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# Digital transformation impact on business decision-making

Rayan Hamad Alkhaldi *

*Saudi Aramco AMIRAL Program, Dhahran, Saudi Arabia.*

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## Abstract

The objective of this study was to assess the different ways in which digital transformation tends to affect business decision-making processes. To accomplish this objective, a mixed research design was used in this study. Accordingly, both quantitative and qualitative methods were used, in the form of secondary research and pilot testing. The findings obtained from the study revealed that companies continue to face challenges related to their need to integrate digital transformation and sustain in the incessantly changing business environment.

**Keywords:** Digital transformation; Business performance; Strategic decision-making; Data analytics; Artificial intelligence; Big data analytics

## 1. Introduction

Digital transformation has evolved as one of the most prominent technological innovations of the modern era, which is being used extensively as a multifaceted and strategic process that booms with the integration of digital technology in almost every sphere of business practices (Rêgo et al., 2022; Kraus et al., 2021). Subsequently, digital transformation has not only changed the processes of business operations and intends to deliver higher customer value but has also led to massive cultural changes, demanding organisations to incessantly challenge the present circumstances, force experimentations, and become more acquainted with failures (Nadkarni and Prügl, 2020). Its continuously changing nature has also made digital transformation a crucial component of the decision-making processes used by modern businesses by having an undeniable impact on the societal, institutional, and environmental implications (Egodawele, Sedera and Bui, 2022; Nadkarni and Prügl, 2020). It can therefore be argued that digital transformation has a role beyond leading technological shifts, which requires a holistic approach to building organisational agility and creating a long-lasting positive societal impact.

From a general perspective, decision-making in businesses is a necessary function, which offers clarity regarding the strategic direction that the organisation is taking to accomplish its determined goals while ensuring efficiency in managing resources and enhancing time as well as cost-effectiveness in the process. Building accountability, mitigating risks, and promoting continuous learning and improvements within the organisational culture are some of the fundamental roles of decision-making in businesses. When viewed under the influence of digital transformations, businesses today largely benefit from the data-driven culture, whereby the integration of technology has promoted more informed and timely decisions (Gong, Parisot and Reis, 2024; Omol, 2023; Moore, 2022; Harvard Business Review Analytic Services, 2016). The outcome is increased agility and responsiveness, improved collaboration and customer centricity, and a stronger, more sustainable competitive edge.

* Corresponding author: Rayan Hamad Alkhaldi

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*Objectives*

- To assess, using case studies, the impacts of digital transformation on the strategic decision-making processes in modern businesses
- To examine the effects of big data analytics (as one of the most prominent new technologies) on business practices, using the survey tool
- To conduct a comprehensive literature review to explore the changes occurring within organisational structure and cultural dynamics to facilitate better decision-making propelled by digital transformation

*Thesis statement*

Digital transformation is reshaping the landscape of business decision-making by enhancing data-driven strategies, fostering agile methodologies, and promoting a culture of continuous innovation, which collectively contribute to the competitive advantage and long-term sustainability of organizations in the modern economy.

## 2. Methodology

This study focuses on the mixed research approach, integrating qualitative as well as quantitative data analysis tools. As can be observed from the previous section, this study aims to accomplish three objectives, each following a different methodological approach. The first objective considered for this study is to assess the range of digital transformation-driven impacts on the strategic decision-making processes used by modern businesses. To accomplish this objective, the case study method has been used, which comprised one success story and one incidence where the company failed to extract the positive impacts of digital transformation to optimise its strategic decision-making process. Data to construct these case studies were obtained from a range of secondary sources, such as news articles, company reports, and industry reports with academic credibility. The factors that led to the success and failure of the selected businesses for the case studies were subsequently assessed using the track Key Performance Indicators (KPIs), i.e., time-to-market, customer satisfaction score, employee engagement, and revenue growth.

Correspondingly, the second objective of this study is focused on assessing the impacts of big data analytics on business decision-making in the current era. Theoretically, big data analytics can be defined as "*the systematic processing and analysis of large amounts of data and complex data sets, known as big data, to extract valuable insights*" (IBM, 2024). The quantitative measures used for this objective included the multiple regression model. Stating precisely, the data for this objective was collected using a pilot survey with 37 non-randomly selected low-level managers from different Future 50 companies. A purposive sampling technique was used where only those with at least 3 years of experience in the organisation and at least 5 years of experience in the industry. To be noted in this regard, 50 managers were invited formally to participate in the pilot survey, out of which, 37 offered their consent and provided completed self-administered questionnaires. The hypothesis to be tested using this measure is listed hereunder.

