

## The Impact of Digital Leadership on Service Economies in Service Ministries in The Kingdom of Saudi Arabia

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**Abstract.** This study investigates the impact of digital leadership dimensions (digital culture, providing a visionary blueprint, system design, an empowering leader, employee professional development, innovation, persuasion, and knowledge) on service economics dimensions (economic innovative ideas, activating economic time, leadership behaviors, and economic learning) in the context of service ministries in the Kingdom of Saudi Arabia. We used a quantitative methodology to gather data from a sample of 364 workers engaged in service ministries using a survey questionnaire. We examined the data using the technique of multiple regression analysis. The results suggest that the various aspects of digital leadership have a notable and beneficial effect on the dimensions related to service economics. The study identified digital culture, innovation, and employee professional development as the primary factors that significantly influence digital leadership. This research adds to the existing body of literature by presenting empirical findings on the correlation between digital leadership and service economics. It also provides practical recommendations for service ministries in Saudi Arabia to improve their service economics by implementing successful digital leadership strategies. However, the study has some limitations, such as the cross-sectional design and the focus on a specific context, which future research should address.

**Keywords:** Digital leadership, service economics, digital culture, Employee professional development, Economic innovative ideas, Leadership behaviours.

## **1. Introduction**

Organizational leadership practices have undergone a significant shift because of recent advancements in the field of digital transformation (Schwarz Müller et al., 2018). Digital leadership is regarded as a cutting-edge strategy for enhancing and modernizing educational leadership, doing away with its historical issues, and enhancing institutional work performance through the application of fresh, quick, and efficient digital techniques. The Kingdom of Saudi Arabia is attempting to adopt and use the digital leadership approach, which is one of the contemporary leadership philosophies that are making an appearance in service ministries. The leader must invest in technical abilities to accomplish administrative and foundational chores in addition to ministerial duties.

The service economy is based on the idea that individuals may receive public services in exchange for financial rewards that support the local economy. The "service economy" is also the portion of the global economy that helps emerging countries transform products into services. Supports residents' needs. Abu Fass (2018) found that measuring health service performance factors from stakeholders' viewpoints might help Algerian healthcare institutions meet high-quality standards. Isaac et al. (2019) link global innovation and local digitalization. Nesterova et al. (2018) and Sebashvili (2020) say digital technology drives innovation, global economic growth, and national competitiveness. Innovation drove economic growth and dependence on the competitive economy. Many economic disciplines study regional competitiveness. Competitiveness is the capacity to fulfill a task (goals, responsibilities, or obligations) with quality and value in a competitive market. Competitiveness is the capacity to maintain high revenue and employment when facing global competition (Dmitrieva & Guseva 2019). Services are one of the most important economic sectors in emerging countries because they promote growth and development. Services include finances, health, travel, communications, transportation, and education. Economic and social factors pose significant challenges to the service sector in emerging countries. Furthermore, these countries struggle to raise money to invest in this sector because of their inadequate infrastructure and low technological proficiency. The service economy and digital leadership are two of the most important issues that most nations are currently dealing with. The Kingdom regards financial services as one of the most significant economic sectors.

Digital leadership can be very complex and requires many heavy workloads in service economies, high levels of pressure due to the balance between digital transformation, and issues related to service economics, and therefore the current study may shed light on digital leadership in assisting workers in service ministries in the Kingdom of Saudi Arabia. Thus, the services offered in Saudi Arabia are quite economically advanced.

Public services have seen significant global growth, despite the predominant focus on commodity production, due to their significant impact on a nation's economic environment. Consequently, it is clearly apparent that several state entities see performance and service quality as pressing concerns. Merely offering people high-quality services is no longer sufficient. Instead, it is vital to exert significant efforts in order to enhance service delivery to the desired degree of excellence as aspired by residents (Idris, 2006). The increasing number of services offered leads to a rapid growth in the complexity of service provision and management procedures. Furthermore, the improvement of service quality directly correlates with technological advancements and efforts to improve service performance. Therefore, in order to establish the digital revolution as a basis for providing services, the implementation of digital transformation technologies requires the existence of digital leadership with the objective of cultivating a digital culture.

Based on the information provided and the fact that digital leadership is a crucial aspect of the Kingdom's Vision 2030, this study seeks to fill a gap in the literature by investigating the impact of digital leadership on service economics within Saudi Arabian service ministries. Specifically, it aims to examine how digital leadership influences the economics of services for employees in these ministries. The question that this study aims to address is: How does digital leadership impact the financial side of service provision in Saudi Arabia's ministry of services?

We organize the remainder of the current study as follows: Section 2 presents the theoretical background and hypotheses. Section 3: Methodology, Section 4: Results of Hypothesis Testing, Section 5: Discussion, Sixth: Contributions; Seventh: Recommendations; Finally: Limitations and proposed future research.

## **2. Theoretical Background and Hypotheses**

### **2.1. Digital leadership**

Digital leadership is the result of combining the proficient use of digital technology with leadership skills to improve decision-making processes (Goethals et al., 2002). To effectively use digital technology as a part of leadership and enhance the organization, digital leadership requires combining culture and digital skills. (Rukmana & Mihardjo, 2018). Digital leadership is characterized by inventiveness, extensive knowledge, a strong network and cooperation, and real participation via vision (Toduk & Gande, 2016). Zhu (2015) identified many common characteristics of digital leadership, including creativity, reflection, global vision and cooperation, curiosity, and a strong foundation. Based on research conducted by Abollado & Shehab (2018), Barchiesi & Fronzetti Colladon (2019), Berné-Martínez et al. (2021), and Palmié et al. (2020), it has been shown that a significant number of organizations engaged in global competition have transitioned into digital enterprises. Traditional methods and business models are changing as new digital technologies emerge and new challenges arise in the digital realm (Holzmann et al., 2020; Wesseling et al., 2020; Alajaji, 2023; Zygiaris & Maamari, 2023).

