Investigating the Effect of Cloud Computing Adoption on Improving the Digital Competitiveness Index-An Empirical Study: Case of Kingdom of Saudi Arabia

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Abstract
Cloud computing technology is changing how enterprises use, store, and offer information, applications, and workloads. It provides the computing resources over the web where efficiency, cost-effectiveness and scalability are the main advantages of cloud computing adoption. On the other hand, digital transformation is becoming more vital in businesses as users demand more IT services and more competitive digital environments. Cloud computing offers flexible IT resources that make business model transformation fast and more cost-effective. Therefore, cloud computing is considered a key factor in digital transformation. In order to achieve such digital transformation, enterprises should shift much of their computing infrastructure from their own data centers to those operated by private or public cloud providers. This research focuses on cloud computing roles in achieving the digital transformation in Saudi Arabia. The current status of digital transformation in Saudi Arabia will be explored, then the key factors affecting such transformation will be studied. The findings of this research are obtained through two primary sources, which are online questionnaire and practical application via the simulation environment. The conclusion of this paper will enlighten how migrating data centers into cloud will affect and speed up digital transformation.

Keywords:
Cloud Computing, Digital transformation, , Data Centers, IaaS, Enterprise Infrastructure

1. Introduction

Today almost all enterprises rely heavily on IT to run their businesses and become more dynamic and business-focused. New technology trends are emerging very fast such as cloud computing, agile development, and IoT. Successful enterprises are those who choose to adopt these trends and modify their strategies in order to operate effectively, efficiently and smoothly. Digital transformation is a set of practices and methodologies that help enterprises to achieve competitive advantages in their businesses. Moreover, cloud computing is becoming a critical player in digital transformation as it motivates continual growth and innovation. By transitioning IT systems to the cloud, IT departments can focus more on business initiatives and innovation. As a result, businesses will experience stability, scalability, efficiency and flexibility in running their tasks [1]. The National Institute of Standards and Technology (NIST) defines cloud computing as "a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" [2]. "When the COVID-19 pandemic hit, there were a few initial hiccups, but the cloud eventually delivered exactly what it was supposed to achieve," said Sid Nag, Gartner's vice president of research [3] "It has responded to increasing demand and catered to customers' preference for flexible, pay-as-you-go consumption models". Synergy Research Group found in 2016 that cloud computing dominated many components of the information and communication market driving cloud revenue growth above 25% year on year[4]. This paper presents a subset of the findings of a study investigating the impact on organizations from both sectors within the Kingdom of Saudi Arabia (KSA) when adopting cloud computing technologies. The concept of digital transformation revolves around radical change to the traditional way of working in order to accelerate work pace and provide better, faster services to beneficiaries. This concept is divided into three main sections:

1. Digitization – The process of converting information from a physical form (paper) to a digital form.
2. Digitalization – The use of technology to transform operational processes from traditional to digital.
3. Digital transformation – The comprehensive transformation of business, organization, and operations activities to take full advantage of the developments and opportunities offered by digital technologies.

The main research question of this study is what the key factors that affect migration to cloud computing. Five questions were derived accordingly as follows:

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1) What are the factors that affect the move to cloud data centers?
2) What are the factors that reduce digital wandering in the cloud computing standard?
3) Does adopting cloud computing lead to improving digital transformation in the Kingdom of Saudi Arabia? ?
4) What are the obstacles to moving to cloud computing?
5) What is the current status of cloud computing infrastructure in Kingdom?

