The Role of Digitalization in Enhancing Digital Service Quality: A Study on Commercial Banks in Egypt

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Abstract
The objective of the research is to examine the influence of digitalization on Digital Service Quality (DSQ). The research population consists of all employees at Commercial banks in Egypt. The researcher has adopted a sampling method to collect data for the study. The appropriate statistical methods such as Alpha Correlation Coefficient (ACC), Confirmatory Factor Analysis (CFA), Multiple Regression Analysis (MRA), are used to analyze the data and test the hypotheses.

The research has reached a number of results, the most important of which are (1) the decrease in the number of employees holding a master's degree and a doctorate in the study sector. This means that the banks affiliated with this sector do not make privileges for holders of higher educational degrees. (2) The age group that work in the field of information are mostly young. This means that this group need intensive training in order to be able to gain experience in the operations related to the bank. (3) The study shows that there is a significant relationship between the variables under study, which confirms that banks in this sector invest all their resources in order to improve bank performance. (4) The study shows the weakness of the variable of skills and capabilities of employees in this sector, which requires activating this variable by working to raise the skills and capabilities of employees and training them so that they can gain experience in dealing with devices and equipment, and how to use them properly. (5) Communication networks play an important role in improving bank performance, and the current study has shown that there is a fundamental relationship between improving communication networks and achieving competitive advantage and the quality of services provided. (6) There is a statistically significant relationship between the dimensions of digitization represented in strategic planning, preparing leaders, institutional structure, attracting skills, competencies and quality of banking service on the one hand, and competitive advantage on the other.

The study referred to a number of recommendations, the most important of which are (1) the need for a bank affiliated with this sector to pay attention to developing the skills and experiences of employees in terms of using modern devices and technology in the world of technology, markets and products, (2) the necessity of paying attention to information technology and the ability to use it and manage it in terms of employing the skills and capabilities of employees in this sector, (3) effective investment in employees in terms of their development, providing opportunities to accomplish their job tasks, increasing their awareness of the importance and value of their work, and increasing their sense of the need to achieve success for the bank in which they work, (4) creating a good atmosphere that links the goals of the employees, the bank and the community in a way that achieves the highest possible performance on the one hand, and achieving competitive advantage on the other hand, and (5) paying attention to information technology, as most banks are gradually moving towards using computers in order to save time and improve performance.

Keywords: Digitalization, Digital Service Quality

1. Introduction

Digitization is concerned with how technology is used within an organization and helps improve the services provided to customers. Digitization is also based on employing technology in an optimal manner, in a manner that serves the workflow within the organization, and in its dealings with customers, in order to facilitate access to services in a manner that ensures saving time and effort (Ivarsson, & Svahn, 2020).

The issue of digitization is one of the most prominent modern administrative concepts that emerged in the past few years due to the increasing interest in information. Digitization has been associated with the emergence of the knowledge economy, and the tremendous development of information and communication technology (Chaniasa, 2019).

In light of the increased competition, the speed of technological development, and the high level of inflation in the countries of the world, this has led organizations to search for opportunities in developing countries that were not affected by the financial crisis due to their digital backwardness. Hence the
importance of digitalization in that it provides protection from external threats, takes advantage of available opportunities, and adapts to new rules in internal and external markets (Chaniasa, 2019).

Entrepreneurial organizations seek to achieve competitive advantage by providing a technological structure capable of supporting the different needs of customers, enhancing communication with them, as well as trying to attract new customers (Tarhini & Kassar, 2018).

Digitally oriented organizations tend to adopt digital initiatives and achieve distinct levels of creativity and innovation, as they have a vision and a great commitment to using advanced technologies to provide innovative products and services, and improve the performance of their operations (Wroblewski et al., 2018).

Organizations with strong technology knowledge have the ability to realize entrepreneurial projects that help them achieve distinct levels of profitability and exploit opportunities. Technology acquisitions also provide opportunities to exploit recent innovations by spreading knowledge and technology, reaching customers, and reducing costs through reliance on big data, cloud computing, and artificial intelligence applications (Urbinati et al., 2017).

The business environment has become more complex due to the increased intensity of competition. Also, the rapid development of technology has led to changes in the production pattern, and thus business organizations have realized that their survival requires new methods and tools, in order to enhance their competitive capabilities (Kantur, et al., 2015).

Many organizations are facing the knowledge revolution, so it is necessary to determine the cognitive capabilities and technological culture that they possess and through which they can practice and interact with technological technologies (Jameel, 2008).

Technological progress has also changed the behavior of customers, and contributed to building an electronic relationship by relying on programs that contribute to data collection and analysis to explain their behavior and identify their needs and use them in developing appropriate plans and strategies (Cho & Pucik, 2005).

DSQ is the one that is provided through modern technologies and is characterized by ease of use (AlBalushi, 2021).

DSQ also contributes to helping customers obtain goods with advanced service technologies in the digital age (Kalal & Paul, 2021).

This is in addition to the ability to keep pace with digital technology in providing services via the Internet to achieve customer satisfaction (Li et al., 2021), reduce costs, take advantage of the huge potential of technology, (Pedrosa et al., 2020), and quickly display goods and services easily. Add to this developing relationships with customers in the era of digitalization (Pirola et al., 2020), and a better understanding of customer behavior to achieve their satisfaction and confidence (Rita, 2020).

The dimensions of DSQ are digital tangibles, digital reliability, digital interaction, digital trust, customer centricity (Büyüközkan et al., 2020; Bunker, 2020; Büyüközkan et al., 2019; Lyons et al., 2019; Rawat, 2016; Neill , 2015; Price et al., 2013).

It should be noted that there is a direct relationship between the DSQ and the fulfillment of the desires and needs of the beneficiaries of the services, and that the DSQ increases trust in the organization brand and achieve market excellence, in addition to the acquisition of new customers (Büyüközkan et al., 2020).

There is a direct positive relationship between the DSQ and the satisfaction of customers who benefit from taking the organization services (Mujina, 2020).

There is also a strong relationship between the dimensions of DSQ and the behavior of customers who benefit from the organization services (Kalai & Paul, 2020).

The dimensions of DSQ represented in reliability, responsiveness, and empathy play an important role in the positive impact on increasing customer satisfaction and loyalty (Hadid, et al., 2020).

Finally, there is a relationship between the quality of the services provided and the increase in the level of customer loyalty and satisfaction, and that the dimensions of DSQ represented in reliability, responsiveness, and empathy have a positive impact in achieving customer satisfaction and loyalty (Mbama & Ezepue, 2018).
It is worth noting that there is a direct relationship between DSQ and customer satisfaction. The study indicates that the most important factors that determine the quality of services are cost, trust, social impact, credibility, responsiveness, security, and reliability (Kar, 2020).

There is a direct relationship between the quality of services and customer satisfaction. The results also show that there is a positive relationship between the services provided through the offline digital system and customer satisfaction (Wang & Teo, 2020).

This is in addition to the fact that the more providers of digital electronic services pay attention to improving their quality and keeping pace with technological developments, the faster this leads to responding to the needs and desires of customers (Büyüközkan et al., 2019).

It is worth noting that digital transformation affects individuals, processes, products and the organization as a whole (Sayabek et al., 2020). Therefore, subordinates must be involved in the field of digital transformation to ensure the success of the digital transformation process (Morakanyane et al., 2020). Citizen participation in urban development issues is also necessary in order to improve the efficiency of urban management (Morozova & Kurochkin, 2020).

Researchers can better analyze digital transformation, and business managers can better plan their digital transformation processes (Steiber et al., 2020). The digitization of organizations is essential because they provide great opportunities for both organizations and societies, and workers must be able to transform themselves towards digitization (Andriushchenko et al., 2020). In addition, digital transformation is an important topic due to its positive impact on organizational restructuring (Plesnci et al., 2018), formal and informal structures (Bonanomi et al., 2019), and business model innovation (Rachinger et al., 2019).

There is also an essential relationship between digital transformation and employee performance development on the one hand, and organizational development on the other (Nair, 2019).

The entrepreneurs in small and medium enterprises adopt digital transformation to raise the efficiency of the performance of workers on the one hand, and the performance of projects on the other hand (Liang, 2018).

There is a strong direct positive effect between the dynamic capabilities supported by information technology and the level of digital maturity. Therefore, future research should include a cluster analysis of the stages of digital maturity (Danailova, 2017). Therefore, information systems scientists must continue to assess developments related to the role of the digital director, the role of the head of information systems, and business and IT alignment (Haffke, 2017).

It is worth noting that decision makers in non-profit organizations must understand the opportunities and challenges posed by digital transformation to allow them to formulate a digital transformation strategy, which can lead to competitive advantages and digital communication with stakeholders (Brink et al., 2020). Therefore, sustainable development can be effectively promoted through digital transformation, and the need for governments to pay attention to appropriate financing of sustainable development programs and projects. This requires policy makers to direct and encourage investments in the digital network infrastructure and human capital (El-Massah & Mohieldin, 2020).

