

## COVID-19 and the Digital Transformation that Followed in the Kingdom of Saudi Arabia

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### Abstract

This study examines the impact of the COVID-19 pandemic on the digital transformation landscape in the Kingdom of Saudi Arabia. Its main goal is to find out to what extent the pandemic has spurred digital technology adoption.

During the pandemic, Saudi Arabia has seen a rapid transition to digital solutions in various areas such as remote working, online education and e-commerce. And telemedicine. This study examines the factors that contribute to this transition and assesses its long-term consequences.

A quantitative, inductive and explanatory study design was selected for this study to analyze primary data collected from 247 respondents working in official UK organisations, ministries and agencies. Saudi Arabia through a survey questionnaire page. Statistical analysis tools were used to evaluate the conclusions of the results.

Key findings highlight the central role of government investments in digital infrastructure and highlight the challenges of digital literacy and data security. Ultimately, this study acknowledges that the pandemic has acted as a catalyst, reshaping traditional business models and service delivery. To build on this momentum, the recommendations call for sustainable investment in digital infrastructure, increasing digital literacy, and encouraging innovation through collaborative and responsive partnerships. Actively on network security issues.

**Keywords:** COVID-19, digital transformation, pandemic, technology adoption, remote work, online education, e-commerce, telehealth, digital infrastructure

## 1. Introduction

Today's world is surviving in a multifaceted, complicated technological evolution that is altering not only the lives of people but also the public, private, and academic realms of life. This technological transformation gives countries the chance to integrate their technologies with the goal of building a future that is more inclusive and centred on people (AbdulRahim and Mabrouk, 2020). The COVID-19 pandemic accelerated the transition of promoting and testing digital infrastructure in the Kingdom of Saudi Arabia, where government, as well as private entities, came together to develop and launch 19 digital applications and platforms to serve the public and provide health care services (Hassounah et al., 2020). The focus of Vision 2030 was to offer support through the development of digital infrastructure by offering high-speed coverage of broadband, strengthening the national digital transformation. This digital transformation facilitated Kingdom of Saudi Arabia in prompt response to COVID-19 pandemic by supporting e-learning within educational sector, telemedicine in the healthcare setting, and e-commerce boom in the retail industries, which was in congruence with the free-of-charge data services provided by the government to ensure seamless delivery during the crisis situation (Hassounah et al., 2020). Nonetheless, the country-wide mitigation measures caused by the COVID-19 measures expedited the smooth transition of the digital integration highlighting standing gaps for the decision-makers.

### 1.1. Research Problem

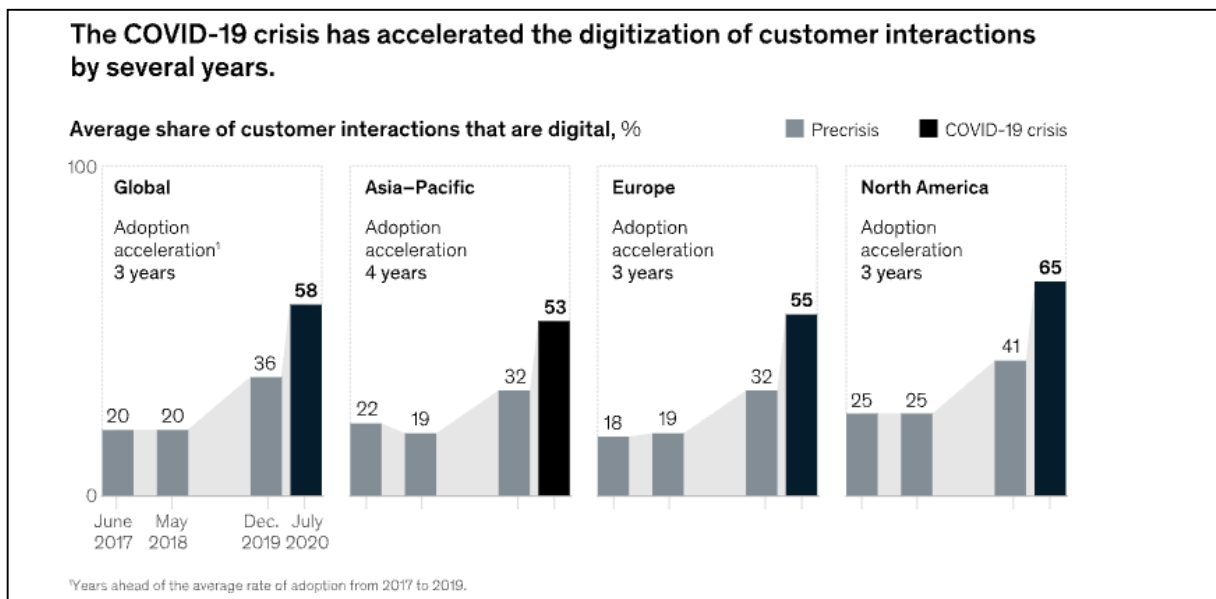
The Kingdom of Saudi Arabia now has a greater need for digital transformation than ever before as a result of COVID-19's strict social distance and physical contact regulations. With the launch of Vision 2030, digitization has gained attention; nevertheless, its practical consequences have slowed down as a result of the COVID-19 epidemic, which stopped the nation's economic growth (AbdulRahim and Mabrouk, 2020).