This paper is organized as follows, section two describes the digital transformation in KSA, and section three explains the Global Index Section four provides a literature review that provides the theoretical idea to conduct the case studies. While sections five, six and seven are devoted to present methodology and the collected results. Finally, a discussion and conclusions are provided

2. Digital Transformation in KSA

In recent years, the concept of digital transformation has become one of the most widespread and important goals in the business world. Since then organizations have been using Big Data, AI, social networks, Cloud Computing, IoT, and 3D printing to run operations and make decisions, helping drive economies around the world [5]. Located in the crossroads of three key continents--Europe, Asia, and Africa--Saudi Arabia is poised to take a leading role in the e-government field in the region. The post-oil plan for the Kingdom was announced under a strategic framework called Vision 2030 in April 2016. The goal is to secure the future of the Kingdom, raise income levels, and reach advanced levels in the fields of industry and technology. In support of this goal, the National Transformation Program 2020 (NTP) was launched to achieve government operational excellence, support digital transformation, develop government work, stimulate investments, support non-oil exports, globalize local enterprises, support a knowledge economy, innovation and productivity, and create the necessary infrastructure to improve economic fundamentals and raise the standard of living [6].

3. Kingdom of Saudi Arabia and Global Index

In 2019, KSA jumped 16 places in Information and Communication Technology (ICT) to rank 38th among countries in the 2019 index of Global Competitiveness. Because of the advancements in the country's digital infrastructure, KSA also ranked third among G20 countries and 11th globally in digital transformation. That's after adopting different technologies, including those in the field of communications[7]. According to a comparative study done by Accenture, Saudi Arabia is fifth in the field of digital government. This achievement is attributed to such initiatives as producing an online portal to access public services, similar to the Saudi Open Data Portal. An integrated information base for open government data, the portal allows social media and other digital channels to enable communication with citizens [8].

4. Related work

To achieve the goals of the vision for the Kingdom of Saudi Arabia 2030, it was decided that digital transformation in the country is the main possibility. In the literature, there is no commonly accepted definition for digital transformation among researchers. Some define digital transformation as "the continuous process by which enterprises adapt to or drive disruptive changes in their customers and markets (external ecosystem) by leveraging digital competencies to create new business models, products, and services"[9]. The Saudi government aims to digitize and globalize the entire economy into a digital economy. To achieve this, it must consider the user experience, trust, and security, and additionally accept the people who will use it [10] in order to implement and adopt digital transformation technologies. The study indicated [11] that in order to achieve the goals of enterprises, increase their productivity, and enhance competition, they must first modify their work plans to a digital business model. They must be very careful to implement digital transformation because it gives new technological opportunities that affect the main structure of organizations. To adopt migration to cloud computing, there are some important factors in determining this decision, with the most important being security and privacy. Therefore, the government of the Kingdom of Saudi Arabia must identify and codify the areas to be implemented to accelerate the process of ICT deployment and migration to the cloud[12] In this paper, we will examine these factors to get the right decisions and help the decision-makers to decide if it's right to migrate to cloud-based data center or not. In another study like ours[13], a two-dimensional model was adopted to study the use of cloud computing in the Kingdom of Saudi Arabia, with statistical analysis being conducted from 5 different Saudi universities. It was discovered that availability and security are the most important disincentives, and ubiquitous and on-demand network access are the most important motivators. According to Majid Al-Ruithe [14] the Saudi National Transformation Program 2020 was launched to build the institutional capacity and capabilities needed to achieve the goals of Saudi Arabia's Vision 2030, the digital transformation is considered an important objective in this program.

5. Research Methodology

This paper will first focus on qualitative data that was collected by interviewing key persons and studying existing documents related to digital transformation in Saudi Arabia. Moreover, a questionnaire was distributed to address the research questions. The collected data will be analyzed to ascertain to what extent the concepts of digital transformation are being applied in the enterprises being investigated. The perception of and willingness/reluctance to engage in digital transformation will be studied in regards to the regulations, culture, and practices of the enterprises

6. Research Population and Sampling

As previously discussed, this paper is part of a larger project to study in detail the extent to which cloud computing is adopted in the Kingdom, and this paper will focus on the results of the survey that was conducted. The research project, in its entirety, received ethical approval from a number of participating parties: Imam Abdulrahman bin Faisal University, Majmaah University, the Ministry of Health, General Directorate of Health Affairs, Makkah Region Health Affairs Local Committee for Research Ethics, Makkah Region Health, Al-Noor Specialist Hospital, the Cloud Computing Association, and a number of ICT. The questionnaire was refereed by the Cloud Computing Association to ensure its suitability and was then officially distributed over a period of four months to obtain the desired results.

