

Digital transformation and the challenges associated with applying digital technologies in achieving strategic flexibility in public administration: a case study in Jordan

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ABSTRACT

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The study aimed to identify the impact of digital transformation and analyze the obstacles and complexities facing the integration of digital technologies into Jordanian Customs and their subsequent impact on achieving strategic flexibility. The study aims to uncover challenges, evaluate their effects, and suggest recommendations to enhance adaptive strategies within Jordanian Customs considering digital transformations. The study included employees in Jordanian General Customs, including customs officials, IT staff, and administrative staff working on digital initiatives. A population of 670 individuals was identified, from whom a purposive sample of (465) directly involved in digital transformation efforts was selected to participate in the study. The study used the descriptive analytical approach to comprehensively investigate the challenges of digital transformation within Jordanian Customs. Surveys, interviews, analysis of regulatory documents formed data collection methods. Quantitative data were subjected to descriptive analysis and regression modeling, while qualitative insights were thematically analyzed to provide a comprehensive understanding of the challenges faced. The analysis revealed the results, the most important of which is that digital transformation has a positive, statistically significant impact in its four dimensions (strategy, organizational culture, transformational leadership, and human resources) in achieving strategic agility in Jordanian Customs, and reveals multi-faceted challenges prevailing within Jordanian Customs, including structural constraints. Infrastructure, resistance to change, cyber security vulnerabilities, and skills gaps among the workforces. The regression analysis highlighted the significant impact of these challenges in hindering the achievement of strategic flexibility within the Customs Department. Based on the results of the study, Jordanian Customs is recommended to take proactive measures to confront the challenges identified. This includes investing in a robust technology infrastructure, implementing targeted training programs to improve employee skills, promoting a culture of innovation, and establishing cross-departmental collaboration to enhance adaptability and strategic flexibility. The study recommended increasing attention to training workers and raising their capabilities to deal with digital transformation positively and improve services.

1. Introduction

Digital transformation represents a critical catalyst for reshaping the regulatory landscape, particularly within public bodies such as Jordan Customs, where the effective integration of digital technologies carries significant implications for strategic

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and workforce flexibility (Sankar et al., 2023). As scientific research has confirmed, the strategic adoption of digital initiatives within customs departments significantly impacts operational flexibility, responsiveness to dynamic market requirements, and employee roles and engagement (Ravichandran, 2018). Digital Transformation and strategic agility researchers highlight the pivotal role of digital transformation in enabling strategic flexibility within organizational frameworks (Hanelt et al., 2021; Raed et al., 2023). Moreover, strategic flexibility refers to a company's ability to sense and respond quickly to environmental changes which is not only enhanced, but often dependent on successful digital transformation efforts (Warner & Wäger, 2019). This emphasis is particularly relevant within public institutions such as Jordan customs, where responding to evolving trade dynamics and regulatory frameworks is crucial impact on targeted employees. However, the advent of digital transformation will inevitably change the landscape for employees within organizations (Saarikko et al., 2020). The impact of this shift on target employees within Jordanian customs is a subject of deep scholarly interest. Several empirical studies illustrate how digitalization can redefine job roles, require new skill sets, and catalyze shifts in organizational culture, thus requiring adaptive strategies for workforce engagement and up skilling (Jain, 2021, Noonan et al., 2017, Rolandsson et al., 2020). Against this background, the specific case of Jordan customs provides an interesting avenue to study. As an integral part of Jordan's trade ecosystem, the Customs Department faces the challenges and opportunities posed by digital transformation. Effective alignment of digital initiatives with management's strategic objectives holds the potential to streamline operations, enhance trade facilitation, and reshape employee roles and responsibilities (Jaloliddin, 2023; Akhorshaideh et al., 2023). This study aims to conduct a careful study of the impact of digital transformation on achieving strategic flexibility within Jordanian Customs, while at the same time investigating the effects of this transformation on the targeted employees. By compiling scientific insights and empirical evidence, the research seeks to shed light on the interplay between digital initiatives, strategic responsiveness, and workforce dynamics within the unique context of Jordanian Customs (Ahmad et al., 2024).