### 1.2. Research Questions

1. What is the impact of COVID-19 on the digital transformation and transition in Kingdom of Saudi Arabia?
2. How COVID-19 accelerated the digital reliance within the official institutions, ministries, and agencies in Kingdom of Saudi Arabia?

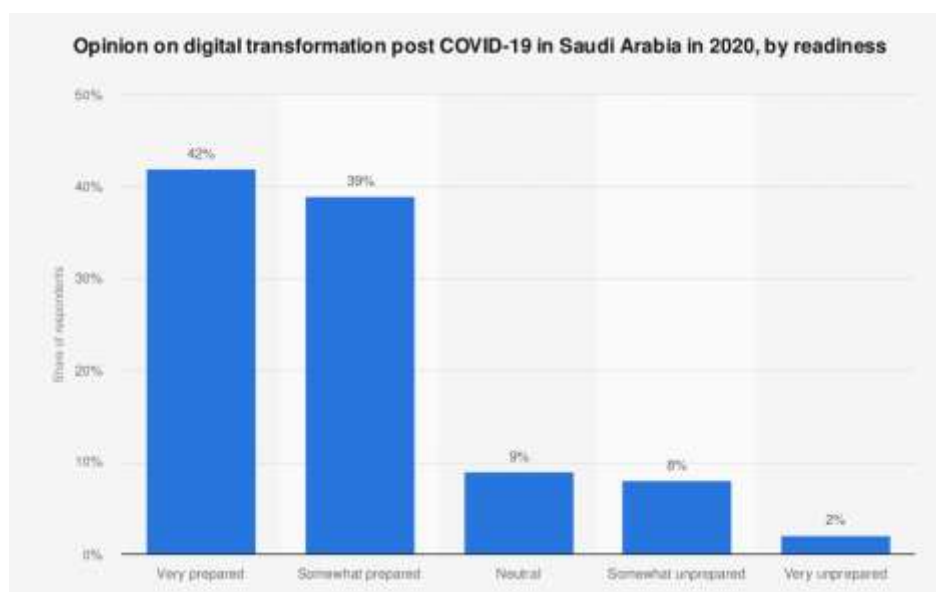
## 2. Literature Review

Digital Transformation is regarded as the backbone of sustainability, survivability, and competitive edge of the business through efficient utilization, innovation, and operational integration (Fletcher and Griffiths, 2020). McKinsey & Co. (2020) highlighted that a dramatic shift was observed towards digitalization during the COVID-19 due to online channels, which facilitated the businesses to stay afloat while sustaining customer interactions (See Fig.1).



**Figure 1:** Digitalization during COVID-19 (Source: McKinsey & Co., 2020)

The key driver in this accelerated trend of digital transformation has been the active start-up ecosystem that forced people to use internet services (Lagendorf and Farley, 2021). A survey on digital transformation in Kingdom of Saudi Arabia reported that 42% of the respondents are readily prepared for digital transformation post- COVID-19 in Kingdom of Saudi Arabia (Puri-Mirza, 2021).



