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Digital Transformation Challenges for Government Sector

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Abstract

Digital transformation in Egypt became government trend supporting by political leader starting in services places like civil registry, real estate center, traffic department and many ministries do their best to apply digital transformation. In the public sector, digital transformation refers to the digitization of government activities, such as delivering a better and easier customer experience, enacting regulations that allow for a distributed workforce, and upgrading and optimizing processes to save money and resources. Employee behavior is a basic element that can affect positively or negatively, positive effect will lead to fasting transformation and increasing services so the upper management can achieve their plans. At the opposite direction if negative impact where employee become obstacle and problem for this transformation the plans will take more time, and this will harm all the systems and prevent integrity between them. Some factors will affect employee behavior education, skills, work culture, leadership, job responsibility and effective communication. Also, we cannot ignore training, and finance. No one denies the impact of digital transformation on the economy of countries, and that is why the obstacles that face digital transformation need to more explored and manipulated in different techniques according to the material and moral needs to achieve complete digital transformation.

The study utilized a quantitative approach by administering a self-administered questionnaire to government officials in the public sector of Egypt. The collected data was analyzed using SPSS. The results of the analysis confirmed the relationship between various factors and the implementation of digital transformation in the Egyptian public sector. These factors include financial capabilities, availability of infrastructure and communication systems, organizational culture, cooperation between government, business, higher education, and civil society, employee experience and skillset, selection of senior leaders, employee-centered organization, and diversity management.

Keywords: Digital Transformation, Public Sector Transformation, E-government, Leadership, Performance, Culture.

1. Introduction

The concept of e-government, began to take shape in the 1990s, with defenders disputing that governments that had become 'e-government', or made widespread use of information and communication technology (ICT) in the public sector, would be able to provide services more efficiency by eliminating bureaucracy for public entities and improving links within government, as well as lowering costs and stimulating economic growth (Chadwick, 2016). As the Internet became more participatory and collaborative, and as new technological advances became more frequent, the concept of e-government developed as well, eventually becoming known as "digital government" (Katsonis & Botros, 2015). While e-government was formerly thought to be primarily a one-way connection in which the government provided individuals with information and services via websites, digital governance is a far broader idea. It's a two-way connection in which citizens and governments communicate with one another using the most up-to-date digital means (such as social media platforms or mobile applications) (Katsonis & Botros, 2015). In it, governments use technologies based on electronic cloud and big data to enhance operational efficiency and change the business services landscape for production, marketing, provisioning, and utilization of services and outputs in proportion to the large data volume. (Bounabat, 2017). As a result, governments will go through a long, complex, and hurried process of becoming a digital government, allowing citizens to access key information and government data in a more transparent manner, as well as express their opinions. Their concerns, grievances, and opinions for government organizations - all through digital tools

(Sandoval-Almazán, et al., 2017).

Egypt has a unique chance to alter various economic sectors, including financial services, retailing, healthcare, agriculture, and manufacturing, while also providing possibilities for individuals and businesses, as well as influencing equitable development and economic progress (Kamel, 2021).

In Egypt, over the course of nearly three decades, the government's attempts to use computers in schools by studying computer basics for middle school students, but these attempts clashed with school employees who treated computers as personal custody and placed them in closed rooms to protect them, and it took years until some schools had a computer lab with a set of devices for students, but this attempt was not successful in all schools, and some schools are still studying computer in theory.

There were other attempts in government agencies, such as the Educational Buildings Organization (EBO), which relied, in its establishment of its information center in the nineties, on foreign aid obtained from various parties, and equipped an information center at a good level, enabling it to prepare its cadres to work in an electronic form, but this work was not easy and faced many problems such as the fear of losing the authorities and powers, the fear of not being able to teach and the fear of laying off employees after the paper files were converted into computer programs. But the conditions made available to EBO were not available to the rest of the government organizations, and that is why the digital transformation has not been fully completed yet.

The research used the Nine elements model/framework by Elsafty (2018, 2019, 2020, 2021, 2022, 2023) to analyze the context and has been used in several research papers (Elsafty, A., Elsayed, H., & Shaaban, 2020; Elsafty, A., Elbouseery, I., & Shaarawy, A., 2020; Elsafty, A., & Elzeftawy, A., 2021/2022; Elsafty, A., & Oraby, M., 2022; Elsafty, A., & Mahmoud, I., 2022; Elsafty, A., & Mansour, M., 2023; Elsafty, A., & Ramadan, E., 2023). According to (Elsafty, 2018) who propose the 9 elements model for analyzing and defining the organizational context as shown in the following figure, the model is deployed to understand the digital transformation challenges in government sector.

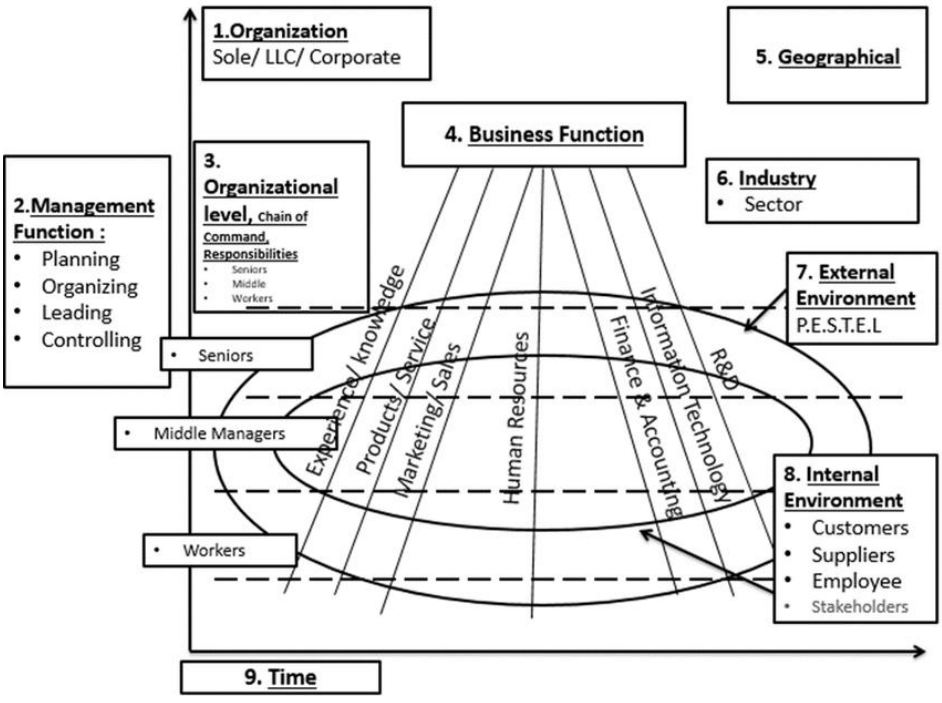

Figure 1. The 9 Elements Model Proposed by Elsafty (2018)

1.1 Organization

As part of the Egyptian state's endeavor to improve the capabilities of the state's administrative apparatus in its various ministries and units, and to develop work methods in line with the National Agenda for Sustainable Development and Egypt's Vision 2030.

