Pak. j. life soc. Sci. (2025), 23(1): 6618-6627 E-ISSN: 2221-7630;P-ISSN: 1727-4915

Pakistan Journal of Life and Social Sciences

www.pjlss.edu.pk

https://doi.org/10.57239/PJLSS-2025-23.1.00517

RESEARCH ARTICLE

The Effect of Digital Transformation on Organizational Ambidexterity

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ARTICLE INFO

Received: Jan 3, 2025

Accepted: Feb 18, 2025

Keywords

Digital Transformation
Organizational Ambidexterity
Strategy
Organizational Culture
Transformational Leadership
Human Resources

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ABSTRACT

This study analyzing the reality of digital transformation in its dimensions (strategy, organizational culture, transformational leadership, and human resources) and its effect on organizational ambidexterity. To achieve the objectives of the study and answer its questions, the descriptive analytical method was used. The target population in this research consists of industrial companies. The researcher was able to collect (238) questionnaires that were approved to be filled out by employees' industrial companies. The result showed an effect of digital transformation in its dimensions (strategy, organizational culture, transformational leadership, and human resources) on organizational ambidexterity. On the basis of the results, it is suggested that industrial enterprises in Jordan should first make the adoption of a synergic digital transformation strategy considering all the four analyzed dimensions a priority. Companies need to develop leadership training offering transformational leadership characteristics, because good leaders are critically important for driving digital efforts.

INTRODUCTION

The swift advancement of technology globally has been paralleled by a growing interest in information technology and digitalization (Mishra & Agarwal, 2024). The majority of academics concentrated their investigations on technical and digital transformations that assist in addressing issues and enduring throughout intense competitive landscapes and swift changes (Pal, 2023). Vial asserted that firms must recognize the significance of digital transformation as a critical aspect in enhancing profitability and attaining sustainable growth. Digital transformation enables firms to identify novel business models that enhance the necessary capabilities for the business environment, ultimately aiming to elevate the overall level of services offered (Tavoletti et al., 2022). Organizations consistently strive for long-term success, advancement, and excellence in their respective fields by enhancing their capacity to analyze unique data and services, leveraging highly efficient human resources and technological infrastructure (Waseel et al., 2024), while ensuring ongoing development. The organization's capabilities, particularly technological ones, are crucial internal resources distinguished by excellence and a strong competitive reputation among its clientele (Benavides, 2024). Organizational ambidexterity is regarded as a crucial contemporary trend for addressing rapid advancements, as inadequate performance can result in diminished effectiveness and the emergence of organizational crises that may precipitate the organization's departure from the competitive market (Aljumaiee & Al-Harthy, 2021).

There are challenges for organizations during the digital transformation, such as the strategy, organizational culture, transformational leadership and human resources. But most of them are difficulty in these dimensions integration, which results in unsatisfying organizational ambidexterity. If an unclear digital strategy is not developed, a poorly formed organizational culture does not exist and transformational leadership is lacking, it will be difficult to achieve resource alignment, resistance to new technologies, and adoption of digital projects. The existing literature lacks a holistic framework to guide digital transformation efforts, posing risks to leveraging resources effectively,

missing out on opportunities, and maintaining a competitive edge in the digital economy. Accordingly, this study analyzing the reality of digital transformation in its dimensions (strategy, organizational culture, transformational leadership, and human resources) and its effect on organizational ambidexterity.

LITERATURE REVIEW

Digital transformation

Digital transformation is a modern university idea, arising from its predecessors' IT-based transformational theory (Wessel et al., 2020). While digital transformation shares some characteristics with other organizational change processes, it is a distinct category of organizational change (Hess et al., 2016; Vial, 2019). Studies of IT-enabled transformation have placed several factors influencing the change process at the center of focus, for example, organizational inertia, processes, agency and performance. Theoretical assumptions on IT-enabled change have led to insights about digital transformation, although new research now suggests that digital transformation represents deep structural transformation in organizations, brought about by convergence of several technologies that drastically change the rules of the games with respect to organizational value and identity (Skog et al., 2018; Wessel et al., 2020).

