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AN ANALYSIS OF HOW DIGITAL TRANSFORMATION AND ITS CAPABILITIES INFLUENCE SUSTAINABLE PERFORMANCE IN THE HEALTHCARE SECTOR

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ABSTRACT

The objective of the research is to investigate the manner in which the healthcare industry's sustainable performance is affected by digital transformation and its associated capabilities. A quantitative research methodology was used in the study. These elements—digital business strategies, smart technology, the internet of things, human and collaborative capabilities, and innovation capabilities—were determined by earlier research. 102 completed responses were obtained from the survey, which was created using validated items from earlier studies and distributed to participants via Google Forms. Overall, the study's results showed a good model. Furthermore, two of the six hypotheses received support. Furthermore, the results demonstrated that the internet of things, smart technology, and digital business strategies— none of the components of digital transformation had any impact on performance over the long term. Additionally, the results demonstrate that sustainable performance is influenced by human and collaborative capabilities, which are two components of digitally associated technologies.

Keywords: Digital Transformation - Internet of Thing - Digital-related Capabilities - Sustainable Performance

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1. Introduction

Digital transformation is acknowledged as a crucial trend that is shaping both societies and organizations (Wu et al. 2025). Digital transformation equipped organizations with tools to augment productivity and foster economic growth, while emphasizing continuous improvement through value-adding activities and sustainability, thereby facilitating a significant competitive advantage and enhancing business performance (Alathamneh and Al-Hawary 2023). The COVID-19 lockdown measures necessitated that companies cease operations from their physical premises, compelling a transition to online platforms and therefore, employees faced furloughs, terminations, or remote work arrangements, rendering IT an essential and vital component for any organization aiming to endure the pandemic (Ben-Zvi and Luftman 2022). Therefore, the urge to use evolving information technology for competitive advantage continues where digitalization has evolved into a worldwide phenomenon (Ben-Zvi and Luftman 2022). That said, if the company is not prepared to adapt, approximately 70% of DT initiatives fail to accomplish their intended objectives (Costa et al., 2022). This is a high percentage of failure considering the effort and cost that an organization may put in digital transformation. Thus, it is important that organizations have sustainable transformation that is reflected in their sustainable performance. As a multidisciplinary discipline, digital transformation encompasses a variety of functional areas, such as innovation and operations management of information systems, and marketing (Nasiri, 2021). Therefore, this research addresses the issue of sustainable transformation and performance from a management information system insight. Information systems research and practice may inadvertently endorse the use of technologies across various contexts, potentially leading to significant negative environmental consequences and therefore, by precisely analyzing the significance of IT in advancing sustainability, information systems field contributes to the development of environmentally sustainable economies and societies (Veit and Thatcher, 2023). Consequently, this research aims to investigate the influence that digital transformation

and the capabilities associated with it have regarding sustainable performance within the context of healthcare sector by answering the following research questions:

Q1: To what extent does digital transformation impact sustainable performance in the healthcare sector?

Q2: To what extent do digital-related capabilities impact sustainable performance in the healthcare sector?

While organizational performance is one of the most comprehensive management search phrases (Alathamneh and Al-Hawary, 2023), this study intends provide novel perspectives on whether digital transformation and its related capabilities have an impact on sustainable performance. Answering such questions may shed new light regarding the many facets of digital transformation and the influence it has regarding sustainable performance, especially in a sensitive sector such as healthcare. The paper is structured as follows. The next section addresses literature and hypothesis, followed by methodology section, result, discussions and conclusion.