The head of the Central Agency for Organization and Administration issue the decision No.86 in 2019 year to establish an organizational division for information systems and digital transformation in the state's administrative apparatus.in accordance with this decision, the Ministry of Communications provides support and technical necessary to manage the work of this division and its employees for all units of the state's administrative apparatus.

1.2 Management Function

The organizational division of information systems and digital transformation consists of three sub-organizational divisions:

1.2.1 Systems, applications, and technical support

Analyzing the work system in the entity, determining the design, and providing the requirements for digital transformation of the systems and applications, and structuring the information and databases necessary for the work of the entity based on the best standards and practices, and linking them to the digital converter to ensure maximizing the benefit of database integration at the state level.

Analyzing the work system in the entity, designing systems, applications and databases that are compatible with the best standards and practices, meeting the requirements of mechanization and digital transformation, and the necessary needs for the entity's activities and operations, including the work of user interfaces, software and databases, and technical testing to ensure the efficiency and effectiveness of its electronic system, and the implementation of programs, projects and initiatives systems, applications and databases. In the entity and in partnership with all the concerned organizational divisions within the entity, external parties, and suppliers, and review the implementation to ensure that it conforms to the standards of the systems and applications established.

Ensuring the availability and efficiency of the work of all systems and applications in the entity through managing, maintaining, and updating systems, applications, and databases related to the internal and external activities and services on time sound and based on the specific technical procedures in order to ensure the efficiency and sustainability of mechanization and digital transformation in the entity.

Providing technical support and technical assistance in a consistent and regular manner for all systems, applications, and databases in a manner that ensures business continuity and supports the achievement of the entity's objectives.

Ensure that all technical support services are implemented in accordance with the Service Level agreements defined by the Systems, Applications and Technical Support Department.

Most government websites are still just for inquiry, and you cannot complete any online transactions and he recommend other variables, such as the strengthening of the system of online payment gateways, are crucial to the development of more complete services with online transaction choices.

1.2.2 Infrastructure and information security

It develops an annual plan for the technological infrastructure needs of the entity in line with the entity's strategic plan and annual plan, as well as the country's digital transformation strategy.

Ensure the availability and effective operation of all components of the technological infrastructure of the entity such as devices, servers, printers, scanners, phones, operating systems, software, etc., through the implementation of the work of configuration, installation, management, follow-up, support, insurance, periodic maintenance, and continuous updating in a timely manner and based on the technical procedures specified for that.

Providing cyber insurance and protecting all information systems and applications of the entity by identifying and addressing any real or potential security risks and ensuring their availability, continuity, security and efficiency, through the creation, management and support of insurance systems in the entity while carrying out all periodic maintenance and continuous updating of them.

Provide consistent and regular technical support and assistance to all infrastructure components of devices, servers, printers, scanners, networks, main lines of communication and software in a manner that ensures business continuity and supports the achievement of the entity's objectives.

1.2.3 Statistics, reports, and electronic publication

Implementation of document digitization programs in the entity in coordination with all internal stakeholders using best practices, standards and models in modern digital document preservation and archiving systems to raise the efficiency of work in the entity to achieve the specific digitization goals, by specifying the preparation, examination and scanning

of all historical and new documents and documents required to be digitized and indexed and determine the level of availability.

And enter them on the digital archiving system prepared for this in the entity and support the requests of all employees of the institution to retrieve documents and digital documents.

Meeting the requirements of all parties concerned with the entity from reports, studies, data and business intelligence panels that determine business trends in the entity and the environment in which it operates, using best practices, standards and models in modern business intelligence systems and applications, which supports decision-making in the entity.

Supporting decision-making in the entity by providing decision makers with studies, analyzes and reports that determine business trends in the entity and the environment in which it operates, using best practices, standards, and models in modern business intelligence systems and applications.

1.3 Organizational Level

The division for information systems and digital transformation organization is made up of three primary divisions that oversee all of the specified functions. The - Infrastructure and information security department is in charge of all functions linked to the building and securing an information network and securing the organization's needs from hardware. the Systems, applications, and technical support department is responsible for designing all the applications that the organization needs and employing the capabilities available to bring the organization in line with a country's overall plan for digital transformation. The statistics, reports and electronic publication department is responsible for analyzing data to prepare all the statistics and reports that the organization needs. The departments are under the supervision of the Director of Information Systems and Digital Transformation.

1.4 Business Function

The Information Systems and Digital Transformation Unit prepares the organization's plan for digital transformation, designs service requests forms, prepares the necessary reports to follow up the workflow and submits the required reports to support the decision maker.

1.5 Geography

All state institutions in all governorates of Egypt are required to achieve a complete digital transformation of all the work and tasks they perform, in addition to integrate and link data between the various institutions.

1.6 Industry

The public / government sector in Egypt is required to achieve complete digital transformation according to the state's 2030 plan.

1.7 External Environment

1.7.1 Political

Since digital transformation is considered a sustainable development goal, it cannot be achieved without political stability and support in Egypt.

The law on "electronic commerce" is still being debated, which is stifling the growth of internet payments and he recommend by involving research think tanks, universities, or other research institutes, we can strengthen the system of privacy and internet data exchange Adapting and improving the regulatory and monitoring framework in response to digital advancements, system changes, and the needs of target audiences.

1.7.2 Social

The digital transformation faced many challenges, including the resistance of government employees at the beginning and the attempt to spread a culture of acceptance of change within government institutions.

There are various challenges From Socioeconomic aspects at various levels of government miss to integrate between each other, and key stakeholder ,so that the Legal documents should provide a clear definition of each power participating in e-government implementation, shortage of experts and weakness of technical and recommendation for developing the employees , e-government system financed from the budget of central government and from recently established e-government fund which is not sufficient, so recommendation to encourage public-private partnerships (PPPs) for e-government projects might help to tackle funding and service quality issues.

1.7.3 Technological

External stakeholders represented by the Ministry of Communications, Armed Forces Systems Institute, Central Agency for Organization and Administration and Ministry of Planning and Economic Development have taken the lead in this

field by providing financial support from trained people and equipment to assist the various institutions in achieving the required development.

Technical and online service quality aspect where there are few businesses in the telecommunications industry that have monopoly control over internet and investment tariffs. The country's telecom infrastructure is slowly expanding into rural areas. therefore, supporting more telecommunication providers to enter the market will deliver competitive operation, investment, and pricing for ICT infrastructure. The ICT market is developing at a snail's pace.