7. Research Survey

The survey was based on the digital transformation criteria "Yesser Program," authorized by the Saudi government internally in the ninth criterion of the "Enterprise Infrastructure" indicator, according to the best practices. Hence, it has been widely disseminated by technology professionals, cloud users, and enterprise decision-makers. The questionnaire was designed using the employee's Imam Abdulrahman bin Faisal University account on the "QuestionPro Online-Program" subscription. The following is an overview of the survey; where answers whose questions marked with * are being analyzed for results involved in this paper. Some of the questions are related to another research paper, their answer results will not be considered here.

Q1: Participants are asked whether they agree to participate in the survey or not

Q2-*Q5: From 2 to 5 participants are asked about demographic information, the result of the participating sector type, organization classification and academic degree will be displayed

- Then some important terms for the survey sections, computing concepts and digital transformation are defined

Q6-Q7: Participants are asked about cloud computing policies and regulations in Saudi Arabia

*Q8: Do current organizations rely on cloud services

*Q10: what is the most powerful advantage of using cloud computing?

Q9, Q11- results are to be presented in another research paper

*Q12: The effect of adopting cloud services on daily business and its usefulness for enterprises

*Q13: what are the most influential factors that can be considered an obstacle to progress in more cloud services

*Q14: The most used cloud services within the organization

*Q15-Q18: Are about cloud computing infrastructure and type of adoption

*Q19-26: discussion of costs and challenges of cloud computing adoption and its impact on the digital transformation of Saudi Arabia

8. Research process and sampling size

The research sample targeted "Digital Transformation Departments for Organizations, Technology Departments, End Users, and Decision Makers." The focus was within Saudi Arabia, and the method for collecting data was to first obtain ethical approval for research from a number of higher education institutions and the Ministry of Health in the Makkah region. The study was then announced to all participating universities via e-mail and social media such as Twitter, WhatsApp, and Facebook through associations and university officials in order to reach the target groups.

- Sample Size calculations:

In order to measure and calculate the sample size adopted in this study, we used the Steven K. Thompson equation to calculate the sample size according to the following formula:

$$n = \frac{N \times p \times (1-p)}{[N-1 \times (d^2 \div z^2) + p \times (1-p)]}$$

where
n: Sample size
N: Population size
z: Confidence level at 95% (1.96)
d: Margin of error (0.05)
p: Sample proportion (15%)

The sample size was set to 201, based on the standard equation above for both public and private sectors inside the Kingdom of Saudi Arabia (KSA). In the first month, a 30% response rate was obtained. The study period was then extended, at the request of the supervisor and the team, to a full semester at a rate of three and a half months, during which time more than 70 organizations responded and made sure to specifically select the classes. Thankfully, the participation rate increased to 50% in the second month and reached the peak of 90% in the last month. Public and private sectors: In the beginning, an inquiry was made about the institutional sector of the participant. The results of this survey show that 75% of the sample size belongs to the "public sector" inside Saudi Arabia, while 24% were from the "private sector," as shown in Fig 1:

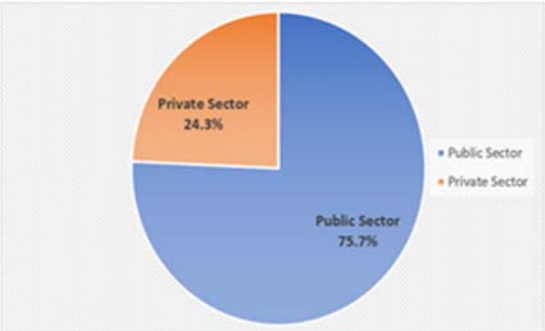

Fig 1 Describe public/private sample size

8.1 Classification of the concerned party

In the classification of the participating entities, a number of classifications were previously addressed before the questionnaire was published, and, after obtaining the results, we had categories that participated at an average of 30% of the participants and were included with the results. The largest share of participants were from the education sector at 43%, followed by the public security sector at 11.7%, the civil service sector at 11.2% and the medical sector at 10.7%. The research sample also included a number of ICT sector participants, of up to 7.5%, after which differences appeared among the various sectors of the Kingdom of Saudi Arabia, the result in Table 1:

Classification of the concerned party	n	%
Education sector	94	43.9%
Public security department	25	11.7%
Civil Service Sector	24	11.2%
Medical sector	23	10.7%
ICT sector	16	7.5%
Leisure and tourism sector	7	3.3%
Social security and human resources sector	4	1.9%
Banking sector	2	0.9%
Energy sector	2	0.9%
Media sector	1	0.5%
Transport sector	1	0.5%
Other	15	7.0%
Total	214	100%

Table 1 sectors classification

8.2 Cloud computing policies

Participants were asked, in general, how familiar they were with the Cloud Computing Guidelines and Policy in the Kingdom of Saudi Arabia, and the results are as follows:

Fig 2 cloud computing policies awareness

8.3 Current cloud computing perspective

Participants were asked about the current cloud computing perspective in the KSA and the results Table 2 were as follows: 43% answered "moderately satisfied"; 27.1% said "somewhat satisfied"; 18% chose "extremely satisfied"; and 2%,8% were not satisfied with the current status

Table 2 cloud computing perspective in the KSA

In general, how satisfied are you with the current cloud computing perspective in Saudi Arabia:	n	%
Not at all satisfied	5	2.3%
Slightly satisfied	18	8.4%
Somewhat satisfied	58	27.1%
Moderately satisfied	94	43.9%
Extremely satisfied	39	18.2%
Total	214	100%

8.4 Adoption of cloud computing

All participants were asked about the possibility of implementing a cloud computing service in the organization to which they belong. The results were impressive, as 63% answered “yes”; 22% said “no”; and the remaining percentage answered “no, but that will be planned." as shown in Table 3:

Table 3 Adoption of cloud computing

Does your organization rely on cloud computing technology:	n	%
Yes	135	63.1%
No	47	22.0%
No, but we will plan and start using cloud computing	32	15.0%
Total	214	100%

To answer one of the most important questions of this study—"What is the sector that applies the best practices of digital transformation in Saudi Arabia in the cloud computing perspective?"— the results in Table 4 were subjected to the ***chi-squared test of association*** to determine the ***significance of the*** P-value in order to obtain a meaningful comparison of ***descriptive statistics.***

Table 4 the most sector applies cloud computing

Sector	Using Cloud Computing Technology n (%)		Sig.
	Yes	No	
Public	103 (63.6%)	59 (36.4%)	0.791
Private	32 (61.5%)	20 (38.5%)	

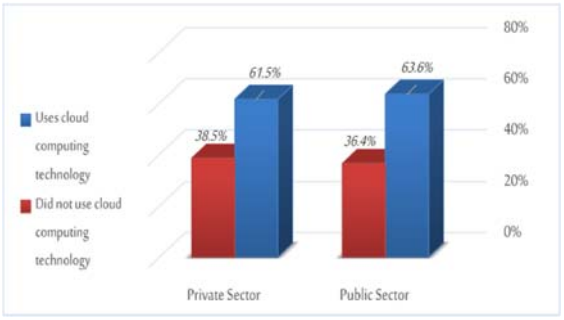

Fig 3 cloud computing utilization

We note that through the value of the (Sig.), both the public and private sectors have close ratios of statistical significance to the implementation of digital transformation, according to the best practices in the ninth measurement in "YASSER" program to the fourth criterion "infrastructure." The public sector is 63%, while the private sector is approaching it at 61%. To be more precise, a result was extracted from the categories that mostly implement and adopt the cloud from nowhere, shown in Fig3 and Fig 4

