

Digital Transformation and Sustainability Factor Cases from UAE

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Abstract

The research addresses the increased focus by organizations in adopting sustainability measures as necessary strategies to improve their performance and be more responsible for the impact their operations have on the surrounding economy, societies, and environment. The article reviews studies on the correlation between adopting digital transformation programs and delivering sustainability goals and deriving global examples. Interviews are conducted with four UAE-based companies (DU, FEWA, Etisalat, and DEWA). The results shed light on their sustainability goals, how they motivated their respective digital transformation and the significant outcomes of digitization regarding sustainability. Reduced waste, more efficient and cost-effective processes, and a higher quality of service to customers were some of the key results of the digital transformation that facilitated a more sustainable operation by these companies.

Keywords

Digital Transformation, Sustainability, Innovation, Analytical Capability

1. Introduction

Organizations across different economic sectors have realized the importance of sustainable operations for business continuity and meeting the expectations of stakeholders. There are numerous methods of improving organizational sustainability, from environmental considerations to more efficient and responsible processes. With increased technological integration in countless aspects of business operations across industries, one of the critical methods of achieving sustainability is an adequate and relevant digital transformation. Given the wide range of digital transformation as a topic of study, innovative factors must be considered

to understand its role and contribution to sustainability. Therefore, this research addresses key SMART factors on how digital transformation helps achieve sustainable operations and why digitization is a key instrument for companies to succeed in sustainability.

The relationship between ICT and sustainability goes very long back to the 1990s when European Commissioner Bangemann started an award very similar, so that the Nobel Prize prioritized ICT applications into the environment which at present is known as sustainability.

Both the importance of sustainability and digital transformation have become key strategic developments in businesses worldwide; the research addresses a fundamental literature review that addresses the importance of each and their correlation on a global scale. Five of the most common and widely adopted SMART parameters for digital transformation and sustainability are addressed, illustrating each process's success factor and criterion. Four local case studies in the United Arab Emirates are analyzed through existing findings and primary research as questionnaires to assess the role of sustainability and digital transformation in organizational success. The UAE companies addressed are Du, DEWA, Etisalat, and FEWA.

The moral and ethical boundaries between global and corporate sustainability do not exist at present. Most of us are not aware of the Williamson universe where the cost of transactions helps in determining the entire form of the market the methods of Greta Thunberg are very important because like her a growing majority of the market is represented because of which countries and companies are usually presented at the forefront of the market with bringing innovation and advances full stop.

Digital transformation fosters the environment for analytical capabilities which improves data quality (El Khatib, Yaish, & Ali, 2021). This can be an appropriate input for a higher degree of monitoring and more accurate data for streamlining sustainability goals.

AI and digital transformation are closely related as AI can drive digital transformation by improving efficiency and automation in various industries. However, it is important to ensure that these advancements are sustainable, both environmentally and socially. This can be achieved by implementing responsible AI practices, such as reducing energy consumption, minimizing data bias, and promoting transparency in decision-making processes. Additionally, incorporating sustainability into the goals and strategy of digital transformation can lead to more sustainable outcomes in industries such as transportation, energy, and manufacturing.

2. Methodology

The research utilizes a combination of primary and secondary research in addressing the relationship between digital transformation and sustainability. A combined research methodology is beneficial for understanding the differences

between case studies that have been addressed on a global level with the UAE's local context. Using already published studies indicates what has been derived from past examples and provides a benchmark for analysis of current organizational cases.

The secondary research is conducted in a literature review form, which evaluates critical articles and studies globally. These publications identify and provide valuable insight on how the parameters of success in digital transformation contribute to the delivery of objectives for sustainability. The secondary research findings offer ample information about global trends in digital transformation and sustainability to address local case studies. A total of four companies in the UAE are engaged during the primary research in the form of structured questionnaires and interviews. The primary studies address how organizations across different economic sectors of the UAE are implementing, or have completed, implementing digital transformation programs and the impact these have on organizational sustainability. Both the primary and secondary research allows for a thorough analysis comparing local performance with global benchmarks for sustainability and digital transformation parameters.