1.8 Internal Environment

1.8.1 Customer

We have two kinds of customers Citizens are considered the primary customers who receive the service and deal with government in digital way and government entities which will change the communication way between them, and this require training, awareness, good communication, and Efficiency rewards.

1.8.2 Supplier

The government has entered into contracts with various service providers to improve the results of service delivery to customers. Service providers provide services for site evaluation and customer evaluation of the service to compare the actual service with the targeted service and to review citizens' opinions and their feedback in order to improve the service.

1.8.3 Employees

The work team is a mixture of government workers and contractors, which results in a variety of experiences and knowledge of digital transformation and the nature of work in each entity.

1.8.4 Stakeholder analysis

Stakeholders engage together to achieve the state's plan 2030.

1.9 Time

EGYPT seeks complete digital transformation by 2030.

1.10 Digitization strategies in government

According to the OECD report (2017), there are several strategies that can be employed to facilitate digital transformation in government. By applying these strategies, successful digitalization can be achieved.

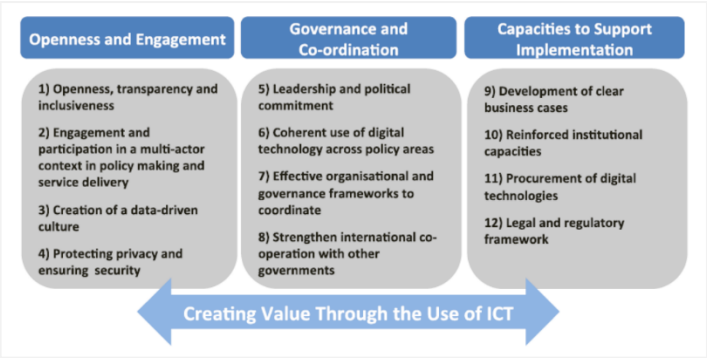

Figure 2. OECD Recommendation on Digital Government Strategies (OECD,2017)

Figure 3. Digital transformation of the public sector: From e-Government to Digital Government (OECD,2017)

In the report, the challenges encountered in implementing digital transformation strategies in government are explored. Figure 4 presents data extracted from a questionnaire conducted in each country, highlighting the specific challenges identified.

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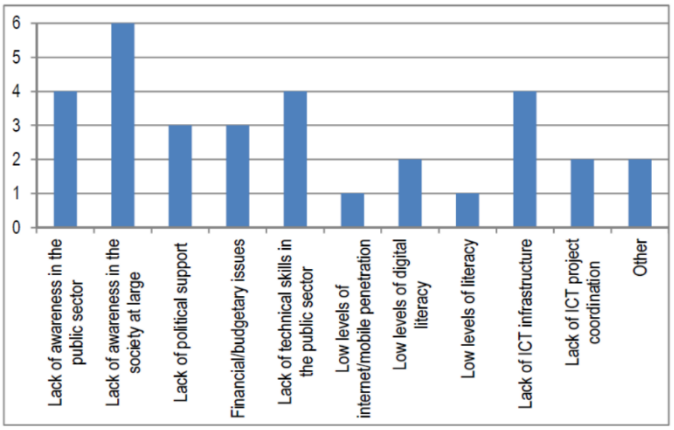


Figure 4. Main challenges for implementing digital government strategies (OECD,2017)

The literature section will explore cases from different countries to extract the factors that influence digital transformation and how they go about dealing with it.

2. Literature Review

2.1 The challenges of E-Government in Uzbekistan

From Political aspects: Low public knowledge of open data, open recommends, and open dialogue portals, resulting in lower citizen participation and he recommend improving public awareness of policymaking and participation in decision-making, educational and promotional measures are required. Educational content, such as movies or advice materials, can be shared via text messages or widely utilized social media sites like telegram or Facebook (Kuldosheva, 2021).

Uzbekistan, as a developing country, suffers from the same problems that Egypt suffers, from weak skills, lack of experts and anemic financial capabilities. The public-private partnership (PPP) that Uzbekistan encourages is one of the solutions to this problem that can be applied in Egypt.

As for the weak public knowledge of open data and open dialogue portals, which reflects the low participation of citizens, this is also felt in Egypt as a result of the level of education and the lack of policymaking recommendations in Uzbekistan are suitable for Egypt to improve public awareness of policy-making and participation in decision-making by sharing educational content, such as films or instructional materials through different educational institutions and text messages or widely used social networking sites such as Telegram or Facebook.