The advent of the digital transformation age has been made possible by the widespread use of contemporary technologies; particularly those pertaining to media, communication, electronics, and the internet (Akour & Alenezi, 2022). On the other hand, technology, knowledge, and IT talents provide the foundation of the digital economy (Ostrovskaya et al., 2021; Hammouri et al., 2023b). As a result, it is now a threat to firms that are still falling behind and a competitive advantage for many other organizations the shift towards digitalization is significant not just in affluent nations but also in emerging and Arab nations (Toffler, 2022). A well-defined plan has been put in place by a few Arab nations to accomplish this change (Waitzberg et al., 2020). To promote social and economic development and lessen the possibility of a divide between developed and developing nations (Kuznets, 2019; Hammouri et al., 2023a).

The company's ability to exercise strategic agility allows it to succeed and attains sustainable institutional excellence to increase the speed of its operations, the organization needs to improve both its technological efficiency and the capabilities and efficiency of its personnel (Carvalho et al., 2019; Ghaith et al., 2023). Furthermore, improving the organization's capacity to respond to different internal and external factors will help it get stronger over time and provide it the ability to thrive, expand, and compete to achieve strategic success (Fiksel & Fiksel, 2015). The study's challenge is determining how strategic agility affects Jordan Customs and what changes are made to it, as well as whether the department may profit from these changes. Through putting the idea of strategic agility to use. Additionally, given the unstable conditions and highly unpredictable environment, the department's use of digital transformation to attain adequate levels of strategic agility is relevant. The following goals are attempted to be attained in this study. First, to determine the extent to which Jordan Customs has implemented digital transformation. Additionally, the study that determines whether strategic agility is available in Jordan Customs and explains how applying digital transformation and strategic agility in Jordan Customs are related. The report concludes by reviewing how the Jordan Customs might achieve strategic agility by utilizing the many facets of digital transformation.

2. Literature Review

The emergence of digital transformation has redefined organizational models in various sectors, especially within public institutions (Kraus et al., 2021; Hanandeh et al., 2021). This review brings together current academic work on the intersection of digital transformation, strategic agility, and their implications for employees in public organizations, focusing on empirical studies conducted in this area (Nadkarni & Prügl, 2021). Empirical research emphasizes the pivotal role of digital transformation in enhancing strategic flexibility (Meena et al., 2023; Zhao and Yan, 2023; Awais et al., 2023; Hammouri et al., 2021). Moreover, the organizations that benefit from digital technologies show greater flexibility in responding to market transformations, thus enhancing their competitiveness (Li, 2020). Likewise, Saputra et al., (2022) highlight the relationship between digital capabilities and strategic agility, focusing on how an organization's digital maturity impacts its ability to adapt and respond. Challenges in public institutions Adopting digital initiatives within public institutions faces distinct challenges (Mergel, 2021). Several studies emphasize that bureaucratic hurdles and cultural resistance as barriers to successful digital transformation in public sectors (Syed et al., 2023; Lemperos & Aboulkacim, 2023; Hammouri et al., 2022b). In addition, Trenerry et al. (2021) highlight the importance of leadership commitment and organizational culture in mitigating resistance and facilitating effective digital transformation in government agencies. Employee influence and adaptation to the transformative nature of digital transformation greatly impacts employees within organizations. Several empirical studies demonstrate how digital transformation is reshaping job roles, necessitating new skill sets and fostering a culture of continuous learning (Warner & Wäger, 2019; Burns, 2020). Moreover, the study conducted by Bozkus (2023) emphasizes the importance of employee empowerment and engagement in navigating digital transformations, emphasizing that supportive organizational

structures facilitate smoother adaptation. Case studies of public institutions studies of public institutions confirm these results. The work of Al-Shaboul et al. (2018) provide insight into the challenges faced during digital transformation in Jordanian government agencies, highlighting workforce readiness and technology infrastructure as key determinants of success. Likewise, the case study conducted by Liu et al. (2022) on digital transformation in Chinese public administration identifies the pivotal role of leadership, collaboration, and employee buy-in in achieving successful outcomes. Literature related to digital transformation indicated that there are many issues that may affect strategic agility reviewed (Gong & Ribiere, 2023; Hammouri et al., 2022a). It will summarize the main dimensions of digital transformation which may affect strategic agility which are as follows.