2. Literature Review and Hypothesis

The topic of digital transformation continues to garner considerable attention from both scholars and practitioners, as the pursuit of sustainable societies stands as a crucial objective for various stakeholders engaged in different capacities (Pappas et al., 2023). The method in which businesses function, government's function, and people communicate or interact has been revolutionized because of digital transformation (Goel et al. 2024). It is abundantly evident that digital transformation is not an isolated move that is made for the purpose of updating certain activities of companies; rather, it is more of a process (Feroz et al. 2021). While it is true that technology is not inherently harmful, it is contended that consumption-based approaches to technology have caused harm to society by widening the digital divide, causing damage to the environment, and increasing the amount of energy consumed and toxic waste produced (Veit and Thatcher 2023). Thus, when it comes to digital transformation, responsible practices encompass the use of digital technologies and processes to generate shared value in a manner that takes into consideration the long-term effects on both people and the world (Pappas et al. 2023).

With the ongoing advancement of digital technologies, the sustainability of digital transformation has emerged as a critical concern for various stakeholders (Wu et al., 2025).

Transforming processes into digital formats necessitates the establishment and maintenance of information technologies that must be operational around the clock, every day of the week, throughout the entire year (Veit and Thatcher, 2023). Although these systems provide significant advantages for accelerating transactions, enhancing information management, and optimizing data transfer speeds, they also require considerable resources regarding power consumption, maintenance, and system updates (Veit and Thatcher, 2023). Businesses encounter the essential problem of aligning technical advancement with responsible environmental behaviours (Wu et al. 2025). The practice of DT requires one to navigate the complex interaction that exists between technical breakthroughs, concerns about the environment, ethical issues, and societal ramifications (Pappas et al. 2023).

One way for businesses to achieve sustainable performance is using intelligent technologies that enable rapid and adaptable responses to the constantly evolving environment (Nižetić et al., 2019; Weichhart et al., 2016; Nasiri, 2021). Indeed, the ongoing trends in the digitalization of sustainability present numerous opportunities for business organizations to develop innovative business models and enhance existing ones (Feroz et al., 2021). An organization aiming for optimal economic performance must fulfill the criteria of its environmental, social and economic performance (Costa et al., 2022). Environmental, economic, and social sustainability are the three fundamental pillars that create the essence of sustainability, specifically for sustainable performance as can be seen in table (Goel et al. 2024).

Table 1. The Pillars of Sustainability

Environmental Sustainability	Economic Sustainability	Social sustainability
Utilizing natural resources in a responsible manner to forestall their depletion and avoid causing damage to the environment, ensuring that it remains healthy over the long term, safeguarding ecosystems, preserving species, and reducing pollution and waste.	behaviors that stimulate innovation, efficient resource use, and equal distribution of wealth, the creation of economic systems that sustain long-term economic health is a priority.	understanding the significance of social fairness, the well-being of communities, and the preservation of cultural traditions, as well as making certain that all community have access to the fundamental resources, opportunities, and services that are required for a life that is both healthy and satisfying.

Thus, it can be said that for an organization that aims to achieve sustainable performance, it needs to consider the three pillars of sustainability as suggested by Rosário and Dias (2022). For instance, in the environmental sustainability pillar, digital transformation could mean that social media, big data analytics, Internet of Things (IoT), mobile devices, and artificial intelligence (AI) are technologies that being utilized to develop and execute sustainable solutions in areas such as pollution control, waste management, sustainable production, and sustainable urban development are examples of such applications. When it comes to the economic sustainability pillar, the latest digital technologies may significantly accelerate the transition to an environmentally friendly circular economy, a digital sharing economy, and improved infrastructure and industrial design. Finally, the social sustainability pillar, is an important pillar to ensure that there are multifaceted policy views that address the present digital gap and lessen the disparity in access, skills, and utilization of current digital technologies.

Therefore, organizations need to work toward these pillars to achieve a sustainable performance. Additionally, it is important that the upper management ought to perceive digital technologies not merely as tools for enhancement but as triggers of transformation that continuously generate impacts across the organization (Feroz et al., 2021). It is essential, in the context of information system research, to make certain that the practices of digital transformation take into account the best practices for the environment. This will guarantee that the transition does not have negative impacts. In fact, Veit and Thatcher (2023), showed that environmental sustainability has a possesses a strong foundation in the domain of information systems, as shown by the consistent rise of publications in leading journals formed by the results of an extensive examination of existing literature. Therefore, it can be a critical issue if digital transformation is developed while it does not navigate its interaction with sustainability. The next sub-sections address each of the research hypotheses in integration with literature.