Businesses are adapting their strategies in response to the changing landscape of digital technology. In order to thrive, businesses must undergo changes and adapt to the current circumstances. In order to successfully adapt, it is critical to have digital leaders who possess advanced strategic thinking skills and can effectively use the latest digital technologies to create new business prospects that are advantageous for their customers. In order to thrive in the new digital age, firms must possess digital leadership, which is crucial for adapting and modifying their company plans. Effective digital leadership facilitates the implementation of a well-defined digital business strategy to achieve effective business success. Organizations, abandoning conventional approaches and adopting innovative management and leadership philosophies tailored to specific tasks, have endeavored to enhance their organizational structures in recent years (Holzmann et al., 2020; Wesseling et al., 2020; Al-Hadrami et al., 2024). Temporary organizations are formulating novel digital company strategies; nevertheless, they often lack a comprehensive comprehension of the significance of digital leadership within this undertaking (Abbu & Gopalakrishna, 2021; de Villiers et al., 2020). The absence of digital leaders in these firms is the primary cause of their poor business success. In order to effectively oversee the process of digital transformation, it is essential for digital leaders to possess the requisite tools and resources. However, there are notable deficiencies in both technological supremacy and operational management. The research project's primary goal is to investigate the concept of digital leadership by examining relevant literature within an organizational context. Hence, this article uncovers a favorable correlation in the modern age between digital leadership, organizational performance, and productivity. While several sectors are undergoing globalization, global industrial strategies are reshaping the actions of digital leaders to enhance their understanding of the transformation process. This understanding is based on their unique traits, expertise, and experience.

Digital leadership is the use of an organization's digital assets to achieve business goals at both the organizational and individual levels (Thomson et al., 2016). In many companies, new digital technologies have brought about significant changes in competitive and organizational environments and roles. Changes are required in many organizational dimensions such as roles, work culture and technologies. Transformation programs are designed to drive adjustments to meet concrete short-term requirements while creating a new foundation for an uncertain future. Digital leaders need a set of skills to mitigate these challenges and help organizations move forward in the transformation process (Frank

et al., 2019; Somerville, 2013). Therefore, as a new skill set is needed to effectively lead the organization into an uncertain and more dynamic future, leaders have a significant impact. For example, inspiring people to work with a new set of technologies that may or may not be used due to uncertainty at the core of the digital future is a major challenge for digital leaders. Today, many leaders do not have the necessary skills to be strong digital leaders, but the good point is that they are starting to develop the necessary skills (Katsos & Fort, 2016). Proficiency in digital leadership requires the following essential skill sets (Luck et al., 2012). 1) Providing a clear and meaningful direction. 2) Generating immersive experiences; and 3) Encouraging individuals to think creatively and innovatively. 4) Promoting collaboration and knowledge sharing across different teams and organizations. 5) Foster effective communication inside and across teams and organizations; 6) Formulate and implement a company plan; and 7) Work together.

“Digital leadership” means leadership in key sectors of the information society such as communications, journalism or multimedia. However, both leadership styles are very similar to each other; both leverage core ICT sectors to connect customers and suppliers. Therefore, all leaders today must be aware of the new constraints and opportunities provided by ICT and use them effectively (Goethals et al., 2002:2). It was pointed out by Van Ee et al. (2020) define digital leadership as achieving an ICT-based goal, through directing human assistants and using ICT. While Zeike et al., (2019) defined it as the ability of leaders to create a clear and meaningful vision for the digitalization process, and the ability to implement strategies to achieve it. Thus, we define digital leadership as the leader’s ability to influence others, accomplish leadership tasks, and exercise its functions such as planning, organizing, coordinating, and supervising. Communication and decision-making using technical means.

There are skills that leaders in digital institutions must acquire. Bersin (2016) believes that what distinguishes digital leadership is that leaders are closely involved in engineering the organization, its culture, and its standards. They employ people with high innovative skills, and one of the keys to this type of digital leadership is the ability to change the shape of the organization by changing the operational structure with a “network of teams” instead of traditional structures, as well as focusing on culture. Success depends mostly on people sharing information with each other, and this can happen when you adopt a culture of transparency and value-based group participation.

Kumar & Chadha (2017) identified some of the skills a leader needs to manage the digital process: technical skills that identify the new fundamentals of transformation. Design-capable mental skills. Skills in designing new digital experiences and digital communications. Adaptive critical thinking skills and agile curriculum skills. A flexible and receptive mentality. In addition to the availability of attributes and skills for the leader to exercise his role in the world of digital leadership, there are basic pillars upon which digital transformation is based. Kumar & Chadha (2017) explained that the best pillars for leading digital transformation in the organization are Vision: “launching a strategic vision for the organization and linking it precisely and clearly.” What is needed to achieve mission success? Value focus: focusing on delivering reasonable value, delighting the customer, and improving return on investment. Decisiveness in decision making prioritizing creativity using data and facts rather than perception and intuition and embracing complex organizational work.