2.1 Digital Transformation

Digital transformation refers to a process that seeks for companies and organizations to adopt the changing needs of their beneficiaries (Bellantuono et al., 2021). The building of business models and new products is based on the principle of employing digital technologies (Ranta et al., 2021). Also, they are providing services to beneficiaries with the aim of improving user experience, raising the quality of performance, and operational efficiency, with an aim to support digital innovation (Alzuod et al., 2023; Hanandeh et al., 2023a). Digital transformation symbolizes business or government transformation, i.e., making radical changes to the business model, procedures, and processes (Hinings et al., 2018; al Freijat & Hammouri, 2022). Transformation may affect the process of changing the product or the method of providing the service entirely, and it may interfere strategically by intervening in all the functions of the organization from sales to supply, information technology and the entire value chain (Paiola & Gebauer, 2020; Hanandeh et al., 2023b). However, digital transformation has requirements that must be achieved through major dimensions, strategy, organizational culture, transformational leadership, and human resources (Nicolás-Agustín et al., 2022; Mansour et al., 2024).

2.2 Strategic Agility

Strategic agility refers to the ability of organizations to deal with changing conditions, adapt to continuous and accelerating fluctuations, harness resources and capabilities to take and avoid potential risks and threats, as well as the necessary measures to exploit opportunities (Teece et al., 2016; Hammouri et al., 2009). Additionally, Alzuod et al., (2023) defined strategic agility as the ability of organizations to see shifts in the business environment in which they operate, and the ability to adapt to them. Strategic agility relates to staying competitive by identifying opportunities and taking advantage of them, as well as identifying potential threats and mitigating or preventing them (Braunscheidel & Suresh, 2009). Strategic agility indicates to the organization's ability to continuously adapt to environmental changes, ensuring a rapid response to changing markets, faster than competitors, to maintain its market share, and to achieve survival and prosperity in an environment characterized by a high degree of uncertainty (Ahammad et al., 2021).

Strategic agility represents the ability to continuously adjust the strategic direction of the company's core business, and as it represents a function of strategic ambitions and changing conditions, new products do not only create new business models, but also, modern creative ways to generate value for the company (Sampath & Krishnamoorthy, 2017). However, agile companies have many characteristics and characteristics that distinguish them from other traditional companies. Consequently, according to a study conducted by Mohamad Karimi et al., (2020), they indicated that strategic agility consists of the following dimensions: clarity of vision, setting strategic goals, understanding fundamental and core capabilities, joint responsibility, and responsiveness.

2.3 Digital Transformation and Strategic Agility

Several empirical studies examined the relationship between digital transformation and strategic agility (Segaetscho, 2019; AlNuaimi et al., 2022; AlTaweel & Al-Hawary, 2021). The relationship between strategic flexibility and the elements of digital transformation scale, scope of digital transformation, and speed of digital transformation was evaluated positively (Hongyun et al., 2023). Shaaban, (2021) However, all components of digital transformation have a significant positive relationship with agility (Gong & Ribiere, 2023). It is important to predict the strategic agility of organizations. Equally important, discovered the contribution of digital transformation to achieving control over the desired effect on strategic agility in the most cost-effective way possible (Ravichandran, 2018). Based on previously studies maintained, this study suggests to tests the following:

H₀₁: *There is no statistically significant positive impact of digital transformation, and these dimensions (strategy, organizational culture, transformational leadership, human resources) on strategic flexibility in the Jordanian General Customs Corporation are considered.*

H₁: *There is no statistically significant positive effect of strategy on strategic flexibility in the Jordanian General Customs Corporation.*

H₂: *There is no statistically significant positive effect of organizational culture on strategic agility in the Jordanian General Customs Corporation.*

H₃: *There is no statistically significant positive effect of transformational leadership on strategic flexibility in the Jordanian General Customs Corporation.*

H₄: *There is no statistically significant positive effect of human resources on strategic flexibility in the Jordanian General Customs Corporation.*

In order to achieve the objectives of the study, the researcher developed the following model to confirm the relationship between digital transformation and strategic agility, according to Fig. 1.