2.1 Digital Transformation (DT)

DT presents a novel environment in which organizations are required to consistently adjust to emerging technologies, restructure business processes, and address evolving customer expectations (Billi and Bernardo, 2025). The integration of IT technologies facilitates organizational success through the optimization of resource utilization, cost reduction, enhancement of employee productivity and labor efficiency, improving of supply chains, and customer loyalty and satisfaction (Billi and Bernardo, 2025). Indeed, utilizing digital technologies enables organizations to seamlessly combine their goods and services through

geographical, organizational and functional boundaries (Billi and Bernardo, 2025). Thus, this allows organizations to achieve sustainable performance. The next subsections illustrate various aspects of DT and how it could lead to organizations performance.

2.1.1 Smart Technologies (ST)

Smart technologies are characterized by a collection of attributes integrated into physical objects or business processes that complement digital technology, hence enhancing the intelligence of these organizations. Artificial intelligence, data analytics, and the Internet of Things (IoT), are examples of smart technologies and strategic assets that have the potential to bestow a competitive advantage and generate financial success (Zhuo and Chen, 2023; Ullah et al., 2023). Indeed, by facilitating the collection of information and large amounts of data from both internal and external sources, the utilization of information and communication technologies (ICTs) such as big data contributes to the enhancement of innovation processes within and between organizations, thereby contributing to an overall improvement in innovation performance (Billi and Bernardo, 2025). Thus, for sustainable and successful performance, organizations must use such technologies to adapt rapidly and flexibly to the evolving environment (Nižetić et al., 2019).

H1: Smart technologies are positively associated with sustainable performance.

2.1.2 Internet of Thing (IoT)

The objects that integrate information and communication without human intervention are known as IoT (Costa et al., 2022). IoT technology facilitates the connection of devices to the Internet via utilization of sensors, actuators, and software, thereby enabling the collection and exchange of data by these objects (Badwy, 2024). The advancement of IoT has revolutionized ordinary things, turning them into smart objects that interact seamlessly with each other and their surroundings (Truong, 2022). Indeed, employees may now remotely operate actual machinery, buildings, equipment, and other items using IoT technology enabling them to gather and share data (Alathamneh and Al-Hawary, 2023). Big data analytics, IoT, and AI, for example, may be used to identify sustainability-related possibilities in solid waste management that lead organizations to modify their business models (Rosário and Dias, 2022). Thus, the emergence of the IoTs proven to be a significant and influential factor in both the realm of software and society

H2: The Internet of Things (IoT) is positively associated with sustainable performance.

2.1.3 Digital Business Strategies

Digital Transformation has emerged as a primary area of interest for organizations management and researchers, driving the exploration and implementation of disruptive

strategies (Billi and Bernardo, 2025). Digital transformation encompasses the implementation of new technologies; however, it extends beyond this aspect as it fundamentally reshapes the business model with the objective of generating value for both the customer and the organization (Costa et al., 2022). Thus, it is encouraged that firms formulate intended strategies for a gradual and sustainable implementation of these technologies (Billi and Bernardo, 2025). For the purpose of improving economic sustainability performance, a digital business strategy may be implemented by digitizing conventional industrial activities and implementing a completely automated business process (Chae and Park, 2018). For long-term sustainability, organizations need to strategically manage their internal resources during digital transformation, ensuring that investments in digital technologies do not overshadow other important initiatives (Wu et al., 2025). Thus, a digital business strategy will improve a organizations' strategic flexibility while offering better sustainability performance for businesses which will be accomplished via the use of digital tools and digital solutions at the operational level. (Benitez et al., 2018; Ukko et al., 2019).

