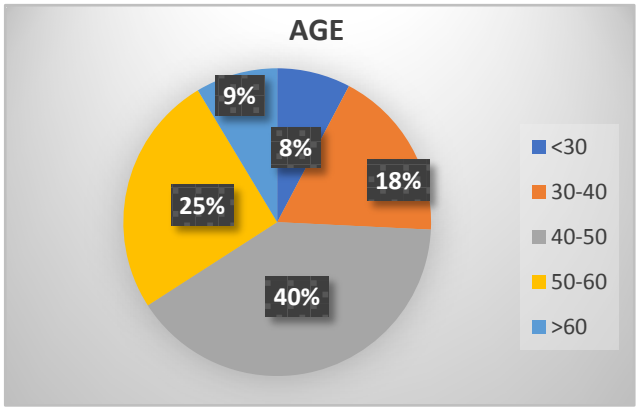

Figure 4. Demographic: Age

Figure 5 shows that 51.1% have a university degree, 27.7% have master's degree and, and 19.3% have doctoral degrees only have a high school diploma. That means the sample is highly educated.

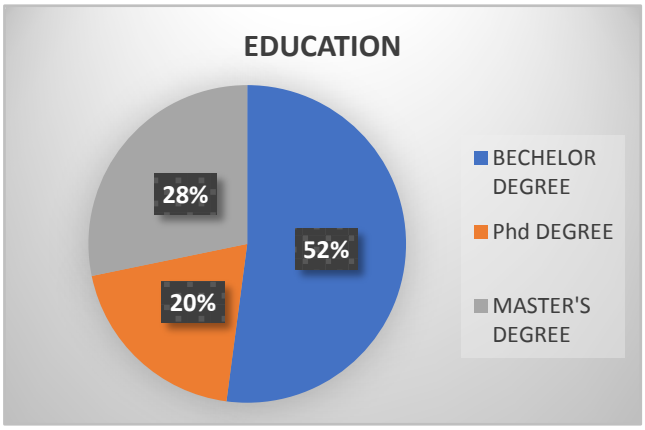

Figure 5. Demographic: Education Level

Figure 6 shows years of experience, that 8.6% are less than 10 years in experience, 27.7% are between 10-20 years of experience, 44.2% are of 20-30 years of experience, 18.8/% are more than 30 years of experience.

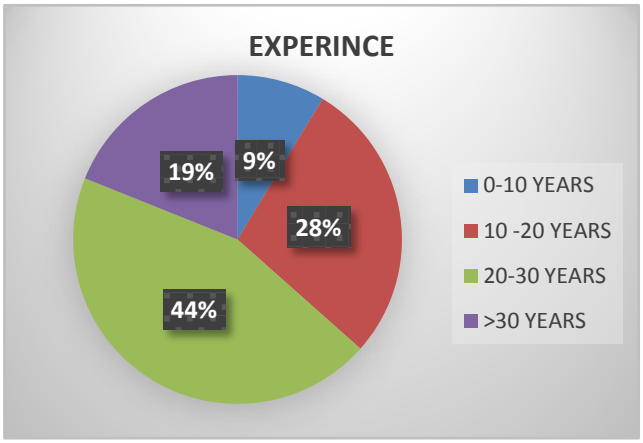

Figure 6. Demographics: Experience years

Figure 7 shows the sectors from which the respondents are working at it shows that 45% are from commercial sector, 32% are from services sector and 23% are from industrial sector.

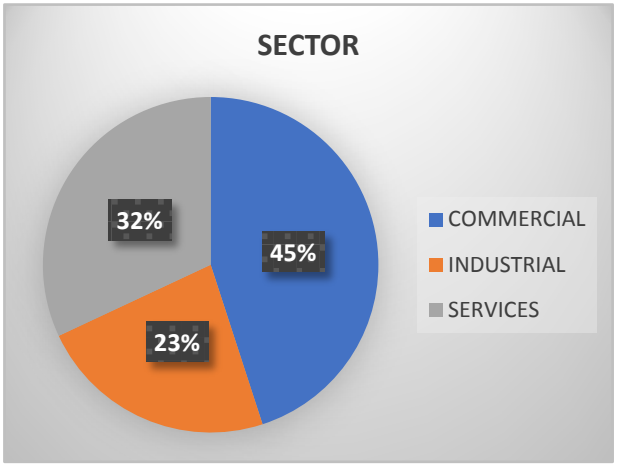

Figure 7. Demographics: Sector

4.6. Descriptive Data Analysis of the Survey

Descriptive analysis is used to analysis data in a way that aids in the description and summarization of this data, such as patterns that may emerge from the data. Descriptive analysis is important because it simply presents the researcher's raw data. The descriptive analysis does not allow us to make conclusions beyond the data we have analyzed or reach conclusions regarding any research hypotheses.

The collected data is analyzed with IBM© SPSS© Statistics Version 23 using the Pearson correlation analysis, linear regression, and path analysis to test the supposed causal relationships and moderating effects of the variables. This support for exploring relationships between variables means searching for evidence that the variation in one variable coincides with the variation in another variable (Bryman & Bell, 2003). The statistical analysis related to the proposed conceptual model and the study hypotheses will be analyzed and discussed in detail in this section.