H0: *Big Data Analytics Capabilities (BDACs) do not have a positive impact on Business Process Efficiency (BPE) and Organisational Innovation (OI), with data-driven decision-making (DDDM) and the levels of Technological Readiness (TR) acting as the mediators* (i.e., $\beta_{BDACs \rightarrow DDDM}.\beta_{DDDM \rightarrow BPE} = 0$ and $\beta_{BDACs \rightarrow TR}.\beta_{TR \rightarrow OI} = 0$) [p-value ≥ 0.05]

H1: *Big Data Analytics Capabilities (BDACs) have a positive impact on Business Process Efficiency (BPE) and Organisational Innovation (OI), with data-driven decision-making (DDDM) and the levels of Technological Readiness (TR) acting as the mediators* (i.e., $\beta_{BDACs \rightarrow DDDM}.\beta_{DDDM \rightarrow BPE} = 0$ and $\beta_{BDACs \rightarrow TR}.\beta_{TR \rightarrow OI} \neq 0$) [p-value ≤ 0.05]

The third objective focuses on the exploration of changes occurring within the organisational structure and cultural dynamics to facilitate better decision-making propelled by digital transformation, which was accomplished based on the comprehensive literature review method. Contextually, only literature published through scholarly journals as peer-reviewed research articles was included for the objective. Another key inclusion/exclusion criterion used in the process of selecting the relevant literature was the timeline of its publication, which was limited to the timeframe between 2019 and 2024 (i.e., 5 years tenure). Considering that digital transformation is rapidly changing the organisational decision-making process, ensuring the relevance of the qualitative data sources was imperative. It was thus that these inclusion/exclusion criteria were used to accomplish the third objective of this study.

## 3. Case Studies of Digital Transformation

### 3.1. IKEA's Successful Digital Transformation

IKEA's approach to digital transformation, with the integration of AI, serves as an interesting example of how a traditional retail brand can evolve in the digital era while staying true to its core values.

#### *3.1.1. Strategic Leadership*

Three years ago, IKEA Retail (Ingka Group) began a digital transformation journey. Barbara Martin Coppola, a seasoned professional with experience at Google, Samsung, and Texas Instruments, was tasked with leading this endeavour (Stackpole, 2021). The objective was to maintain the essence of the company while revolutionizing nearly every aspect of operations, with a focus on managing customer data and preserving IKEA's culture amidst the changes (Stackpole, 2021). For instance, the adaptation of AI for its decision-making processes has allowed IKEA to radically enhance its ability to access high-quality datasets, critical for its competencies in understanding its customers and personalising its marketing efforts (Woo, 2022).

#### *3.1.2. E-Commerce and Operational Efficiency*

In response to the increasing demand for online shopping, IKEA has been fully committed to a comprehensive digital transformation since 2018 (The Agility Effect, 2022). This involved substantial investments in cloud computing and a shift towards e-commerce to enhance efficiency and adaptability. The COVID-19 pandemic further accelerated this process, compelling IKEA to intensify its digital initiatives (The Agility Effect, 2022).

#### *3.1.3. Technology Integration*

In 2021, IKEA made the significant decision to discontinue its renowned print catalogue, marking a symbolic shift towards digitalization. The company focused its efforts on digital platforms and technologies, including the acquisition of Geomagical Labs, a provider of 3D imaging and augmented reality solutions aimed at enhancing the online customer experience (The Agility Effect, 2022). Illustratively, through technology integration, IKEA has boasted the use of augmented reality (AR) and virtual reality (VR) to improve its effectiveness in its digital marketing (Woo, 2022).

#### *3.1.4. Operational Changes*

IKEA successfully launched its first e-commerce mobile app within six months, which resulted in a complete overhaul of its digital touchpoints, including the website, internal tools, and physical stores (Work&Co., 2024; Harper, 2023). This transformation led to improved efficiency, more engaging customer experiences, and increased revenue (Hagberg and Jonsson, 2022).