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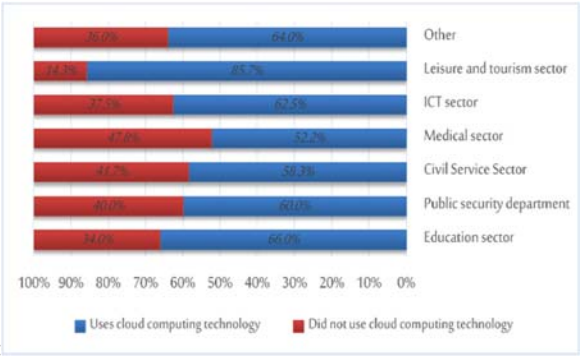

Fig 4 sectors apply cloudcomputing

8.5 Advantages of cloud computing

This question was presented to the participants due to its importance, to analyze the most important cloud feature that supports decision-makers, technology departments, and digital transformation in adopting services from service providers. The results show that 81% of the participants indicated that the speed of access to resources on the cloud is better than in any other environment, 66% indicated "better data security," 51% said that it reduces the capital costs of enterprises, 50% said that accessing data from "anywhere, anytime" motivated them to adopt cloud services, 40% said that it would reduce the number of support staff, thereby providing capabilities to organizations, and, finally, 27% said that the data recovery and disaster recovery services are the basis for their choice of the cloud. as shown in Table 5:

Table 5 Advantages of cloud computing

The technical factor: In your opinion, what is the most motivating technical factor for adopting cloud computing::	n	%
Speed and ease of access to software on the cloud	110	81.5%
Access data anytime/from anywhere	68	50.4%
Easy data recovery and disaster recovery	37	27.4%
Better data security	90	66.7%
Reducing capital costs (better economic efficiency)	70	51.9%
Reduce the number of IT staff needed to support systems	55	40.7%

The second question is what are the factors that affect the move to cloud services, and the result came as shown in Fig 5:

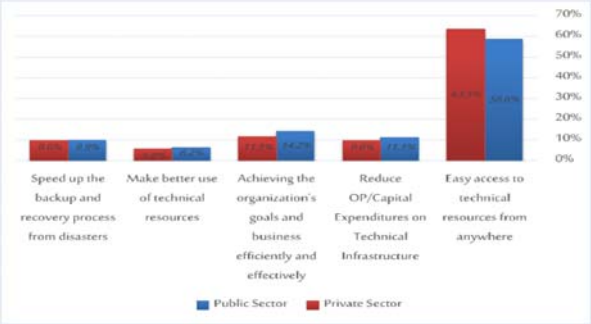

Fig 5 most factor affect cloud computing

To understand and clarify the result The participants' educational levels were questioned as well to understand their capabilities to adapt and utilize new technologies and solutions. Their answers were put under a descriptive statistics test, and then significant results resulta were obtained as shown in Table 6:

Table 6 storage in cloud computing

Education	Understanding the advantages of storage in cloud computing n (%)		Sig.
	Yes	No	
High School	13 (65%)	7 (35%)	0.003
Diploma	8 (88.9%)	1 (11.1%)	
Bachelor's	92 (78.6%)	25 (21.4%)	
Master's	42 (95.5%)	2 (4.5%)	
PhD	29 (87.9%)	4 (12.1%)	

By observing the values of P:Sig , we find that there is an association between the variables of the question, the type of educational level of the participants, and the degree of their dependence on cloud computing technologies and services. It appears to us that the master's level holders are our elite in this study, for applying and understanding the advantages of cloud computing, with a percentage of no less than 95%, their peers at the doctoral level with 87%, and the participants at the bachelor's level with 78%.

8.6 User experience

One of the most important factors that directly affects the adoption of any new technology, whether at the individual or institutional level, is the "user experience," meaning that at the beginning in order to adopt any new technology, its efficiency is tested first by distributing it to a number of people to test the quality in facilitating business or not. From this perspective, participants are asked about the reality of their daily experiences and the use of cloud computing resources, and whether the cloud experience enhances the performance of institutions. They are asked: "Do you think that relying on cloud computing has helped improve the performance of the organization more than before?". The results of the survey in Fig 6 were that 91.1% of the participants praised the quality and facilitation of daily work more than traditional methods, and a very small percentage do not see it as an benefit to them.