The rules governing conventional leadership are undergoing a transformation. The term "digital" now characterizes the new epoch that began after 2013. Hence, the next search for leadership qualities will prioritize attributes such as innovation, proficiency in digital skills, extensive networks, collaborative aptitude, participatory involvement, and visionary thinking (Toduk, 2014). In today's digital age, success necessitates digital leadership. We created the standards to adapt to the rapidly evolving digital landscape, which offers numerous opportunities but also poses the risk of becoming outdated. This new reality affects various aspects, such as work, policies, systems, and products. Therefore, it is crucial for digital leaders to make well-informed decisions that will drive business success, especially in light of the exponential growth in communications. The Internet, e-learning, artificial intelligence, mobile phone technology, smart systems, and inventive applications compel contemporary leaders to develop

novel approaches to work that reflect the evolving environment both inside and outside of organizations. Within the realm of digital transformation, there has been a noticeable change in the expectations of individuals who benefit from the services provided by different businesses, and this change is on the rise. Leaders must quickly adapt to advancement and development by using creative ways that align with the contemporary digital landscape (Philbin et al., 2022). Digital leadership is crucial for fostering innovation capabilities, as it involves the effective utilization of communication and technology. This aligns with the demands of the digital age, which closely intertwines creativity and innovative methods. By employing analytical techniques, digital leadership can effectively analyze and enhance relationships with customers (Wasono et al., 2018). Digital leadership necessitates that individuals embrace change and foster creativity in order to stay abreast of the evolving labor market, which demands advanced competencies to effectively compete and adapt to the digital age. It focuses primarily on the concept of digital leadership and its profound influence on information and communications technology, particularly the Internet, as a strategic foundation for addressing the challenges and demands of the current era. Its goal is to equip business systems with the necessary capabilities to keep up with present and future societal needs, while also cultivating a generation of managers who possess the requisite skills to exert influence in this era. Hansen et al. (2011) argue that good leadership plays a vital role in incorporating business leaders and information systems into the digital transformation of their enterprises. Successful digital transformation entails using digital strategies to guide leaders' efforts and create new value proposition elements. Managers, particularly those involved in digital transformation, lead the organization by combining SMACIT technologies (Social, Mobile, Analytics, Cloud, and Internet of Things) with the organization's existing capabilities (Sebastian et al., 2017; Yokoi et al., 2019). An effective approach is to engage managers in departmental meetings about strategic IT issues. As a result, this engagement usually results in a higher level of autonomy and advanced business knowledge (Hansen et al., 2011).

## **2.2. Economics of services**

Manufacturing and services are of great importance to economies, as well as their interdependence, and some argue that the decline in manufacturing and the resulting shift to services is unsustainable in the long run, because services depend heavily on manufacturing to survive. In the absence of manufacturing, service sectors are expected to collapse. On the other hand, a convincing case has been made that services have become a major driving force for economies (OECD, 2000). Moreover, KON (1997) examined the role of services in modern and developing economies, as well as the relationship between service production growth and economic development. Their study emphasized the significance of these activities in the dynamics of economic restructuring. Furthermore, this study focused on the differences in service restructuring between the public and private sectors, as well as the implications for service internationalization and concluded that economic restructuring caused by changes in goods and services has significant regional implications. Le Anh; Nguyen & Tran, L. (2021) presented a model examining factors affecting management and technological innovation in the auditing service sector. Results showed significant impacts, with internal source involvement being a key factor. Contextual factors like organizational size and age also influence performance, with younger firms showing a higher impact. Services are a key component of economic transformation, particularly in developing countries. Services trade generates jobs, adds value, and diversifies economies. Good policies, systems, and institutions are required to maximize the positive contribution of services. To effectively regulate the services sector, a multi-stakeholder approach and public-private partnerships are required. To develop global trade services and support sustainable development, international efforts are required and designing and coordinating the liberalization process in accordance with national rules and regulations is critical to creating an enabling environment for business services (Unctad, n.d.). Buera & Kaboski (2012) have discussed the role of highly skilled, specialized labor in the disproportionate growth of the service sector. It stressed that there is empirical evidence showing that the growing relative wages and availability of highly skilled labor coincided with an increase in the significance of skill-intensive

services. He created a theory that says production becomes more in demand than supply. More skilled and intensive as output increases. According to the theory, there will be an increase in the relative cost of services linked with this skill premium, the skill premium, and the level of skill. According to Ali et al. (2020), Blockchain technology has emerged as a decentralized, encrypted security system, contributing to the digital transformation of industries and business practices. This framework outlines the functions, difficulties, and financial advantages of the blockchain paradigm. It also highlights the implications for practice and future research. Meanwhile, Data from the Spanish Technological Innovation Panel covering the years 2008–2012 was used in analyses carried out by (González-Blanco et al., 2018) to test approaches related to the service sector in the Spanish economy. The findings suggest that if technological and non-technological innovation are applied concurrently, businesses can increase productivity more.

The competitive dynamics of the logistics industry have undergone a radical change due to the swift advancement of digital technologies, compelling logistics service providers to undergo a digital transformation. Five barriers and eight success factors for the digital transformation of service providers have been identified based on Cichosz et al (2020) research on identifying these barriers as well as the organizational components and leading practices connected to them. As well as the related groundbreaking methods around digital transformation. Using 183 consumer responses, Patwa et al (2021) presented an empirically validated model that highlighted the impact of consumer behavior on the acceptance of recycled products and the use of products as services. The study examined the adoption of circular economy principles in emerging economies, with a focus on resource availability, government policies, and consumer behavior. Businesses, consumers, and policy makers could all benefit from the research's insights. Kandampully et al (2022) examined the literature on service quality and customer experience, emphasizing the role of technology in the experience landscape. They also reviewed the service and experience landscapes, focusing on their interconnected aspects and the need for industry-wide focus in the service sector. Their research showed that service organizations could create intelligent experiences that improve customer value creation and experience by integrating technological personalization, aesthetics, functionality, interaction, and social presence. Technology can also combine marketing, management, and operations to create lasting memories and emotional connections with customers. Additionally, (Corvello et al., 2022) investigated what promotes antifragility in service-oriented small and medium-sized enterprises (SMEs), concentrating on five instances where they effectively modified their business plans and strengthened their competitive edge amidst the COVID-19 pandemic. The main components identified by the findings were operational dexterity, context insight, and entrepreneurial orientation. The study offered helpful advice on how SMEs can better equip themselves to handle future crises and develop their capacity to turn them into opportunities.

