

Identifying significant elements of the digital transformation of organizations in Kuwait

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ABSTRACT

The adoption and implementation of digital transformation (DT) plans and initiatives have become compulsory for organizations worldwide during this flourishing era of advanced technology. However, it is estimated that 70% of all DT initiatives do not achieve their goals, with billions of dollars going to waste. This study identified the main elements of digital transformation initiatives from the literature by scholars around the world and then applied these elements to organizations in Kuwait. 33 organizations (private and public) in Kuwait participated in a survey to investigate the level of readiness of organizations attempting to execute digital transformation plans and initiatives. Some insights were found: having a well-defined strategic vision in organizations, digital leadership, technical talent, and having digital expertise are significant elements in implementing digital transformation plans.

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1. INTRODUCTION

At present, we live in the most successful effective period of technological achievement and great progress has been achieved in the technological development of smart devices and systems. This development has led to widespread changes affecting all aspects of the operations carried out by individuals and organizations, leading to a saving of time, cost reduction, greater levels of flexibility and quality in performance. There is no doubt that these changes extend the scope of development and modernization, affecting major fundamental transformations in personal, economic and social life. Studies have demonstrated the role of digital transformation (DT) as one of the drivers of growth in the economies of countries and the acceleration of the growth rates of their economic and social returns [1].

It is noted that some alterations are happening in our life by DT through the use of digital technologies [2], [3]. Disney theme parks has moved to the digital domain, enhancing guest experience, with an investment of \$1 billion in a software system named “MyMagic+”, allowing visitors to enhance their experience at Disneyworld. Some of the software initiatives including (FastPass ride reservations, restaurants reservations, onsite photography services, and resort access) through enabled radio-frequency identification (RFID) wristband. These initiatives have brought a better understanding of the business, better customer experience, greater efficiency of its operations, an increase in the number of daily visitors at the parks, and an increase in revenues [4], [5]. The shipping giant MAERSK launched a block-chain platform by International

Business Machines (IBM) corporation for the tracking shipped goods all over the world. The tracking system is a highly complex process with all of the paperwork swapped between the numerous parties and with the customs authorities. The system was a success and improved the efficiency of commercial shipping [5], [6]. According to international data [7], spending on the digital transformation of business practices, products, and organizations was estimated at \$1.3 trillion in 2019. However, it is projected that in 2023 the investments in DT could reach \$2.3 trillion, enabling digital transformation technologies and services worldwide [8].

Kuwait has a population of 4.27 million and it was reported in 2019 that 99.54% of the population of Kuwait uses the internet. According to the World Bank [9] collection of development indicators, there were 4.20 million social media users and 7.38 million mobile connections in Kuwait in January 2020, equivalent to 174% of the total population [10]. The government of the State of Kuwait is keen on rolling out digital touch through advanced technology to its citizens. The government has organized several forums, headed by the Prime Minister, introducing the idea of transformation to smart government. Further, the CEO of the communication and information technology regulatory authority (CITRA) says that the government is planning to help its citizens to accelerate the DT process [11]. It is expected that introducing e-services through DT could have an influence on the country's economy and social welfare. According to the Director of the central agency for information technology (CAIT) the new developments have been adopted to help the government keep pace with modern technology, with policies and procedures being laid down to provide better services. Furthermore, Kuwait has adopted a new vision to be completed by 2035 as a Smart City. The Kuwait government has plans focusing on the practical area artificial intelligence (AI) to implement a smart e-services project [11]. However, it was estimated that \$1.3 trillion was spent on DT in 2019 and according to a recent survey of DT initiatives 70% of all DT initiatives do not achieve their goals. An estimated \$900 billion went to waste [12].

Our literature review revealed some studies relating to the area of e-government in Kuwait. However, there was no evidence of any studies reporting the DT readiness level of organizations in Kuwait. This research focuses on investigating the implications of DT readiness in Kuwaiti organizations, public and private, attempting to measure their capabilities in moving into the digital arena through the following research questions;

- R1: What are the main elements of DT in the literature?
- R2: To what extent do DT elements exist in Kuwaiti organizations?

A review of the literature is offered in sections two, presenting the literature review of DT and method, section three, provides in depth explanation of the survey experiment, the results and a discussion. Section five presents the conclusion and insights found in the research.