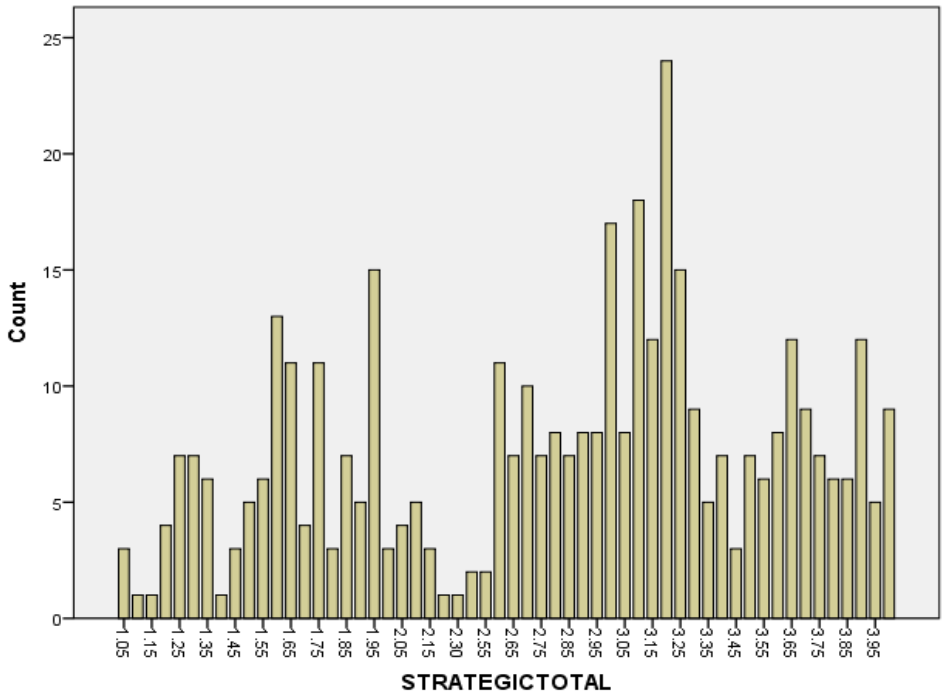

Figure 8. score of strategic risk management

Figure 8 show the score of the strategic risk management of the respondents.

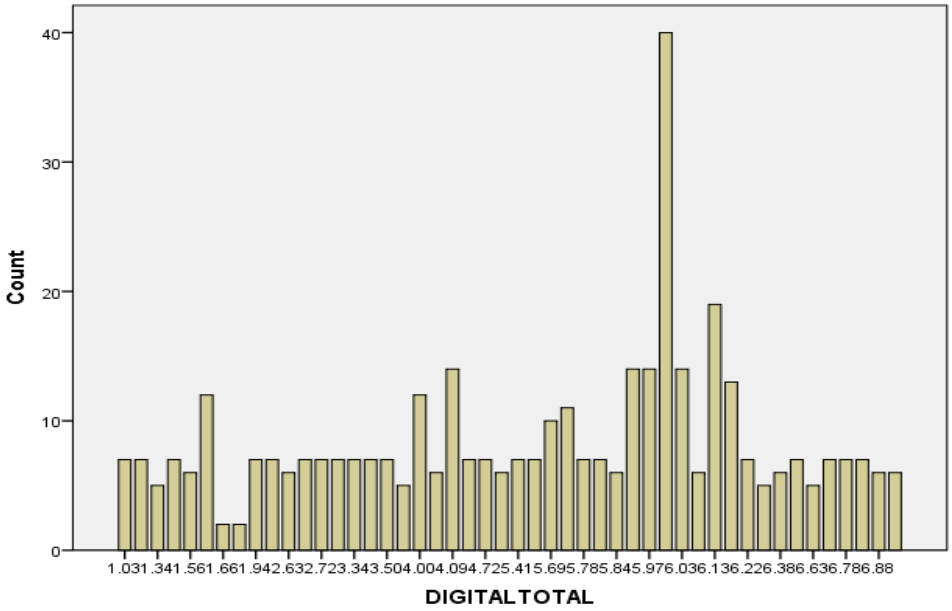

Figure 9. score of digital transformation

Figure 9 show the score of the Digital readiness of the respondents.