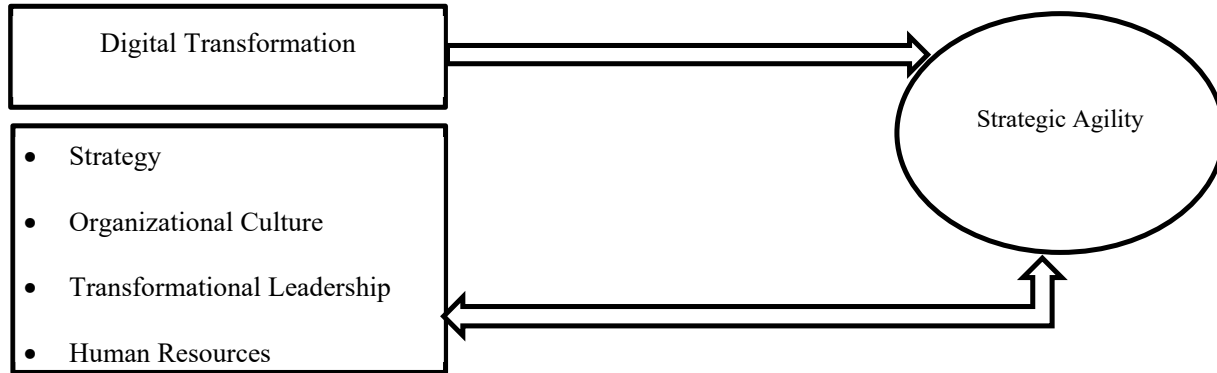


Fig. 1. Research Model

3. Research Methodology

3.1 Population and Sampling of the Study

The study targeted 465 employees at Jordanian Customs, the study used an appropriate sample to (<https://www.customs.gov.jo/en/Annual.aspx>) determine the sample that is compatible with the nature and objectives of the study. The study sample size was determined based on the size of the study population using the Craigie and Morgan table, which is used to determine the sample size based on the size of the study population. The size of the study population was 670 male and female employees, based on the Krejci table. Of the surveys administered, 465 questionnaires were distributed and deemed suitable for analysis. Hence, 70.9% was shown as a response rate. The results of demographic variables showed that most of the samples were males (76.3%), while the percentage of females was 23.7%. It is clear that customs is interested in employing males, because there are tasks that require more effort and longer working hours, and are more suitable for males than females.

Table 1

Demographic Profile of the Sample

Measure	Items	Frequency	Percentage (%)
Gender	Male	355	76.3
	Female	110	23.7
Age	18 – 27	77	16.5
	28 – 37	118	25.3
	38 - 47	99	21.3
	48 - 57	48	10.4
	58 – 67	123	26.5
Educational Level	Diploma	22	4.7
	Bachelor	315	67.7
	Master	87	18.7
	PhD	41	8.9

3.2 Measurements

The study developed a questionnaire capable of measuring the study variables. The questionnaire items were divided into three sections: The first section was designed to measure the demographic data of the sample members, while the second section consists of 18 items that measure the dimensions of digital transformation. Finally, the third section of the questionnaire consists of 24 items measuring the dimensions of strategic agility. Accordingly, the study relied on a five-point Likert scale to measure the response of the study sample by Sekaran and Bougie (2016). Structured interviews: They consist of pre-defined questions and follow a specific format. Semi-structured interviews: include a mix of pre-determined and open-ended questions, allowing flexibility for discussion. Unstructured interviews: Provide the greatest amount of freedom, allowing for open conversation without strict formatting. Participant observations: Researchers actively interact with participants in the environment under study. Non-participant observations: Researchers observe without direct interaction, maintaining observational distance. Personality tests: assess different traits and characteristics. Behavioral assessments: evaluate patterns of behavior in specific contexts.

4. Data Analysis

As mentioned earlier, descriptive statistics of the data were performed using IBM SPSS 22. Hence, to test and evaluate the hypothesis were used regression analysis.

4.1 Reliability Test

The reliability of the variables of study was determined using the minimum Cronbach alpha level set by Hair, (2010) The consistency of the items is bigger more than the level adopted, as suggested by as shown in Table 2, the lowest acceptable level for (α) is 0.86. This shows that the instrument is very reliable.

Table 2
Reliability Test

Variables	No. of Items	Cronbach's alpha (α)
Strategy	5	0.904
Organizational culture	6	0.921
Transformational leadership	4	0.914
Human resources	3	0.911
Clarity of vision	6	0.915
Setting strategic goals	5	0.894
Understanding basic and core capabilities	4	0.893
Joint responsibility	4	0.927
Responsiveness	4	0.938
Total	41	0.907

Arithmetic means of variable dimensions were calculated to determine the level of digital conversion of Jordanian customs. Table 3 shows the results, the mean of the dimensions of the digital transformation variable showed that they are all within the range of high relative importance, and the strategic dimension was calculated with the highest arithmetic mean value (3.95) among the dimensions of digital transformation, on the other hand, human resource productivity reached the lowest arithmetic mean value of the size (3.70), which is within the range of increased relative importance. In general, the level of digital conversion of customs in Jordan is considered high, because the variable reached an arithmetic mean (3.82) and is classified as having a high relative importance.