This transformation underscores IKEA's capacity to innovate and adapt, ensuring its continued leadership in the retail sector while effectively addressing the changing needs of its customers. The case study reflects a strategic integration of technological advancements and a dedication to enhancing the customer experience, positioning IKEA for ongoing success in the digital era. A visual representation of IKEA's digital transformation has been provided in Figure 1 below.

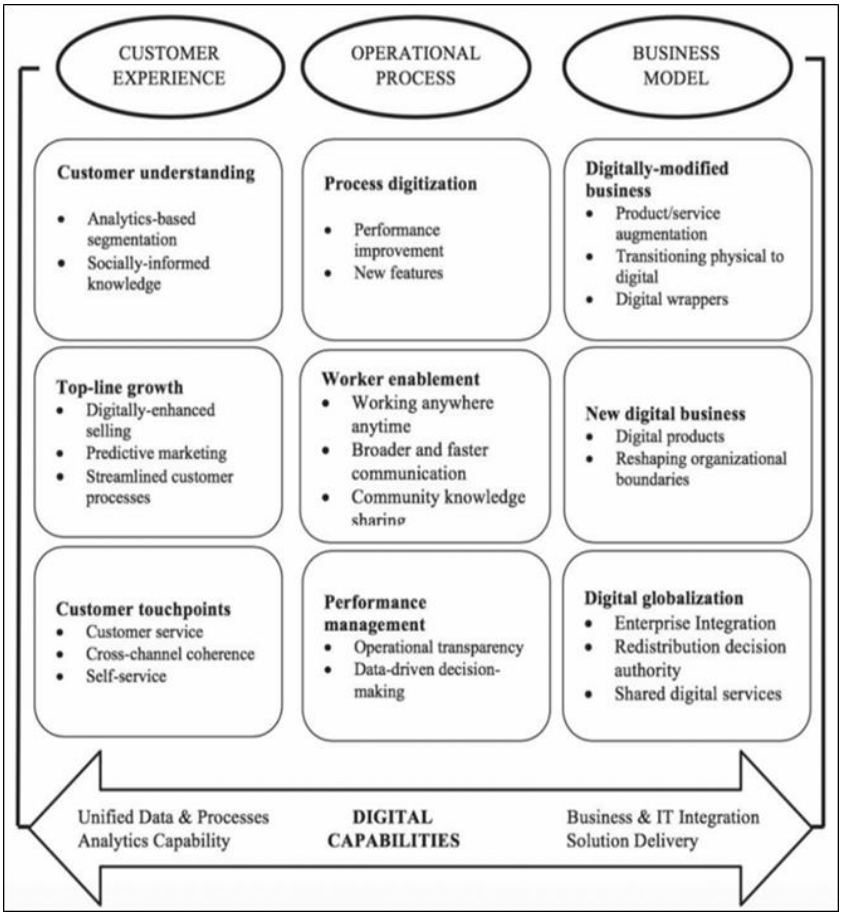


**Figure 1** IKEA's digital transformation (Woo, 2022)

### 3.2. General Electric (GE)'s Failure to Integrate Digital Transformation

In 2008, then-CEO Jeff Immelt led General Electric (GE) in an ambitious plan to transition from a traditional industrial powerhouse to a leader in Industry 4.0 by implementing the Industrial Internet of Things (IIoT) (Girod and Duke, 2019). This venture into digital transformation serves as a cautionary tale about the challenges involved in modernizing legacy industrial companies for the digital age. GE's initiatives included FastWorks, a lean methodology integrating design thinking and an agile-lite approach to product development, the establishment of GE Digital, a new division in San Ramon focused on analytics and the Predix platform, and the creation of Digital Foundries, facilities aimed at aiding GE customers through their digital transformations. The company invested over $4 billion into these strategic endeavours (Girod and Duke, 2019).