H3: Digital business strategies are positively associated with sustainable performance.

2.2 Digital Related-Capabilities (DRC)

As was already said, digital transformation takes into account a variety of organizational factors and is not only about technology. In fact, numerous academics (Berman, 2012; Büyüközkan and Göçer, 2018; Hess et al., 2016; Vial, 2019; Nasiri, 2021) have emphasized the critical roles that human, collaborative, and innovative capacities play in digital transformation which are all represents digital-related capabilities (Nasiri, 2021). Gaining a variety of digital-related capabilities is essential to successfully tackling the opportunities and difficulties presented by digitalization (Sia et al., 2016; Ullah et al., 2023). Three digital capabilities shall to be discussed in the following sub-sections, along with how those capabilities might influence the performance of an organization.

2.2.1 Collaboration Capabilities (CC)

According to Lee et al. (2012), in light of the fact that business management cannot be accomplished only by an organization, cooperation is considered to be an extremely significant organizational competence. The ongoing development of innovative technologies influences the way organizations conduct their operations, generate new business prospects, and engage in collaborative efforts across industries. The strategic reactions of organizations to the upheaval brought about by digital technologies are transforming the priorities of business leaders (Feroz et al., 2021). Büyüközkan and Göçer, 2018; Vial, 2019; Nasiri, 2021 illustrate

that it is possible to demonstrate that the performance of an organization in terms of efficiency may be maintained with the implementation of digital transformation through the use of collaborative capabilities. To provide one example, cooperation between stakeholders and consumers via digital channels has the chance to create a business more profitable by gaining more customers that are involved (Setia et al. 2013; Nasiri, 2021), and therefore, enhance the company's sustainable performance.

H4: There is a positive relationship between collaboration capabilities and sustainable performance

2.2.2 Human Capabilities (HCs)

The presence of human capabilities (HCs) becomes essential in improving an organization's performance through digitalization, which at first seeks modernizing and enhancing traditional work practices and ultimately alter the workplace for employees (Ullah et al., 2023). As an example, HCs have the potential to contribute and accelerate up the decision-making process through employees' support, readiness, and advanced digital abilities (Bharadwaj et al., 2013; Hess et al., 2016; Nasiri, 2021). Additionally, the employees who have had sufficient training in how to utilize digital tools may easily assist individuals work from home 'remotely' (Pramanik et al., 2019; Nasiri, 2021). However, the level of resilience and, consequently, ability to adapt to emerging trends and the utilization of more advanced technologies necessitate ongoing training and regular updates to the skills and expertise of all organizations' stakeholders including employees (Billi and Bernardo, 2025). Consequently, digital-related human capabilities include workers' competencies and capabilities to effectively adapt to and use heightened digitalization (Ullah et al., 2023).

H5: Human capabilities are positively linked to sustainable performance.

2.2.3 Innovation Capabilities (ICs)

DT fosters new sorts of innovation that go outside the conventional borders of industry sectors, incorporate non-digital with digital assets, and instead of emphasizing on conventional industrial sectors, concentrate on ecosystems, communities, and networks (Masoud and Basahel, 2023). Indeed, businesses can improve their operational processes, better their decision-making mechanisms, and produce novel goods and services when they make effective use of innovative technology which in turn leads to increased productivity, cost efficiency, and revenue growth (Ullah et al., 2023). For example, the healthcare industry is experiencing one such digital breakthrough, thanks to internet-based technology, consumers may now rapidly access a wide range of health services and engage within foreign experts, health groups and entities from all over the world (Ben-Zvi and Luftman, 2022).

H6: Innovation capabilities are positively associated with sustainable performance.