Organizational ambidexterity

Organizational ambidexterity is one of the administrative fields that has flourished and spread in the modern era (Tabor, 2023). Due to its importance and characteristics that bring many benefits and benefits to organizations, as it has become an essential entry point for many administrative specializations, including financial, service, and educational disciplines (Kassotaki, 2022), it has been addressed by many researchers in various disciplines and fields in which they research, and the concepts and definitions that have been addressed have varied, and from here it was not It is necessary to address the concepts and definitions that revolve around the term organizational ambidexterity (2018, Ahmed & Ismail).

Organizational ambidexterity is a strategic asset that places an organization at an advantageous position compared to competitors (Clauss et al., 2022). It includes the ability, skill, and talent to get the job done through an effective management of the present operations and of the ability to adapt to the presumable future requirements of a dynamic world (Kozcu & Özmen, 2021). This notion is based on an ability to acquire, process, and apply knowledge from an external context, while using current and developing new competence (Hwang et al., 2023). Such a dual focus necessitates advanced skills that foster excellence and creativity, alongside empowering individuals to make autonomous decisions regarding the allocation of their time and efforts in exploration and the optimal utilization of available opportunities (Pertusa-Ortega et al., 2021).

Hypotheses development

Leso et al. (2023) extended the scarce evidence base on corporate approaches to digital transition by exploring organizational digital transformation (DT) in small and medium enterprises (SMEs), namely, the role of organizational culture, structure, and leadership. Despite these 3 elements being pointed out as significantly necessary to enable digital transformation, their behaviors and interrelationship are poorly defined, and need to be carefully analyzed. Trieu et al. (2024) posit that IT skills and organizational ambidexterity strengthens organizational resilience, buffers wasteful opportunities, and supports responses to market uncertainty. Improvements in organizational multiplexing and resilience then lead to stronger trade performance of SMEs. Conflicting leadership, in the end, delivers, on the one hand, organizational multimodality and organizational robustness, and, on the other, their outputs. Hence, government policies on digitalization may also produce greater IT capability and cleverness in SMEs. da Silva et al. (2023) indicated that organizational ambidexterity (OA) is recognized as a facilitating capability for Digital Transformation (DT) in organizations, encompassing the trade-off between its dimensions: exploration and exploitation. The findings reveal the integrated features of Structural, Contextual, and Leadership-Based Ambidexterity models that facilitate organizations in effectively leveraging resources within the

framework of Digital Transformation (DT). The findings of Zhu & Li (2023) demonstrate that data-driven insights have distinct effects on efficiency transformation and value transformation, with resource orchestration acting as a partial mediator. Additionally, the study highlights the contingent role of varied organizational strategic decision-making and organizational ambidexter. Bråthen et al. (2021) propose ambidexterity as a strategy for organizations to attain explorative and exploitative learning; however, there is a notable lack of research on the role of these two learning modes in facilitating digital transformation. Park et al. (2020) also outline the mechanisms used for digitization to eventually facilitate ambidexterity in a broader fashion. Mechanisms differ between intrafirm-based and interfirm strategic alliance-based arrangements. Digitization and centralization of digitization and centralization are important to achieve ambidexterity in the intrafirm solution, other items are less important. On the other hand, in the interfirm solution, digitization is a subsidiary and, arguably, hindering process in the quest for ambidexterity. Intrafirm cooperation is critical to handle ambidexterity in intrafirm and interfirm solutions. The findings show that the ambidextrous behavior of SMEs requires a high level of digitization only for intrafirm solutions instead of the high level required for interfirm solutions in the case of the large firms.

According to the above, the following hypotheses can be reached:

H1: There is an effect on the level ($\alpha \leq 0.05$) of digital transformation in its dimensions (strategy, organizational culture, transformational leadership, and human resources) on organizational ambidexterity.