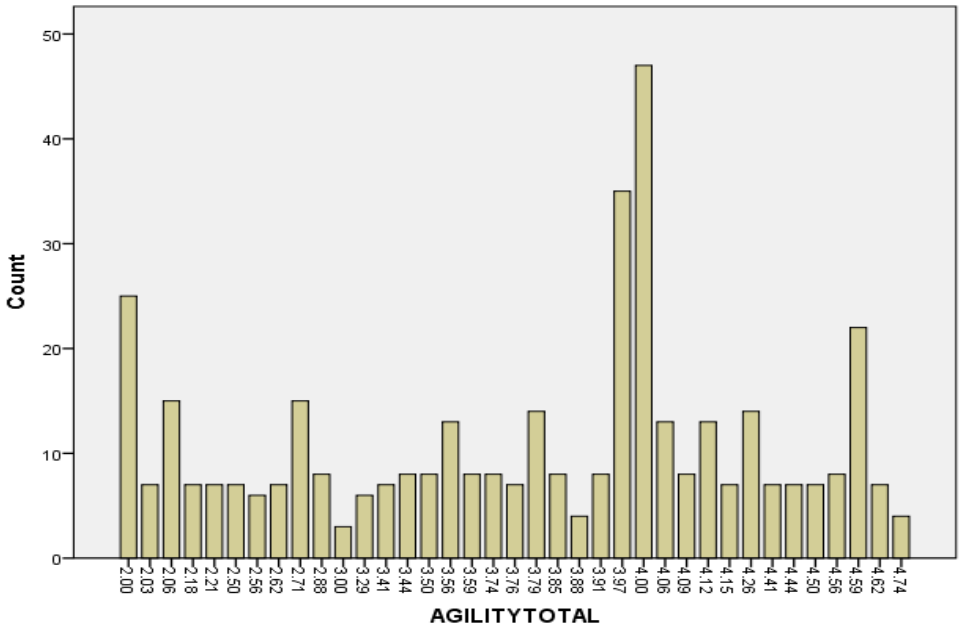

Figure 10. score of agility

Figure 10 show the score of the Agility of the respondents.

4.6.1. Correlation Analysis

Correlation coefficients are used to measure how strong a relationship is between two variables. There are several types of the correlation coefficient, but the most popular is Pearson's. Pearson's correlation (also called Pearson's R) is a correlation coefficient commonly used in linear regression. Correlation coefficient formulas are used to find how strong a relationship is between two variables. The formulas return a value between -1 and 1, where +1 indicates a strong positive relationship, -1 indicates a strong negative relationship, and zero indicates no relationship.

As shown in Table 7 the digital transformation components and the Agility components are having a strong positive relation with each other that's having a Coefficient of a value that varies from 0.628 to 0.756 which is significant at the 0.01 level (2-tailed) and the relation can be considered strong It is noticed that the strongest correlation is between Flexibility (Agility) and Leadership capability (digital transformation). Also the weakest correlation is between Responsiveness (Agility) and Strategic Capability (digital transformation).

As shown in Table 8 the digital transformation components and the Agility components are having a strong positive relation with each other that's having a Coefficient of a value that varies from 0.425 to 0.941 which is significant at the 0.01 level (2-tailed) and the relation can be considered between average and strong It is noticed that the strongest correlation is between Partnership (strategic risk management) and Flexibility (Agility).

Also, the weakest correlation is between Culture (strategic risk management) and Responsiveness (Agility).

Table 7. The correlation of the components of Digital transformation and Agility

	Competence	Flexibility	Quickness	Responsiveness
Strategic capability	0.671**	0.700**	0.642**	0.628**
Leadership capability	0.731**	0.771**	0.699**	0.703**
Market capability	0.690**	0.722**	0.684**	0.699**
Operation capability	0.698**	0.738**	0.677**	0.663**
People expertise capability	0.720**	0.761**	0.703**	0.701**
Culture capability	0.713**	0.756**	0.698**	0.709**
Governance capability	0.703**	0.735**	0.690**	0.688**
Technology capability	0.703**	0.743**	0.692**	0.687**

**. Correlation is significant at the 0.01 level (2-tailed).

Table 8. The correlation of the components of Strategic risk management and Agility

	Culture	Process	Experience	Application	Partnership
Competence	0.477**	0.624**	0.638**	0.781**	0.908**
Flexibility	0.482**	0.632**	0.633**	0.810**	0.941**
Quickness	0.431**	0.568**	0.604**	0.763**	0.894**
Responsiveness	0.425**	0.553**	0.590**	0.734**	0.899**

**. Correlation is significant at the 0.01 level (2-tailed).

Table 9. The correlation of the components of Strategic risk management and digital transformation

	Culture	Process	Experience	Application	Partnership
Strategic capability	0.416**	0.607**	0.653**	0.667**	0.770**
Leadership capability	0.443**	0.618**	0.618**	0.640**	0.792**
Market capability	0.442**	0.586**	0.618**	0.640**	0.792**
Operation capability	0.443**	0.581**	0.630**	0.631**	0.791**
People expertise capability	0.445**	0.615**	0630**	0.652**	0.809**
Culture capability	0.431**	0.578**	0.597**	0.615**	0.817**
Governance capability	0.416**	0.569**	0.589**	0.620	0.807**
Technology capability	0.444**	0.588**	0.611**	0.635**	0.804**

**. Correlation is significant at the 0.01 level (2-tailed).

Table 10. The correlation of the total variables for the digital transformation, agility, and strategic risk management

Correlations				
		Strategic Management	**Digital**	**Agility**
Strategic Management	Pearson Correlation	1	.720**	.801**
	Sig. (2-tailed)		.000	.000
	N	405	405	405
Digital Transformation	Pearson Correlation	.720**	1	.763**
	Sig. (2-tailed)	.000		.000
	N	405	405	405
Agility	Pearson Correlation	.801**	.763**	1
	Sig. (2-tailed)	.000	.000	
	N	405	405	405