However, the transformation encountered significant challenges. For example, GE's decision to establish a dedicated digital division instead of integrating digital capabilities into existing verticals from the outset. There was resistance to change and a need for new skill sets within the company (Austin and Pelow, 2019). Recruitment and compensation practices were also not in line with the digital strategy. Communication issues were prevalent as well (Austin and Pelow, 2019). As a result of falling stock values (refer to Figure 2 below) and perceived past misjudgements, Immelt retired earlier than planned and was succeeded by John Flannery, who continued to support GE Digital but refocused on industrial verticals (Girod and Duke, 2019). Flannery's tenure was short-lived, and he was then replaced by Larry Culp, an outsider to GE. In 2019, GE announced that GE Digital would operate as a separate entity, although it would still be wholly owned by GE (Girod and Duke, 2019). This move indicated a departure from the initial vision of a fully integrated digital-industrial company.

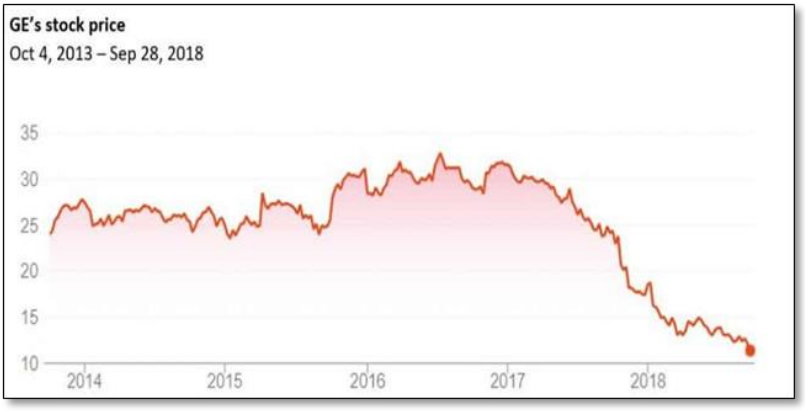


**Figure 2** Stock price changes throughout GE's digital transformation initiative until it was abandoned in 2018 (Mittal and Mundra, 2018)

An insight into GE's failure also reveals problems with its top-line and bottom-line performances, as well as the company's portfolio orientation, indicating a decline in the company's success trajectory, as has been illustrated in the figures below.

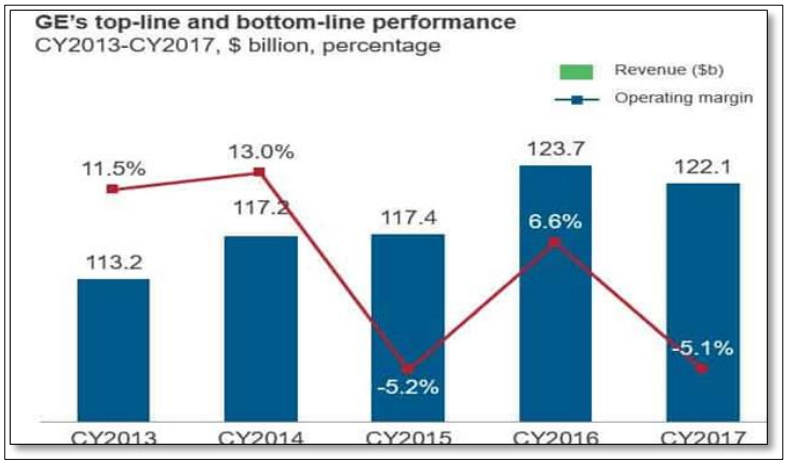


**Figure 3** GE's top-line and bottom-line performance (Mittal and Mundra, 2018)

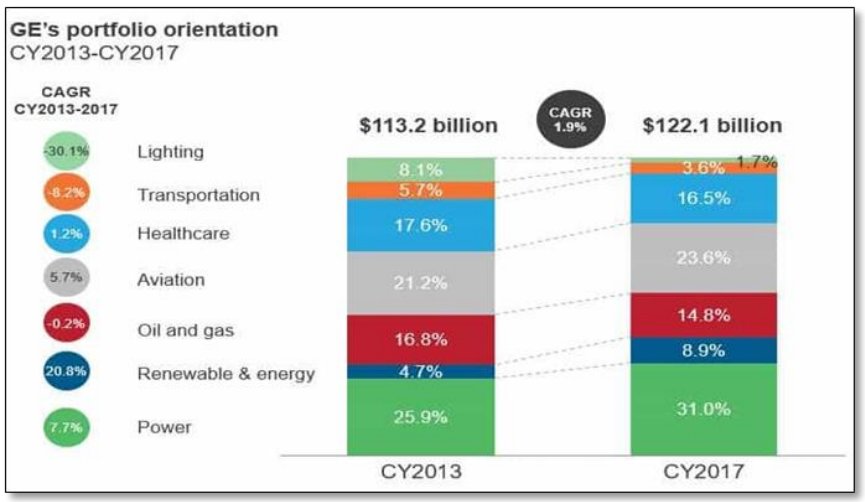


**Figure 4** GE's portfolio orientation changes following its digital transformation initiatives (Mittal and Mundra, 2018)