H1.1: There is an effect on the level ($\alpha \leq 0.05$) of digital transformation in its dimension (strategy on organizational ambidexterity.

H1.2: There is an effect on the level ($\alpha \leq 0.05$) of digital transformation in its dimension (organizational culture) on organizational ambidexterity.

H1.3: There is an effect on the level ($\alpha \leq 0.05$) of digital transformation in its dimension (transformational leadership) on organizational ambidexterity.

H1.4: There is an effect on the level ($\alpha \leq 0.05$) of digital transformation in its dimension (human resources on organizational ambidexterity.

RESEARCH METHODOLOGY

To achieve the objectives of the study and answer its questions, the descriptive analytical method was used, where the descriptive method was used based on the study of the research topic by relying on an appropriate tool used to collect data and information. The analytical method was used to process the collected data, analyze it, and test the hypotheses to reach the results of the study and provide appropriate recommendations for those results.

The study population and sample

The target population in this research consists of industrial companies, as industrial companies are considered among the largest companies that have a direct impact on national income, and try to keep pace with global changes in the field of information technology. As the size of the target population is large. It is relatively difficult to reach everyone, and the time available for data collection is limited. This led to the use of convenience sampling. To achieve the goal of this study, an electronic questionnaire was sent to all industrial companies through the website and e-mail. The researcher was able to collect (238) questionnaires that were approved to be filled out by employees' industrial companies.

Data collection

To collect the data required to achieve the study objectives, two primary sources were used. Firstly, theoretical and scientific literature was used as starting secondary sources. Which helped the researcher provide data to develop the theoretical framework of the study and develop the study hypotheses. While reliance was placed on secondary sources by collecting data from members of the study sample through a study questionnaire prepared to achieve the goal of the study, which expresses the dimensions and variables of this study.

Reliability test

In order to confirm whether the questionnaire items were sufficient and reliable, the Cronbach's alpha coefficient was calculated. If the result is more than 0.70, the value is statistically acceptable (Sekaran and Bougie, 2016). Table (1) shows that Cronbach's alpha falls between 0.955 to 0.967. In other words, the data generated by the study tool is accurate and trustworthy for evaluating the factors, and it is a reliable tool. Reliability was taken into account since all dimensions of the independent and validated variables were above 70%.

Table 1: Cronbach's Alpha coefficient

	Number of items	Cronbach alpha
Strategy	5	0.967
Organizational Culture	5	0.963
Transformational Leadership	5	0.961
Human Resources	5	0.962
Digital Transformation	20	0.955
Organizational Ambidexterity	10	0.964
Total	**30**	**0.956**

The test of hypothesis

To test the first main hypothesis, Multi linear regression analysis was performed.

H1: "There is an effect on the level (α≤0.05) of digital transformation in its dimensions (strategy, organizational culture, transformational leadership, and human resources) on organizational ambidexterity".

Table 2: Results of testing H1

D.V	Model Summery		ANOVA		Coefficients				
	R	R^2	F	Sig F*	variable	B	standard error	T	Sig T*
organizational ambidexterity	0.773	0.597	86.326	0.000	Strategy	0.149	0.081	2.592	0.013
					Organizational Culture	0.191	0.057	3.344	0.001
					Transformational Leadership	0.221	0.073	4.283	0.000
					Human Resources	0.365	0.062	5.890	0.000

Table No. (2) shows a statistically significant relationship between the independent variable (digital transformation) and organizational ambidexterity, with a computed value of F (86.326) and a significance level (sig = 0.000) less than 0.05. The correlation coefficient (R = 0.773) between digital transformation and organizational ambidexterity in industrial companies indicates that variations in digital transformation may account for 59.7% of the variation in organizational ambidexterity (R2 = 0.597).

The regression coefficient values for each of the variable's sub-dimensions (digital transformation) are displayed in Table (2). At a significant level of 0.013, the Strategy Dimension's calculated T value was 2.592, and the table makes it evident that its B value was 0.149. Given that the significance level (α≤0.05) is less than 0.05, it indicates a substantial positive effect.