There is a need to stimulate a culture of experimentation and innovation among workers, as leaders need to align all workers around digital transformation, and organizations that are going through a digital transformation. All the necessary tools to prepare for this change are needed and leaders have to understand digital transformation, gather traditional leadership practices and digital leadership to create a hybrid style. Through this, they will be able to take advantage of digital transformation opportunities (Goretti, 2019).

In addition, the digitization process will be vital in most organizations without considering the challenges they face (Keshab, 2018). Also, organizational factors have a very strong influence on workplace learning practices to support digital transformation (Hirv, 2016).

Therefore, entrepreneurs must rely on their ability to make better use of available resources. Entrepreneurs can also become more capable by using a fluctuating approach to obtaining and using resources to improve performance (Bloodgood, 2013). Distinguished organizations are those that have a good information technology system so that they can achieve high performance in their products and services. This is in addition to improving production and marketing processes, reducing costs, and
improving quality. The multiplicity and diversity of the services provided, and the continuous development and improvement in the current and new services are included (Granham, 2012).

The study is structured as follows: Section two gives a theoretical construct of digitalization and DSQ. Section three presents the research design. Section four embraces the research methodology which includes a detailed description of the questionnaire, the research community, the sample, the procedure of data collection and an overview of the statistical tests used in the study. Section five presents the empirical results and discussion. Section six presents the main conclusions of the study and some recommendations for improving digitalization and DSQ at commercial sectors in general and commercial banks in Egypt in particular.

2. Literature Review

2.1. Digitalization

2.1.1. Digitalization Concept

Digitization means moving from a traditional system to a digital system based on information and communication technology in all areas of work, and seeking to develop business models by investing in technologies, developing talent and reorganizing processes to create new experiences for customers and employees, in addition to security, human, and technical requirements (Sayabek, Suieubayeva, 2020).

Digitization is a process of major organizational change driven by, or dependent on, digital technology that can transform the way businesses are run (Osmundsen, 2018).

Digitization is a representation of the technological aspect of an information system, and it can also be used as an alternative at other times. The task of processing, storing, updating, retrieving and delivering information to the beneficiaries relied on manual methods, despite their limitations and inability in many cases to accomplish the required task efficiently and effectively. However, after the huge increase in the size and type of data and information, the use of modern information technology in the application of the information system is required (Loudon & Loudon, 2014).

Digitization is the process of converting texts or images into binary signals that are compatible with the computer language for the purpose of processing and storing them in a miniature form, maintaining and easy use of them and their transmission through means of communication and information networks. Digitization is a new approach to managing information in a new knowledge society, working to make available and connect traditional libraries to the beneficiaries within their homes (Pandey & Misra, 2014).

Digitization is the process of converting an analog material into an electronic digital form. Digitization is the sum of the processes necessary to convert written and printed materials into an electronic form. The outputs of the digitization process are electronic receptacles that can be broadcast through an intranet or through the Internet (Shariful, 2011).

Digitization is the tools, techniques and systems that can be used to obtain, process, store and retrieve information and data. These technologies include all kinds of computers, storage methods, printing and reading, in addition to receiving methods, transmission, satellite, mobile networks, fax, and software systems. Briefly, digitization is the computer hardware, software, plans, and data and information provision as an essential resource for achieving information technology in the organization (Post & Anderson, 2006).

Digitization is a strategic weapon that can help build and strengthen the capabilities of the organization by providing the best data and information in a way that contributes to strengthening the relationship between digitization, customers and other organizations (Daft, 2005).

Digitization is the technological aspect of the information system, which represents the hardware, databases, networks, etc. Digitization is a group of individuals, data, procedures, hardware and software that work to achieve the objectives of the organization (Turban, 2005).

Digitization is a procedure for converting the intellectual content available on a traditional storage medium such as periodical articles, books, manuscripts, maps, etc. into a digital form (Hodges, 2004).

Digitization is the process of converting information sources of all kinds, such as books, periodicals, audio recordings, and still images, into a readable form by means of computer technologies through the binary system (Bits). Bits are the basic unit of information for an information system based on computers,
and the information is converted into a set of binary numbers. This process is carried out through a set of specialized techniques and devices (Kuny, 2002).

Digitization is a method that allows the transfer of data and information from the traditional manual system to the digital system (Buresi, 2002).

Digitization is the electronic process of producing electronic or digital symbols through a document, any physical object or electronic signals (Cacaly, 2001).

The researcher believes that digitization is a multidimensional phenomenon, and digital technology is of extraordinary strength and speed in human history. And digitization means all the means and devices that individuals in the organization can use in order to obtain and process data and information for the purpose of storing and referencing them when needed. Digitization consists of individuals, electronic computers, telecommunications, audio-visual and printed technology, software, experiences, cumulative skills, and physical, organizational and administrative means that people use to obtain information. In other words, digitization represents the process of obtaining and managing collections of electronic texts by converting information sources available on traditional storage media into an electronic image, and thus the traditional text becomes a digitized text that can be viewed through computer applications.

2.1.2. Digitalization Dimensions

There are four dimensions of digitization. They are strategic planning for digitalization, preparing leaders in the field of digitalization, the institutional environment for digitalization, and attracting human skills for digitalization. These dimensions were identified in the light of many previous studies (Hamad, 2020, Hadeer, 2017 Brink, et al.; 2020, Skog, 2019; Tugce, 2019; Bongiorno, et al., 2018; Douglas et al., 2018; Keshab. 2018; Hirv, 2016; Ernst & Frische, 2015).

2.1.2.1. Strategic Planning for Digitalization

Strategic planning relates to the extent to which the organization takes strategic planning measures for digitization, the extent to which there is a strategic plan for digitization that includes the vision and message compatible with the strategic objectives, the extent to which the organization develops operational plans for digitalization in accordance with technological, organizational and legislative developments, the extent of integration and compatibility of the strategic plan with other parties, and the extent to which the organization follows creative and innovative methods in strategic planning in the field of digitalization.

2.1.2.2. Preparing Leaders in the field of Digitalization

The preparation of leaders in the field of digitization is related to the extent to which the organization develops a plan to develop and prepare leaders and raise their level of familiarity with the digitization process, the extent to which the organization develops plans to prepare leaders on an ongoing basis, the extent to which leaders of digitization are developed in all departments and branches in a way that achieves integration in the digitization process, and the extent to which all leaders in the decision-making process get related to digitization, and the extent of their participation in the digitization process in creative and innovative ways.

2.1.2.3. Institutional Environment for Digitalization

The institutional environment for digitization is related to the extent to which the organization implements the institutional structure for digitization project, the extent to which there is an organizational unit for the institutional structure of digitization, the extent to which there is a clear and effective mechanism for that unit, coordination between these units and other departments in the organization in an integrated manner, and the extent to which the institutional structure contributes to the development of the organization’s orientation towards transformation.

2.1.2.4. Attracting Human Skills for Digitalization process

Attracting skills and competencies for the digitization process is related to the extent to which the organization attracts human skills and competencies for the digitization process, and the extent to which there is an approved plan to attract human competencies for the digital process, and the extent to which the
organization attracts digital competencies according to the plan that has been developed, and the organization's exchanges of specialized human competencies in the field of digitization, and the organization's finding creative and innovative methods to attract and maintain skills and competencies for the digitization process.

2.2. Digital Service Quality

2.2.1. Digital Service Quality Concept

There are many definitions regarding the concepts of service. Services are deeds, processes, and performances (Parasuraman et al. 1985).

Services are increasingly becoming a larger portion of many organizations’ regionally, nationally, and globally and are considered as a tool for revenue streams. Today’s knowledge intensive services businesses require reliable methods of measurement, assessment, and improvement (Spohrer & Maglio, 2008).

Services are a continuous process of on-going interactions between customers and service providers comprising a number of intangible activities provided as premium solutions to the problems of customers and including the physical and financial resources and any other useful elements of the system involved in providing these services (Grönroos, 2004).

Service as is any activity or benefit that one party offers to another which is essentially intangible and does not result in the ownership of anything, and it may or may not be tied to a physical product (Kotler et. al., 1999).

Service is any primary or complementary activity that does not directly produce a physical product-that is, the non-goods part of the transaction between customer and provider (Payne, 1993).

The heterogeneous nature of service hinders the consistency of service delivery and thus, assessment of SQ. What the establishment had intended to deliver might be quite different from what the patrons received. An understanding of the characteristics of service is necessary in the selection of an appropriate instrument to measure SQ. Such an instrument needs to accommodate the difficulties raised above and recognize that the quality of services is more difficult for customers to evaluate than the quality of goods, and that quality assessments are made not only on the service outcome, but also on the process of service delivery (Zeithaml, 1981; Parasuraman et al., 1985).

Service is an activity or series of activities of more or less intangible nature that normally, but not necessarily, take place in interactions between the customer and service employees and /or systems of the service provider, which are provided as solutions to customer problems (Gronroos, 1984).

Service is a package of explicit and implicit benefits performed with a supporting facility and using facilitating goods (Sasser et. al., 1978).