### **3. Methods and procedures**

#### **3.1. Methodology**

The survey study and the descriptive analytical method were also employed in the current investigation to address the study variables. Making a questionnaire to assess the study's variables and hypotheses was one of the measuring strategies utilized to gather data.

#### **3.2. Proposed study model:**

The study model assumes that there is a positive, statistically significant relationship between digital leadership (digital culture, providing a visionary blueprint, system design, an empowering leader, employee professional development, innovation, persuasion, and knowledge) and service economics (economic innovative ideas, activating economic time, Leadership behaviors and economic learning). To answer the study questions, based on the results of previous studies, and considering the specific objectives of the study, the direct relationship between the study variables was determined as shown in

Figure (1):

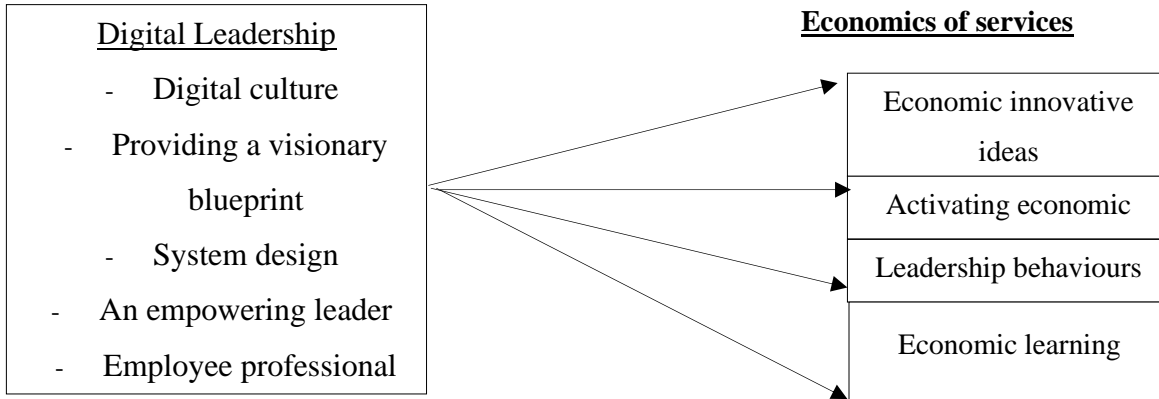


Fig.1: Proposed study model

Regarding the literature and research model, the following hypothesis is proposed:

"There is a statistically significant positive relationship between digital leadership (digital culture, providing a visionary blueprint, system design, an empowering leader, employee professional development, innovation, persuasion and knowledge) and service economics (economic innovative ideas, activating economic time, Leadership behaviors and economic learning) "

Four sub-hypotheses emerge from this hypothesis depending on the dependent variable:

H1/ There is a statistically significant positive relationship between digital leadership (digital culture, providing a visionary blueprint, system design, an empowering leader, employee professional development, innovation, persuasion, and knowledge) and economic innovative ideas.

H2/ There is a statistically significant positive relationship between digital leadership (digital culture, providing a visionary blueprint, system design, an empowering leader, employee professional development, innovation, persuasion, and knowledge) and activating economic time.

H3/ There is a statistically significant positive relationship between digital leadership (digital culture, providing a visionary blueprint, system design, an empowering leader, employee professional development, innovation, persuasion, and knowledge) and Leadership behaviors.

H4/ There is a statistically significant positive relationship between digital leadership (digital culture, providing a visionary blueprint, system design, an empowering leader, employee professional development, innovation, persuasion, and knowledge) and economic learning.

### 3.3. Sample and data collection:

The study population reached 617,822 individuals working in service ministries in the Kingdom of Saudi Arabia in 2023 AD. The sample was selected using simple random sampling, and the sampling unit was individuals working in service ministries in the Kingdom of Saudi Arabia in the year 2023 AD. Before collecting data, approval from Jouf University was obtained to obtain a special permit. As a result, 95% of participants responded to the electronic questionnaire for employees in the service ministries in the Kingdom of Saudi Arabia 2023. The sample size was (384) individuals according to statistical tables to calculate the sample size of the research community of (617,822) individuals (Sekaran & Bougie, 2016). After distributing the questionnaire, the number of respondents reached (364). In this step, the phone number and email address of employees in service ministries in the Kingdom of Saudi Arabia in 2023 AD were obtained. Employees have been given guarantees regarding the confidentiality of information. The emails sent included instructions on how to respond to the survey,

the author's contact information was explained in case they had any questions, and they were reminded to complete the survey.

In order to verify the validity of the questionnaires, we sought the advice of four experts, and as a result, we modified several terminologies to more accurately reflect Saudi society's cultural standards. Particularly in the variable of digital leadership, which was considered in the final compilation of the questionnaire. After that, a few ministry employees tested the survey list to make sure the wording was correct and to find out how they felt about its dimensions, content, and size. As well as how the questions are arranged. The completed list test was subjected to validity and reliability testing; reliability coefficients were calculated using Cronbach's alpha test. The participant characteristics are displayed in Table 1.

Table 1. Characteristics of the participants (N = 364)

| Variables       | Category             | Frequency | Percentage |
|-----------------|----------------------|-----------|------------|
| Gender          | Male                 | 205       | 56.4       |
|                 | Female               | 159       | 43.6       |
| Age             | Below 30 years old   | 75        | 20.6       |
|                 | 30-40 years old      | 147       | 40.4       |
|                 | 40-50 years old      | 118       | 32.4       |
|                 | Above 50 years old   | 24        | 6.6        |
| Education level | Less than bachelor's | 120       | 33         |
|                 | Bachelor's           | 207       | 56.8       |
|                 | Masters and above    | 37        | 10.2       |
| Experience      | Less than 5 years    | 90        | 24.7       |
|                 | 5-10 years           | 36        | 9.8        |
|                 | 11-15 years          | 111       | 30.4       |
|                 | 16-20 years          | 75        | 20.6       |
|                 | More than 20 years   | 52        | 14.5       |