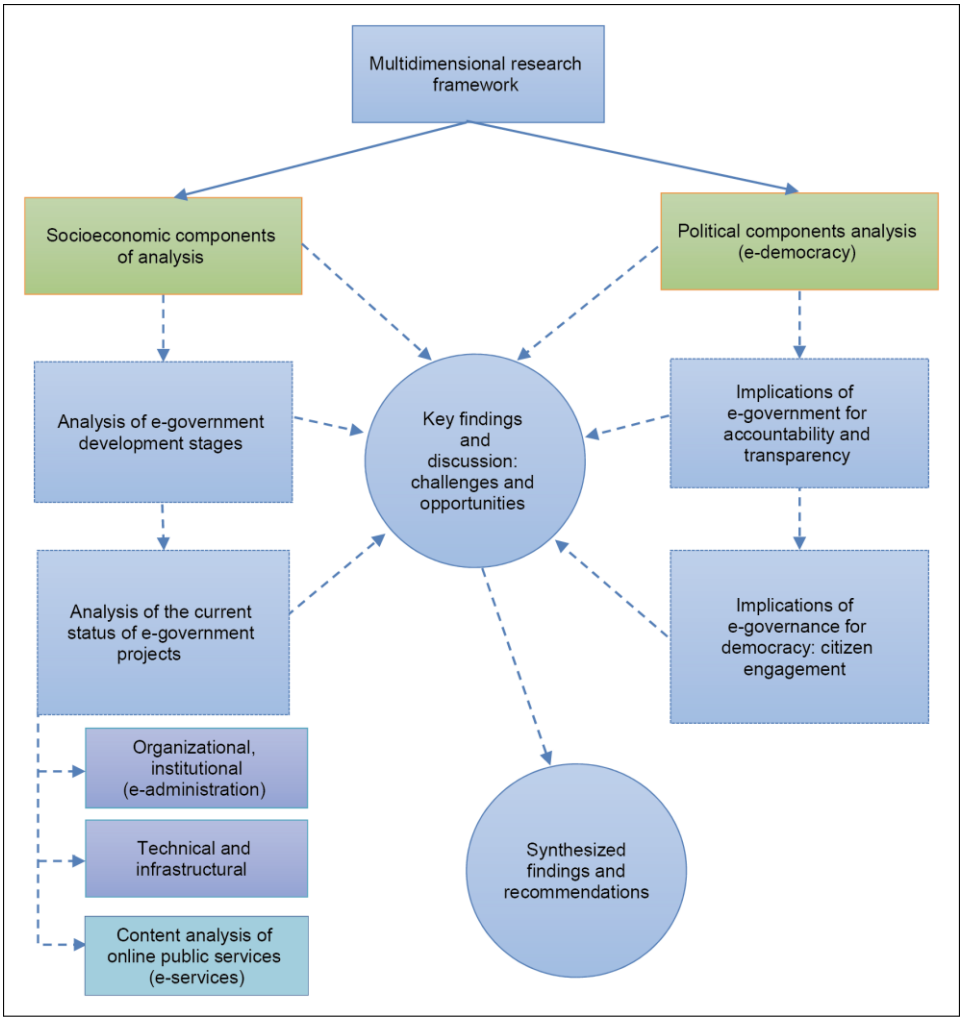


Figure 5. Multidimensional Framework for Analysis (Kuldosheva, 2021).

2.2 The challenges of E-Government in Egypt

The success of digital transformation strategies in any country relies heavily on the active participation and contribution of government employees. They play a critical role in driving and implementing these strategies effectively. lack of awareness of the e-government system and a misunderstanding of its processes and the nature of work inside the new system, personnel in Egyptian government organizations have a high predisposition toward all forms of resistance to change. This resistance has an impact on worker efficiency and effectiveness, as evidenced by the results, which demonstrate modest efficiency and effectiveness (Elgohary & Abdelazyz, 2020).

Employees' resistance to change affects implementing e-government systems in egypt due to [1] Fear of loss of control: Employees' fears of losing power and influence, the contradiction between e-government policies and staff interests, the dread of a job changes, and the notion that e-government limits employees' participation in decision-making are all examples of this. [2] Resistance to modern technology: This includes the employee's desire to retain the status quo, their aversion to change, their conviction that e-government hinders employee collaboration, and their rejection of new ideas and innovation. [3] Feelings of insecurity: This includes the employee's fear of losing their job, a preference for sticking to work rules, and a conflict between the employee's aims and objectives. [4] Fear of inability to implement change: a lack of IT skills, expertise, and training in using information technology systems, as well as ambiguity in information about the transition process.[5] Fear of workload increasing: the employee's fear of having their workload increased, of being overworked, and of the process being slowed because of any adjustments.

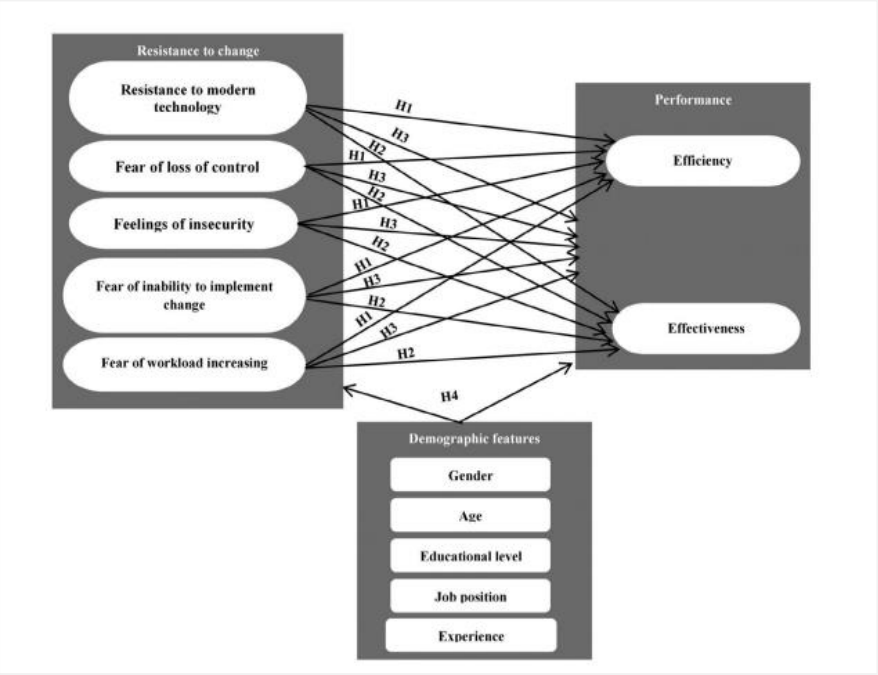


Figure 6. Research Model (Elgohary & Abdelazyz, 2020)

Elsafty and Seddek (2022) conducted a study on the critical success factors of implementing excellence in the Egyptian public sector. Their findings indicate that there is a relationship between rewards and recognition and change management. Furthermore, they found a relationship between rewards and recognition and the performance management system, as well as a relationship between rewards and recognition and leadership. Based on these findings, the researchers concluded that these interconnected factors work synergistically to contribute to the successful implementation outcomes. Therefore, rewards can be used to encourage the employees and motivate them to fast digital transformation in their organizations. Cummings & Worley (2009) emphasized this concept that when a company lacks a satisfactory performance or incentive system, it can result in and cause a slew of bad outcomes.

By using the conclusions by (Elsafty & Seddek, 2022) to solve the problems faced (Elgohary & Abdelazyz, 2020) to move fast toward change this will support digital transformation. Egypt Government Excellence Award as a state direction to improve and develop government performance and encourage its employees. It can be used in all sectors and ministries in the country, where the study demonstrated the impact of financial and moral reward on performance as well as on change management.

Although the fact that there is no one-size-fits-all compensation system for all firms, studies have highlighted the importance of aligning awards and incentives with the organization's strategic aims (Kinley & Ben-Hur, 2017).

The importance of having a strong management board and executives who can provide the necessary digital leadership and governance oversight while also helping to improve bottom-line results is emphasized by Valentine (Valentine, 2016). It is critical for top executives to be able to assess and contextualize the transformation against the company's past and present, as well as diagnose the company's underlying culture. Leaders must be able to deploy the resources required and rapidly scale up the various transformation projects, while empowering people and maintaining oversight (Westerman, Tannou, Bonnet, Ferraris, & McAfee, 2012).According to (Venkatraman, 2017) Digital leaders must be able to comprehend digital business trends, translate them into resource allocations, and collaborate with other members of the company to put them into action and The leader assists in the formation of the organization, team, and ecosystem required to achieve the transformation. As stated by (Kane, Palmer, Phillips, Kiron, & Buckley, 2016) the lack of new digital leaders, mindsets, and leadership styles that are adaptable can have a significant impact on the change and transformation process. According to (Heifetz, Grashow, & Linksy, 2009) Adaptive leaders, while distinguishing power from leadership, must be able to comprehend the cultural dynamics and norms within, determine their implications, and build supportive structures based on that.