3. Literature Review

Sustainability has a ubiquitous term that has gained popularity over the years to indicate various aspects of business and everyday life. Ranging from environmental consciousness to responsible business activities, sustainability in this paper refers to the management of organizations that look at environmental, social, and financial concerns to ensure continuous, ethical, and responsible success (Zelazna et al., 2020). Nationally, each country has its own set of sustainable development goals, which is further customized to suit different companies' business nature and operations across industries. However, the United Nations seeks to standardize key indicators to serve as a framework on what themes should be addressed when achieving sustainability. The standardization of sustainability themes allows for a higher degree of collaboration and synergy in the efforts of governments, institutions, and businesses around the world. Moreover, this provides a more accurate benchmark to evaluate how successful the efforts are in achieving sustainability within the defined parameters.

The indicator themes in the UN framework were adopted in 2001 and categorized into four broad pillars (economic, social, institutional, and environmental). The specific list identified by the UN for strategic are:

- Poverty.
- Governance.
- Risk.
- Education.
- Demographics.
- Natural hazards.
- Atmosphere.

- Land.
- Oceans, seas, and coasts.
- Freshwater.
- Biodiversity.
- Economic development.
- Global economic partnership.
- Consumption and production patterns (UN, 2007).

With rising awareness and concerns to address social, environmental, and economic issues, the need for sustainability is no longer a way for companies to secure competitive advantage and single themselves out from the market, but rather a necessity to meet stakeholders' and customers' expectations. Numerous studies illustrate how organizations seeking to achieve sustainable outcomes have realized the importance of undergoing a digital transformation in their internal operations and customer-facing external experiences (Esses et al., 2021; Cherepovitsyn & Evseeva, 2021). Bican and Brem (2020) explain the interrelationship between digital solutions and sustainability thanks to the higher degree of accuracy, standardization, and transparency technologies offer. Like sustainability, digital transformation entails adopting technological tools to improve business efficiency, improve environmental responsibility, increase automation, and provide the necessary tools that allow management of organizations to factor social, economic, and other considerations in business decisions (Bican & Brem, 2020).

While several studies address how technological integration help businesses improve their efficiency and performance, there are limited studies to identify the relationship between digital transformation and sustainability (El Khatib, Kherbash, Al Qassimi, & Al Mheiri, 2021). However, Esses et al. (2021) argue that digital transformation is necessary for organizations to utilize innovations to increase accountability and deliver economic, social, and environmental goals. Integrating digital solutions mean the organizations can have SMART objectives that are more effectively monitored and, ultimately, more likely to be achieved (Osmundsen et al., 2018). Using artificial intelligence, the Internet of Things, and other innovative technological devices will help track company performance and determine what processes can indirectly be improved with the organization's objectives. These allow for managing resources accurately towards sustainability to ensure improved performance, from reduced environmental impacts of operations to better customer service and more effective corporate social responsibility activities; all of which help the sustainable development and growth of organizations (Osmundsen et al., 2018).

Furthermore, a technological transformation roadmap ensures having an unprecedented degree of analytics at a much more specific scale within organizational processes while factoring in a larger volume of data than possible before (Jones & Wynn, 2021). While this means more detailed and accurate analytics, it also yields radical openness and transparency in addressing different parts of organizational performance (Jones & Wynn, 2021). The Uber-like business mo-

bility is more likely to make companies more agile, using the data gathered to continuously adapt how they conduct their business processes and serve their customers (Bican & Brem, 2020).

Zelazna et al. (2020) looked at how oil and gas companies in the Arctic adopted digital transformation to ensure sustainable development goals regarding socio-economic and environmental factors. For example, the right digital solutions to track, monitor, and flag ecological and safety hospitals early on have allowed oil and gas companies to meet global environmental protection and socio-economic sustainability standards (El Khatib, Zitar, & Al Nakeeb, 2021). A combination of sensors, digital platforms, and live dashboards allow for continuous and accurate monitoring of the performance at every level of the organization, allowing for timely mitigations and prompt actions as needed to reduce any risks to the commitments of the company; this is key for ensuring sustainable development (Zelazna et al., 2020). Therefore, the parameters for digital transformation are innovation, mobile, radical openness, analytics, and trust. Achieving these parameters ensures a successful digital transformation for international organizations and enables meeting their sustainability goals. Data gathered from digital services allow companies to find more energy-efficient methods of operations, which directly support environmental sustainability and identifies more effective recycling, waste management processes, and the protection of biodiversity (Zelazna et al., 2020).