Source: Author own work

### 3.4. Data collection tool

To achieve the objectives of this study and test its hypotheses, a questionnaire was designed by reviewing literature related to the topic. The questionnaire consisted of two parts: The first section: measures digital leadership. It was adapted from the scale of Oktaysoy et al. (2022) and consists of (44) statements divided into eight dimensions: The first dimension (7 items) measures digital culture (the leader directs employees to make optimal use of digital technologies). The second dimension (5 items) measures the provision of a visionary plan (digital technologies stimulate continuous improvement in the administrative process). The third dimension (5 items) measures the design of the system (the leader communicates with decision makers to provide a high-speed Internet network within the workplace). The fourth dimension (5 items) measures an empowering leader (the leader uses social media to share digital knowledge with employees). The fifth dimension (6 items) measures employees' professional development (supports employees' development by sharing with them the latest digital technology developments). The sixth dimension (5 items) measures innovation: (Innovation contributes to implementing services in a faster and high-quality manner). The seventh dimension (7 items) measures persuasion: (Information digitization aims to explain the idea and present it as a primary goal in communications within the organization). The eighth dimension (4 items) measures knowledge (awareness of knowledge can include ease of obtaining information).

The first section also measures the dimensions of service economics. It is adapted from (MIT Sloan Management and Capgemini Consulting 2015) and consists of (34) items distributed over four main dimensions. The first dimension (10 items) measures innovative economic ideas (the organization constantly introduces radical modifications to its services), the second dimension (9 items) measures

activating economic time (I make sure to identify activities that are a waste of time), and the third dimension (5 items) measures leadership behaviours characterized by... Participatory decision-making process in the organization). The fourth dimension (10 items) measures economic learning (the organization relies on the scientific research method to solve the problems it faces). All measures used a 5-point Likert scale where 1 = “strongly disagree” and 5 = “strongly agree.” The second section: includes demographic variables (gender, age groups, qualifications, and length of work in service ministries). To calculate the validity and reliability of the study tool, the reliability coefficient was extracted according to the Cronbach alpha test to ensure internal consistency for all items of the questionnaire, and for the items of each variable of the study. Table (2) shows the reliability and validity values of the study variables, all of which were higher than the acceptable limits (60%) (Sekaran & Bougie, 2016).

Table 2. Reliability test results and validity coefficients results

| Variables                         | Reliability test results | Validity coefficients |
|-----------------------------------|--------------------------|-----------------------|
| <b>Digital leadership</b>         |                          |                       |
| digital culture                   | 0.844                    | 0.918                 |
| providing a visionary blueprint   | 0.875                    | 0.935                 |
| system design                     | 0.914                    | 0.959                 |
| an empowering leader              | 0.899                    | 0.948                 |
| employee professional development | 0.898                    | 0.947                 |
| innovation                        | 0.903                    | 0.950                 |
| persuasion                        | 0.901                    | 0.949                 |
| knowledge                         | 0.975                    | 0.987                 |
| <b>service economics</b>          |                          |                       |
| economic innovative ideas         | 0.799                    | 0.893                 |
| activating economic time          | 0.815                    | 0.903                 |
| Leadership behaviors              | 0.795                    | 0.891                 |
| economic learning                 | 0.825                    | 0.908                 |

Source: Statistical analysis of field research data, Source: Authors own work

### 3.5. Results of the initial indicators of the study

Table (3) shows the characterization of the variables included in the study, represented by the arithmetic means measured on a five-point scale, and their standard deviations, as follows.

Table 3. Reliability test results and validity coefficients results

| 1. Variables                      | Mean | Standard deviation |
|-----------------------------------|------|--------------------|
| <b>Digital leadership</b>         |      |                    |
| digital culture                   | 3.56 | 0.751              |
| providing a visionary blueprint   | 3.96 | 0.857              |
| system design                     | 3.64 | 0.921              |
| an empowering leader              | 3.68 | 0.877              |
| employee professional development | 3.42 | 0.888              |
| innovation                        | 3.69 | 0.817              |
| persuasion                        | 3.77 | 0.826              |
| knowledge                         | 3.67 | 0.907              |
| <b>service economics</b>          |      |                    |
| economic innovative ideas         | 3.77 | 0.685              |
| activating economic time          | 3.91 | 0.647              |

|                      |      |       |
|----------------------|------|-------|
| Leadership behaviors | 3.21 | 0.659 |
| economic learning    | 3.01 | 0.675 |

Source: Statistical analysis of field research data, Source: Authors own work

The arithmetic means for the study variables recorded a rating higher than the average, the highest for awareness was providing a visionary plan (3.96), and the lowest was economic learning (3.01), so the arithmetic mean for these variables was. Higher than the hypothesized mean of a five-graded Likert scale (3).

### 3.6. Common Method Bias

We implemented several safety measures, like lowering item ambiguity and safeguarding respondent anonymity, to lessen the impact of common method bias (Podsakoff et al., 2012). To counterbalance the question order and lessen priming effects brought on by the question context or item embeddedness, the items within each scale were also arranged at random for every respondent. To reduce socially acceptable responses and promote respondent candour, we provided comprehensive information regarding the security measures implemented to protect our respondents' privacy. To allay concerns about the evaluation, we concluded by reminding our respondents that there were no right or wrong answers to the survey's items. As a result, common method bias didn't seem to be an issue. The linear correlation coefficients between the dependent variable and the independent variables under investigation are displayed in Table (4):