**Figure 2:** Digital transformation Post COVID-19 in Kingdom of Saudi Arabia (Source: Puri-Mirza, 2021)

### **Digital Transformation in Kingdom of Saudi Arabia in PostPandemic Scenario**

The COVID-19 pandemic is accelerating the digital transformation, which is predicted to have a profound and immediate impact on the worlds of business and society long after the epidemic is over. The Kingdom of Saudi Arabia has been presented with numerous opportunities as a result of the increasing global focus on digital transformation in reaction to the COVID-19 outbreak. In order to enhance its ICT-focused and other broader start-up ecosystems, the nation can foster the digital innovation and start-up ecosystem (Little, 2021). More than 200 billion SAR in opportunity are presented by the digital economy, which should be seized by fully embracing technology.

### **Digital reliance in Kingdom of Saudi Arabia within official institution, ministries and agencies**

The extensive use of technology has the potential to bring about a number of social and economic advantages. As a result of the digital transformation, both small and large businesses may compete globally by selling their goods and services online. The cabinet of ministers has approved the creation of the Digital Government Authority due to the Kingdom of Saudi Arabia's rising reliance on digital technologies. In order to regulate the work on digital government, the authority would collaborate with other authoritative authorities and take part in the development of a national plan for digital government.

The authority will assist government organisations in putting digital services into place and ensuring a seamless transition to new technologies (gov.sa, 2021). In 2018, the Saudi government was successful in increasing the maturity of e-government services to 71%, which is a major improvement from the previous year's 56 percent. The kingdom's national vision 2030 to build a digital government to boost the economy has resulted in creating such a vibrant digital society that has turned the kingdom into a globally competitive ICT hub (Muzafar and Jhanjhi, 2020). The inception of several e-government projects like Saudi portal, Yasser program, Amer and others are a perfect example of implementation of digital technologies at a governmental level.

### **3. Methodology**

#### **3.1. Research Approach**

The present research utilised in the current study used inductive reasoning to address the study's aims, and a qualitative approach was also included. A particular phenomenon is studied from a general rather than a specific perspective using an inductive approach (Borgstede and Scholz, 2021).

#### **3.2. Research Design**

Followed by the inductive reasoning, explanatory research design has been selected which focuses on analyzing the descriptive information to assess the causal relationship between the variables of the research (Gray, 2013).

#### **3.3. Study Tool**

Close-ended questionnaire tool has been developed to collect information with defined responses.

#### **3.4. Data Collection**

The data collection procedure was based on reviewing the secondary data using online data sources and primary data collection was also being done using questionnaire.

Relevant to secondary analysis, a questionnaire was developed with defined codes indicating participant's responses against statements, i.e., 1 = Strongly Disagree and 5

= Strongly Agree. The questions were relevant to the integrated digitalization coordination, flexibility, remote working, business models, supply chain, and cost management. In this regard, present questionnaire gathered both qualitative and quantitative data (private companies) for review by analytical method.

### 3.5. Data Analysis

Data analysis was performed using quantitative methods that utilizes the statistical tools to generate results. More so, these results were presented in graphical form using illustrative tools. In congruence with this, qualitative data was discussed in thematic fashion to comprehend the responses and views of companies collected from secondary sources that discussed information in a way to keep focus of study intact (Nowell et al., 2017).

### 3.6. Ethical Consideration

Consent was obtained for the content of the questionnaire prior to the start of data collection by research supervisor, taking in consideration the confidentiality of the participants' information and opinions related to the research.

## 4. Results and findings

This chapter of the research focuses on the interpretation of the research findings in response to assess the impact of Covid-19 on digital transformation and transition in Kingdom of Saudi Arabia, and how digital reliance was accelerated by covid-19.

### 4.1. Demographic Analysis

The number of participants included in the research is 247. The basic questions regarding gender, age, education level, and their current position at the organization has been specified in the demographic analysis.

**Table 1: Gender**

		Gender			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	190	76.9	76.9	76.9
	Female	57	23.1	23.1	100.0
	Total	247	100.0	100.0	

The total number of respondents was 247 of which 76.9% of them were males, and only 23.1% were females. The following graph highlights the gender profile of the participants.