The case of GE reveals that creating a digital strategy mapped to the business whole, a shift in culture and communication aligned with the transformation program, are necessary elements of the transformation. The finding thus exhibits the significance of strong leadership and adaptability to transform a large established company in a changing technological landscape.

## 4. Pilot testing of new technologies (big data analytics)

Big data analytics is emerging as an essential element in the decision-making process of an organisation, as it offers valuable insights into the business environment, unattainable through the conventional means of data collection and assessment (Duan, Edwards and Dwivedi, 2019). For example, the utilisation of machine learning (ML) technologies within big data analytics to process large datasets, infer patterns and identify relationships between and among data, besides also explaining the relevant strategic consequences (Schmitt, 2023; Duan, Edwards and Dwivedi, 2019). Businesses can analyse these models to further refine and optimise their development processes, propelling growth and increasing productivity (Chatterjee et al. 2023). Predictive modelling can thus be referred to as a key component of future predictions, using AI and statistical algorithms for big data analytics (Schmitt, 2033). Contextually, statistics provides a broad set of tools for analysing data, which has evolved as a key competitive method for businesses (Schmitt, 2023). Illustratively, the use of the what-if analysis simulates different situations to foresee probable outcomes and optimises accuracy in proactive decisions taken by the organisation (Gathani et al., 2022; Chen, Preston, & Swink, 2021). Stating precisely, big data analytics facilitates accurate decision-making, reduces uncertainty and drives the organization to make decisions that are based on the facts, which help in mitigating risks and also makes optimal use of opportunities which are emerging in the marketplace.

Based on this understanding, the hypotheses (i.e. *Big Data Analytics Capabilities (BDACs) do not have a positive impact on Business Process Efficiency (BPE) and Organisational Innovation (OI), with data-driven decision-making (DDDM) and the levels of Technological Readiness (TR) acting as the mediators*) was developed, which was then tested using the multiple regression model. From the obtained model summary, the R-value was 0.776, the R Square value was 0.602, and the adjusted R Square value was 0.377. Based on these outcomes, it can be affirmed that the correlation between the independent variables and the dependent variable is strong.

**Table 1** Multiple regression model summary for the hypothesis - $\beta_{BDACs \rightarrow DDDM}.\beta_{DDDM \rightarrow BPE} = 0$ and $\beta_{BDACs \rightarrow TR}.\beta_{TR \rightarrow OI} = 0$

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | .776[a] | .602 | .377 | .506 | 2.237 |

a. Predictors: (Constant), Employees' adaptaptability, Effectiveness of core business processes, Frequency of experimentation with big data analytics, Confidence on the accuracy and reliability of DA , Frequency of training, Organisational agility, Well-prepared to adopt and integrate big data analytics, Data analytics drive innovation , Data-driven insights, DDDM Frequency , Oppenness to OI, Communicating data-driven decisions , Bottlenecks to data analytics

b. Dependent Variable: Investment

Correspondingly, the ANOVA table needs to be observed to confirm the rejection of the null hypothesis in this case. To be noted in this context, the F value observed was 2.678 and the p-value was 0.019, i.e., < 0.05. Hence, the condition to satisfy the null hypothesis gets rejected, leading to the acceptance of the alternative hypothesis, i.e., $\beta_{BDACs \rightarrow DDDM}.\beta_{DDDM \rightarrow BPE} = 0$ *and* $\beta_{BDACs \rightarrow TR}.\beta_{TR \rightarrow OI} \neq 0$, or *Big Data Analytics Capabilities (BDACs) have a positive impact on Business Process Efficiency (BPE) and Organisational Innovation (OI), with data-driven decision-making (DDDM) and the levels of Technological Readiness (TR) acting as the mediators*.