The digital transformation facilitates organizational sustainability goals by enabling a higher degree of efficiency in the processes. From an environmental sustainability perspective, the organization's footprint is reduced with more energy-saving and waste reduction processes; further, the socio-economic sustainability of the company is improved by using technology to analyse big data about macroeconomic trends and social developments (Osmundsen et al., 2018). In other words, considering societal needs in the decision-making, whether it is regarding vulnerable populations, employment opportunities, or addressing social causes in the communities. One example is using technological tools to engage the community members and involve them in designing the operational model and what activities the company should invest in to yield optimal results for the local economy and community (El Khatib, Kherbash, Al Qassimi, & Al Mheiri, 2021). Incorporating social media and digital dashboards in customer relationship management has been some of the vital technological tools in having more precise insight into societal and environmental needs, which helps develop a relevant and effective sustainability program.

Moreover, Cascio and Montealegre (2016) argue that a higher degree of visibility on operational processes means higher accountability within the organization besides its commitment to the external stakeholders. Dashboards, trackers, and digital metrics have more transparency in the work environment, resulting in higher trust by employees in the organizational sustainability commitments and customers being more confident of the company meeting their expectations (Wong et al., 2019). E-services help companies in their environmental sustaina-

bility and make information more readily available for external stakeholders, thus improving overall experience and satisfaction. Success criteria for digital transformation are how intuitive the solution is for users; [Morakanyane et al. \(2020\)](#) review over 20 studies to identify the triggers for digital transformation, concluding a combination of both internal and external being the primary cause. Examples derived from Burberry, Starbucks, and L’Oreal reveal that the digital transformation criteria include improved user experience, which relates to organizational sustainability of efficiency, effectiveness, and building trust with relevant stakeholders ([Morakanyane et al., 2020](#)). The interrelationship between digital transformation and sustainability is agreed by multiple sources, with business strategies complimenting social and environmental factors ([Morakanyane et al., 2020](#); [Jakšić et al., 2018](#); [Cherepovitsyn & Evseeva, 2021](#)).

The adoption of the Internet of Things, big data, social media analytics, and other technological tools by Starbucks has yielded social, economic, and environmental sustainability improvements ([Feroz et al., 2021](#)). Replacing manual activities with digital ones not only helped the company reduce its operational costs but also provided access to a more significant amount of data to be analysed. Consequently, a more accurate insight of the target audience, market, and economy has been possible, which allowed Starbucks to have a favourable market positioning as a sustainable and caring organization ([Feroz et al., 2021](#)). The social and environmental performances of Starbucks improved with the use of technologies, such as social media and IoT, by enhancing “pollution control, artificial intelligence in waste management” and being able to use big data in analysing the optimal solutions for meeting societal needs in their corporate social responsibility programs ([Feroz et al., 2021](#)). Such changes depict the role technology plays in achieving sustainability in responsible operations, catering to societal demands, and ensuring the organizational resources are invested in secure business continuity methods.

4. Findings and Results

Interviews conducted with officials from different UAE-based companies addressed the reasons their organization underwent a digital transformation and its impact on sustainability, and the impact sustainability has on increased digitization ([El Khatib, Alabdooli, AlKaabi, & Harmoodi, 2021](#)). A typical response across different organizations was that the organization wanted to have a more effective information technology infrastructure to communicate with and address the concerns of stakeholders and customers. Technology solutions allow these organizations to be more agile to changing expectations and demands, design of offerings, and quality of customer service are quick and cost-effective methods. As several of the studies reviewed, companies are more likely to understand the market’s expectations and precisely shape the services and products to best cater to market trends ([Feroz et al., 2021](#)). The interviewees explained that more advanced technologies were necessary to replace existing processes, from administrative paperwork to the whole life cycle of the business. Reducing waste, cost

and improving the quality of offering to the end-users will improve the brand image and reputation.