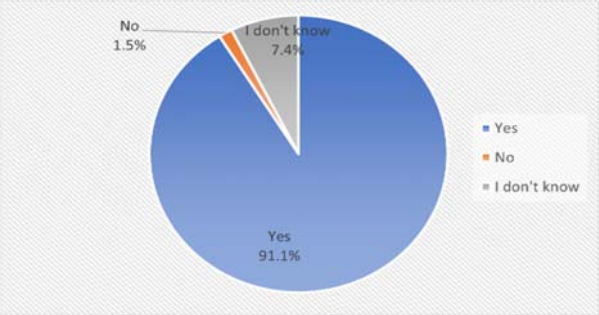

Fig 6 user experience

One of the most important influences on decision-making is the “human factor” and its relationship to the delay in acceleration of digital transformation, That's why it was confirmed by the survey as shown in Table 7:

Table 7 human factor and lack of experience

Do you think that the human factor and lack of experience in the field of cloud computing will be one of the challenges of moving to computing in the Kingdom of Saudi Arabia:	Public Sector	Private Sector	Sig.
Yes	88 (54.3%)	32 (61.5%)	0.335
No	23 (14.2%)	9 (17.3%)	
May be	51 (31.5%)	11 (21.2%)	

8.7 Cloud service platforms

Through the results of what is the most applied cloud platform for services, it shows us approximately varying percentages of this participation as shown in Table 8 :

Table 8 cloud platforms applied in different sectors

What are the cloud computing services applied by the organization in which you are currently working:	Public Sector	Private Sector	Sig.
IaaS Infrastructure as a Service	21 (10.2%)	7 (10.9%)	0.594
SaaS Software as a Service	22 (10.7%)	7 (10.9%)	
PaaS Platform as a Service	16 (7.8%)	2 (3.1%)	
I don't know	44 (21.4%)	16 (25%)	

8.8 Cloud computing challenges

The third research question is “what are the obstacles to moving to cloud services based on your daily experience”. We try to find out the most influential factors that can be considered as obstacles to progress in the application of more cloud services; the result comes as shown in Fig 7 :

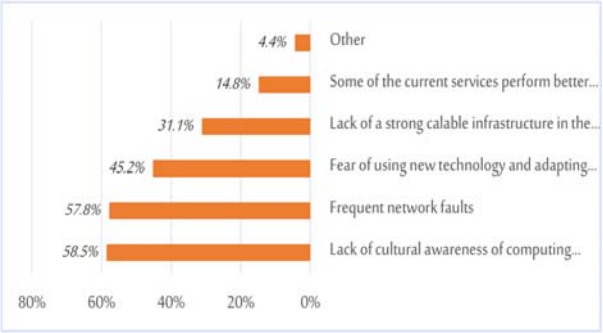

Fig 7 Cloud computing challenges

One of the most important factors to measure the difficulty or ease of implementing new technologies is the organizational factor of the institution. Therefore, the participants in the survey were asked what is the biggest challenge and the obstacle that prevents the adoption of cloud computing in organizations, and the results as shown in Table 9 :

Table 9 Organizational factors

The organizational factor: What is the biggest challenge and obstacle that prevents the adoption of cloud computing in organizations:	Public Sector	Private Sector	Sig.
Information Security	83 (29.2%)	27 (29.7%)	0.931
Lack of cultural awareness and lack of experience about cloud computing	93 (32.7%)	27 (29.7%)	0.488
Costs	40 (14.1%)	9 (9.9%)	0.27
Geolocation of cloud providers' data centers	26 (9.2%)	5 (5.5%)	0.251
Project and risk management	12 (4.2%)	8 (8.8%)	0.086
We don't have challenges to adopting cloud computing	14 (4.9%)	8 (8.8%)	0.164
I do not know	16 (5.6%)	7 (7.7%)	0.468