Quality was seen as a defensive mechanism but it is seen as a competitive weapon for emergence of new markets as well as growing market share (Davis et al, 2003).

Quality has been defined as fitness for use, or the extent to which a product successfully serves the purposes of consumers (Beverly et al., 2002).

Quality is a multi-dimensional phenomenon. Thus, reaching the SQ without distinguishing the important aspects of quality is impossible. There are three dimensions of output technical quality, service performance quality, and organization’s mental picture (Gronroos, 2000).

Quality is considered as an investment for company, where the efforts for its improvement result in an increased clientele, increased levels of purchase from existing customers, and a rise in the company’s profits (Parasuraman et al., 1985; Reichheld & Sasser, 1990; Rust et al., 1995).

Quality refers to the matching between what customers expect and what they experience (Berry et al., 1988).

Quality has been recognized as a strategic tool for attaining efficiency and business performance. With service assurance companies not even retain their existing customers but increase chances of getting and attracting new customers. Quality is one that satisfies the customer (Crosby, 1984; Eiglier & Langeard, 1987).

Quality involves eliminating ‘internal failures’ (defects before the product leaves the factory) and ‘external failures’ (defects after product use); (Garvin, 1983).
Service Quality (SQ) is a concept that companies must understand if they want to remain competitive and grow. In today’s competitive environment delivering high quality service is the key for a sustainable competitive advantage. (Angelova & Zekiri, 2011).

SQ of an organization is becoming an important competition factor in the business field (Veldhuisen, 2011).

SQ is the overall assessment of a service by the customers (Eshghi et al., 2008). SQ is the difference between customer’s expectations for the service encounter and the perceptions of the service received (Munusamy et al., 2010).

SQ is determined by calculating the difference between two scores where better SQ results in a smaller gap (Landrum, et al., 2008).

SQ is a key to gain a competitive advantage in services industry. The satisfaction level of customers is dependent on their perception of SQ and the trust in service provider (Ismail et al., 2006; Aydin & Özer, 2005).

SQ is the result of the comparison that customers make between their expectations about a service and their perception of the way the service has been performed (Caruana, 2002).

SQ has gained tremendous attention from managers and academics due to its considerable influence on business performance, cost reduction, customer satisfaction and profitability (Gummesson, 1998; Suresschander et al., 2002).

SQ has been conceptualized as the difference between customer expectations regarding a service to be received and perceptions of the service being received (Grönroos, 2001).

SQ has become a popular area of academic research and has been acknowledged as an observant competitive advantage and supporting satisfying relationships with customers (Zeithmal, 2000).

SQ is the meeting or exceeding customer expectations or as the expectations of service (Nitecki & Hernon, 2000).

SQ is a casual relationship between SQ and satisfaction and that the perceptions of SQ affect the feelings of satisfaction and/or dissatisfaction by the customer (Fornell et al., 1996).

SQ divisions are related to overall SQ and/or customer satisfaction (Dabhalker et al., 1996; Zeithaml et al., 1996).

SQ is a global judgment, or attitude, relating to the superiority of the service. SQ presents ‘the consumer’s overall impression of the relative inferiority/superiority of the organization and its services. Therefore, SQ is a key of survival to all servicing companies (Parasuraman et al., 1994).

SQ is viewed as a form of attitude representing a long-run overall evaluation. Maintaining SQ at a certain level and improving SQ must be life-time efforts to those companies who desire life-time prosperity in customers’ heart (Cronin & Taylor, 1992).

SQ is a difference between customer expectations of ‘what they want’ and their perceptions of ‘what they get (Grönroos, 1990).

SQ is a tool for gaining competitive advantage and lead in a market-driven system has been well recognized by the organizations. However, in current highly competitive corporate environment, it has become increasingly important to not only become the market leader but also to maintain that top position (Zeithaml et al., 1996; Boltan & Drew, 1991).

SQ is the customer perception of how does a service meets or exceeds their expectations (Czepiel, 1990).

SQ delineates two rather distinct facets of the construct: a technical dimension (the core service provided) and a functional dimension (how the service is provided). Product quality was traditionally linked to the technical specifications of goods, with most definitions of quality arising from the manufacturing sector where quality control has received prolonged attention and research (Grönroos, 1984; 1990).

SQ has been referred as the extent to which a service meets customers’ needs or expectations (Lewis & Mitchell, 1990; Dotchin & Oakland, 1994). It is conceptualized as the consumer’s overall impression of the relative inferiority or superiority of the services (Zeithaml et al., 1990).

SQ has become a major area of attention during the past few decades for managers, researchers, and practitioners because of its huge impact on business performance of firms. Customers prefer and value
companies that provide high SQ. Thus, the attainment of quality in products and services has become a drive concern of the 1980s (Brown & Swartz, 1989).

Customers judge SQ relative to what they want by comparing their perceptions of service experiences with their expectations of what the service performance should be. Marketers described and measured only quality with tangible goods, whereas quality in services was largely undefined and un-researched (Brown & Swartz, 1989).

SQ was developed as the overall evaluation of a specific service firm that results from comparing that firm’s performance with the customer’s general expectations of how firms in that industry should perform. SQ is the global evaluation or attitude of overall excellence of services. SQ has become a significant differentiator and the most powerful competitive weapon that organizations want to possess (Berry et al. 1988).

SQ gives a sustainable competitive advantage to any business. It enables them to fulfill not only the present needs of their customers satisfactorily, but also to anticipate their future needs. This ability to anticipate the future needs of customers allows them to delight their customers through quality services on consistent basis. Subsequently it enhances customer satisfaction (Gantasala & Prabhakar, 2010; Wisniewski, 2001; Zeithaml, 1988).

SQ is interpreted as perceived quality which means a customer’s judgment about a service. SQ is the degree of discrepancy between customers’ normative expectation for service and their perceptions of service performance (Parasuraman et al., 1985).

SQ is a causal antecedent of customer satisfaction, due to the fact that SQ is viewed to be at the transactional level and satisfaction is seen to be an attitude (Oliver, 1997).

DSQ is what is provided through modern technologies and communications, as these services provide benefits to all concerned parties from service providers, users and society in terms of ease of use (Al Balushi, 2021).

DSQ is the ability to help customers obtain goods with advanced service technologies in light of the digital age, in order to enhance the quality of services via the Internet (Kalia & Paul, 2021).

DSQ is the ability to keep pace with digital technology in providing services over the Internet so that they are provided faster, and to take advantage of technological development to achieve customer satisfaction (Li et al., 2021).

DSQ is the provision of services resulting from enabling information and communication technology to reduce costs, and to take advantage of the huge potential of technology to achieve more efficiency of the services provided (Pedrosa et al., 2020).

DSQ is the provision of goods and services by quickly displaying and obtaining them easily, with the aim of creating new value and developing relationships with customers in the era of digitalization (Pirola et al, 2020).

DSQ is the development of new knowledge to better understand customer behavior by better improving the quality of service provided online to achieve customer satisfaction and trust (Rita, 2020).

DSQ includes offers that combine many characteristics related to goods or services to provide them in a simplified manner so that they reach all customers easily and conveniently (Salminen, 2014).

2.2.2. Digital Service Quality Dimensions

The dimensions of DSQ are digital tangibles, digital reliability, digital interaction, digital trust, and customer centricity (Büyüközkan et al., 2020; Bunker, 2020; Büyüközkan et al., 2019; Lyons et al., 2019; Rawat, 2016; Neill, 2015; Price et al., 2013).

2.2.2.1. Digital Tangibles

It means the digitization of equipment, facilities, communication tools, as well as things that can be networked or connected to various forms of digital representation.

2.2.2.2. Digital Reliability

It refers to the fulfillment of the provision of DSQ, the ability to effectively implement them and address all exceptions.

2.2.2.3. Digital Interaction
It means communication networks and digital interaction between customers and organizations through digital platforms.

2.2.2.4. Digital Trust

It refers to gaining and retaining customer and shareholder value by providing trust in DSQ with digital channels.

2.2.2.5. Customer Centricity

It represented an outside-in approach through the experience of providing an innovative service to meet the needs and desires of customers.

3. Research Model

Figure (1) Proposed Comprehensive Conceptual Model

- **Independent Variable**: Digitalization
- **Dependent Variable**: Digital Service Quality

- **Strategic Planning for Digitalization**
- **Preparing Leader in the Field of Digitalization**
- **The Institutional Environment for Digitalization**
- **Attracting Human Skills for Digitalization**

- **Digital Tangibles**
- **Digital Reliability**
- **Digital Interaction**
- **Digital Trust**
- **Customer Centricity**

The figure shows that there are one independent variable (Digitalization) and one dependent variable (DSQ). The research framework suggests that Digitalization have an impact on DSQ.

Digitalization is measured in terms of strategic planning for digitalization, preparing leaders in the field of digitalization, the institutional environment for digitalization, and attracting human skills for digitalization process (Hamad, 2020; Hadeer, 2017; Brink, et al., 2020; Skog, 2019; Tugce, 2019; Bongiorno, et al., 2018; Douglas et al., 2018; Keshab, 2018; Hirv, 2016; Ernst & Frische, 2015).