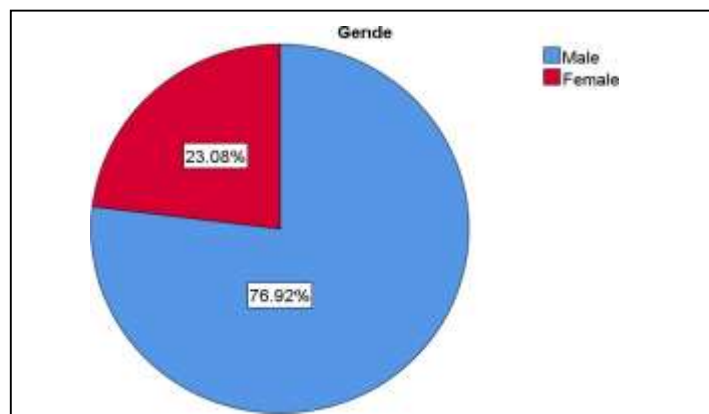


Figure 3: Gender

The next demographic analysis focuses on the age of the respondents which has been signified in Table 2.

Table 2: Age

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Less than 25 years old	23	9.3	9.3	9.3
Valid	From 25- less than 45	190	76.9	76.9	86.2
	More than 45	34	13.8	13.8	100.0
Total		247	100.0	100.0	

It was found that 9.31% of individuals aged less than 25 years, 13.77% aged more than 45 years, whereas the Majority aged between 25 to 45 years. The following graph indicates the ages of the participants.

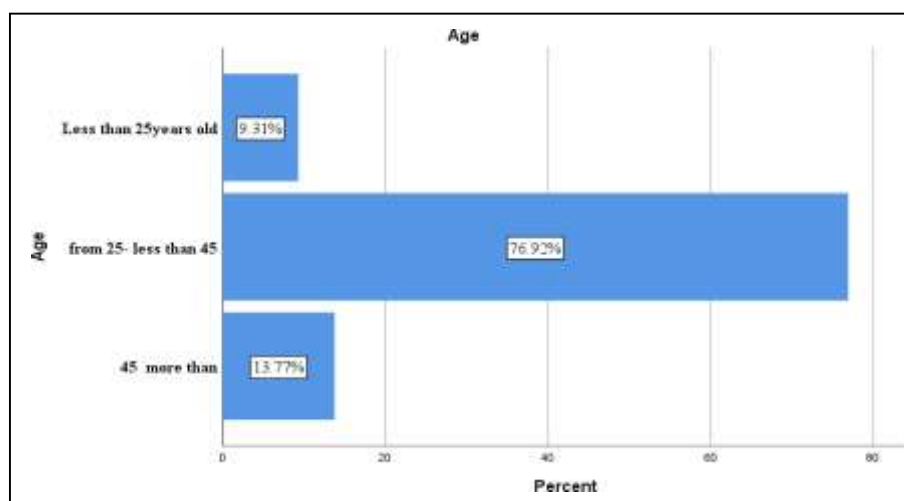


Figure 4: Age

The third variable in the descriptive analysis is the education which is specified in Table 3

**Table 3: Education**

Educational Level					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor's	146	59.1	59.1	59.1
	Diploma	29	11.7	11.7	70.9
	Postgraduate	72	29.1	29.1	100.0
	Total	247	100.0	100.0	

**T-test**

The T-test is used to compare the difference between two groups' mean values. In result, such differences are then considered for hypothesis testing. This includes one sample statistics and one sample test. The one-sample statistics calculates the variation of the variables from mean value of the sample, (JMP, 2021). There are two groups of data namely digital reliance and digital transformation. The following results have been obtained indicating the deviation of each sample responses compared to mean value of sample.

**Table 4: T-Test**

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
Digital Reliance	247	4.1454	0.66893	0.04256
Digital Transformation	247	3.9765	0.65447	0.04164

The factors influencing digital reliance had a mean of 4.1454. The factors influencing digital transformation had a mean of 3.97 after running a t-test. The results of both samples indicate that significant deviation is lying within samples mean values. The variation is about 66% in both samples compared to their mean value.