2.3 Sustainable Performance (SP)

As organizations embrace digital transformation strategies, it is essential to also integrate sustainability procedures to adapt operating models and generate significant impacts (Feroz et al., 2021). It is anticipated that the total worldwide IoT device count will rise substantially by 2030, reaching over 32.1 billion, up from 15.9 billion in 2023 (Goel et al. 2024). Indeed, digital technologies are being utilized more and more to enhance sustainability where organizations are currently launching innovative products and platforms that leverage digital technologies aimed at enhancing the sustainability (Feroz et al., 2021). From an ecological perspective, it will be feasible to achieve a more efficient distribution of resources (Šimberová et al., 2022).

That said, the creation, use, and disposal of digital products affect the environment in various ways and possess pressure on ecological systems (Truong, 2022). This fast growth will mainly result in a rise in the demand for energy, which will exacerbate problems associated with carbon emissions and dependency on fossil fuels, but it will also lead to a significant rise in the generation of electronic waste (Goel et al. 2024). Indeed, Truong (2022) illustrate that the direct consequences associated with digital transformation may cause pollution, greenhouse gas emissions, water shortages, and the loss of resources, which puts a lot of strain on biodiversity. This means more electronic trash, a significant increase in carbon emissions from digital activities, high water consumption in the digital industry, extensive raw material extraction, and data centers and blockchain technologies power consumptions are all consequences of the rapid expansion of digital technology in which the impact of organizations' sustainable performance is affected (Goel et al., 2024).

In light of this, it is imperative that these difficulties be addressed in order to guarantee that the digital transition will positively contribute to sustainability rather than exacerbate the environmental crises that are already present (Goel et al. 2024). As discussed in section 2 that technologies such as big data analytics, IoT, and AI can be used to improve the sustainability of business activities by lowering carbon emissions and waste (Rosário and Dias, 2022). A more sustainable circular economy (CE), which is a commercial production and consumption model that include sharing, renting, reusing, refurbishing, repairing, and recycling resources and goods for the longest feasible duration, may be accelerated by the digital shift (Rosário and Dias, 2022). Meaning that technology itself with better integration and monitoring could

positively impact on the overall sustainability of digital transformation and therefore the overall sustainable performance.

3. Research Methodology

To achieve the objectives of this study, a quantitative research methodology was employed to examine the variables related to digital transformation and its associated capabilities that have a significant effect on sustainable performance. The next sub-sections discuss different aspects of this research's methodology.

3.1 Research Model

The identified constructs of digital transformation, digital related-technologies, and environmental sustainability performance were applied in this study. These constructs were developed in prior research (Alathamneh and Al-Hawary, 2023; Billi and Bernardo, 2025; Ionescu and Sarbu, 2024; Masoud and Basahel, 2023; Ullah et al., 2023) (shown in Figure 1). In the process of digital transformation, the most important variables that have been identified are digital business strategies, smart technology, and the internet of things. Collaboration capabilities, human capabilities, and innovation skills have been highlighted as the primary aspects that are considered to be associated with digital technology.