2.3 The challenges of E-Government in Tunisia

The Tunisian government has been tasked with finding solutions to serious issues related to the digitization process,

such as the lack of digital infrastructure, cybersecurity issues, a lack of digital skills, and financial access, all of which have been identified as demotivating factors for any digital transformation project. SMEs, on the other hand, should be aware that digitization can help them expand their operations and improve their performance. The importance of building a new organizational culture with a new vision and new values that can survive with the new ecosystem was demonstrated in this study (Hassine, 2021).

These are the same problems facing Egypt towards digital transformation. Therefore, the proposed solutions must be re-evaluated to solve these problems, to put the action plan on the right direction.

2.4 The challenges of E-Government in Brazil

The issue of digital transformation in Brazil is no longer a matter of available technology, but an issue of public policy. The centralization of the digital transformation process and its coordination function helped the reach, scale, and speed of the process. The initial stage of the Brazilian Federal Government's digital transformation agenda was a study of all public services, mapping, target audiences, service touch points in the interaction between users and bureaucracy, costs, and processes.

The process of digital transformation involves issues of institutional choice. Various criteria, such as the scope of the policy, the types of operations performed and the beneficiary, influence the decision to digitalize public services. In the process of digital transformation, these choices lead to unequal outcomes. Cause some policy areas or elements associated with delivery types to enhance or dislike the transformation of services, which reduces policy coherence (Filgueiras, Fernandes, & Palotti, 2018), the experience of implementing digital transformation in Egypt in the field of public services is considered a successful one, but free public services still represent problem because they need financing.

2.5 The challenges of E-Government in South Africa

In South Africa policy and legislative measures are being implemented. Poor monitoring and assessment, a lack of political leadership support, governance issues, and power and politics in policy. South Africa’s ambition of a digitally inclusive society by 2030 is abused by these difficulties. These issues necessitate collaboration between the government, business, higher education, and civil society to develop long-term solutions that support equitable growth (Manda & Backhouse, 2017).

The three pillars for digital and inclusive growth are summarized and have been proposed by (Manda & Backhouse, 2017) as shown in figure 7.

Figure 7. Three Pillars of digital transformation in South Africa (Manda & Backhouse, 2017)

As the research in Uzbekistan (Kuldosheva, 2021) also the research in South Africa (Manda & Backhouse, 2017) recommend encourage government, business, higher education, and civil society to work together to develop long-term solutions that foster equitable growth and this recommendations can be applied in Egypt .

2.6 The challenges of E-Government in Nigeria

Ufua, et al. (2021) have operationalize the concept of digital transformation, in Nigeria uses two essential variables: e-governance and technology. They discuss transformative leadership, managerial and organizational competencies, company culture, and work environment as examples of actor-driven transformation.

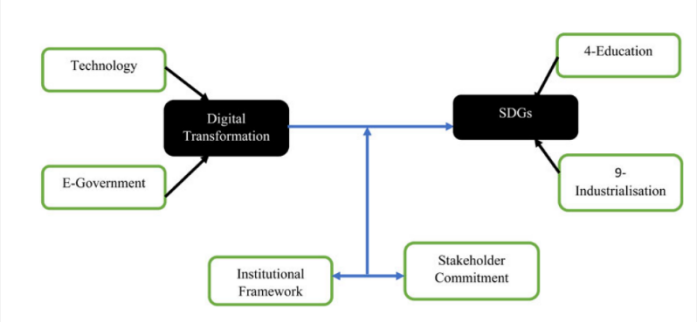


Figure 8. Conceptual framework for digital transformation and the implementation of SDGs in Nigeria (Ufua, et al., 2021).

Al-Samawi (2019) assigns requirements for digital firm, Data Frame employs IT tools to manage its crucial business processes related to customers, suppliers, and employees, The author of this research paper has presented valuable information to contemporary firm managers, IT/IS specialists, and researchers on how to achieve digital transformation. The paper outlines various requirements that a modern business needs to meet to become digital.

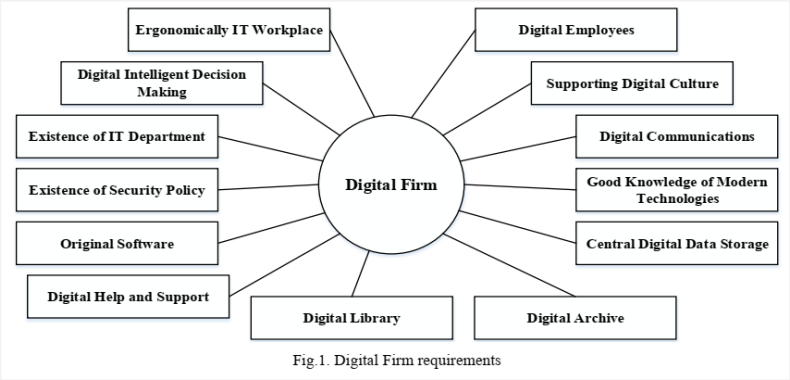


Figure 9. Digital Firm requirements (Al-Samawi, 2019)