The organizational culture value for B is (0.191). According to the table, the value of T in this dimension was established at a significance level of 0.001, or less than 0.05. This suggests that the impact is significantly positive at (α≤0.05).

With the B value of 0.221 and the T value of 4.283 at a significance level of (0.000), less than 0.05, where (α≤0.05), the table clearly shows a significant positive influence in the Transformational Leadership dimension.

And B value of 0.365 and a T value of 5.890 at a significance level of (0.000), less than 0.05, where (α≤0.05), the table clearly shows a significant positive influence on the Human Resources dimension.

To test the sub-hypotheses, simple linear regression analysis was performed.

H1.1: There is an effect on the level (α≤0.05) of digital transformation in its dimension (strategy on organizational ambidexterity.

H1.2: There is an effect on the level (α≤0.05) of digital transformation in its dimension (organizational culture) on organizational ambidexterity.

H1.3: There is an effect on the level (α≤0.05) of digital transformation in its dimension (transformational leadership) on organizational ambidexterity.

H1.4: There is an effect on the level (α≤0.05) of digital transformation in its dimension (human resources on organizational ambidexterity".

Table 3: Impact test results H1.1, H1.2, H1.3 and H1.4

V	Model summery		ANOVA		Coefficients			
	R	R^2	F	Sig F*	B	standard error	T	Sig T*
Strategy	0.608	0.370	138.701	0.000	0.748	0.064	11.772	0.000
Organizational Culture	0.681	0.464	204.579	0.000	0.555	0.039	14.303	0.000
Transformational Leadership	0.685	0.469	208.263	0.000	0.559	0.039	14.431	0.000
Human Resources	0.743	0.553	291.659	0.000	0.565	0.033	17.078	0.000

The R-value of (0.806) in Table 6 indicates that there was a positive correlation between the first dimension (Strategy) and the second dimension (organizational ambidexterity). The coefficient of determination data reveal that (R^2 = 0.370) while all other components remain constant, meaning that the (Strategy) domain accounted for (37%) of the variation in organizational ambidexterity. The value of (F) reaching 138.701 at the confidence level (sig = 0.000) showed that the regression's significance was supported at the significance level (α ≤ 0.05).

R-value of 0.681 for the second dimension indicates that there is a positive correlation between the two dimensions (organizational ambidexterity and Organizational Culture). R^2 = (0.464) is the coefficient of determination after all other factors have been taken into account. This means that 46.4% of the variance in (organizational ambidexterity) can be attributed to the (Organizational Culture) domain. Moreover, the regression's significance at the level of significance (α ≤ 0.05) was showcased by the value of (F) reaching (204.579) at the confidence level (sig = 0.000).

The R-value of 0.469 shows that there is a positive relationship between the dimension of organizational ambidexterity and the third dimension, Transformational Leadership. The coefficient of determination results indicates that, 46.9% of the variance in (organizational ambidexterity) was explained by the (Transformational Leadership) domain, assuming that all other variables remain constant. This translates to a 0.395 coefficient of determination. The regression's significance at the α < 0.05 significance level was also shown by the value of (F) obtained (208.263) at the level of confidence (sig = 0.000).

The R-value of 0.743 for the second dimension shows that there is a positive correlation between the two dimensions (organizational ambidexterity and Human Resources). Following the removal of all other variables, the coefficient of determination yields a value of (R^2 = 0.553), indicating that the domain of Human Resources accounted for 55.3% of the variance in organizational ambidexterity. Additionally, it was shown that the regression was significant at the level of significance (α ≤ 0.05) by reaching the value of (F) at (291.659) at the confidence level (sig = 0.000).