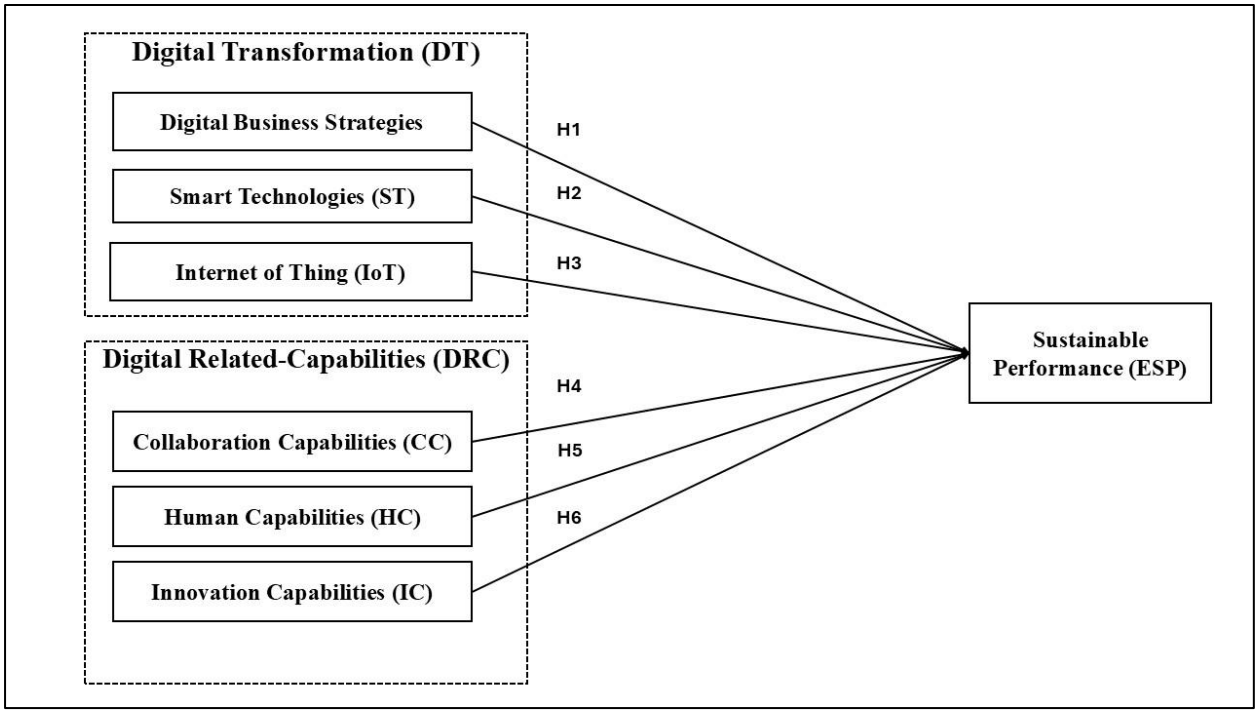

Fig. 1: Research Model

3.2 Survey Instrument

On the basis of verified items derived from previous research (Alathamneh and Al-Hawary, 2023; Billi and Bernardo, 2025; Ionescu and Sarbu, 2024; Masoud and Basahel, 2023; Ullah et al., 2023), the survey instrument was developed. The items were modified so that they were appropriate for the setting of this research, but the original meanings were not altered in any way. Specifically, the survey instrument is broken up into four sections: digital transformation, digital associated technologies, environmental sustainability performance, and demographics of the participants. During the research, a Likert scale with seven points was used. An expert team had been called to enhance the validity of the survey questionnaire despite the fact that verified items from previous research were included with the survey. For each and every item on the survey instrument, the experts were requested to submit their input. For the purpose of determining the reliability of the survey instrument, the Cronbach's Alpha coefficient served as a benchmark.

3.3 Sampling and Data Collection

In order to collect data for this research, Saudi healthcare institutions sent invitations to their staff members. For the purpose of data collection, Google Forms was used as an online service of the instrument. This approach is thought to have a higher probability of producing a sufficient number of replies that are unique and of preventing respondents from responding more than once. Through the use of Google Forms, the researcher distributed the questionnaire to the participants, and 102 responses were obtained. For the purpose of identifying missing data, biased replies, and outliers, the research used a variety of different metrics. As a result, two of the respondents were eliminated, leaving one hundred of the respondents to carry out the analysis.

Table 2: *Demographics Statistics* (N = 100)

Item	Frequency	Percentage (%)
Gender		
Male	72	%72
Female	27	%27
Age		
Under 20	0	0
20 – 30	14	%14
31 – 40	31	%31
41 – 50	51	%51
Older than 50	4	%4

Qualification		
High School or less	2	%2
Diploma	33	%33
Bachelor	49	%49
Master	10	%10
Doctorate	6	%6
Position		
Doctor	14	%14
CEO	0	0
Manager	12	%12
Supervisor	13	%13
Employee	61	%61

3.4 Data Analysis

SmartPLS 4.0 was used to analyze the data. A partial least square method is well-suited for the computation of latent variables. The bootstrapping procedure was performed using a sample size of 5000, as recommended by Hair et al. (2016). To confirm the validity of the overall structural model and to assess the measurement reliability of the latent constructs, confirmatory factor analysis (CFA) was conducted. Reliability of each construct was evaluated through Cronbach's alpha, while composite reliability was used to examine internal consistency. To assess convergent validity, the average variance extracted (AVE) was calculated, and discriminant validity was tested using the Fornell-Larcker criterion.