The economic factor is a very crucial challenge facing enterprises to adopt cloud computing; it is about reducing the operating costs of the organization within the scope of cloud computing. Participants were asked to determine which of the following fees constitutes a recurring burden on the organization's management to adopt cloud computing services, the result as shown Fig 8:

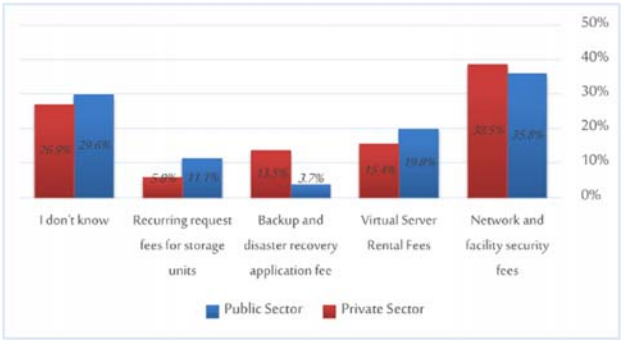

Fig 8 Dominant fee for cloud adoption

8.9 Digital transformation challenges:

In order to correlate the impact of cloud computing adoption on digital transformation, there are a number of issues that must be met before making any decision. Participants are asked about whether using cloud computing as one of the digital transformation technologies improves the performance of the organization. in terms of a number of factors and it seems from the following result that most of 50% of the total say it accelerates business in daily routines, while others it is increasing work efficiency the results as shown in Fig 9 :

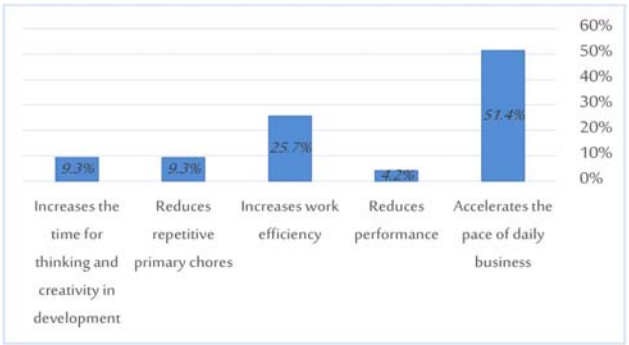

Fig 9 digital transformation challenges

The participants are asked about the impact of the adoption of cloud computing on digital transformation and what are the most prominent challenges for enterprises, and it seems that security and privacy is the most factors that affect any decision on new technology and the results as shown in table 10:

Table 10 impact of the adoption of cloud computing

In general, what are the most prominent challenges that hinder digital transformation in the perspective of cloud computing in the Kingdom of Saudi Arabia:	Public Sector	Private Sector	Sig.
Difficulty taking a step because of the lack of control over cloud data centers	85 (33.1%)	21 (27.6%)	0.129
Abuse of cloud computing resources	51 (19.8%)	14 (18.4%)	0.534
Information security and privacy	88 (34.2%)	29 (38.2%)	0.855
Data loss and mistrust between cloud service providers	33 (12.8%)	12 (15.8%)	0.677

People's awareness of the impact of adopting any new technology on the status of the organization is questioned. The participants were asked, "Do you think that the digital transformation in the country and the trend of organizations to rely on cloud computing, does it affect the performance of daily business and improve the quality of employee performance? The results it is comes as shown in Fig 10 :