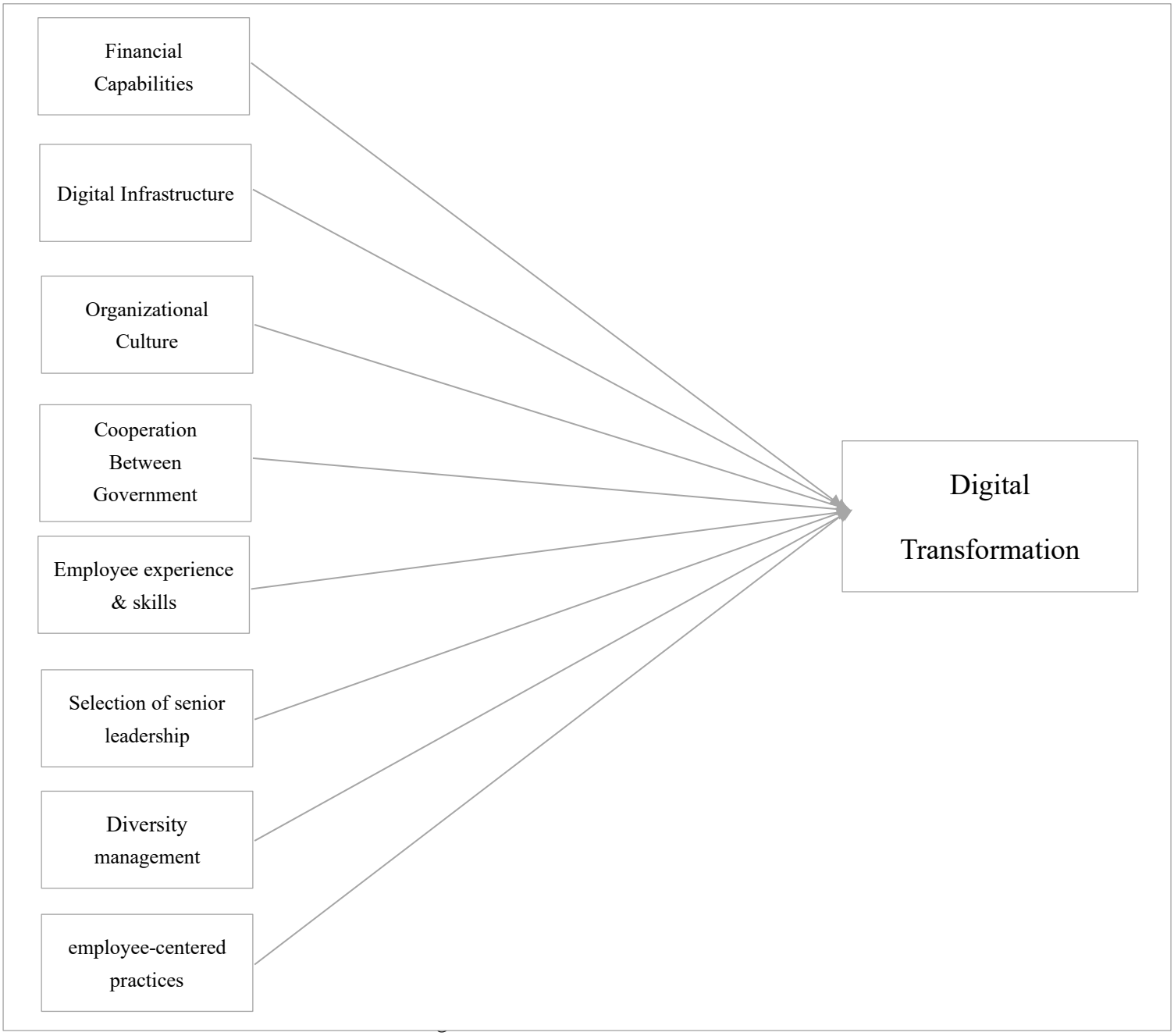
The methods with the highest efficacy in assigning responsibility for digital transformation are dependent on various factors such as an organization's culture, strategic approach, organizational framework, and crucially, the individuals who hold pivotal positions within the organization (Rickards, Smaje, & Sohoni, 2015).

Achieving digital transformation goals arguably requires effective change management. As organizations undergo digital transformation, it is essential to continually evolve, engage with employees, and enhance their actions and thought processes (Bennett & Lemoine, 2014).

3. Methodology

3.1 Theoretical Framework

An empirical study was developed to investigate the aim of the study and validate the hypotheses. Data was collected through a self-administered questionnaire. The questionnaire was designed to test the possible obstacles that effect the implementation of the digital transformation in e-government system in Egyptian public organizations. The data has been collected from 51 participants representing their government entities from Cairo and Giza governorates.



3.1.1 Dependent Variable

VAR (Y): Digital transformation: rate of digital transformation implementation.

3.1.2 Independent Variable

VAR (X1): Financial capabilities: Providing the necessary funding for equipment, training, and establishing strong networks and infrastructure.

VAR (X2): Digital infrastructure: the physical infrastructure required for digitization.

VAR (X3): Organizational culture: the culture of public sector in Egypt.

VAR (X4): Cooperation Between Government institutions: includes cooperation between government, business, higher education, and civil society.

VAR (X5): Employee experience & skills includes training employees in various computer skills and relevant experience and behavior.

VAR (X6): Selection of senior leadership: the selection criteria of senior leaders in public sector.

VAR (X7): Diversity management: the management of diverse cultures, interactions, and new concepts in the public sector.

VAR (X8): employee-centered practices: the practices that make employee satisfied and able to accept new changes.

3.2 Hypothesis

H1: There is a relationship between the availability of financial capabilities and the application of digital transformation.

H2: There is a relationship between availability of infrastructure and communication systems and digital transformation implementation.

H3: There is a relationship between the culture of the organization and digital transformation implementation.

H4: There is a relationship between cooperation between government, business, higher education, and civil society and digital transformation implementation.

H5: There is a relationship between lack of experience and weak skills and digital transformation implementation.

H6: There is a relationship between choosing leaders carefully and digital transformation implementation.

H7: There is a relationship between the diversity management effect and digital transformation implementation

H8: There is a relationship between the selection of senior leadership and digital transformation implementation

H9: There is a relationship between employee-centered Organization and digital transformation implementation.

4. Data Analysis, Results and Discussion

4.1 Descriptive Statistics

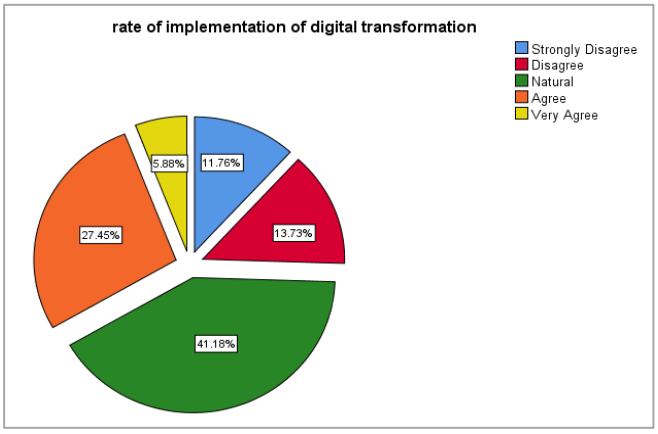


Figure 11. Satisfaction rate of digitalization

Figure 11 describes the survey staff's assessment of the level of digital transformation in their organization which shows how the majority are not satisfied with the level of digitalization in the government sector.

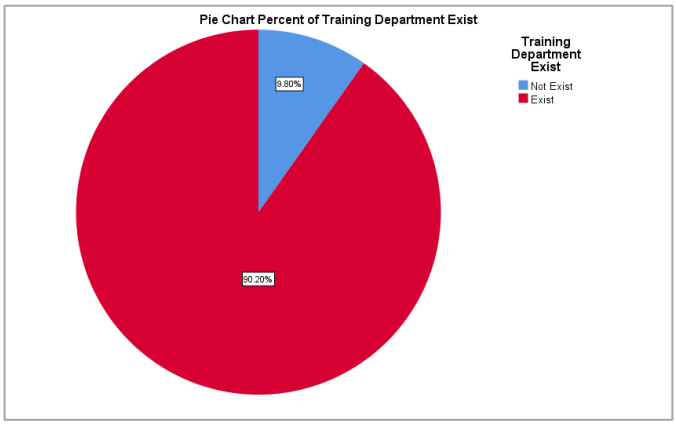


Figure 12. Training Departments

Most of the organizations have training departments as in figure 12. And most of them have an equipped training center as in the chart but unqualified management cannot employ the resources and achieve the necessary targets.