DSQ is measured in terms of digital tangibles, digital reliability, digital interaction, digital trust, and customer centricity (Büyüközkan et al., 2020; Bunker, 2020; Büyüközkan et al., 2019; Lyons et al., 2019; Rawat, 2016; Neill, 2015; Price et al., 2013).

4. Research Questions

The research problem has two sources. The first source is to be found in previous studies. There is a lack in the number of literature reviews that dealt with the analysis of the relationship between digitalization and DSQ. This called for the researcher to test this relationship in the Egyptian environment.

In light of the literature review, digitalization is expected to have a significant impact on society. The value creation process has changed as a result of integrating information and communication technology into the organization's operations. This change leads to efficiency and the creation of new business models such as digital platforms, and a competitive advantage can be achieved, in addition to communication and...
interaction. With customers and suppliers to generate new products and new evolving services, digitalization affects individuals, processes, products and the organization as a whole (Sayabek et al., 2020).

One study aimed to understand what organizations do on their digital journeys. One of the most important results of the study is that there are factors that constitute the success of the digitalization process, and organizations that seek to embark on successful digitalization journeys can rely on them. The study also recommended that subordinates can be involved in the field of digitalization to ensure the success of the digitalization process (Morakanyane, et al., 2020).

While another study aimed to identify the collective understanding of digitalization across Swiss companies, and one of the most important results of the study is that the drivers of digitalization are process engineering and new technologies, digital business development, digital leadership, customer focus and digital marketing (Peter, et al., 2020).

One of the studies aimed to identify the experience of implementing smart city projects in Russia in the context of digitalization. One of the most important results of the study is that there is a decrease in the level of awareness and willingness to innovate in the economy and public life. The study also recommended that citizens should participate in urban development issues in order to improve the efficiency of urban management (Morozova & Kurochkin, 2020).

Another study focused on identifying the current knowledge about what contributes or hinders digitalization, and one of the most important results of the study is that the main drivers of digitalization have been identified. The study also recommended that researchers can analyze digitalization better, and business managers can better plan for their digitalization processes (Steiber, et al., 2020).

Another study was concerned with identifying the characteristics of sustainable development in the context of digitalization, and one of the most important results of the study is that the digitization of organizations is necessary because it provides wonderful opportunities for both organizations and societies. The study recommended that employees should be able to change themselves towards digitization (Andriushchenko et al., 2020).

Another study focused on identifying digitalization techniques. The study focused on the role of specific operating environment characteristics for the digitalization process. The study found that dynamism determines the need for digitalization. The study also contributed to shedding light on the commercial information of digitalization. The study also provided useful ideas for managers in terms of awareness of the operating environment, the need to be aware of technological developments, and the need and importance of environmental scanning (Gupta & Bosa, 2019).

There is a study aiming at identifying the impact of digitalization on organizational variables. The study found that digitalization is an important topic due to its positive impact on organizational restructuring (Plesnci, et al., 2018), formal and informal structures (Bonanomi, et al., 2019), and business model innovation (Rachinger, et al., 2019).

Another study analyzed the relationship between digitalization and performance, concluding that there is a fundamental relationship between digitalization and employee performance development on the one hand, and organizational development on the other hand (Nair, 2019).

Another study analyzed the relationship between digitalization and employee performance. The study found the importance of entrepreneurs in small and medium enterprises in adopting digitalization to raise the efficiency of the employee performance and the project performance (Liang, 2018).

Another study aimed to survey the opinions of digitalization managers from companies in the Netherlands and the United Kingdom, and one of the most important results of the study is that there is a strong direct positive effect between the dynamic capabilities supported by information technology and the level of digital maturity. The study also recommended that future research should include a cluster analysis of the stages of maturity (Danailova, 2017).

Another study aimed to identify the effects of digitalization, and one of the most important results of the study is that companies succeeded in working under a dual design of information technology and alignment of business and information technology (Haffke, 2017).

As for the previous studies regarding DSQ, one of the studies targeted the need to develop the service in light of technological development and the transformation of all services to the digital form. The
study concluded that there is a direct relationship between DSQ and the fulfillment of the desires and needs of the beneficiaries of the services. The study also indicated that DSQ increases trust in the brand and achieves market excellence, in addition to the acquisition of new customers (Büyüközkan et al., 2020).

Another study aimed to identify the role of the service quality provided via the Internet in achieving customer satisfaction. The level of customer satisfaction was measured through an advanced model based on efficiency, achievement, privacy, and the availability of the electronic system. The study indicated that there is a direct positive relationship between DSQ and the satisfaction of customers who benefit from taking the services (Mujina, 2020).

Another study identifies customers' perceptions of services through the Internet. The quality of electronic services was measured through efficiency, achievement, privacy, availability of the electronic system, and compensation. The study found a strong relationship between the dimensions of DSQ and the behavior of clients benefiting from these services (Kalia & Paul, 2020).

Another study sought to analyze the relationship between DSQ and the level of customer loyalty and satisfaction. The study found a relationship between DSC provided and the increase in the level of customer loyalty, and the dimensions of the quality of electronic service represented in reliability, responsiveness, and empathy, play an important role in the positive impact on increasing customer satisfaction and loyalty (Hadid, et al., 2020).

Another study examined the impact of DSQ on customer loyalty and satisfaction. The study found a relationship between DSC and the increase in the level of loyalty and customer satisfaction. In addition, the dimensions of DSQ represented in reliability, responsiveness, and empathy have a positive impact in achieving customer satisfaction and loyalty (Mbama & Ezepue, 2018).

The second source is the pilot study, which was conducted through interview with (30) employees at Commercial banks in Egypt. The researcher found through the pilot study several indicators. The important role could be played by Digitalization in affecting DSQ at Commercial banks in Egypt. The research questions are as follows:

Q1: What is the relationship between digitalization (strategic planning for digitalization) and DSQ at Commercial banks in Egypt?
Q2: What is the nature of the relationship between digitalization (preparing leaders in the field of digitalization) and DSQ at Commercial banks in Egypt?
Q3: What is the extent of the relationship between digitalization (the institutional environment for digitalization) and DSQ at Commercial banks in Egypt?
Q4: What is the nature and extent of the relationship between digitalization (attracting human skills for the digitalization) and DSQ at Commercial banks in Egypt?

5. Research Hypotheses

In the light of a review of previous studies, there is a study that provided a framework for evaluating higher education curricula in the context of digitalization, and one of the most important results of the study is that the open virtual innovation lab fills a research gap because it overcomes a deficit in the collection of methodological skills for digitalization (North et al., 2020).

Another study aimed at evaluating the appropriateness of digital maturity models, and one of the most important results of the study is that maturity models are among the main tools in the digitalization process, and can have a key role in clarifying the concept and paths to success. The study recommended that it is necessary to focus on expanding the production of products and services by creating smart solutions (Zapata, et al., 2020).

Another study focused on identifying areas of work for digitalization. One of the most important results of the study is that some industries still face difficulties in exploiting the benefits of digitalization. The study also recommended that decision makers in non-profit organizations should understand the opportunities and challenges posed by digitalization in order to allow them to formulate a digitalization strategy, which can lead to advantages of competitiveness and digital communication with stakeholders (Brink et al., 2020).

One of the studies aimed to identify the impact of digitalization on achieving sustainable development, and the results of the study were that sustainable development can be effectively promoted...
through digitalization. The study also indicated the need for governments to pay attention to appropriate funding for sustainable development programs and projects, and this requires policy makers to direct and encourage investments in digital network architecture and human capital (El-Massah & Mohieldin, 2020).

Another study examined the impact of digitalization on leadership within the organization, and one of the most important results of the study is the need to stimulate a culture of experimentation and innovation among employees, and leaders need to align all employees around digitalization. The study also recommended that companies going through a digitalization process need all the necessary tools to prepare this change. It is also necessary for leaders to understand digitalization, and there is a set of leadership characteristics. A leader must combine traditional leadership practices and digital leadership to create a hybrid approach, and through this, he can take advantage of digitalization opportunities (Goretti, 2019).

Another study aimed to identify how to transform a traditional organization into a performance company, and one of the most important results of the study is that the digitization process will be vital in most organizations without considering the challenges they face (Keshab, 2018).

One of the studies aimed to know the impact of long-term interventions and follow-up on the development of learning practices in the workplace in the context of digitalization, and one of the most important results of the study is that it was found that the interventions helped to strengthen many non-formal education practices among trainers, and that organizational factors have a strong impact on workplace learning practices to support digitalization (Hirv, 2016).

Another study identifies how corporate entrepreneurs seize opportunities and the ability to deal with threats by obtaining, controlling, managing and using resources. The study indicated the need for businessmen to rely on their ability to improve their use of available resources.

The study also pointed out how entrepreneurs can become more capable by using the volatility approach in obtaining and using resources in order to improve performance (Bloodgood, 2013).