Table 3
Mean and the relative importance of the dimensions of the digital transformation variable

Dimension	Rank	Mean	Relative importance
Strategy	3.95	1	High
Organizational culture	3.85	2	High
Transformational leadership	3.77	3	High
Human resources	3.70	4	High

According to the strategic skill variable, Table 4 shows the results according to which the mean of the dimensions showed that, except for the solidarity dimension, all are within the limits of high relative importance. The clarity of vision dimension was considered to have the highest arithmetic mean value (4.97) among the strategic skill metrics, which is within the medium relative importance. In general, the level of strategic flexibility of Jordanian customs is high, because the variable reached an arithmetic mean (4.46) and is classified as having a high relative importance.

Table 4
Mean and the relative importance of the dimensions of the strategic agility variable

Dimension	Rank	Mean
Clarity of vision	3.91	High
Setting strategic goals	3.82	High
Understanding basic core capabilities	3.70	High
Joint responsibility	3.63	Medium
Responsiveness	3.76	High
Strategic agility	3.68	High

Multiple linear regression analysis was used to prove the main hypothesis and to show the interpretation ratio of the independent variable and the dimensions of the dependent variable, and the (f) value and its significance were used to test the evidence of the hypothesis. The given Table 5 is analyzed below.

Table 5
Hypothesis Testing Results

D.V	ANOVA		F	Sig F*	Digital Transformation	Coefficients		
	R	R2				B	T	Sig
Strategic agility	0.883	0.779	329.947	.000*	Strategy	0.241	5.105	0.016*
					Organizational culture	0.212	4.613	0.000*
					Transformational leadership	0.232	4.524	0.000*
					Human resources	0.181	4.987	0.000*

* Statistically significant at the level of statistical significance ($\alpha \leq 0.05$)

5. Discussion

Four dimensions of digital transformation (strategy, organizational culture, transformational leadership, and human resources) have a statistically significant positive effect on achieving strategic agility in Jordanian Customs. Digital transformation is associated with strategic agility, with a strong positive relationship, indicating a significant impact of strategic agility in all digital transformation changes. Digital transformation can explain 79% of strategic agility, but this percentage is high, and the remaining explanation is due to other factors not considered in the study. This study is consistent with the findings that all elements of digital transformation have a significant positive relationship with strategic agility. Based on the results, Jordanian customs shows a high degree of digital transformation as the variable achieved a high relative importance of the arithmetic mean (3.82). Furthermore, the strategy dimension achieved the highest arithmetic mean among the other dimensions, achieving a value of (3.95). This means that Jordanian Customs has a clear vision and mission documented regarding the transformation process. On the contrary, organizations do not need to take any action to make up the difference between their actual performance and the strategy designed for digital transformation. Jordanian Customs has a high level of strategic agility, as it is concerned with the application of its dimensions, and its arithmetic mean is (3.76). All dimensions except shared responsibility were the least applied of the strategic agility dimensions, achieving high relative importance as the mean was (3.62). This is due to the lack of participation of employees in the activities of the department and in the planning and implementation of projects. However, the availability of strategic agility practices is high in nonprofit organizations. Finally, based on the findings, Jordanian Customs has a clear vision, which is considered when formulating the highest goals among the dimensions of strategic agility. The same applies to the ability to define strategic objectives, which is enhanced by Jordanian Customs' ability to transform objectives into reality. However, the Jordanian practice is not to develop goals regularly and continuously.

6. Conclusions

The purpose of this study was to determine the impact of digital transformation on strategic agility and target employee achievement in Jordanian Customs. This study utilized a descriptive analysis approach using the Statistical Package for the Social Sciences (SPSS) program to analyze the data collected from the study population. The study population consists of employees working in different centers and departments of Jordanian Customs. 365 questionnaires were returned, with a response rate of 85%. This study revealed several findings, the most important of which is that digital transformation has a significant impact on achieving strategic agility at Jordanian Customs in its four dimensions: strategy, organizational culture, and transformational leadership, human resources) has a statistically significant positive impact. This study contributes by highlighting how Jordanian habits should increase the chances of success. Recommendations are therefore provided to Jordanian Customs considering the results to date, including that Jordanian Customs strive to provide the necessary technology after assessing the current digital transformation process. Additionally, the study suggests proactively engaging in digital transformation and focusing on training and upskilling employees to improve services.

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