4. Results

4.1. The Measurement Model

The overall model's validity and the reliability of latent variable measurements were examined through confirmatory factor analysis (CFA).To ascertain the degree of reliability linked to each construct, this study used Cronbach's alpha (CA) as a standard comparison. Based on DeVellis (2016), a CA that is more than 0.7 is considered acceptable. For the purpose of this investigation, the Cronbach's alphas for DBS, ST, IoT, CC, IC, and ESP were 0.918, 0.878, 0.923, 0.892, 0.912, 0.934, and 0.927, respectively. These values indicate that all constructions have a high degree of reliability (Table 2). In addition, composite reliability (CR) was used in order to assess the internal reliability of the constructs. The results demonstrated that the DBS, ST, IoT, CC, IC, and HC and ESP constructions are all higher above the threshold of 0.70, as shown in Table 3.

Table 3: *A confirmatory Factor Analysis Results* (N = 100)

Variables	Number of Items	Cronbach's Alpha	R^2	Composite Reliability	Average Variance Extracted (AVE)
DBS	3	0.918		0.919	0.791
ST	6	0.878		0.884	0.540
IoT	5	0.923		0.930	0.701
CC	3	0.892		0.894	0.732
IC	3	0.912		0.912	0.775
HC	3	0.934		0.940	0.826
ESP	5	0.927	0.687	0.929	0.716

A calculation known as the average variance extracted (AVE) was carried out with the aim to assess the convergent validity of the data (Hair et al., 2016). Every variable had AVE ratings that were significantly higher than 0.50. The assessment of discriminant validity followed the approach proposed by Fornell and Larcker (1981), table 4 demonstrates that the findings suggested that the discriminant validity was fulfilled.

Table 4: *Discriminant Validity Results* **(**Fornell-Larcker criterion) (N = 100)

Variables	CC	DBS	ESP	HC	IC	IoT	ST
CC	0.800						
DBS	0.800						
ESP	0.735	0.680					
HC	0.775	0.831	0.789				
IC	0.803	0.724	0.664	0.786			
IoT	0.588	0.582	0.402	0.586	0.782		
ST	0.592	0.617	0.453	0.622	0.739	0.821	

4.2. The Model Estimation

In this study, R2, the structural model's standard deviation, shows the exogenous latent constructs' combined effects (DBS, ST, IoT, CC, IC, and HC) on the endogenous latent construct (ESP). Table 3 illustrates that the R2 value for ESP is 0.687, which exceeds the acceptable threshold of 0.25, thereby indicating model suitability (Hair et al., 2016). The path coefficient is used to measure how the constructs in the structural model are related to each other (Hair et al., 2016). The results indicate two pathways exhibiting notable relationships (CC

-> ESP and HC -> ESP), alongside four pathways that do not demonstrate significant relationships (see Table 5).

Table 5: *Hypothesis Test* (N =100)

The paths in the model	path coefficient	Standard Deviation (STDEV)	P Values	Significance level
CC-> ESP	0.277	0.111	0.013	**
DBS -> ESP	0.038	0.114	0.727	NS
HC -> ESP	0.500	0.146	0.001	***
IC -> ESP	0.152	0.119	0.204	NS
IoT -> ESP	0.166	0.131	0.210	NS
ST -> ESP	0.012	0.148	0.914	NS

p < 0.05, **p < 0.01, ***p < 0.001. NS is not significant.