DISCUSSION

Hypotheses are deduced from the relationship between digital transformation processes and organizational ambidexterity, i.e., how some constructs of digital transformation (strategy, organizational culture, transformational leadership and human capital) lead these constructs. The broad hypothesis postulates that in various ways digital transformation is significant for organizational ambidexterity. Ambidexterity is defined as the ability to simultaneously innovating in new directions and exploiting existing ones. Despite the hypo-sub-hypotheses state, for each of the dimensions of digital transformation (strategy, organizational culture, transformational leadership, and human resources), a significant contribution to organizational ambidexterity, at α 0.05. It is shown that each of the dimensions applies specifically for the process of establishing the capacity of an organization to balance between exploration and exploitation. Leso et al. (2023) highlight the importance of having a clearly defined ambidextrous strategy for successful digital transformation (DSS). The findings could support H1.1, suggesting that organizations with clear strategic digital initiatives are better equipped to adapt and innovate. Trieu et al. (2024) focusing in particular on the ways in which organizational culture facilitates or frustrates the execution of digital transformation efforts. It may reinforce H1.2, indicating that an enabling culture leads to a climate in which experimentation and flexibility thrive, both of which are crucial for an ambidextrous company. da Silva et al. (2023) investigate the impact of transformational leadership on digital projects. It may underpin H1.3, that is the evidence that leaders being instrumental in the development of an innovative culture and of a culture of the (undermining of) the shock therapy which fuels entrepreneurship, elevates company ambidexterity. Zhu Li (2023) has undertaken an investigation into the role of human resources in the process of digital transformation. They have also been argued to say that the importance of skills development and knowledge transfer for ambidexterity is essential, and that the need for justification of such a principle H1.4 cannot be overridden. Bråthen et al. (2021) a context for wider interdependencies by extending the interrelationships within the framework of the digital transformation paradigm. It may demonstrate the opposite, that a holistic and integrated approach to digital transformation–namely, that strategy, culture, leadership and HR all contribute to an optimum ambidexterity–is better at generating its full potential. Park et al. (2020) lend empirical backing to the relationship between digital transformation and organizational performance. It can be, albeit indirectly, in favor of H1's greater generality, that those organizations successfully orchestrate their mix of these dimensions will find themselves in a position from which to flourish in a changing landscape. The hypotheses outline a clear construct from which to interpret the extent of the digital transformation of the organization the ambidexterity of the organization. The following studies, taken together, provide strong support for the validity of these arguments through empirical validation and theoretical underpinning of each dimension's role. Overall, they suggest that organizations must adopt a holistic approach to digital transformation, considering strategy, culture, leadership, and human resources as interconnected elements crucial for achieving ambidexterity.

CONCLUSION

For successfully exploring the effects of the digital transformation on the organizational ambidexterity in industrial companies in Jordan, a mixed-method approach will be used. This will include quantitative surveys distributed to employees at various levels within selected companies, assessing their perceptions of digital transformation practices—specifically in strategy, organizational culture, transformational leadership, and human resources. The research highlights the great relevance of digital transformation for the increase of organizational ambidexterity among Jordanian industrial companies. Results show that, for any of the dimensions of digital transformation strategy, organizational culture, transformational leadership, and human resources each contributes its own unique positive effect toward the exploration of new opportunities as well as towards the efficient use of current assets. This dual capacity is also very important to manage the complexity of modern industrial landscapes, where technological innovation and competitive forces put pressure not only on creativity, but also for efficiency. As a result, the study emphasizes the need of organizations to implement integrated digital transformation approaches in order to preserve and strengthen their competitive advantage. On the basis of the results, it is suggested that industrial enterprises in Jordan should first make the adoption of a synergic digital transformation strategy

considering all the four analyzed dimensions a priority. Companies need to develop leadership training offering transformational leadership characteristics, because good leaders are critically important for driving digital efforts. Concurrently, developing an organizational climate of change acceptance, and innovation, will be critical to the development and maintenance of ambidexterity. HR approaches need to be targeted towards ongoing learning and the development of skills in order to give employees the competence to cope with digital phenomena. However, continuous evaluation and revision of digital transformation approaches should also be pursued in order to react effectively to changing market forces as well as new technical trends.

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