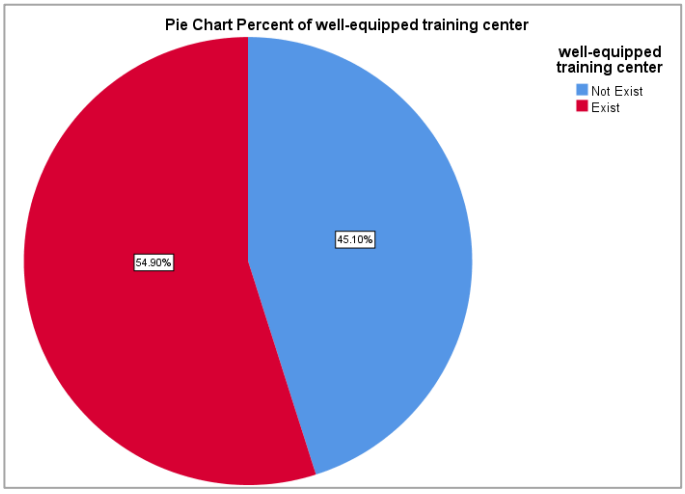


Figure 13. Training Centers

Table 1 analyze the relation between rate of implementation of digital transformation and the effects of financial capabilities, infrastructure and communication system, culture of the organization and the cooperation between government, business, higher education, and civil society.

The analysis shows the Mean, Median, Mode, and Standard Deviation of each item and the conclusions drawn from this data.

Table 1. Measures of Centers

Metrics	Rate of Implementation of Digital Transformation	Financial Capabilities Effects	Infrastructure and Communication Systems	Culture of The Organization	Cooperation between government, business, higher education, and civil organization
Mean	3.02	3.31	3.67	3.71	3.61
Median	3.00	3.00	4.00	4.00	4.00
Mode	3	3	5	5	3
Std. Deviation	1.257	1.259	1.178	1.238	1.041
Variance	1.140	1.580	1.387	1.532	1.083

The output in table 1 shows the median values are generally higher than the mean values, indicating that the distributions of the metrics are negatively skewed (i.e., there are more values on the higher end of the scale).

The standard deviation is 1.257 for the rate of implementation, indicating that the implementation rates vary moderately around the mean.

For the variable of infrastructure and communication systems, the average is 3.67, which indicates that the participant sees, on average, that infrastructure and communication systems are considered higher than neutral in affecting digital

transformation.

The median is 4.00, which suggests that the distribution of infrastructure and communication systems is skewed to the left, with more values above the median

For the culture of the organization variable, the median is 5.00, which suggests that the distribution of culture of the organization is skewed to the left, with more values above the median.

The mode is 5 for most the searched factors, indicating that a score of 5 is the most frequent for the factors that is reflect the most participants strongly agree these factors have tangible effect on digital transformation.

For the cooperation between government, business, higher education, and civil organization variable, the mean is 3.61, this indicates that cooperation between these entities has an influence that is perceived on average as above neutral.

The survey asserts the rate of implementation of digital transformation, is compatible with the quality of infrastructure and system communication, culture of the organization, Financial Capabilities and the cooperation between government, business, higher education, and civil organization.

Table 2. Skewness

Metrics	Rate of Implementation of Digital Transformation	Financial Capabilities Effects	Infrastructure and Communication Systems	Culture of The Organization	Cooperation between government, business, higher education, and civil organization
Skewness	-.348	-.251	-0.456	-0.397	-.022
St. Error of Skewness	.333	.333	.333	.333	.333
Kurtosis	-.298	-0.849	-0.744	-1.244	-1.172
St. Error of Kurtosis	.656	.656	.656	.656	.656

The distribution shows the left skewness. Which is an indication that respondents lean towards these factors significantly affect digital transformation.

Table 3 show how important the selection for management of the organizations and senior leadership also the cconscious management will work to raise the skills of workers and consider the employee an essential element for the development of work and the use of the digital system.

Table 3. Measures of Center

Metrics	Rate of Implementation of Digital Transformation	Lack of Experience and Weak Skills	Diversity Management Effect	The Selection of Senior Leadership	Leadership Style	Employee Centered Organization
Mean	3.02	3.33	3.31	3.46	3.59	3.25
Median	3.00	3.00	3.00	4.00	4.00	300
Mode	3	3	4	4	4	4
Variance	1.140	1.627	1.300	1.315	1.047	1.354

These statistics suggest that, on average, the organizations surveyed have implemented digital transformation initiatives to some extent (with a mean score of 3.02), but there is a perceived Leadership Style (with a mean score of 3.59). The median score for the “Leadership Style & The Selection of Senior Leadership " metric is higher than the median score for the "Rate of Implementation of Digital Transformation" metric, indicating that there is a greater perceived a problem in leadership among employees than there is progress in implementing digital transformation initiatives. The variance for both metrics indicates that there is some variability in the scores among the organizations surveyed.

The variance for the "Leadership Style" metric is lower than the variance for the "Rate of Implementation of Digital Transformation" metric, indicating that there is less variability in the scores for leadership style among the organizations surveyed.

The median score for the "Diversity Management Effect" metric is higher than the median score for the "Rate of Implementation of Digital Transformation" metric, indicating that diversity management policies are perceived to have

a greater impact on digital transformation than the actual implementation of digital transformation initiatives.

The organizations surveyed have implemented employee-centered organization practices that have a somewhat positive effect on digital transformation (with a mean score of 3.25). The median score for the "Employee Centered Organization" metric is higher than the median score for the "Rate of Implementation of Digital Transformation" metric, indicating that employee-centered organization practices are perceived to have a greater impact on digital transformation than the actual implementation of digital transformation initiatives. The variance for the "Employee Centered Organization" metric is higher than the variance for the "Rate of Implementation of Digital Transformation" metric, indicating that there is more variability in the scores for employee-centered organization practices among the organizations surveyed.

Table 4. Skewness

Metrics	Rate of Implementation of Digital Transformation	Lack of Experience and Weak Skills	Diversity Management Effect	The Selection of Senior Leadership	Leadership Style	Employee Centered Organization
Skewness	-0.348	-0.123	-0.235	-0.152	-0.131	-0.127
St. Error of Skewness	0.333	0.333	0.333	0.337	0.333	0.333
Kurtosis	-0.298	-1.037	-0.730	-1.127	-1.067	-0.898
St. Error of Kurtosis	0.656	0.656	0.656	0.662	0.656	0.656

The standard error of skewness is .333 for most variables, indicating the accuracy of the skewness values.