2. LITRATURE REVIEW AND METHOD

The technology of digital transformation has become one of the primary strategies pursued by commercial companies in particular and government institutions in general. Some benefits that this smart technology offers include changing the culture of innovation methods of undertaking business and various transactions, as well as the technique of providing services [6]. DT is not considered as the mechanization of traditional processes, but changing and or transforming the business models with innovative thinking and technical capabilities. Hence, the process of DT has become an urgent necessity imposed by the rapid development of the use of information technologies to improve the efficiency of businesses and government [13].

One definition of digital transformation is the process of transitioning government entities into a business model depending on digital technologies to create products and services through new channels of returns that increase the value of products and services [4]. Further, the importance of the digital transformation lies in its ability to contribute to solving human problems, activating development and promoting sustainability. This includes a number of aspects, including economic, social, environmental and cultural aspects, where technology functions as a catalyst in all these areas [14]. In practical terms, improving customer experience, operational flexibility, and innovation are key factors for digital transformation, as well as developing new sources of revenue and ecosystems.

The literature has revealed that DT is considered to be a compound paradox, which has technology as one part of it that requires to be resolved by organizations to have a competitive digital position [6]. Other parts include strategy, organizational restructuring, processes and culture, which are compulsory in order to increase the capability of achieving DT [15]-[17]. Others argue that DT lacks clear understanding along with its multi-level implications for organizations [6], [17]. In today's competitive environment, managers have to thoroughly rethink how technology is changing in order to understand how they can gain value for their companies in the challenging process of DT. The DT shows how to use technology within institutions to help increase operational efficiency and improve the services they provide to customers and the target audience of

those services. DT is based on the most effective use of technology, serving the workflow within the organization in all its departments and also in dealing with customers and the public to improve services and facilitate access to them, which ensures the saving of time and effort [6].

2.1. Elements of digital transformation

DT has many advantages, including [12] saving cost and effort, improving the organization's operational efficiency and its quality. Further, some opportunities could arise to provide innovative and creative services compared to traditional methods. It has been argued that, to achieve successful DT, government and private institutions must implement DT across four main axes [17], [18]: technologies, data, human resources and operations. Technology is concerned with building DT using a system of devices, operating systems, storage media and software to operate it. This technical environment consists of information centers to ensure uninterrupted operational efficiency, which requires professional teams responsible for managing it. Secondly, institutions have to monitor and analyze data regularly and effectively, providing reliable and complete quality information and procedures, using appropriate tools for statistical analysis and data search to ensure its continued flow and benefit from it in line with the organization's goals and expectations. Thirdly, human resources constitute a vital aspect for institutions to implement and achieve a successful DT. Vision planning and implementation requires human competencies, scientific and practical experience. Fourthly, operations, which is a set of activities and tasks arranged and interrelated that produce a specific service or a specific product for the beneficiaries, and the institutions need to establish an effective technical structure that allows the development of operations internally and externally to ensure the optimal application of the digital transformation.

According to Hess *et al.* [1] argued that organizations need to discover ways of using technologies for innovation purposes and embracing the implications of DT to gain better operational performance. However, technology by itself is not the sole component in achieving DT. There are several challenges hindering the digital transformation process, including [19]: a lack of competencies and capabilities within the organization, a lack of budgets for executing digital transformation plans, and a fear of information security risks. Table 1 presents the essential elements discovered in the literature that organizations need to accomplish a successful process of DT.

Table 1. The essential elements in building a successful DT

No of references	Element name	Description of element	References
12	Organizational structure	DT leads to changes in the business environment, digitalization significantly impacts on organizations. New patterns of business and organizational solutions.	[5], [15]-[17], [20]-[27]
10	Inertia	Capabilities of existing resources can act as barriers to disruption for innovation through digital technologies.	[25], [28]-[36]
7	Employee roles and skills	To form the digital workforce there is a need to develop of the skills of existing workers and the skills required for future workers.	[1], [19], [37]-[41]
7	Digital capabilities	Expertise is available on strategic and technical levels and possess the level of skills to execute its digital strategy.	[5], [6], [15]-[17], [19], [20]
7	Funding strategic alignment	funding strategic digital initiatives with uncertain returns through necessary financial commitments, supports	[5], [6], [15]-[17], [20]
6	Resistance	Changing the behavior of employees and altering the required processes to enable flexibility in the face of change.	[25], [42]-[46]
6	Technology assets	Availability of the level of Big Data use, data mining and analytics, mobile technologies, cloud computing, Internet and wireless communications.	[5], [6], [15]-[17], [19]
5	Building organizational dynamic capabilities	This is the ability of firms to firmly alter their resources to increase their degree of fitness with their environment.	[14], [47]-[50]
5	Strategic vision	Captures the existence of a clear strategic vision for the organization and a strategy for implementation.	[5], [15]-[17], [51]
4	Leadership	Having the right leadership and talent in place at all levels of an organization is crucial.	[52]-[55]