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation of the components of Strategic risk management and Digital transformation As shown in Table9 the digital transformation components and the Agility components are having an Average -Strong positive relation with each other that's having a Coefficient of a value that varies from 0.416 to 0.817 which is significant at the 0.01 level (2-tailed) and the relation can be considered between average and strong It is noticed that the strongest correlation is between Partnership (strategic risk management) and Culture capability (digital transformation) Also, the weakest correlation is between Culture (strategic risk management) and Governance capability (digital transformation)

Pearson correlation analysis was used to measure the quantitative amount of correlation and dependence relationships between dependent and independent variables. It indicates the relative effect of independent variables on dependent variables that determines the significance of the relationships between them. Table 10 shows the correlation matrix, which is used to test the consistency of survey constructs and their component items. Results show strong internal consistency between all variables of the study constructs. All variables' correlations are over 0.3 (the critical value for correlation) at a significant 0.01 level (99% confidence level). There is a positive linear correlation between strategic risk management and digital readiness of 0.72, There is a positive linear correlation between strategic risk management and Agility of 0.801 and There is a positive linear correlation between digital readiness and agility 0.763

4.6.2. Regression Analysis

Regression analysis was used to test the effect of different independent variables on the dependent variable. It summarizes the relationships between variables while making predictions of likely values of the dependent variable. Moreover, it measures the relationship between one dependent variable and several independent variables and is therefore considered a suitable technique to test hypotheses. This is achieved by producing a model, in the form of a linear equation, which identifies the best weighted combination of predictor variables to best explain the dependent variable (Malhotra, 2010). The correlation coefficient squared (coefficient of determination R2) is used to analyze how differences in one variable (dependent) can be explained by a difference in the second variable (independent), and it is determined during regression analysis, where the regression model's ability to predict the changes in the dependent variable based on changes in the independent variables will be indicated by the coefficient of determination test (R).

ANOVA (Analysis of Variance): Used to test if there is a linear relationship between the tested variables. The null hypothesis is that there is no significant relationship between the tested variables where all coefficients equal zero. The alternative hypothesis assumes that there is at least one significant relation, as coefficients will not equal zero. Test the statistical significance of the statistics for the relationships, they are determined using the F-statistic test. In the F-statistic test, a probability value (P) is obtained to tell whether the correlation is statistically significant. Where $P > 0.05$ indicates non-significant, $P<0.05$ indicates significant (at 95% confidence level), and $P<0.01$ indicates highly significant (99% confidence level), then the null hypothesis is rejected and the alternative hypothesis is supported And then we can assume that there is a linear relationship between the tested variables in the model and that the model is a good fit.

Regression equation of each dependent variable as a function of the independent variables. The regression equation is as follows: $Y = \beta 0 + \beta 1 X1 + \beta 2 X2 + \beta 3 X3$.

In this equation, Y is the predictor score on the dependent variables; the X's are the predictors or independent variables. While the betas (β) are the weights or coefficients associated with the predictors. Each beta represents the weight of the independent variable and its relative contribution in predicting the dependent variable, and the amount of change in the dependent variable for a one-unit change in the independent variable. The more value forbeta the more contribution of this variable in predicting the independent variable (Malhotra, 2010).

Regression Analysis of Digital Transformation and Strategic Risk Management

Table 11. Regression analysis of digital transformation and Strategic Risk management

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.720[a]	.518	.517	.57681		
a. Predictors: (Constant), DIGITALTOTAL						
ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.896	.076		25.095	.000
	DIGITALTOTAL	.351	.015	.763	23.700	.000
a. Dependent Variable: AGILITYTOTAL						
Table						
1	Regression	143.956	1	143.956	432.685	.000[b]
	Residual	134.080	403	.333		
	Total	278.036	404			
a. Dependent Variable: STRATEGICTOTAL						
b. Predictors: (Constant), DIGITALTOTAL						
Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.143	.082		13.923	.000
	DIGITALTOTAL	.334	.016	.720	20.801	.000
a. Dependent Variable: STRATEGICTOTAL						

For the regression model digital readiness as predictors and Strategic risk management as (dependent variable), produced R2 = 0.518, F = 432.685 which is significant at p<0.001 thus it can be assumed that there is linear relationship between the tested variables and that the digital readiness are successful in predicting 51.8% of the variance in the strategic risk management and the beta (β) coefficient for digital readiness is 0.720 Regression analysis of digital transformation and Agility.

Table 12. Regression analysis of digital transformation and Agility

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.763[a]	.582	.581	.53113	
a. Predictors: (Constant), DIGITALTOTAL					
ANOVA[a]					
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	158.454	1	158.454	561.687	.000[b]
	Residual	113.687	403	.282		
	Total	272.141	404			
a. Dependent Variable: AGILITYTOTAL						
b. Predictors: (Constant), DIGITALTOTAL						
Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.896	.076		25.095	.000
	DIGITALTOTAL	.351	.015	.763	23.700	.000
a. Dependent Variable: AGILITYTOTAL						

For the regression model digital readiness as predictors and Agility as (dependent variable), produced R2 = 0.582, F = 561.687 which is significant at p<0.001 thus it can be assumed that there is linear relationship between the tested variables and that the digital readiness are successful in predicting 58.2% of the variance in the strategic risk management and the beta (β) coefficient for digital readiness is 0.763.