There is a study aiming at identifying the role of information technology in achieving the strategic direction towards enhancing the competitiveness of the organization. The study indicated that distinguished organizations have a good information technology system in order to be able to achieve high performance in the products and services they provide.

This is in addition to improving production and marketing processes, reducing costs, and improving quality. The study also indicated that there is a significant relationship between information technology and the production of new services, the multiplicity and diversity of the services provided, and the continuous development and improvement in the current and new services (Granham, 2012).

As for the previous studies related to the DSQ, one of the studies aimed to identify the reality of the quality of DSQ and their role in achieving the satisfaction of customers who benefit from the service. DSQ was measured by several factors: cost, ease of use, trust and performance, security, social impact, credibility, speed of response, capacity and assurance.

The study found a direct relationship between DSQ and customer satisfaction, indicating that the most important factors that determine the quality of services are cost, trust, social impact, credibility, responsiveness, security, and reliability (Kar, 2020).

Another study aimed to measure the success of digital governments that provide services through the online and offline digital system. Customer satisfaction was measured through system quality, information quality, and online service delivery, as well as the quality of offline services.

The study found a direct relationship between the quality of services and customer satisfaction. The results also showed that there is a positive relationship between the services provided through the offline digital system and customer satisfaction (Wang & Teo, 2020).

Another study aimed to analyze the quality of services from the perspective of digitalization. It has relied on a model consisting of several dimensions to measure the quality of electronic service; tangibility, reliability, interaction, digital experience, and digital assurance.

The study concluded the success of the model in measuring the quality of electronic service. This is in addition to the fact that the more providers of digital electronic services pay attention to improving their quality and keeping pace with technological developments, the faster this leads to responding to the needs and desires of customers (Büyüközkan et al., 2019).
The following hypotheses were developed to decide if there is a significant correlation between digitalization and DSQ.

H1: There is no statistically significant relationship between digitalization (strategic planning for digitalization) and DSQ at Commercial banks in Egypt.

H2: Digitalization (preparing leaders in the field of digitalization) has no statistically significant effect on DSQ at Commercial banks in Egypt.

H3: There is no relationship between digitalization (the institutional environment for digitalization) and DSQ at Commercial banks in Egypt.

H4: There is no statistically significant relationship between digitalization (attracting human skills for the digitalization) and DSQ at Commercial banks in Egypt.

6. Research Population and Sample

The population of the study included all employees at commercial banks in Egypt. The total population is 66536 employees. Determination of respondent sample size was calculated using the formula (Daniel, 1999) as follows:

\[ n = \frac{N \times (Z)^2 \times P \times (1-P)}{d^2 \times (N-J) + (Z)^2 \times P \times (1-P)} \]

A number of samples, obtained by 381 employees at Commercial banks in Egypt, are shown in Table (1).

<table>
<thead>
<tr>
<th>Bank Type</th>
<th>Number of Population</th>
<th>Percentage</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. General Commercial Banks</td>
<td>52564</td>
<td>79%</td>
<td>382 X 79% = 302</td>
</tr>
<tr>
<td>2. Joint Commercial Banks</td>
<td>11977</td>
<td>18%</td>
<td>382 X 18% = 69</td>
</tr>
<tr>
<td>3. Foreign Branches of Banks</td>
<td>1995</td>
<td>3%</td>
<td>382 X 3% = 11</td>
</tr>
<tr>
<td>Total</td>
<td>66536</td>
<td>100%</td>
<td>382 X 100% = 382</td>
</tr>
</tbody>
</table>

Source: Egyptian Central Bank, Economic Magazine, 2020

Table (2) Frequency Distribution Table of Demographics

<table>
<thead>
<tr>
<th>Demographic Variables</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Job Title</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Manager</td>
<td>24</td>
<td>%8</td>
</tr>
<tr>
<td>Deputy General Manager</td>
<td>15</td>
<td>%5</td>
</tr>
<tr>
<td>Deputy Manager</td>
<td>18</td>
<td>%6</td>
</tr>
<tr>
<td>Controller</td>
<td>30</td>
<td>%10</td>
</tr>
<tr>
<td>Excellent Banker</td>
<td>57</td>
<td>%19</td>
</tr>
<tr>
<td>Banker A and B</td>
<td>156</td>
<td>%52</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Marital Status</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>210</td>
<td>%70</td>
</tr>
<tr>
<td>Single</td>
<td>90</td>
<td>%30</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3- Age</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 30 years</td>
<td>120</td>
<td>%40</td>
</tr>
<tr>
<td>From 30 to 45</td>
<td>135</td>
<td>%45</td>
</tr>
<tr>
<td>More than 45</td>
<td>45</td>
<td>%15</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4- Educational Level</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>University Education</td>
<td>135</td>
<td>%45</td>
</tr>
<tr>
<td>Post Graduate Studies</td>
<td>165</td>
<td>%55</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5- Period of Experience</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 years</td>
<td>60</td>
<td>%20</td>
</tr>
<tr>
<td>From 5 to 10</td>
<td>210</td>
<td>%70</td>
</tr>
<tr>
<td>More than 10</td>
<td>30</td>
<td>%10</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>100%</td>
</tr>
</tbody>
</table>

7. Procedure

The goal of this study was to identify the role of digitalization in enhancing DSQ. A survey research method was used to collect data. The questionnaire included three questions, relating to digitalization, DSQ, and biographical information of employees at Commercial banks in Egypt. About 382 survey questionnaires...
were distributed. Multiple follow-ups yielded 300 statistically usable questionnaires. Survey responses were 78%.

8. Research Variables and Methods of Measuring

The 20-item scale digitalization section is based on Hamad, 2020, Hadeer, 2017 Brink, et al.; 2020, Skog, 2019; Tugce, 2019; Bongiorno, et al., 2018; Douglas et al., 2018; Keshab. 2018; Hirv, 2016; Ernst & Frische, 2015. There were five items measuring strategic planning for digitalization, five items measuring preparing leaders in the field of digitalization, five items measuring the institutional environment for digitalization, and five items measuring attracting human skills for digitalization process.

The 34-item scale DSQ is based on Büyüközkan et al., 2020; Bunker, 2020; Büyüközkan et al., 2019; Lyons et al., 2019; Rawat, 2016; Neill, 2015; Price et al., 2013. There were eight items measuring digital tangibles, eight items measuring digital reliability, seven items measuring digital interaction, six items measuring digital trust, and five items measuring customer centricity.

Responses to all items scales were anchored on a five (5) point Likert scale for each statement which ranges from (5) “full agreement,” (4) for “agree,” (3) for “neutral,” (2) for “disagree,” and (1) for “full disagreement”.

9. Data Analysis and Hypotheses Testing

9.1. Coding of Variables

The research consists of three variables. The first is (independent variable). The second is digitalization (independent variable). Description and measuring of the research variables is presented in the following table:

<table>
<thead>
<tr>
<th>Table (3) Description and Measuring of the Research Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Variables</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Total Digitalization</td>
</tr>
<tr>
<td>Dependent Variable</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Total BD</td>
</tr>
</tbody>
</table>

9.2. Construct Validity

9.2.1. Digitalization

The researcher used Confirmatory Factor Analysis (CFA) for digitalization. This can be illustrated by the following figure:
From the previous figure, it is clear that all the statement of digitalization are greater than 0.50, which corresponds to GFI. This is a good indicator of all other statistical analysis. The quality indicators for digitalization can be illustrated in the following table:

### Table (4) Quality Indicators for Digitalization Using AMOS Analysis

<table>
<thead>
<tr>
<th>Test the Quality of the Model</th>
<th>Acceptance Condition (Daire et al., 2008)</th>
<th>Test Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2$ / Degree of freedom $&gt; 5$</td>
<td></td>
<td>1329.044</td>
</tr>
<tr>
<td>P. value $&gt; 0.5$</td>
<td></td>
<td>0.000</td>
</tr>
<tr>
<td>Goodness of fit Index (GFI) $&gt; 0.90$</td>
<td></td>
<td>0.725</td>
</tr>
<tr>
<td>Tucker-Lewis Index (TLI) $&gt; 0.95$</td>
<td></td>
<td>0.802</td>
</tr>
<tr>
<td>Comparative Fit Index (CFI) $&gt; 0.90$</td>
<td></td>
<td>0.843</td>
</tr>
<tr>
<td>Normed Fit Index (NFI) $&gt; 0.90$</td>
<td></td>
<td>0.815</td>
</tr>
<tr>
<td>Incremental Fit Index (IFI) $&gt; 0.95$</td>
<td></td>
<td>0.828</td>
</tr>
<tr>
<td>Relative Fit Index (RFI) $&gt; 0.90$</td>
<td></td>
<td>0.739</td>
</tr>
<tr>
<td>Root Mean Square Residual (RMR) $&lt; 0.5$</td>
<td></td>
<td>0.098</td>
</tr>
<tr>
<td>Root Mean Square Error of Approximation (RMSEA) $&lt; 0.5$</td>
<td></td>
<td>0.107</td>
</tr>
</tbody>
</table>

In light of the above-mentioned indicators, it is clear that the previous indicators are good for making all other statistical analysis.