**Table 2** ANOVA table output of the multiple regression analysis justifying the condition p-value < 0.05

**ANOVA**[a]

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 8.919 | 13 | .686 | 2.678 | .019[b] |
| | Residual | 5.892 | 23 | .256 | | |
| | Total | 14.811 | 36 | | | |

a. Dependent Variable: Investment

b. Predictors: (Constant), Employees' adaptaptability, Effectiveness of core business processes, Frequency of experimentation with big data analytics, Confidence on the accuracy and reliability of DA , Frequency of training, Organisational agility, Well-prepared to adopt and integrate big data analytics, Data analytics drive innovation , Data-driven insights, DDDM Frequency , Oppenness to OI, Communicating data-driven decisions , Bottlenecks to data analytics

Based on the obtained output from the multiple regression model, it can be affirmed that integrating big data analytics can be highly beneficial for building organisational agility and resiliency.

## 5. Advantages And Opportunities In Digital Transformation

As was argued by Nandkarni and Prügl (2020), digital transformation offers a multitude of advantages and opportunities for businesses. By embracing digital technologies, organizations can achieve increased productivity. It takes initiatives to streamline processes. The adoption of automation increases efficiency and productivity, also offering the advantage of better customer experience, by promoting personalized interactions and seamless service across channels (Nandkarni and Prügl 2020). Arguably, better customer involvement increases overall satisfaction, with the benefits of real-time data analytics, which enable informed choices and strategic planning within the organisations (Nandkarni and Prügl, 2020). According to Nandkarni and Prügl (2020), organisations also benefit from cost-effectiveness resulting from the optimization of their operations, which can be accomplished by the integration of cloud solutions, and the reduction of manual efforts. Illustratively, cloud-based tools help in providing teamwork and knowledge sharing, contributing further to the organizational capability to respond to market changes (Nandkarni and Prügl, 2020). Elaborating further, Li (2020) affirmed that digital transformation could be a benefit for developing a new revenue stream for the organization, as modern organisations are increasingly encouraged to use digital channels for supporting new and innovative business models, data monetization, and e-commerce opportunities. Moreover, the adoption of digital transformation has been observed as a driver of efficient supply chain management, as it helps in integrating the IoT, blockchain, and AI, and hence, enhances the supply chain visibility (Adama and Okeke 2024).

## 6. Challenges in digital transformation

The strategic integration of digital transformation to enhance organisational performances in the short-term and in the long-term can be a challenging process, according to Lesonsky (2023). First and foremost, the business environment today is continuously evolving, which has created a constant need to adapt to the changes and can be observed as a challenge (Lesonsky, 2023). As was further noted by Nadkarni and Prügl (2020), adaptability causes considerable challenges for businesses, regardless of their sizes, fundamentally when the businesses struggle to match the pace of transformation with the change of their organisational culture, work environment, and the perspectives of the mid-level management, further indicating friction between the technology being introduced to the business processes and the actors introducing the change. According to Nadkarni and Prügl (2020), this friction leads to a poor synergy between the technology and skilled employees/executives to exhibit the intended transformative power of the business. Nonetheless, Nadkarni and Prügl (2020) also denote the severely lacking empirical understanding of these challenges in academia, implying the further need to conduct more thorough investigations. Referring back to the findings from the case studies, while IKEA was able to minimise the friction and build a strong synergy between technology and employees, GE failed to do so, and therefore, failed to perform and instead, abandoned the project. Apart from the above-noted organisational challenges, businesses also face technical and ethical challenges when considering digital transformation (Klein, 2022). For instance, data privacy and protection, understanding and overcoming cybersecurity issues and risk mitigation, transparency in using AI and algorithms, and compliance with industry standards and best practices, are some of the noteworthy technical and ethical challenges associated with digital transformation in the current era (Trigyn, 2024; Klein, 2022). Stating precisely, the key risk factors associated with digital transformation include security vulnerabilities, such as cyber-attacks, cultural resistance from employees, data privacy concerns,

vendor selection challenges, and organizational complexity (Deloitte, 2018). Understanding and addressing these risks are crucial for successful transformations.