Regression Analysis of Agility and Strategic Risk Management

Table 13. Regression analysis of Agility and Strategic Risk management

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.801[a]	.642	.641	.49693
a. Predictors: (Constant), AGILITYTOTAL				

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	178.518	1	178.518	722.911	.000[b]
	Residual	99.518	403	.247		
	Total	278.036	404			
a. Dependent Variable: STRATEGICTOTAL						
b. Predictors: (Constant), AGILITYTOTAL						

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.153	.110		-1.384	.167
	AGILITYTOTAL	.810	.030	.801	26.887	.000
a. Dependent Variable: STRATEGICTOTAL						

For the regression model Agility as predictors and Strategic Risk Management as (dependent variable), produced R2 = 0.642, F = 722.911 which is significant at p<0.001 thus it can be assumed that there is linear relationship between the tested variables and that the digital readiness are successful in predicting 64.2% of the variance in the strategic risk management and the beta (β) coefficient for digital readiness is 0.801.

Regression analysis of Digital transformation and Agility on Strategic Risk management

Table 14. Regression analysis of Digital transformation and Agility on Strategic Risk management

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.819[a]	.670	.668	.47770
a. Predictors: (Constant), AGILITYTOTAL, DIGITALTOTAL				

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	186.300	2	93.150	408.193	.000[b]
	Residual	91.737	402	.228		
	Total	278.036	404			
a. Dependent Variable: STRATEGICTOTAL						
b. Predictors: (Constant), AGILITYTOTAL, DIGITALTOTAL						

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.015	.109		-.135	.892
	DIGITALTOTAL	.120	.021	.259	5.840	.000
	AGILITYTOTAL	.610	.045	.604	13.622	.000
a. Dependent Variable: STRATEGICTOTAL						

For the regression model of Digital readiness and Agility as predictors and Strategic Risk Management as (dependent variable), produced R2 = 0.670, F = 408.193 which is significant at p<0.001 thus it can be assumed that there is linear relationship between the tested variables and that the digital readiness and agility are successful in predicting 67.0% of the variance in the strategic risk management and the beta (β) coefficient for digital readiness is 0.259 and (β) for agility is 0.604.

4.6.3. Path Analysis for the Proposed Model

A variable may be considered a mediator to the extent to which it carries the influence of a given independent variable (IV) to a given dependent variable (DV). Generally speaking, mediation can be said to occur when (1) the IV significantly affects the mediator, (2) the IV significantly affects the DV in the absence of the mediator, (3) the mediator has a significant unique effect on the DV, and (4) the effect of the IV on the DV shrinks upon the addition of the mediator to the model. These criteria can be used to informally judge whether or not mediation is occurring, but MacKinnon & Dwyer (1993) and MacKinnon, Warsi, & Dwyer (1995) have popularized statistically based methods by which mediation may be formally assessed.

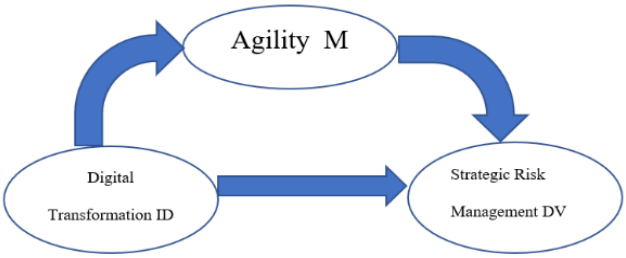

Figure 11. The proposed model

Conducting Sobel test

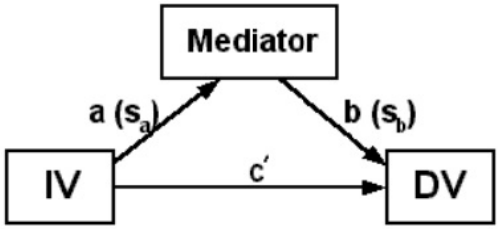

Figure 12. Sobel test Diagram

a = raw (unstandardized) regression coefficient for the association between IV and mediator.

=0.351

s_a = standard error of *a*=0.015

b = raw coefficient for the association between the mediator and the DV (when the IV is also a predictor of the DV).

=0.610

s_b = standard error of *b*.=0.045

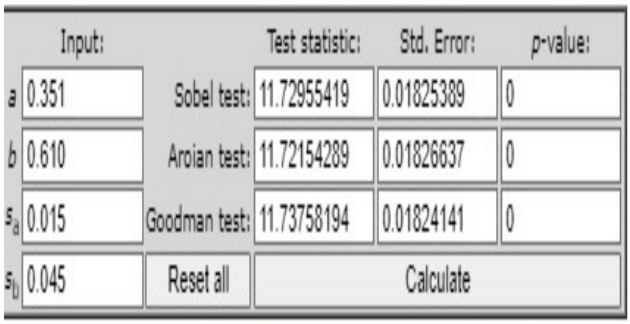

Figure 13. Sobel test results

As shown in Figure 13 of the Sobel test results Since t he z-score (11.73) is greater than 1.96 we conclude that the effect is larger than would be expected by chance and call the effect significant

4.6.3.1. PLS Path Analysis

After running the proposed model to the PLS for checking the Path analysis. As shown in Table 15, the Total Effect coefficient β=0.761, τ -value=39.941, P value=0.000 for the Digital transformation on Strategic Risk Management which is significant

The indirect effect for the Digital Transformation through Agility on the Strategic Risk management β=0.484 τ -value=12.916 P value=0.000 which is significant.