#### 9.2.2. Digital Service Quality

The researcher used CFA for DSQ. This can be illustrated by the following figure:
According to Figure (2), it is clear that all the statement of DSQ are greater than 0.50. This is a good indicator of all other statistical analysis. The quality indicators for DSQ can be illustrated in the following table:

**Table (5) Quality Indicators for DSQ Using AMOS Analysis**

<table>
<thead>
<tr>
<th>Test the Quality of the Model Using AMOS Analysis</th>
<th>Test Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance Condition (Daire et al., 2008)</td>
<td></td>
</tr>
<tr>
<td>X² / Degree of freedom &lt; 5</td>
<td>1233.018</td>
</tr>
<tr>
<td>P. value &gt; 0.5</td>
<td>0.000</td>
</tr>
<tr>
<td>Goodness of fit Index (GFI) &gt; 0.90</td>
<td>0.669</td>
</tr>
<tr>
<td>Tucker-Lewis Index (TLI) &gt; 0.95</td>
<td>0.832</td>
</tr>
<tr>
<td>Comparative Fit Index (CFI) &gt; 0.95</td>
<td>0.669</td>
</tr>
<tr>
<td>Normed Fit Index (NFI) &gt; 0.90</td>
<td>0.720</td>
</tr>
<tr>
<td>Incremental Fit Index (IFI) &gt; 0.95</td>
<td>0.754</td>
</tr>
<tr>
<td>Relative Fit Index (RFI) &gt; 0.90</td>
<td>0.797</td>
</tr>
<tr>
<td>Root Mean Square Residual (RMR) &lt; 0.5</td>
<td>0.083</td>
</tr>
<tr>
<td>Root Mean Square Error of Approximation (RMSEA) &lt; 0.5</td>
<td>0.103</td>
</tr>
</tbody>
</table>

In light of the above-mentioned indicators, it is clear that the previous indicators are good for making all other statistical analysis.
9.3. Descriptive Analysis

Table (6) shows the mean and standard deviations of Digitalization and DSQ

<table>
<thead>
<tr>
<th>Variables</th>
<th>The Dimension</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digitalization</td>
<td>Strategic Planning for Digitalization</td>
<td>3.43</td>
<td>0.813</td>
</tr>
<tr>
<td></td>
<td>Preparing Leader in the Field of Digitalization</td>
<td>2.62</td>
<td>0.483</td>
</tr>
<tr>
<td></td>
<td>The Institutional Environment for Digitalization</td>
<td>4.02</td>
<td>1.120</td>
</tr>
<tr>
<td></td>
<td>Attracting Human Skills for Digitalization</td>
<td>3.51</td>
<td>0.863</td>
</tr>
<tr>
<td></td>
<td>Total Measurement</td>
<td>3.39</td>
<td>0.791</td>
</tr>
<tr>
<td>Digital Service Quality</td>
<td>Digital Tangibles</td>
<td>4.16</td>
<td>0.806</td>
</tr>
<tr>
<td></td>
<td>Digital Reliability</td>
<td>3.57</td>
<td>0.668</td>
</tr>
<tr>
<td></td>
<td>Digital Interaction</td>
<td>4.18</td>
<td>0.845</td>
</tr>
<tr>
<td></td>
<td>Digital trust</td>
<td>3.86</td>
<td>0.765</td>
</tr>
<tr>
<td></td>
<td>Customer Centricity</td>
<td>3.58</td>
<td>0.620</td>
</tr>
<tr>
<td></td>
<td>Total Measurement</td>
<td>3.89</td>
<td>0.709</td>
</tr>
</tbody>
</table>

According to Table (6), most of the respondents identified strategic planning for digitalization (M=3.43, SD=0.813), preparing leader in the field of digitalization (M=2.62, SD=0.483), the institutional environment for digitalization (M=4.02, SD=1.120), attracting human skills for digitalization (M=3.51, SD=0.863), and total digitalization (M=3.39, SD=0.791).

Regarding to DSQ, most of the respondents identified the digital tangibles (M=4.16, SD=0.806), digital reliability (M=3.57, SD=0.668), digital interaction (M=4.18, SD=0.845), digital trust (M=3.86, SD=0.765), customer centricity (M=3.58, SD=0.620), and total DSQ (M=3.89, SD=0.709).

9.4. Evaluating Reliability

Table (7) Reliability of Digitalization and DSQ

<table>
<thead>
<tr>
<th>Variables</th>
<th>Dimension</th>
<th>Number of Statement</th>
<th>ACC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digitalization</td>
<td>Strategic Planning for Digitalization</td>
<td>5</td>
<td>0.924</td>
</tr>
<tr>
<td></td>
<td>Preparing Leader in the Field of Digitalization</td>
<td>5</td>
<td>0.754</td>
</tr>
<tr>
<td></td>
<td>The Institutional Environment for Digitalization</td>
<td>5</td>
<td>0.962</td>
</tr>
<tr>
<td></td>
<td>Attracting Human Skills for Digitalization</td>
<td>5</td>
<td>0.926</td>
</tr>
<tr>
<td></td>
<td>Total Measurement</td>
<td>20</td>
<td>0.974</td>
</tr>
<tr>
<td>Digital Service Quality</td>
<td>Digital Tangibles</td>
<td>8</td>
<td>0.923</td>
</tr>
<tr>
<td></td>
<td>Digital Reliability</td>
<td>8</td>
<td>0.912</td>
</tr>
<tr>
<td></td>
<td>Digital Interaction</td>
<td>7</td>
<td>0.947</td>
</tr>
<tr>
<td></td>
<td>Digital Trust</td>
<td>6</td>
<td>0.919</td>
</tr>
<tr>
<td></td>
<td>Customer Centricity</td>
<td>5</td>
<td>0.825</td>
</tr>
<tr>
<td></td>
<td>Total Measurement</td>
<td>34</td>
<td>0.979</td>
</tr>
</tbody>
</table>

Table (7) presents the reliability of digitalization. The 20 items of digitalization are reliable because the ACC is 0.974. Strategic planning for digitalization, which consists of 5 items, is reliable because the ACC is 0.924. The 5 items related to preparing leader in the field of digitalization are reliable because the ACC is 0.754. The 5 items related to the institutional environment for digitalization are reliable because the ACC is 0.962. Attracting human skills for digitalization, which consists of 5 items, is reliable because the ACC is 0.926. Thus, the internal consistency of digitalization can be acceptable.

The 34 items of DSQ are reliable because the ACC is 0.979. Digital tangibles, which consists of 8 items, is reliable because the ACC is 0.923. The 8 items related to digital reliability are reliable because the ACC is 0.912 while the 7 items of digital interaction are reliable because the ACC is 0.974. The 6 items related to digital trust are reliable because the ACC is 0.919 while the 5 items of customer centricity are reliable because the ACC is 0.825. Thus, the internal consistency of DSQ can be acceptable.

9.5. The Means, St. Deviations and Correlation among Variables
Table (8) Means, Standard Deviations and Intercorrelations among Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Digitalization</th>
<th>DSQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digitalization</td>
<td>3.39</td>
<td>0.791</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Digital Service Quality</td>
<td>3.89</td>
<td>0.709</td>
<td>0.758**</td>
<td>1</td>
</tr>
</tbody>
</table>

Table (8) shows correlation coefficients between digitalization and DSQ. Digitalization is (Mean=3.39; SD=0.791), while DSQ is (Mean=3.89; SD= 0.709). Also, the correlation between digitalization and DSQ is (R=0.758; P <0.01).

9.6. The Correlation between Digitalization and DSQ

Table (9) Correlation Matrix between Digitalization and DSQ

<table>
<thead>
<tr>
<th>Research Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic Planning for Digitalization</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparing Leader in the Field of Digitalization</td>
<td>0.900**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Institutional Environment for Digitalization</td>
<td>0.937**</td>
<td>0.735**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Attracting Human Skills for Digitalization</td>
<td>0.970**</td>
<td>0.843**</td>
<td>0.943**</td>
<td>1</td>
</tr>
<tr>
<td>Digital Service Quality</td>
<td>0.745**</td>
<td>0.637**</td>
<td>0.748**</td>
<td>0.747**</td>
</tr>
</tbody>
</table>

Based on Table (9), correlation between digitalization (strategic planning for digitalization) and DSQ is 0.745 whereas digitalization (preparing leader in the field of digitalization) and DSQ shows correlation value of 0.637. Also, digitalization (the institutional environment for digitalization) and DSQ is 0.748 whereas digitalization (attracting human skills for digitalization) and DSQ shows correlation value of 0.747. The overall correlation between digitalization and DSQ is 0.758.