Table 4. Bivariate Linear Correlation between the study's variables

| Variab<br>les | Y1          | Y2          | Y3          | Y4          | Y5          | Y6          | Y7          | Y8          | Z1          | Z2          | Z3          | Z<br>4 |
|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------|
| Y1            | 1           |             |             |             |             |             |             |             |             |             |             |        |
| Y2            | 0.708<br>** | 1           |             |             |             |             |             |             |             |             |             |        |
| Y3            | 0.635<br>** | 0.740<br>** | 1           |             |             |             |             |             |             |             |             |        |
| Y4            | 0.544<br>** | 0.638<br>** | 0.671<br>** | 1           |             |             |             |             |             |             |             |        |
| Y5            | 0.444<br>** | 0.525<br>** | 0.531<br>** | 0.404<br>** | 1           |             |             |             |             |             |             |        |
| Y6            | 0.294<br>** | 0.385<br>** | 0.502<br>** | 0.483<br>** | 0.530<br>** | 1           |             |             |             |             |             |        |
| Y7            | 0.425<br>** | 0.413<br>** | 0.555<br>** | 0.531<br>** | 0.612<br>** | 0.800<br>** | 1           |             |             |             |             |        |
| Y8            | 0.445<br>** | 0.386<br>** | 0.541<br>** | 0.486<br>** | 0.717<br>** | 0.719<br>** | 0.825<br>** | 1           |             |             |             |        |
| Z1            | 0.426<br>** | 0.406<br>** | 0.564<br>** | 0.460<br>** | 0.641<br>** | 0.627<br>** | 0.770<br>** | 0.866<br>** | 1           |             |             |        |
| Z2            | 0.363<br>** | 0.380<br>** | 0.532<br>** | 0.507<br>** | 0.628<br>** | 0.749<br>** | 0.801<br>** | 0.772<br>** | 0.800<br>** | 1           |             |        |
| Z3            | 0.370<br>** | 0.410<br>** | 0.517<br>** | 0.499<br>** | 0.544<br>** | 0.745<br>** | 0.722<br>** | 0.752<br>** | 0.744<br>** | 0.852<br>** | 1           |        |
| Z4            | 0.370<br>** | 0.391<br>** | 0.533<br>** | 0.480<br>** | 0.601<br>** | 0.658<br>** | 0.776<br>** | 0.755<br>** | 0.771<br>** | 0.791<br>** | 0.796<br>** | 1      |

Source: statistical analysis of field research data \*\* P<0.01, N=364

It is clear from Table (4) that: There was a positive, significant, and strong correlation between most of the study variables, and all correlation coefficients were high, medium, or low in general, as shown in the table.

#### 4. Results of the study hypothesis test:

This hypothesis tests the relationship between digital leadership (digital culture, providing a visionary blueprint, system design, empowering leader, employee professional development, innovation, persuasion, knowledge) and service economics (economic innovative ideas, economic time activation, leadership behaviors, economic learning). To test this hypothesis, used the multiple linear regression analysis method: The stepwise regression analysis method was used to compare the relative importance of digital leadership in determining the relative importance of services economics, and to determine the best set of explanatory variables. Tables (5) and (6) show the results of this analysis: Table (5) shows the results of this analysis: 5) The following are the stages of introducing the dimensions of digital leadership according to their relative importance in explaining the variation in services economies:

Table 5. Results related to the Multiple Regression Analysis

| Variables                         | R <sup>2</sup> | ΔR <sup>2</sup> | Adj R <sup>2</sup> | F       | Sig.     |
|-----------------------------------|----------------|-----------------|--------------------|---------|----------|
| Economic innovative ideas         |                |                 |                    |         |          |
| Innovation                        | 0.636          | –               | 0.630              | 560.513 | ***0.000 |
| Knowledge                         | 0.659          | 0.023           | 0.656              | 366.914 | ***0.000 |
| Employee professional development | 0.679          | 0.02            | 0.681              | 197.628 | ***0.000 |
| Persuasion                        | 0.697          | 0.018           | 0.692              | 160.126 | ***0.000 |
| Economic time activation          |                |                 |                    |         |          |
| Digital culture.                  | 0.748          | –               | 0.739              | 730.614 | ***0.000 |
| Providing a visionary blueprint   | 0.769          | 0.021           | 0.761              | 566.917 | ***0.000 |
| Employee professional development | 0.788          | 0.019           | 0.779              | 498.626 | ***0.000 |
| Knowledge                         | 0.795          | 0.007           | 0.791              | 370.327 | ***0.000 |
| Empowering leader                 | 0.800          | 0.005           | 0.797              | 263.428 | ***0.000 |
| Leadership behaviors              |                |                 |                    |         |          |
| Digital culture.                  | 0.629          | –               | 0.626              | 541.857 | ***0.000 |
| Providing a visionary blueprint   | 0.686          | 0.063           | 0.674              | 339.312 | ***0.000 |
| Employee professional development | 0.725          | 0.039           | 0.718              | 256.656 | ***0.000 |
| Persuasion                        | 0.734          | 0.009           | 0.728              | 196.934 | ***0.000 |
| Economic learning                 |                |                 |                    |         |          |
| Employee professional development | 0.472          | -               | 0.466              | 482.48  | ***0.000 |
| Providing a visionary blueprint   | 0.551          | 0.079           | 0.543              | 269.09  | ***0.000 |
| Innovation.                       | 0.577          | 0.026           | 0.571              | 187.05  | ***0.000 |
| Knowledge                         | 0.587          | 0.01            | 0.583              | 146.14  | ***0.000 |
| System design                     | 0.590          | 0.003           | 0.587              | 120.09  | ***0.000 |

Source: statistical analysis of field research data \*\*\* P<0.001, N=364

From Table (5) we conclude the following:

The innovation variable was the most significant factor in explaining the variance in innovative economic ideas, accounting for 63.6% of the variance. This was followed by the knowledge variable at 2.3%, the employee professional development variable at 2.2%, and the persuasion variable at 1.8%.