The direct effect of the Digital transformation on strategic risk management is β=0.0.278, τ -value=6.632, P value=0.000 which is also significant.

Total Effect	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Agility -> Strategic Management	0.641	0.642	0.035	18.102	0.000
Digital transformation -> Agility	0.753	0.753	0.03	25.405	0.000
Digital transformation -> Strategic Management	0.761	0.761	0.019	39.941	0.000
Indirect Effect	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Digital transformation -> Strategic Management	0.483	0.484	0.037	12.916	0.000
Direct Effect	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Agility -> Strategic Management	0.641	0.642	0.035	18.102	0.000
Digital transformation -> Agility	0.753	0.753	0.03	25.405	0.000
Digital transformation -> Strategic Management	0.278	0.277	0.042	6.632	0.000

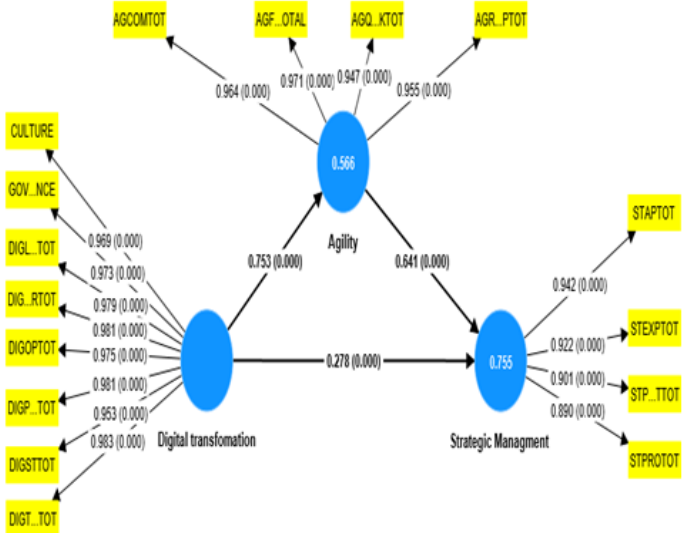

Figure 14. The output of PLS Path Analysis

Table 15. Summarizing the PLS Path analysis

Type of effect	Effect	Path Coff.	T stats	Remark
Total effect	Digital trans--→ Risk Man	0.761	39.941	Significant
Indirect effect	Digital tran→Agility→Risk man	0.484	12.916	Significant
Direct effect	Digital trans--→ Risk Man	0.278	6.632	Significant
VAF	IE/TE	63.6%		
Conclusion	Strong Partial mediation exists			

By calculation of the VAF (Variance Accounted For) which is equal to the Indirect Effect Divided by the Total effect and it is in percentage so the VAF=63.3% which is good percentage of effect for a variable as a mediating.

So, we can summarize the result as that Agility is having Moderating effect in between Digital transformation and strategic Risk management more over we can also emphasize that it's a partial mediation effect since the direct effect is also significant.

4.7. Testing Research Hypotheses from H1 to H4

- H1 Digital transformation significantly and positively impact the Agility

This hypothesis has a coefficient β = 0.351, supported by a t-value of 23.70 which is significantly over 99.9% (p=<0.001), the reliability and validity wereacceptable. Therefore, we can confirm that this hypothesis is supported.

H2 Digital transformation significantly and positively impact the strategic risk management

This hypothesis has a coefficient β = 0.334, supported by a t-value of 20.801 which is significantly over 99.9% (p=<0.001), the reliability and validity were acceptable. Therefore, we can confirm that this hypothesis is supported.

H3 Digital transformation and Agility significantly and positively impact the strategic risk management

This hypothesis has a coefficient β (DIG)= 0.120 and β(AGI)=0.610, supported by a t-value of 5.84 and 13.622 respectively which is significantly over 99.9% (p=<0.001), the reliability and validity were acceptable. Therefore, we can confirm that this hypothesis is supported.

H4 The Agility is a mediator factor connects the independent variable of Digital transformation and the dependent variable of the strategic risk management.

Table 16. Testing the Significance of the effects in the model

	Standardized estimation	P value	result
Total effect	0.720	0.02	Significant impact
Direct effect	0.235	0.03	Significant impact
Indirect effect	0.484	0.03	Significant impact

Which shows that the Agility is a mediating variable for the impact of digital transformation on strategic risk management. Using SOBEL test, Smart PlS, we confirm that this model is valid and this hypothesis is supported

Hypothesis	Result
H1 Digital transformation significantly and positively impact the Agility	Passed
H2 Digital transformation significantly and positively impact the strategic risk management.	Passed
H3 Digital transformation and Agility significantly and positively impact the strategic risk management	Passed
H4 The Agility is a mediator factor connects the independent variable of Digital transformation and the dependent variable of the strategic risk management.	Passed

5. Conclusion

Many reports have emerged in recent years analysing digital transformation impacts on the organizations in many aspects, and there have been claims, in both industry- and academic-related literature, that successful digital transformation initiatives lead to high ability to strategic Risk management. Moreover, Organizational agility enables the organization to respond to dynamic market conditions quickly or rapidly. More agile organizations win in the customer and investor marketplaces. Organizations that cannot change as fast as their external demands, quickly fall behind,never catching up. Rapid response to future dynamic changes and fast innovation of products, services and business models differentiate organizations that win

In this research, the model proposed Based on the conceptual framework concerning the relationships between the digital transformation, organizational agility and strategic risk management is shown in the Figure 15.