## 7. SWOT analysis -digital transformation

**Table 3** SWOT analysis of digital transformation developed based on the findings from this study

| Strengths | Weaknesses |
|---|---|
| • **Strong Brand Reputation:** Existing brand equity can boost digital initiatives<br>• **Loyal Customer Base:** A loyal customer community supports adoption<br>• **Talented Workforce:** Skilled employees drive transformation | • **Outdated Technology:** Legacy systems hinder progress<br>• **Resource Constraints:** Limited marketing or IT resources<br>• **High Employee Turnover:** Retention challenges affect continuity |
| **Opportunities** | **Threats** |
| • **Emerging Markets:** New customer segments and growth potential<br>• **Consumer Behaviour Changes:** Adapt to evolving preferences<br>• **Technological Advancements:** Leverage innovations | • **Competition from New Entrants:** Disruptors entering the market<br>• **Economic Downturns:** Financial instability impacts investments<br>• **Regulatory Changes:** Compliance challenges |

## 8. Best practices and strategic recommendations

Based on the outcomes of the case studies and the pilot test conducted for this study, the best practices of integrating digital transformation for businesses should be focused on investments in building Business Process Efficiency (BPE), and Organisational Innovation (OI). Investing in the improvement of data-driven decision-making (DDDM) and the levels of Technological Readiness (TR) within the organisation will also be helpful. From a broader perspective, however, it is necessary to focus on aligning the business goals with the drivers of digital transformation having an impact on the business operations as well. To follow through with this recommendation, businesses need to adapt to a transformative mindset, making necessary changes within the organisational culture. Building strategic collaborations and partnerships within the business value chain can also help businesses build better agility and resilience. From a critical perspective, as was observed from the case of GE, the emphasis on integrating digital transformation vertically may be more demanding for businesses to strengthen their adaptability, leading to the recommendation that businesses must also focus on scaling the scope for digital transformation across their horizontal processes.

## 9. Benchmarking with the industry

Based on the case studies and the variables tested using the multiple regression model, it can be affirmed that to gain excellence through digital transformation, businesses should focus on assessing their digital maturity and plan their investments. For instance, it can be argued that a major reason for the failure of GE in integrating the digitization strategies was largely correlated to its limitations in terms of digital maturity, whereas the approach taken by IKEA was in coherence with the organisational maturity as well as that of the industry. From a general perspective, other benchmarking initiatives in integrating digital transformation shall include continuous peer comparison and reality checks to maintain the much-needed coherence between the external and internal environmental factors.

## 10. Future directions and implications

Considering that studies conducted with an emphasis on identifying the challenges and barriers of digital transformation in businesses, future investigations should focus on investigating the correlation between the pace of transformation and organisational agility as well as resilience. The trajectory of adopting digital transformation follows different paths in different business settings. While some firms adopt it promptly and efficiently, others take their time. Organizational culture, change-readiness, and leadership commitment are factors that affect the trajectory. Fostering these changes is a successful process that entails enabling staff to adopt new technologies, fostering an innovative culture, and matching digital activities with strategic goals. Correspondingly, as organizations continue to progressively abandon traditional decision-making procedures, digital transformation has gathered steam. Predictive analytics, real-time insights, and data-driven decision-making are hence facilitated by digital technologies. Organizations choose agile, data-centric ways over traditional ones recognizing the need for them to adjust to the changing market dynamics. Therefore, it would be wise for future research initiatives to examine the ethical implications of digital change. It is essential to strike a balance between data privacy, openness, and ethical AI use, implying that future studies must also focus on investigating the premises of social implications of digital transformation while comprehending the effectiveness of the human-centric approaches. The collection of these findings would help to understand the proactive variables driving the integration of digital transformation within businesses in different types of environmental settings.

## 11. Conclusion

From the findings obtained in this study, it can be noted that digital transformation is an unceasing process that organisations need to adopt rather than a one-time approach. Therefore, it is necessary to understand that the drivers and the outcomes as well as challenges of digital transformation may continuously change, which makes it rather imperative for businesses that intend to integrate these tools to thrive and build their agility and resilience. Nonetheless, further investigations will be needed to further examine the effectiveness of the human-centric approaches in helping businesses integrate digital transformations effectively.

## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

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