The hypothesis' significance level is verified using the p-value. Rejecting the hypothesis is strongly indicated by a small-scale p-value (≤ 0.05), suggesting that the hypothesis is substantiated. Consequently, the p-values for two paths fell below 0.05, indicating that H4 and H5 are validated.

5. Discussion and Implications

This research attempts to analyze the influence that digital transformation and the skills that are associated with it have on sustainable performance within the framework of the healthcare industry. According to Nasiri (2021), digital transformation is a multidisciplinary field that spans a wide range of functional areas. These functional areas include innovation and operations management of information systems, and marketing. To fill the existing research gap, this study focuses on sustainable performance and transformation as viewed through management information systems, offering a detailed analysis of the elements that affect sustainable performance. These factors include digital business strategies, smart technology, the internet of things, collaboration skills, human capabilities, and innovation capabilities. The results of this investigation showed that the model was, on the whole, satisfactory. In addition, there was support for two of the six hypotheses, which is a further area of interest in such a study.

With the purpose of providing an answer to the first question, we conducted an analysis of the influence that digital transformation has on sustainable performance by using the following elements: digital business strategies, smart technology, and the internet of things. In the context of the healthcare industry, the results suggest that these criteria do not have any influence on the performance and sustainability of the organization. Consequently, this indicates that the use of digital transformation technologies does not have an impact on the sustainable performance of healthcare organizations. In contrast to the findings of previous research (Alathamneh and Al-Hawary, 2023; Ullah et al., 2023; Zhuo and Chen, 2023), this conclusion is not entirely consistent. It is likely that the participants are unable to recognize the potential and effect of these technologies since they have just recently been implemented in the healthcare industry. In order to gain a more comprehensive understanding of the long-term effects of these technologies, it may be beneficial to consider conducting longitudinal research in the future.

In addressing the second question, we evaluated the influence of digital technologies on sustainable performance through the following factors: collaboration capabilities, human capabilities, and innovation capabilities. The results demonstrate that two factors positively influence sustainable performance within the healthcare sector. The findings indicate that collaboration capabilities positively influence sustainable performance, consistent with previous studies (Feroz et al., 2021; Nasiri, 2021). The results indicate that human capabilities positively influence sustainable performance, aligning with previous studies (Billi and Bernardo, 2025; Nasiri, 2021; Ullah et al., 2023).

The findings indicate that the sustainable performance of healthcare organizations is primarily influenced by digital technologies. These findings will assist healthcare organizations in implementing digital technologies as primary tools for enhancing performance. Digital transformation factors do not influence sustainable performance, yielding results that contradict previous research. Therefore, it is essential to consider future research.

6. Limitations and Future Research

A number of limitations have been recognized, particularly concerning the formulation of various factors to examine their effect on sustainable performance. This study considers various factors; however, the impact of additional factors may yield different outcomes. Thus, future research should be considered including other factors that could influence the switching

intention such as big data. This research consisted of cross-sectional studies. Longitudinal investigations are recommended in future research to provide a clearer understanding of how these technologies influence outcomes over time. The study population was limited to employees within Saudi healthcare organizations, irrespective of their skills and knowledge regarding these new technologies. Future research should explore the collection of diverse data types related to various fields of study and technical skills, enabling more comprehensive explanations. To strengthen the external validity of the results, future research is encouraged to conduct comparative analyses across various national contexts.

7. Conclusions

In the healthcare sector, the study focuses on analyzing the influence of digital transformation and its supporting competencies on sustainable performance. This study's results indicated that the model in question is, on the whole, satisfactory. Furthermore, out of the six hypotheses, only two of them can be substantiated. The results also shown that the variables of digital transformation, which include digital business strategies, smart technology, and the internet of things, do not have any influence on the performance of the organization in a sustainable manner. Additionally, the results indicate that two aspects of digitally associated technologies have an effect on sustainable performance. These aspects include human capacities and the capabilities of digital technologies involved in cooperation.

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