**Table 5: One-Sample Test**

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Digital Reliance	97.395	246	0.000	4.14541	4.0616	4.2292
Digital Transformation	95.490	246	0.000	3.97648	3.8945	4.0585

One-sample test shows the significance and confidence interval over the mean values of samples. The mean difference is of the variable is mentioned above. In addition, the confidence intervals of the difference of both digital reliance and digital transformation represent interesting numbers. Digital reliance has 4.0616 and 4.2292 confidence intervals lower and upper, respectively. The digital transformation has 3.8945 and 4.0585 confidence intervals lower and upper, respectively. It highlights that very significant mean value difference is lying between the variables. In addition, the mean value differences at 95% confidence interval measure the level of surety. In last, the findings indicate that the research is 95% confident that digital transformation and digital reliance improves the working proficiency of the government institutions at Kingdom of Saudi Arabia.

## 5. Discussion

### Research question 1: The impact of COVID-19 on digital transformation and transition in Kingdom of Saudi Arabia

The purpose of the first research question was to determine how COVID-19 will affect digital transformation. Without a question, the pandemic has increased economies' reliance on digital technology and changes. E-commerce grew in popularity as a result of the closure of physical locations including offices, retail stores, and schools as well as the rise of remote learning and online shopping. The economies that embraced the digital transformation at a faster rate than corporations did were the ones who were able to withstand the COVID-19 pandemic's negative effects. In the digital sphere, the Kingdom of Saudi Arabia is also developing quickly. Most of the respondents reported that their firm either adopted digital infrastructure, tools and systems,

transitioned to cyber space, incorporated a remote and flexible employment structure, digitalized business model and supply chain channels or incorporated various platform development technologies like messaging application, networking platforms and alike. Even before the pandemic, the focus of the companies remained on investing and prioritizing technology. Prior to the pandemic, many companies viewed technology and digitalization as the means to save money and reducing the cost of doing business. However, with the outbreak of the novel COVID-19, digital transformation is viewed to offer tremendous business opportunities to innovate. Businesses now consider digital transformation as a source for modernizing their business capabilities, achieving a competitive edge and creating a culture that is built around digital technologies and outpaces the concerns regarding cost reduction (EHL Insights, 2020).

### **Research question 2: Reliance on digital transformation within the private and government institutions, agencies in Kingdom of Saudi Arabia**

The second research question aimed at exploring whether the outbreak of COVID-19 increased the reliance of public and private sector on digital transformation focusing on organizations, government agencies and ministries. As part of its Vision 2030 strategy for a diversified economy, the Kingdom of Saudi Arabia has made the development of information, communication, and technology (ICT) a priority (ITU, 2020). In order to maintain the critical communication link and improve people's quality of life, the public and commercial sectors worked together to ease the deployment of ICT. This enabled an efficient response to the epidemic. Throughout the COVID-19 epidemic, ICT deployment has been essential for disseminating important information both within organisations and across the nation. The organisations and government agencies were able to inform employees and residents on how to respond to the crisis thanks to the developed communication infrastructure in the kingdom.

## **6. Conclusion**

With the extensive review of literature and questionnaire response analysis, it can be stated that like the rest of the world, the outbreak of novel coronavirus accelerated the digital transformation in the Kingdom of Saudi Arabia and has significantly increased the reliance of government agencies as well as private sector on the digital technologies. The responses collected from respondents working in various different positions in the private sector revealed that each organization shifted to digital either by adopting digital tools, opting for telecommuting,

shifting the business model towards digital or redesigning their supply chain facilitated through digital means. In complying with the research aim, the objectives of this study were to assess how the COVID-19 accelerated the digital reliance within the official institutions, ministries, and agencies in Kingdom of Saudi Arabia. Literature findings revealed that digital transformation is the future in the post-pandemic scenario within the Kingdom of Saudi Arabia and investment is needed to derive digitalization through recruiting and retaining skilled professionals to ensure smooth transitioning at individual, organizational and kingdom wide level. The results comprised of descriptive statistics to determine the responses of the participants. The validity and reliability tests indicated that there was high digital reliance and transformation based on the Cronbach alpha's value which was found to be 0.7. On the other hand, there was insignificant variance between digital reliance and digital transformation based on ANOVA

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