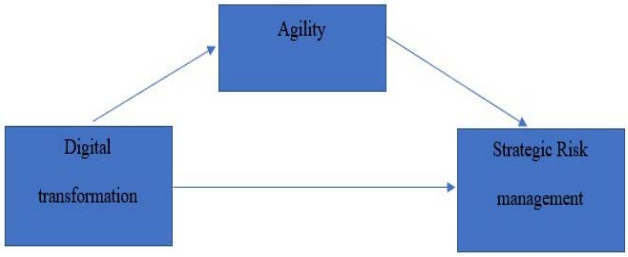

Figure 15. The Proposed Model

The empirical results presented in Chapter 4 demonstrate that this model explains

The relationship between the variables of the proposed model, and this will contribute to the following conclusions that will lead to answers to research questions evolved about SMEs working in Egypt.

1. How has digital transformation impacted the Agility?

For many o rganizations, digital transformation can be a driving factor of change, enabling them to make optimal use of information and communication technologies without investing massively at the outset and avoiding the risks of getting stuck with obsolete methods of running a business. With digital transformation, organizations can utilize an information and communication technology infrastructure to develop its abilities and gain potential differentiating itself than other organizations. By using digital transformation, organizations thrives on the inevitability of change and the exhilaration of new technologies and innovative capabilities, where organisations pursue ever greater flexibility and global reach at greater speed, towards a world dominated by a search for organisational agility. With Organizational agility an organisation's capacity to respond, adapt quickly and thrive in the changing environment can be updated and improved.

2. How has the digital transformation impacted the Strategic Risk Management?

Companies used to be very self-sufficient, and risk management was simple. Many businesses, from multinationals to locally based businesses, kept a tight rein on their varied business needs in-house until a decade ago. Including the creation of the strategy, the defining of the processes, the definition and construction of the product range, the ownership of capital equipment, technology, infrastructure, and operations. Senior management have a great deal of control over the variables that affect business risk in this closed environment.

The information age has made risk management strategies substantially more complex than they have ever been and demand a comprehensive approach across many corporate functions. Complex risk management standards, the need for new risk management approaches, and the need for new risk management strategies all define this new environment. Overall, in reaction to the bureaucratization and centralization of the planning function, best practices in strategic risk management have arisen. The new approaches place a strong emphasis on a continuous strategy creation and management process as well as broad stakeholder participation in future-focused strategic thinking. They provide connections between the creation of strategies and plans and other managerial systems, such as the distribution of resources, the use of organizational and human resources, and monitoring and evaluation. They apply techniques that are future-focused, issue-focused, and opportunity-seeking. They use extremely interactive, creative techniques. In the presence of Digital transformation. Strategic risk managers can offer frameworks and resources to make resource allocation transparent and strategic in accordance with organization priorities. These frameworks might mirror risk management strategies that methodically reallocate resources from legacy programmes to future opportunities instead of being threats.

3. How has the digital transformation and agility impacted the strategic risk management?

As the digital transformation and organizational agility merged, they can boost the process of strategic risk management and will automatically adopt the best practice to utilize the organization abilities for sustained strategic risk management. A related important role for strategic risk managers is to build and support local planning institutions at various levels and facilitate dialectical interactions among these levels. This will resemble the role of strategic risk managers in large corporations in organizing the process of formulating strategies for various business units, sectors, and functions, and providing these units with global environmental analysis, scenarios, and shared frameworks and guidelines. Digital transformation helps in broadening the reach and richness of firm’s knowledge and business operations to enhance the overall enterprise agility.

The practical application of agility and digital transformation synergy achieved helps to address the ability of the organization to maneuver through the risks which its facing and will be facing on long term. Also, they aims to raise awareness and influence mindsets among the organization layers and build broad constituency that attends to the future and rapid goals achievement.

4. What is the Role played by the Agility affected by the Digital Transformation on the Strategic Risk Management?

Dissertation results emphasize the positive role of Organizational agility when establishing using strategic risk management using digital transformation.

The results of the study also emphasize the mediating role of the organizational agility in Improving the capabilities of strategic risk management. The difficulties of implementing agility across the entire organization are great in organizations where agility is perceived to be about implementing new methods of programme management, lean management practices, and team-based organizational structures. This is due to the fact that agility is a far broader issue that frequently necessitates a significant culture change in traditional organizations, along with changes in mentality and skill sets at all levels. The informal always prevails over the formal when it comes to cultural impediments to organizational adaptability.

Digital transformation has had a significant impact on strategic risk management. The introduction of new technologies and digital platforms has created new opportunities for businesses to improve efficiency, increase revenue, and gain a competitive edge. However, with these opportunities come new types of risks that organizations need to manage. In order to effectively manage these risks, organizations need to be agile and adaptable.