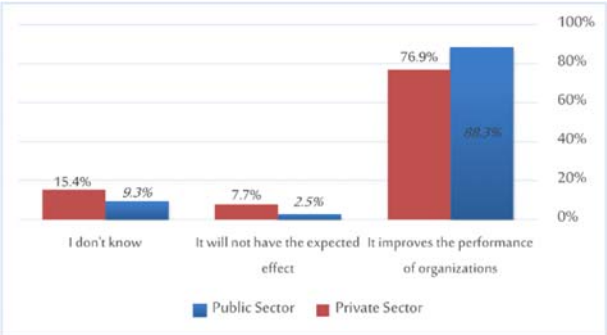

Fig10 Impact of adopting any new technology

9. Results analysis

Through the results, presented in order to identify the current status of cloud computing infrastructure, the study concluded that both the public and private sectors in Saudi Arabia have become more aware than before of cloud computing technology. The results of a previous study (2017) confirmed that cloud computing is still an emerging technology in the KSA in the public sector in the application of computing in schools and hospitals. However, in our paper, both the public and private sectors to achieve the 2030 vision for Saudi Arabia to adopt cloud computing in organizations. After obtaining employees' answers from both sectors, it was found that 56% of the total answers made it clear that in the Kingdom of Saudi Arabia, with the support of the Communications and Information Technology Commission, the guidelines and policies for the adoption of cloud computing files are available online for all sectors and individuals and, thus, proved that there is a societal "awareness" of these guidelines. One of the most important benefits to the adoption of cloud computing is speed and ease of access to software on the cloud and the reduced capital cost of establishing local data centers. The results showed that organizations are still hesitant to use the IaaS cloud service, and nearly 50% of the participants prefer to use SaaS cloud services for ease of subscription and use. By reviewing these and previous results, it is clear that there is still a slowdown in the transition to IaaS. One of the Saudi vision requirements is the adoption of governmental cloud-based data centers on a large scale, and all institutions must adopt this. One of the most important obstacles to the adoption of cloud computing is "information security," which is what cloud service provides, and it is their responsibility to pay attention to it, especially with the increasing number of cyberattacks targeting data stores on the cloud. From our point of view, there are some guidelines that institutions that want to migrate to IaaS must take to ensure a smooth migration and recommendations on choosing the cloud or not. When starting the digital transformation process within the concerned entity, it will be difficult to stop the traditional system used in the workplace, because this means that the entity will need to temporarily stop providing its services to customers. Therefore, at this particular stage, there must be professional management to solve this problem by working parallel to the traditional system with the new digital system until the completion of the digital transformation within the entity. Support from senior management is needed to achieve the transformation from a local data center environment to a cloud-based environment, which requires providing the necessary budget and training for employees. In general, there are a number of stages that every organization must adopt in order to smoothly migrate to the cloud. Sometimes, the traditional procedures for some services are not completely clear to the digital

transformation service providers and, therefore, may not be done correctly, or the transition to the cloud is wrong. Thus, cloud service providers, in particular, must explain more clearly than before the full tasks and requirements related to services, and the rental plan for some long- or short-term services.

10. Conclusion

The adoption of cloud computing is one of the most important criteria affecting the digital transformation of the world. In this paper, digital transformation in Saudi Arabia was studied from a cloud computing perspective. The results of the study show that both public and private sectors have to be the leader in adopting the latest cloud technologies, but based on previous studies in the same approach, it remains that the private sector has fewer practices that have adopted cloud computing. Some results show that there are updates to the adoption of computing, including the opinion of 56% that information security constitutes a major challenge and an obstacle to the adoption of the cloud, while 51% believe that the weak cultural awareness of any new technology is one of the most important obstacles to progress and increase in all digital transformation technologies. The main contribution of this research is to focus on the role of cloud computing in achieving digital transformation in the Kingdom of Saudi Arabia in the public and private sectors and to explore the current situation of digital transformation there. What this paper represents is part of our larger research into the concept of digital transformation and the cloud; our other method consists of interviews with key personnel in both cloud computing and digital transformation. Important results were obtained and we will discuss those in another paper. Experiments using simulation and analysis of cost were also mastered using the MATLAB program, but one of the most important results related to our first method is the arrival of Saudi Arabia to an advanced position. The Kingdom of Saudi Arabia has become the largest market in the Middle East in the field of cloud computing after the emergence of cloud giants, Alibaba Cloud and Google Cloud, with their full potential.

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