9.6.1. Digitalization (Strategic Planning for Digitalization) and DSQ

Table (10) MRA Results for Digitalization (Strategic Planning for Digitalization) and DSQ

<table>
<thead>
<tr>
<th>Digitalization (Strategic Planning for Digitalization)</th>
<th>Beta</th>
<th>R</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The bank has taken strategic planning actions for digitization.</td>
<td>0.248*</td>
<td>0.681</td>
<td>0.463</td>
</tr>
<tr>
<td>2. The bank has a strategic plan for digitization that includes the vision and mission compatible with its objectives.</td>
<td>0.065</td>
<td>0.665</td>
<td>0.442</td>
</tr>
<tr>
<td>3. The bank is constantly developing the strategic plan for digitization in accordance with technological and legislative developments.</td>
<td>0.202**</td>
<td>0.669</td>
<td>0.447</td>
</tr>
<tr>
<td>4. The strategic plan included a plan for integration and compatibility with the efforts of other relevant authorities.</td>
<td>0.030</td>
<td>0.542</td>
<td>0.293</td>
</tr>
<tr>
<td>5. The bank has adopted innovative methods in strategic planning in the field of digitization.</td>
<td>0.285**</td>
<td>0.705</td>
<td>0.497</td>
</tr>
<tr>
<td>MCC</td>
<td>0.752</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC</td>
<td>0.565</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculated F</td>
<td>76.384</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree of Freedom</td>
<td>5.294</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indexed F</td>
<td>3.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of Significance</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As Table (10) proves, the MRA resulted in the R of 0.752 demonstrating that the 5 independent variables of digitalization (Strategic Planning for Digitalization) construe DSQ significantly. Furthermore, the value of R², 5 independent variables of digitalization (Strategic Planning for Digitalization) can explain 0.56% of the total factors in DSQ level. Hence, 44% are explained by the other factors. Therefore, there is enough empirical evidence to reject the null hypothesis that it said there is no relationship between digitalization (Strategic Planning for Digitalization) and DSQ.

9.6.2. Digitalization (Preparing Leader in the Field of Digitalization) and DSQ

As Table (11) proves, the MRA resulted in the R of 0. 689. This means that DSQ has been significantly explained by the 5 independent variables of digitalization (Preparing Leader in the Field of
Digitalization). As a result of the value of $R^2$, the five independent variables of digitalization (Preparing Leader in the Field of Digitalization) justified 47% of the total factors in DSQ level. Hence, 53% are explained by the other factors. So, there is enough empirical evidence to reject the null hypothesis that it said there is no relationship between digitalization (Preparing Leader in the Field of Digitalization) and DSQ.

Table (11) MRA Results for Digitalization (Preparing Leader in the Field of Digitalization) and DSQ

<table>
<thead>
<tr>
<th>Digitalization (Preparing Leader in the Field of Digitalization)</th>
<th>Beta</th>
<th>R</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The bank has developed a plan to prepare leaders and raise their level of familiarity with the digitization process.</td>
<td>0.051</td>
<td>0.354</td>
<td>0.125</td>
</tr>
<tr>
<td>2. The bank is working to develop leaders in the process of digitization and improve them continuously.</td>
<td>0.210**</td>
<td>0.545</td>
<td>0.297</td>
</tr>
<tr>
<td>3. The bank develops digitization leaders in all departments in a way that achieves integration in the digitization process.</td>
<td>0.226**</td>
<td>0.559</td>
<td>0.312</td>
</tr>
<tr>
<td>4. All leaders are involved in the decision-making process related to digitization.</td>
<td>0.078*</td>
<td>0.053</td>
<td>0.002</td>
</tr>
<tr>
<td>5. The bank engages leaders in the digitization process in creative and innovative ways.</td>
<td>0.359**</td>
<td>0.614</td>
<td>0.376</td>
</tr>
</tbody>
</table>

- MCC
- DC
- Calculated F: 5.294
- Degree of Freedom: 3.01
- Indexed F
- Level of Significance: 0.689

9.6.3. Digitalization (The Institutional Environment for Digitalization) and DSQ

Table (12) MRA Results for Digitalization (The Institutional Environment for Digitalization) and DSQ

<table>
<thead>
<tr>
<th>Digitalization (The Institutional Environment for Digitalization)</th>
<th>Beta</th>
<th>R</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The bank is implementing the institutional infrastructure project for digitization.</td>
<td>0.274**</td>
<td>0.723</td>
<td>0.522</td>
</tr>
<tr>
<td>2. The bank has established an bank unit for the institutional structure and has assigned clear tasks and responsibilities.</td>
<td>0.159*</td>
<td>0.693</td>
<td>0.480</td>
</tr>
<tr>
<td>3. The bank unit of the institutional structure has a clear and effective mechanism.</td>
<td>0.194**</td>
<td>0.707</td>
<td>0.499</td>
</tr>
<tr>
<td>4. Coordination is made between the bank unit of the institutional structure and other departments in an integrated manner.</td>
<td>0.204*</td>
<td>0.724</td>
<td>0.524</td>
</tr>
<tr>
<td>5. The institutional structure contributed to the development of the bank's approach to digitization in light of quality, time and cost.</td>
<td>0.035</td>
<td>0.643</td>
<td>0.413</td>
</tr>
</tbody>
</table>

- MCC
- DC
- Calculated F: 7.821
- Degree of Freedom: 3.01
- Indexed F
- Level of Significance: 0.756

As Table (12) proves, the MRA resulted in the R of 0.756 demonstrating that the 5 independent variables of digitalization (The Institutional Environment for Digitalization) construe DSQ significantly. Furthermore, the value of $R^2$, 5 independent variables of digitalization (The Institutional Environment for Digitalization) can explain 0.51% of the total factors in DSQ level. Hence, 49% are explained by the other factors. Therefore, there is enough empirical evidence to reject the null hypothesis that it said there is no relationship between digitalization (The Institutional Environment for Digitalization) and DSQ.

9.6.4. Digitalization (Attracting Human Skills for Digitalization) and DSQ
Impact Factor 3.582  Case Studies Journal ISSN (2305-509x) – Volume 10, Issue 11–Nov-2021

Table (13) MRA Results for Digitalization (Attracting Human Skills for Digitalization) and DSQ

<table>
<thead>
<tr>
<th>Digitalization (Attracting Human Skills for Digitalization)</th>
<th>Beta</th>
<th>R</th>
<th>R^2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The bank has taken measures to attract skills and competencies for the digitization process.</td>
<td>0.187*</td>
<td>0.669</td>
<td>0.447</td>
</tr>
<tr>
<td>2. A plan has been prepared to attract digital competencies to enhance the capabilities necessary to achieve the digitization strategy.</td>
<td>0.109</td>
<td>0.673</td>
<td>0.452</td>
</tr>
<tr>
<td>3. The bank is attracting a number of human competencies in the field of digital according to the specific plan.</td>
<td>0.183**</td>
<td>0.665</td>
<td>0.442</td>
</tr>
<tr>
<td>4. The bank attracts and exchanges human competencies to benefit from them in the field of digitization.</td>
<td>0.091</td>
<td>0.582</td>
<td>0.338</td>
</tr>
<tr>
<td>5. The bank finds innovative ways to attract and preserve human skills for the digitization process.</td>
<td>0.267**</td>
<td>0.706</td>
<td>0.498</td>
</tr>
</tbody>
</table>

- MCC
- DC
- Calculated F
- Degree of Freedom
- Indexed F
- Level of Significance

| MCC | 0.749 |
| DC | 0.562 |
| Calculated F | 75.367 |
| Degree of Freedom | 5.294 |
| Indexed F | 3.01 |
| Level of Significance | 0.000 |

As Table (13) proves, the MRA resulted in the R of 0.749 demonstrating that the 5 independent variables of digitalization (Attracting Human Skills for Digitalization) construe DSQ significantly. Furthermore, the value of R^2, 5 independent variables of digitalization (Attracting Human Skills for Digitalization) can explain 0.56% of the total factors in DSQ level. Hence, 44% are explained by the other factors. Therefore, there is enough empirical evidence to reject the null hypothesis that it said there is no relationship between digitalization (Attracting Human Skills for Digitalization) and DSQ.

10. Research Results

1. The decrease in the number of employees holding a master's degree and a doctorate in the study sector means that the bank affiliated with this sector does not make privileges for holders of higher educational degrees.
2. The age group that works in the field of information is mostly young meaning that this group needs intensive training in order to be able to gain experience in the operations related to the bank.
3. There is a significant relationship between the variables under study, which confirms that banks in this sector invest all their devices and equipment in order to improve bank performance.
4. The study showed the weakness of the variable of skills and capabilities of employees in this sector, which requires activating this variable by working to raise the skills and capabilities of employees and training them so that they can gain experience in dealing with devices and equipment.
5. Communication networks play an important role in improving bank performance, and the current study has shown that there is a fundamental relationship between improving communication networks and achieving competitive advantage on the one hand, and the quality of services provided on the other.
6. The study showed the importance of hardware, software, databases, communication networks and others, which is reflected in the bank performance of companies operating in this sector.
7. Despite the existence of communication networks, devices, and equipment. The level of use of information technology did not achieve the required level, and perhaps this is due to the weak experiences and capabilities of employees in this field.
8. The current study showed that information technology plays an important role in reducing the time taken between customer contact and the delivery of the product that meets his needs and desires.
9. The current study showed that communication networks can work more efficiently and effectively than they are now, and this can be achieved through contacting customers and exchanging information among them.
10. There is a statistically significant relationship between the dimensions of digitization represented in strategic planning, preparing leaders, institutional structure, attracting skills, competencies and quality of banking service on the one hand, and competitive advantage on the other.
11. The strategic planning for digitization is weak, in terms of the shortcomings in taking actions for the strategic planning of digitization, weakness of the strategic plan for digitization that includes the vision

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and the message compatible with the strategic objectives, and the inadequacy of the bank’s development of operational plans for the strategic plan for digitization on an ongoing basis and in accordance with technological and bank developments. There is a lack of integration and compatibility between the bank's strategic plan and the governmental efforts exerted. The bank's failure to follow creative and innovative methods in strategic planning in the field of digitization.