Regarding sustainability, organizational performance becomes more transparent with technological frameworks in place, allowing a higher degree of visibility for management to track which operating procedures contribute to the company's sustainability goals. A common finding from the primary research revealed that the digital transformation was motivated by replacing paperwork and physical labour for repetitive tasks that do not necessarily impact organizational growth with digital alternatives. This allows the organizations to divert saved resources into community service and increase investments in aspects that could help its development and improve the community it serves. For example, the interview with Du explained that the digital transformation was strategic for the organization's sustainability goals in enhancing the telecommunications sector through reduced costs of operation, more extensive reach of services to remote communities, and elevating customer service quality while being connected with Du.

While there are several benefits listed in both existing literature and discussed in the interviews, the primary research revealed the need to assess the organization's maturity level. This means evaluating its readiness level for technological integration and the associated training needed for the digital transformation to meet the company's sustainability goals successfully (El Khatib et al., 2022).

In the case of Du, having specific regulatory measures to comply with; means that law and international standards mandate several sustainability goals of the organization. For example, reducing the carbon footprint and providing equal access to different population segments are both international standards for a responsible telecommunications company and embedded in DU's strategy. Consequently, the company's digital transformation is a legal requirement and allows for achieving and assessing how the sustainability goals are being addressed. With clear sustainability goals of reducing carbon footprint, digitizing otherwise paper-based tasks, and increasing the network reach of the company to residents across the country with uninterrupted services can all be monitored through centralized dashboards, similar to the solutions discussed by Jakšić et al. (2018) and Esses et al. (2021). Like the benefits Starbucks realized with using technology in improved relationship management and customer experience for more sustainable business development and better addressing the expectations of community members, all the respondents in the survey explain the need for digital transformation to improve the communication and interaction between the organizations and their external stakeholders. FEWA adopted a digital solution to replace several processes that would otherwise have to be done in person and use paper-based processes with online portals; the goal for this project was three-fold (Alzoubi, 2021). First, it supported the company's sustainable goal of reducing reliance on paper by converting to more environmentally friendly methods. Second, the company can provide a quicker and more efficient service experience to its customers, allowing them to setup and manage water and electricity accounts

online. Online services are helpful for remote communities as it reduces the need to drive to a branch and respond to any malfunctioning, complaints, or issues. Especially with the current pandemic of COVID-19, online services will help individuals to stay safe at home. Given the nature of services offered by FEWA, the total demand for electricity and water by households and communities means the uninterrupted services directly impact not only the provider but also the standard and quality of living of the community members. Therefore, using technology to ensure uninterrupted services and a convenient method of managing all client accounts regardless of location directly correlates with FEWA's ability to achieve sustainable performance and growth and positively impact the environmental and social spheres of the UAE's communities.

From an internal perspective, companies are motivated to undergo digital transformation to increase the inclusion and diversity of companies. Jones and Wynn (2021) illustrated how IBM used technological solutions to integrate employees across different business functions, which allows participation and higher communication. Similarly, one of Etisalat's digital transformation objectives is to enhance digital channels and increase internal communications. The sustainability goal that motivated digital transformation is to have a higher degree of responsibility, governance, and accountability, increasing transparency within Etisalat enabled by automation and digital solutions.

FEWA implemented "SAP", an enterprise resource planning solution within its digital transformation journey. Consequently, allowing internal processes to be done in a higher degree of synergy and clearly stating key performance indicators to address what "success" should entail per process. Lacking such a degree of accountability and monitoring before the integration of SAP was a major issue. Therefore, the implementation allowed FEWA to evaluate what processes can be improved, how to optimize value for internal and external stakeholders, and any room for improved efficiency across functions within the organization (El Khatib & Ahmed, 2021). These implementations reduced the paper-based tasks by 35% and the lead-time for over 50 processes to drop by half the time required. Etisalat uses machine learning and artificial intelligence to have data-driven insights on customer behaviour and the associated environmental impacts of the company's performance, identifying how to achieve more responsible marketing, reduction in energy consumption, and management of waste, water, and biodiversity. Companies that factor in environmental impacts of their performance are more likely to assess ways for being more sustainable and reducing their footprint. Also, environmental sustainability helps the business reduce costs, positioning itself in a more responsible level to the market, and meeting customers' expectations (Jones & Wynn, 2021). Etisalat and DEWA directly address the environmental impact of their performance as one of the parameters to their digital transformation, illustrating a direct link to the organizations' sustainability goals in being more environmentally responsible.