3. SURVEY RESULTS AND DISCUSSION

Survey participants consist of 33 chief executives of large organizations in Kuwait. These participants are the organizations' representatives responsible for implementing and executing DT plans. 36.4% of the representatives were CEOs and 63.3% were vice CEOs. 39.4% of the organizations are public governmental organizations (education, ICT, and oil), while the rest (60.6%) were private organizations (banking, education, investment, oil, and others). 81.9% of the participants reported that they have good to excellent knowledge of

DT, while only 18.1% reported that they have weak knowledge of DT. In the next sub-sections, illustration of the most challenging elements found in the research along with explanation and discussion of the survey results.

3.1. Defined and clear strategic vision

According to the results in Table 2, 64% of organizations that have a clearly defined strategic vision mapped to an understanding of their digital needs, also have a strategy for DT, while all organizations that do not yet have a defined strategic vision did not have a strategy for DT. These differences were significant (p<0.01). Almost all organizations (92%) that have a clearly defined strategic vision reported that the senior executive team has a clear understanding of DT capabilities (p<0.01). In addition, all organizations that did not adopt a clearly defined strategic vision for digital needs, also have a lack of digital leadership to define their strategy (p<0.01). On the other hand, having a digital strategic vision has nothing to do with developing a digital strategy for the organization. Therefore, the results showed that 40% of organizations that have a vision still have difficulty in developing a digital strategy for their organizations. The majority of organizations that have a defined strategic vision are planning to acquire a strategy for DT. Further, a lack of digital leadership, which is an important characteristic, leads to organizations reaching a clearly defined strategic vision.

Table 2. Defined and clear strategic vision

		We have a clearly defined strategic vision mapped to an understanding of our digital needs		Chi-Square	Exact Sig.
		No	Yes		
Our organization has a strategy for DT	Planning to Acquire	100%	36.0%	9.94	.003**
	Yes	0.0%	64.0%		
Our senior executive team has a clear understanding of DT capabilities	No	75.0%	8.0%	14.81	.001**
	Yes	25.0%	92.0%		
We have a lack of digital leadership to define our strategy	No	0.0%	84.0%	18.48	>.001**
	Yes	100%	16.0%		
We have difficulty developing a digital strategy for our organization	No	25.0%	60.0%	2.97	.118
	Yes	75.0%	40.0%		

* p<0.05, ** p<0.01

3.2. Organization possesses innovative culture

The results in Table 3 present all organizations that have a culture of innovation and risk-taking also encourage new ways of thinking and solutions from diverse perspectives, while only 38.5% of organizations that do not have a culture of innovation did not support these innovative ways of thinking (p<0.01). Moreover, 75% of organizations that have an innovative culture rewarded innovators in their organizations (p<0.01). Most of these organizations (70%) have no problem with cultural resistance either (p<0.05). More than 61% of organizations in Kuwait do not have an innovative culture and do not encourage new ways of thinking, and 85% of the organizations that do not have an innovative culture do not provide a rewarding system for innovators. Further, 70% of organizations have problems with cultural resistance due to not having an innovative culture.

Table 3. Organization possesses innovative culture

		Our organization has a culture of innovation and risk-taking		Chi-Square	Exact Sig.
		No	Yes		
Our organization encourages new ways of thinking and solutions from diverse perspectives	No	61.5%	0.0%	16.25	>.001**
	Yes	38.5%	100%		
Innovators are rewarded in our organization	No	84.6%	25.0%	11.21	.001**
	Yes	15.4%	75.0%		
We have no problem with cultural resistance	No	69.2%	30.0%	4.89	.038*
	Yes	30.8%	70.0%		

* p<0.05, ** p<0.01

3.3. Availability of technical and innovative skills in the organization

With regard to digital expertise as seen in Table 4, most organizations that have developed such expertise (88.9%) have the necessary visionary/innovative skills within the organization to define the right DT (p<0.01) and have the technical talent for innovation (p<0.01). Almost all organizations (96.3%) that had developed the required digital expertise did not lack digital skills to execute strategy (p<0.01). 89% of organizations that have digital expertise have the ability to define the right DT plan and have a technical

talent for innovation. Further, 96% of organizations that have digital skills are able to execute the DT strategy.