The digital culture variable was the most significant factor in explaining the variance in activating economic time, accounting for 74.8 percent of the variance. This was closely followed by the provision of a visionary plan, which contributed 2.1% of the variance. The employees' professional development variable, which contributed 1.9% of the variance in activating economic time, was followed by the knowledge variable, which contributed 0.7%, and the leader variable, which contributed 0.5%. It is possible to explain 0.5% of the variance in economic time activation.

The digital culture variable was the most significant factor in explaining the variance in leadership behaviors, accounting for 62.9 percent of the variance. This was followed by the provision of a visionary plan, which contributed 6.3% of the variance. The employee professional development variable contributed 3.9% of the variance in leadership behaviors, while the persuasion variable contributed 0.9%.

The employee professional development variable played the most significant role in explaining the variance in economic learning, accounting for 47.2% of the variance. This was closely followed by the provision of a visionary plan, which contributed 7.9% of the variance. The variable of providing a visionary plan contributed 7.9% to the explanation of the variance in economic learning, while knowledge contributed 1%. Finally, the system design variable contributed 0.3% to the explanation of the variance in economic learning.

Table 6. Regression analysis related to the study's variables.

| variables                         | Beta  | T      | Sign     | Constant coefficient | F       | Sig.     |
|-----------------------------------|-------|--------|----------|----------------------|---------|----------|
| <b>Economic innovative ideas</b>  |       |        |          |                      |         |          |
| Innovation                        | 0.773 | 24.599 | ***0.000 | 0.604                | 160.126 | ***0.000 |
| Knowledge                         | 0.390 | 7.272  | ***0.000 |                      |         |          |
| Employee Professional development | 0.245 | 4.385  | ***0.000 |                      |         |          |
| Persuasion                        | 0.149 | 2.539  | **0.012  |                      |         |          |
| <b>Economic time activation</b>   |       |        |          |                      |         |          |
| Digital culture.                  | 0.969 | 34.015 | ***0.000 | 0.834                | 263.428 | ***0.000 |
| Providing a visionary blueprint   | 0.725 | 24.238 | ***0.000 |                      |         |          |
| Employee professional development | 0.586 | 18.513 | ***0.000 |                      |         |          |
| Knowledge                         | 0.475 | 12.321 | ***0.000 |                      |         |          |
| Empowering leader                 | 0.242 | 6.254  | ***0.000 |                      |         |          |
| <b>Leadership behaviors</b>       |       |        |          |                      |         |          |
| Digital culture.                  | 0.795 | 24.262 | ***0.000 | 1.341                | 196.934 | ***0.000 |
| Providing a visionary blueprint   | 0.339 | 12.727 | ***0.000 |                      |         |          |
| Employee professional development | 0.367 | 5.543  | ***0.000 |                      |         |          |
| Persuasion                        | 0.155 | 2.443  | **0.016  |                      |         |          |
| <b>Economic learning</b>          |       |        |          |                      |         |          |
| Employee professional development | 0.685 | 22.676 | ***0.000 | 0.838                | 120.09  | ***0.000 |
| Providing a visionary blueprint   | 0.243 | 6.969  | ***0.000 |                      |         |          |
| Innovation.                       | 0.172 | 3.754  | ***0.000 |                      |         |          |
| Knowledge                         | 0.125 | 3.654  | ***0.000 |                      |         |          |
| System design                     | 0.084 | 2.686  | ***0.000 |                      |         |          |

Source: statistical analysis of field research data \*\*\*P<0.001 \*\*P<0.01 \*P<0.05 N=364

It is evident from Table (6) that:

The parameter signals confirm the existence of a direct, positive, and statistically significant relationship between the dimensions of digital leadership and the economics of services. The results of

(T. value) indicate the importance of the model parameters, and the model significance factor (Sig. F) indicates the importance of these results at a significance level of (0.001).

## **5. Discussion**

This study developed a model to examine the relationship between digital leadership and service economics. The conceptual framework guided the development of the four hypotheses in this study, and subsequent testing yielded the following results:

In this study, H1 indicated that digital leadership has a statistically significant positive effect on innovative economic ideas in service ministries in Saudi Arabia. Moreover, this indicates that there is a strong relationship between employees' opinions on the following dimensions of digital leadership (innovation, knowledge, employee professional development, and persuasion) and their perceptions of innovative economic ideas (2023; Fang et al., 2019). Innovation, as a representation of digital leadership, effectively fosters economic innovation (Guo et al., 2022). We expect these results given the theoretical foundations and results of other empirical studies that examined the relationship between elements of digital leadership and innovative economic ideas. The study concludes that digital leadership plays a crucial role in fostering a climate that supports innovative economic ideas. By creating a suitable environment for work in service ministries in the Kingdom of Saudi Arabia, digital leaders can influence the creativity of innovative economic ideas.

The hypothesis (H2) of this study was also accepted, which indicates that digital leadership, represented by digital culture, providing a visionary plan, professional development for employees, and persuasion, enhances the activation of economic time in the context of service ministries in the Kingdom of Saudi Arabia. This finding is consistent with previous research that has shown the beneficial effect of digital leadership on economic time activation. This finding suggests that digital culture promotes an equal level of economic time activation and that those digital leaders who are digitally literate have a greater influence on their subordinates' perceptions of economic time activation. This research is consistent with several empirical studies that demonstrate a positive, statistically significant relationship between digital leadership and economic time activation (de Araujo et al., 2021).

After analyzing the data and discovering a significant positive relationship between digital leadership and leadership behaviors, we accepted the hypothesis (H3) of this study, suggesting digital leadership (digital culture) positively influences leadership behaviors. This study provides insight into enhancing leadership behaviors in service ministries in the Kingdom of Saudi Arabia by spreading digital culture in the ministries. This result is consistent with previous research (Zeike et al., 2019).