One of the key aspects of digital transformation is the increased use of data and analytics. This has led to an increased need for organizations to have the ability to quickly collect, process, and analyze large amounts of data. With the vast amount of data generated by digital platforms, organizations need to be able to make sense of this data in order to gain valuable insights and make informed decisions. However, managing the risks associated with data and analytics is a complex task. This is where agility comes in, organizations need to be agile in order to respond quickly to changes in the data landscape and adapt their data and analytics strategies accordingly.

Another aspect of digital transformation is the increased use of cloud-based technologies. The cloud provides organizations with the ability to scale their operations, reduce costs and increase flexibility. However, it also exposes organizations to new types of risks, such as security breaches and data loss. In order to effectively manage the risks associated with cloud security, organizations need to be agile. This means being able to quickly respond to security threats and breaches and adapt their security strategies as the threat landscape evolves.

In addition to these specific risks associated with digital transformation, the overall pace of change has also increased. Organizations need to be agile in order to effectively manage the risks associated with a rapidly changing business environment. This includes being able to quickly adapt to new technologies, market conditions, and regulatory changes. In today's fast-paced business environment, organizations need to be able to respond quickly to changes in order to stay competitive and minimize risks.

People in agile organizations are aware of and actively participate in the business' success. They are equipped to deliver client value without daily management control because they have defined objectives, high levels of autonomy, and the necessary skills and knowledge. At the business unit, function, team, and individual levels, there is constant feedback and unambiguous accountability for results. People are aware of how their job affects corporate

success and take pride in it. Decisions should be based more on discussion and consensus than on authority because there is shared (and distributed) leadership in place. Teams use performance optimization techniques, benchmarks, experiment and test new ideas, and share learning. In conclusion, digital transformation has led to an increased need for organizations to be agile in order to effectively manage strategic risks. The ability to quickly collect, process and analyze large amounts of data, respond quickly to security threats and breaches, and adapt to a rapidly changing business environment is essential for organizations to manage the risks associated with digital transformation. Companies that can be agile in managing these risks will be better positioned to take advantage of the opportunities presented by digital technologies and platforms.

5.1. Contributions of Research

This study has contributed to the body of knowledge regarding confirming results of for the dimensions used to measure the agility [58] and the measurement model of digital maturity [59]. [60] model for measuring the strategic risk management capabilities. The relationship between the digital transformation, agility and strategic risk management [52]. Also, the study concurs with the assessment of the digital readiness [61] and that's digitalization needs culture change [17].

In this study, it utilized the measurement tools studied in previous researches for the three main variables, and built a new model including an each variable as a separate construct the purpose of doing that is to study all the relationship between all components of each variable trying to enrich the literature with enough data on how to stimulate the ability of the organization to glorify the ability of its Strategic Risk Management through the components of the independent variable which is the Digital transformation and the mediating variable which is the organizational agility.

Many researches have been conducted on building the conceptual model that describes. The relationship between the 3 variables under the scope in this study, with no complete definition in depth has been made for the role of organizational agility between digital transformation and strategic risk management. The findings of the study added new understanding to the literature affirming that both digital transformation and organizational agility are determinants of strategic risk management and that digital transformation develops better capabilities of strategic risk management by enhancing its organizational agility.

This dissertation also demonstrates the relationship between the digital transformation, organizational agility and strategic risk management for the Egyptian SMEs, where up to now no serious study about this variable has yet been conducted on the Egyptian SMEs.

The findings of this dissertation have several implications for SMEs working in the Egyptian market. The study results concerning the relationship between digital transformation and the strategic risk management suggest that SMEs in Egypt should be aware of the mediating effect of the organizational agility for advanced strategic risk management. SMEs should ensure proper improvements of each component or dimension of both the digital transformation and organizational agility to have the best practice of the strategic risk management.

5.2. Limitations of Research

While this research has successfully investigated the effect of the digital transformation and organizational agility on the strategic risk management, there are several limitations that need to be acknowledged.

1. The data for the research was collected from SMEs working in EGYPT, that can assume a wide range of variation between the responses depending on the volume and sector the SME is operating at Egypt
2. Due to limited information about the topic in Egypt, the study depended on data collected from previous researches and published reports within the context of the study to build up the dissertation framework.
3. Data were generated among the SME's operating in Egypt. Therefore, the results are limited to this Egyptian framework and caution should be exercised in attempting to draw generalizations to other contexts.

5.3. Direction for Future Research

1. Studying the proposed model's success to predict 51% to 68% of strategic risk management capabilities, future researches should be conducted to enhance the predictive power of independent variables, through investigation of other factors that might explain the performance of strategic risk management in Egypt.
2. Organizational agility is volatile variable, more studies should be conducted to tackle down additional dimensions that can be used in improving the organization agility
3. Future researches should be conducted about the impact of the variables in this study for each sector of business separately as it might be having more insights for how to increase the strategic risk capabilities differentiated by the sector of business.
4. As the culture of the staff is a common factor between the three variables, the researcher suggests a focusing study on the linkage between the culture of the organization's staff and the ability to improve the strategic risk management of the organization.

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