Furthermore, results from the interview with a DEWA employee illustrated a more specific and advanced digital transformation project than FEWA, incor-

porating solar power generation, energy-efficient energy storage systems, artificial intelligence for data processing, and advanced digital interaction services. The objective is to have an integrated digital solution for internal and external processes for the organization to reduce the potential for any errors in its operations and activities while optimizing the quality of service for end-users. When asked about the impact of sustainability on digital transformation, the interviewee stated that utilizing technology is critical to acknowledge the organization's sustainability goals, including a continuous and uninterrupted supply of power for Dubai residents (El Khatib, Al Hammadi, Al Hamar, Oraby, & Abdulaziz, 2021). Some of the benefits that were quick to be realized through the digital transformation are providing both employees and customers' different metrics for accurate time monitoring in performance. Jones and Wynn (2021) explained that processing big data using new technological solutions such as artificial intelligence makes it possible to simplify complex and large volumes of information in prestigious dashboards (El Khatib & Al Falasi, 2021). This is like the services that DEWA can provide customers and utilize internally in tracking performance and dealing with any bottlenecks or challenges early on. With more efficiency in the lead-time and the resources required for its operations, the higher the potential of the output by the company (Osmundsen et al., 2018). Dropping the associated costs reduces the cost of offerings to the customer, making the company more competitive, positioning itself as more responsible, and contributing to broader environmental and economic sustainability goals within the country of operation (Osmundsen et al., 2018).

Moreover, we asked companies about the performance of the organizations regarding sustainability, and technological implementation relates to international standards. DEWA appears to be at the forefront of technological innovation from all the responses, with their ongoing projects to improve different stages of the business life cycle and its associated activities that will add value to generating power in the most efficient ways. They emphasized the importance of facilitating remote working that will improve sustainability in the company's internal processes by using technological solutions without compromising the quality of offering to end-users. The reduction of associated costs and resources for internal performance helps in organizations' environmental and economic sustainability. It improves the brand image as an innovative and forward-thinking company (Morakanyane et al., 2020).

5. Recommendations

Each of the companies interviewed had different triggers that prompted digital transformation with their sustainability commitments. There are several fulfilled benefits when adopting digital solutions, such as artificial intelligence, machine learning, and extensive data analysis. For instance, it makes the management of these organizations more informed and capable of identifying specific areas in their business that could be improved and facilitate more sustainable operations

internally and offerings externally. One recommendation is to have a higher degree of synergy between large organizations in the same community, resulting in a much more impactful economic, environmental, and social continuity. Moreover, while technological solutions have proven to be very effective, there is an extensive range of technologies to pick from and study. It is crucial to adopt what would be feasible for the business. For example, FEWA adopted SAP for streamlining internal processes. Still, there are other solutions that the company should consider for improving its social responsibility activities and more effectively add value to the UAE's community regarding economic and social development while protecting the biodiversity of the country's environment.

Further, more specific KPIs should be established on what would constitute improved sustainability; most of the companies interviewed have generic and generalized criteria for contributing to environmental protection and economic and social development. However, there should be clear criteria for what the outcome should yield. The more detailed the parameters of success, the better technological tools will be for accurate monitoring and the likelihood of achieving intended results.

6. Conclusion

Organizations in the UAE have become increasingly aware of the need to improve their sustainability to benefit their business continuity and the country's strategic sustainability goals. To obtain a higher degree of sustainability, identifying the purpose and key elements of achieving it indicates the importance of having digital innovations to facilitate its success. Similarly, undergoing digital transformation results in higher environmental and economic sustainability degrees for companies in streamlining processes, reducing waste, and optimizing costs. Both literatures reviewed and interviews conducted revealed the interrelationship between digital transformation and achieving sustainability.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendix

- 1) What are the sustainability goals your organization has set?
- 2) How do you think sustainability is helpful for organizational performance?
- 3) What steps are being taken to achieve sustainability goals?
- 4) What are the objectives of the digital transformation done in the company?
- 5) How does the digital transformation relate to the sustainability goals?
- 6) What measures are monitored in the digital transformation process of the company?
- 7) Do you think digital transformation helps in improving sustainability for the company? If so, how?
- 8) What key benefits did the company experience from digital transformation?
- 9) What practical benefits were realized by digital transformation in relation to the company's sustainability goals?