The hypothesis (H4) was accepted. The results showed that digital leadership has a positive and significant impact on the relationship between digital leadership and economic learning. The following provides an explanation for the mediation effect:

Digital leadership may lead to cognitive competence and thus help develop economic learning, which may enhance positive perceptions of economic learning. Digital leadership helps achieve economic learning, increase productivity, and create innovative business behavior. (Hung et al., 2023).

## **6. Contributions**

The study has theoretical, practical, and experimental importance, as it enhances the understanding of digital leadership and service economics. First: The current study is the first attempt to examine the relationship between digital leadership and service economics in service ministries in the Kingdom of Saudi Arabia. Second: Digital leaders in service ministries in the Kingdom of Saudi Arabia may be an important resource for their employees in promoting innovative economic ideas. In other words, digital leadership encourages high levels of economic creativity and is a means of generating innovative economic ideas. Third: This study explained the theory of digital leadership to clarify the role of digital leadership in service ministries in the Kingdom of Saudi Arabia. Furthermore, the results of the current

study on the effects of digital leadership have added to existing research on the feasibility of the theory as well as the stability of the instruments used in this study.

Fourth: Most studies on digital leadership are qualitative studies. However, this current study provides empirical analysis to examine the relationship between inclusive leadership and service economies in the Kingdom of Saudi Arabia. The empirical results of this study provide further evidence and support for the reliability and validity of the measurement instruments used, such as reliability is the internal consistency that explains the significant relationship between items or questions variables within a measurement instrument. Study results can demonstrate reliability by demonstrating high internal consistency, meaning that the items in the instrument consistently measure an identical construct. Furthermore, the construct validity used in the study demonstrates the positive and significant relationship; these experimental results provide evidence of the tool's ability to capture the intended concept. Fifth: In addition, the results of the study contributed to leadership selection and training initiatives that enhance the economics of services and linked them to digital leadership theory. These theories have never been used to find the theoretical basis for service economics.

Leaders in service ministries in Saudi Arabia can benefit from the practical and managerial contributions of this study. First, the results show that digital leadership is critical to enhancing service economies. As a result, leaders and ministries can benefit from leader selection and development programs to enhance their digital leadership capabilities. Second, this study shows leaders the sensitive nature of the digital leadership variable, which should motivate them to spread digital culture. In this sense, digital leaders need to encourage and enhance creativity at work. Sixth: Service ministries can support their service economies by restructuring their digitization processes and evaluating employees' capabilities in using digital tools. Seventh: Adopting digital leadership as a contribution to employee development because it may help people look positively at innovative economic ideas.

## **7. Conclusion and Recommendations**

This study investigated the impact of digital leadership dimensions on service economics dimensions in the context of service ministries in the Kingdom of Saudi Arabia. The findings indicate that digital leadership plays a crucial role in enhancing service economies, particularly through fostering a digital culture, encouraging innovation, and supporting employee professional development. Service ministries in Saudi Arabia should focus on developing these digital leadership dimensions to improve their service economies and meet the challenges of the digital era. However, the study has some limitations, such as the cross-sectional design and the focus on a specific context, which future research should address by employing longitudinal designs and investigating the relationship in other contexts. Despite these limitations, the study makes a valuable contribution to the literature by providing empirical evidence on the relationship between digital leadership and service economics and offers practical implications for service ministries in Saudi Arabia to enhance their service economies through effective digital leadership practices.

The results of the study indicate that when raising the levels of digital leadership in service ministries in the Kingdom of Saudi Arabia, digital leadership may need to focus on helping subordinates raise the level of innovative economic ideas. This study emphasized the importance of digital leadership and its elements. This study strongly recommends training programs on Digital leadership is broad. Training programs for leaders will enhance the capacity of digital leadership capacity that supports the advancement of professional integrity and progressive behavior in the workplace built on enhanced collaboration, diligence, and teamwork.

Promoting factors that strengthen the concept of digital leadership according to its basic elements in the workplace, educating service ministry employees on its importance and its impact on service economics, and developing digital leaders and their capabilities to achieve institutional excellence by encouraging, training, and proposing them in specialized courses.

This research suggests that Saudi Arabian service ministry executives establish explicit digital culture dissemination policies. The leader may create digitalization policies. We must properly communicate and reinforce these policies. Finally, Arab digital leadership research is still in its infancy, requiring additional investigation.

## **8. Limitations and Future Research**

This current study has paved the way for future studies that can expand the current conceptual framework to obtain more evidence that is empirical. This study is unique in nature but there are some limitations as a suggestion for future research related to the current model. First, the current study chose one leadership style such as digital leadership, but future studies could examine the role of the leader as comprehensive leadership, and the soft leader of inspirational leadership. Because it is important to see whether differences in different leadership styles have varying impacts on the economics of services. Secondly, the current study relies on service ministries, which is the service sector. Therefore, future research is recommended to apply the current study model to various service and industrial sectors to generalize the results, as the participants in this study are only from the service ministries sector, which is a service sector. Third, the latter study relies on a cross-sectional design, and future research recommends implementing longitudinal or experimental data collection designs, because longitudinal studies can provide insight into the long-term effects of digital leadership on service economics. Empirical studies can explore causal relationships and help create a stronger link between digital leadership and service economics. Fourth: This study is entirely in service sectors. Given some limitations in generalizability, future research is recommended to apply the study model to diverse service and industrial sectors. By broadening the context of the study, researchers can evaluate whether the findings hold true in a different organizational setting. Fifth: An interesting area for future research is to study digital leadership without examining its multiple characteristics. Sixth: The research conducted on service ministries in the Kingdom of Saudi Arabia showed that the leaders of these organizations are required to implement digital leadership rationally, which is one of the additional factors that determine the generality of the results of this study. The study revealed the need for digital leadership in the work of service ministries in the Kingdom of Saudi Arabia. This specific context may influence the generalizability of the findings. It is suggested that future research explores the rational implementation of digital leadership in other industries and contexts to determine the generalizability of the study findings.

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