The standard error of kurtosis is .656 for most variables, indicating the accuracy of the kurtosis values.

The skewness value for the Rate of Implementation of Digital Transformation metric is -0.348, which is negative, indicating that the distribution of data is slightly skewed towards higher values.

A kurtosis value of 0 indicates a perfectly normal distribution, while a negative value indicates a platykurtic distribution (flatter and more spread out than normal), and a positive value indicates a leptokurtic distribution (more peaked and tightly clustered around the mean than normal). In this case, the kurtosis value for "Rate of Implementation of Digital Transformation" is -0.298, indicating a platykurtic distribution.

The skewness value for Lack of Experience and Weak Skills is -0.123, which is also negative. This indicates that the distribution of data for this metric is also slightly skewed towards higher values.

The standard error of kurtosis is 0.656, which is relatively large. This suggests that the estimate of kurtosis may be less reliable than the estimate of skewness.

The kurtosis value for Lack of Experience and Weak Skills is -1.037, which is negative and indicates that the distribution is flatter than a normal distribution.

The skewness value for the Diversity Management Effect metric is -0.235, which is also negative. This indicates that the distribution of data for this metric is also slightly skewed towards higher values.

The kurtosis value for Diversity Management Effect is -0.730, which is negative and indicates that the distribution is flatter than a normal distribution.

The moderate negative skewness for "Diversity Management Effect" suggests that most organizations have scored relatively low on this metric, with a few organizations scoring higher.

This indicates that the distribution of data for this metric is also slightly skewed towards higher values.

The skewness value for The Selection of Senior Leadership metric is -0.152, which indicates that the distribution is also slightly skewed towards higher value. Suggesting that the distribution is less skewed.

The kurtosis value for The Selection of Senior Leadership metric is -1.127, which indicates that the distribution is moderately flatter and more spread out than normal.

The skewness value for the Leadership Style metric is -0.131, which indicates that the distribution is also slightly negatively skewed.

The kurtosis value for "Leadership Style" is 0.204, indicating a relatively normal distribution that is slightly less peaked than normal.

The kurtosis value for Leadership Style metric is -1.067, which indicates that the distribution is moderately flatter and more spread out than normal.

For the variable "Employee Centered Organization", the skewness value is -0.127, indicating that the distribution is slightly negatively skewed, which means that the data are slightly skewed to the left. The kurtosis value is -0.898, indicating that the distribution is flatter and more spread out than normal, which means that it is flatter and more spread out than a normal distribution.

Thus, distribution shows left skewness. Which is an indication that respondents lean towards good choice of management affects digital transformation.

Table 5. Cronbach Alpha test

Cronbach's Alpha	N of Items
0.920	10

Cronbach's Alpha is a measure of the internal consistency or reliability of a scale or test. It indicates how well the items in the scale or test are measuring the same construct or concept. Alpha values range from 0 to 1, with higher values indicating better internal consistency. In this case, the value of Cronbach's Alpha is 0.920, which is generally considered to be a good level of internal consistency.

4.2 Correlation Analysis

Table 6. ANOVA with Cochran's Test

		Rate of Implementation of Digital Transformation	Financial Capabilities Effects	Infrastructure and Communication Systems	Culture of The Organization	Cooperation between government, business , higher education , and civil organization
Rate of Implementation of Digital Transformation	Pearson Correlation	1	0.428	0.435	0.549	0.583
	Sig.(2-tailed)	0.00	0.002	0.003	0.00	0.00
	N	51	51	51	51	51

The output of table [1& 2&7] reflect the relationship between

- The availability of financial capabilities and the application of digital transformation which support and validate hypothesis 1.
- Quality of infrastructure and communication systems and digital transformation implementation which support and validate hypothesis 2.
- Culture of the organization and digital transformation implementation which support and validate hypothesis 3.
- Cooperation between government, business, higher education, and civil society and digital transformation implementation which support and validate hypothesis 4.

Table 7. Correlation Analysis

		Rate of Implementation of Digital Transformation	Lack of Experience and Weak Skills	Diversity Management Effect	The Selection of Senior Leadership	Leadership Style	Employee Centered Organization
Rate of Implementation of Digital Transformation	Pearson Correlation	1	0.686	0.389	0.389	0.484	0.447
	Sig.(2-tailed)	0.00	0.00	0.005	0.005	0.00	0.001
	N	51	51	51	51	51	51

The output of table [3& 4 &8] reflect the relationship between

- Lack of experience and weak skills and digital transformation implementation which support and validate hypothesis 5.
- Choosing leaders carefully and digital transformation implementation which support and validate hypothesis 6.
- The diversity management effect and digital transformation implementation support and validate hypothesis 7.
- The selection of senior leadership and digital transformation implementation which support and validate hypothesis 8.
- Employee-centered Organization and digital transformation implementation which support and validate hypothesis 9.

5. Conclusion & Recommendation

The study has validated the relation of different factors that affect directly on implementation of digital transformation strategies in Egyptian public sector. These factors include:

Financial capabilities: The public sector needs to have the financial resources to invest in digital transformation initiatives. This includes the cost of hardware, software, and training.

Availability of infrastructure and communication systems: The public sector needs to have the necessary infrastructure and communication systems in place to support digital transformation initiatives. This includes reliable internet access, high-speed data networks, and secure servers.

Organizational culture: The public sector needs to have an organizational culture that is supportive of digital transformation. This includes a culture of innovation, risk-taking, and collaboration.

Cooperation between government, business, higher education, and civil society: The public sector needs to cooperate with other stakeholders, such as businesses, universities, and civil society organizations, to implement digital transformation initiatives. This cooperation can help to share resources, expertise, and best practices.

Employee experience and skillset: The public sector needs to ensure that its employees have the experience and skills necessary to implement digital transformation initiatives. This includes training in new technologies and processes.

Selection of senior leaders: The public sector needs to select senior leaders who are committed to digital transformation. These leaders need to have the vision, skills, and experience to lead the transformation effort.

Employee-centered Organization: The public sector needs to create an employee-centered organization that encourages innovation and creativity. This can be done by providing employees with the freedom to experiment, the resources they need, and the support they need to succeed.

Diversity management: The public sector needs to manage diversity effectively to ensure that all employees feel included and valued. This can be done by creating a culture of inclusion and by providing training on unconscious bias.

By addressing these factors, the public sector in Egypt can increase its chances of successfully implementing digital transformation strategies.

6. Future Research Recommendation

In the future, the study may include a large-scale quantitatively analyzed survey to understand employee resistance to change and explore motivational approaches for facilitating this change. Additionally, expanding data collection beyond

employees in large cities and central organizations to encompass rural areas and local administrations could unveil new research opportunities in previously unexplored areas.

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