Table 4. Availability of technical and innovative skills in the organization

		Our organization has digital expertise		Chi-Square	Exact Sig.
		Planning to Acquire	Yes		
Overall, there are necessary visionary/innovative skills within our organization to define the right DT	No	83.3%	11.1%	13.94	.001**
	Yes	16.7%	88.9%		
Our organization has technical talent for innovation	No	83.3%	11.1%	13.94	.001**
	Yes	16.7%	88.9%		
Our organization lacks digital skills to execute strategy	No	33.3%	96.3%	15.14	.002**
	Yes	66.7%	3.7%		

* p<0.05, ** p<0.01

3.4. Organization uses software within all levels and dimensions

According to the results in Table 5, most of the organizations (82.8%) that are using software to improve the operation's performance also improve customer understanding. In contrast, only 25% of organizations that did not use software to improve the operation's performance tried to improve customer understanding (p<0.05). Using software to improve the operation's performance seems not to be related to improved product know-how, or supplier interactions. From Table 5 it was noted that 83% of organizations using software to improve the operation's performance are increasingly using software to improve customer relations.

Table 5. Organization uses software within all levels and dimensions

		We are increasingly using software to improve operations performance		Chi-square	Exact Sig.
		No	Yes		
We are increasingly using software to improve customer understanding	No	75.0%	17.2%	6.39	.036*
	Yes	25.0%	82.8%		
We are increasingly using software to improve product know-how	No	25.0%	48.3%	0.77	.607
	Yes	75.0%	51.7%		
We are increasingly using software to improve supplier interactions	No	25.0%	48.3%	0.77	.607
	Yes	75.0%	51.7%		

* p<0.05, ** p<0.01

3.5. Availability of budget or fund for DT plans

In Table 6 most of the organizations (83.3%) that are willing to fund strategic digital initiatives with uncertain returns do not have a problem with a lack of budget/resources assigned to DT (p<0.01). No significant relation was found between willingness to fund strategic digital initiatives with uncertain returns and investment in new forms of software. 83% of organizations in Kuwait that are funding strategic digital initiatives with uncertain returns will most likely fund DT plans and invest in software.

Table 6. Availability of budget or fund for DT plans

		Our organization is willing to fund strategic digital initiatives with uncertain returns		Chi-Square	Exact Sig.
		No	Yes		
Our organization does not have a problem with lack of budget/resources assigned to DT	No	80.0%	16.7%	13.24	>.001**
	Yes	20.0%	83.3%		
Our organization has increasingly invested in new forms of software over the past three years	No	33.3%	5.6%	4.24	.070
	Yes	66.7%	94.4%		

* p<0.05, ** p<0.01

3.6. Organization investment and usage of technology assets

Almost all organizations that used big data (94.4%), as explained in Table 7, have the technical talent for innovation (p<0.05). It was interesting to see no significant relation between using big data and both using data mining and analytics and having no lack of digital skills to execute strategy.

Table 7. Organization investment and usage of technology assets

		Our organization uses Big Data		Chi-Square	Exact Sig.
		No	Yes		
Our organization uses data mining and analytics	No	80.8%	44.4%	4.33	.070
	Yes	20.0%	55.6%		
Our organization has technical talent for innovation	No	40.0%	5.6%	5.81	.030*
	Yes	60.0%	94.4%		
Our organization does not lack digital skills to execute strategy	No	53.3%	33.3%	1.34	.304
	Yes	46.7%	66.7%		

* $p < 0.05$, ** $p < 0.01$

4 CONCLUSION

This study investigated the literature and identified elements of DT plans and initiatives. A quantitative method was used through a survey instrument based on findings from the literature and the survey was then given to executives responsible for DT from 33 large organizations, public and private, in Kuwait. The research revealed the following elements (in order of importance): i) Having a well-defined strategic vision of the organization is an important aspect in acquiring DT plans as a road map; ii) Having a digital leadership is a significant element in defining and executing DT plans; iii) Organizations that encourage innovative cultural and new ways of thinking are most likely to succeed in defining and executing DT plans and initiatives; iv) Having an innovative culture reduces the rate of cultural resistance; v) Digital expertise is an essential element in defining and implementing DT plans; vi) Continuous investment and funding DT plans with uncertain returns is a successful element; and vii) Organizations should foster technical talent manpower to succeed in executing and implementing DT plans. This research has identified the most important elements embracing the successful planning and execution of DT initiatives in Kuwait. Some executives have explained that the COVID-19 pandemic put huge pressure on most of the organizations, public and private, to accelerate DT plans and led to some failing projects. Measuring the success and failure of DT plans in public and private organizations could have potential as a future research topic.

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