12. There is weak preparation of leaders in the field of digitization in terms of the bank’s failure to develop a plan to develop and prepare leaders and raise their level of knowledge of the digitization process, and inadequacy of implementing the plan to develop and prepare leaders in the digitization process and continuous improvement of these plans. There is weakness of the bank’s development of digitization leaders in all departments and branches in a way that achieves integration in the digitization process, and leaders do not participate in the decision-making process related to digitization.

13. The weakness of the institutional structure for digitization in terms of the failure of the bank to implement the project of the institutional structure for digitization, the failure to establish an bank unit for the institutional structure linked to the senior management with clear tasks, responsibilities and mechanism, the lack of coordination between this unit and other departments in an integrated manner, the weak contribution of the institutional structure to the development of the bank towards digitization.

14. Weakness in attracting human skills and competencies for the digitization process, in terms of the bank’s failure in the procedures for attracting human skills and competencies for the digitization process, and the absence of an approved plan to attract digital human competencies with the aim of enhancing the capabilities necessary to achieve the digitization strategy, not developing a plan to attract digital human skills and competencies continuously with the aim of improvement and development in the bank, the failure of the bank to attract and exchange human competencies specialized in the field of digitization, the absence of creative and innovative mechanisms and methods concerned with attracting human skills and competencies in the field of digitization.

15. Digitization helps improve the services provided to customers. Digitization is also based on employing technology in an optimal manner, in a manner that serves the workflow within the bank, and in its dealings with customers, in order to facilitate access to services.

16. The issue of digitization is one of the most prominent modern administrative concepts that have emerged during the past few years due to the increasing interest in information, and it has been associated with the tremendous development of information and communication technology.

17. The importance of digitization appeared in that it provides protection from external threats, takes advantage of available opportunities, and adapts to new rules in internal and external markets.

18. Digital-oriented banks tend to adopt digital initiatives and achieve distinct levels of creativity and innovation, as they have a vision in terms of using advanced technologies to provide innovative products and services, and improve the performance of their operations.

19. Digitization has a significant impact on society, and communication and interaction with customers and suppliers to generate new products and new advanced services, therefore digitization affects individuals, processes, products and the organization as a whole.

20. The digitization of a bank is essential in the current stage, as it provides great opportunities for both organizations and societies.

21. Digitization is an important topic due to its positive impact on organizational restructuring, formal and informal structures, and business model innovation.

22. There is an essential relationship between digitization and employee performance development on the one hand, and organizational development on the other.

23. The digitization process will be vital in most organizations without considering the challenges they face. Organizations that have a good information technology system can achieve high performance in their products and services. This is in addition to improving production and marketing processes, reducing costs, and improving quality besides the production of new services, the multiplicity and diversity of the services provided, and the continuous development and improvement of the current and new services.

11. Research Recommendations
1. The need for banks affiliated with this sector to pay attention to developing the skills and experiences of employees in terms of using modern devices and technology in the world of technology, markets and products.

2. The necessity of paying attention to information technology and the ability to use it and manage it in terms of employing the skills and capabilities of employees in this sector.

3. Effective investment in employees in terms of their development, providing opportunities to accomplish their job tasks, increasing their awareness of the importance and value of their work, and increasing their sense of the need to achieve success for the bank in which they work.

4. Working to create a good atmosphere that links the goals of the employees, the bank and the community in a way that achieves the highest possible performance on the one hand, and achieving competitive advantage on the other hand.

5. The need for banks affiliated with this sector to pay attention to information technology, as most banks are gradually moving towards using computers and its programs in order to save time and improve performance.

6. The need for banks to apply information technology and its role in improving the quality of service provided on the one hand, and achieving competitive advantage on the other hand. This is in addition to achieving employee and customer satisfaction, and achieving profits, which ultimately leads to enhancing the bank's marketing position.

7. The need to create the regulatory environment for the development of the digitization system, in terms of training employees, re-engineering operations, and making fundamental changes in the bank's work mechanism, forming a department to prepare and implement the digitization system in line with the nature of work in the bank.

8. The formation of the digitization system through three basic components, which are (1) the system inputs represented in the data processing system, the specialized research and studies system, the data collection system, the financial transactions of the bank, and the economic, social, technological and legal environment surrounding the bank, (2) the raw material transfer processes to useful outputs, (3) reports and graphs that reflect the output of the operation of the previous stage, (4) feedback, through which deficiencies or weaknesses in the previous stages are identified in order to correct them.

9. The necessity of involving subordinates in the field of digitization to ensure the success of the digitization process. Workers must also be able to change themselves towards digitalization.

10. Researchers must analyze digitization better, and business managers can better plan their digitization operations.

11. The necessity for entrepreneurs in small and medium enterprises to adopt digitization to raise the efficiency of the performance of workers on the one hand, and the performance of projects on the other hand.

12. Information systems scientists should continue to assess developments related to the role of the digital manager, the role of the head of the information systems department, and the alignment of business and information technology.

13. Nonprofit decision makers must understand the opportunities and challenges posed by digitalization in order to allow them to formulate a digitization strategy, which can lead to competitive advantages and digital communication with stakeholders.

14. The need for governments to pay attention to appropriate financing for sustainable development programs and projects, and this requires policy makers to direct and encourage investments in the digital network infrastructure and human capital.

15. Organizations going through a digital transformation need all the tools necessary to prepare for this change, and it is also necessary for leaders to understand digitalization, and the leader must combine traditional leadership practices and digital leadership to create a hybrid style between them.

16. The necessity for businessmen to rely on their ability to improve their use of available resources. The study also pointed out how entrepreneurs can become more capable by using the volatility approach in obtaining and using resources in order to improve performance.
12. Conclusion
The subject of digitization has attracted the attention of many researchers due to its great contribution to the development of work systems, and the development and growth of bank. Digitization has also contributed to motivating individuals to achieve better performance on the one hand, and improve the effectiveness of the bank's performance on the other hand. It has become easy to store and retrieve information of all kinds and sizes.

Digitization is the process of transformation into digital formulation, and this requires a shift from traditional methods to electronic preservation systems. This transformation requires identifying the methods that already exist and choosing what suits them with the nature of the environment in which the transformation takes place. The shift to digitization has become a necessity to solve many contemporary problems, the most important of which are the elimination of government red tape, the complexity of procedures, the problems of overcrowding, and the difficulty of retrieval, and this is not commensurate with the orientation to e-government.

Information systems appeared in the bank, which included how to deal with digitization using different types and forms of technology, which led to an increase in the competitive value of bank in increasing digitization and improving and developing their performance.

Digitization has become the common denominator among all daily activities, and it has penetrated all scientific and practical aspects. People have become highly dependent on information and communication technology in all fields of knowledge on the one hand, and communications on the other hand.

Digitization has invaded multiple fields, and it has become called Digital Humanities, which includes other concepts such as digital libraries, visualization, text mining, Geographic Information System, Multimedia, Social Networks, Teaching using technology With Technology, Digital Culture.

The primary purpose of the digital humanities is to promote research and learning, and to create products and processes that aim to update our knowledge. The concept of digital humanities is related to the humanistic institution that works on the use of media and computational theories in the field of humanities research and teaching, such as Text Encoding and Linguistic Computing.

The digital revolution has moved the human being from the world of paper to the intangible world, and the digital age was distinguished from the other by advantages related to size, storage, capacity, the ability to delete and add, and others. Reading has also become more rapid and interactive with others, but it has become more superficial and dispersed in the current era.

Digitization has played an important role in the markets in terms of identifying the needs and desires of customers through technology devices, tracking their habits and desires and searching on the Internet, which made marketing experts precede the desires and needs of customers, as they create a path for their consumption and direct them towards specific purchases.

12. Future Studies
The present study attempts to reveal the dimensions of digitalization and its impact on the dimensions of the DSQ, but the scope of this study, the methods used and its findings indicate that there are areas for other future studies.

Among these research areas are (1) the impact of digitalization on sustainability competitive advantage, (2) the effect of digitalization on sustainable development, (3) the impact of digitalization on environmental sustainability, (4) the impact of digitalization on social sustainability, (5) the impact of digitalization on economic sustainability.

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