Journal of Project Management 11 (2026) 1097–1112

Contents lists available at GrowingScience

Journal of Project Management

homepage: www.GrowingScience.com/jpm

Does technological evolution truly enhance performance in the education sector? The moderating role of top management support

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C H R O N I C L E

Article history:
Received April 15 2026
Received in Revised Format June 12 2026
Accepted August 16 2026
Available online August 16 2026

Keywords:
Strategic Planning
Perceived ease of use
Strategy Management
Digital Transformation
Performance
Top Management Support
Digital Transformation in Higher Education
Resource-Based View (RBV)
Technology Acceptance Model (TAM)
Dynamic Capabilities

A B S T R A C T

This study aims to understand the link between strategic planning, perceived ease of use and strategy management and the organizational performance in Jordanian public higher education institutions, and to examine the moderating role between PEU and top management support in regards to digital transformation. A quantitative research design was used, and the structured questionnaire was given to a sample of 384 employees in public universities of Jordan. Descriptive data analysis was performed by SPSS 26 and partial least squares structural equation modeling was performed by SmartPLS 4. It employed a two-stage analysis: (1) assessment of the measurement model for reliability and validity and (2) evaluation of the structural model for testing the proposed hypotheses and moderating effects. The results show that perceived ease of use and strategy management significantly positively influenced the performance and that perceived ease of use is the strongest predictor. Strategic planning, on the other hand, does not directly affect performance to a significant extent. The moderating role of top management support is significant and negative to the relationship between strategic planning and performance, but not significant to the relationship between perceived ease of use and performance as well as to the relationship between strategy management and performance. The findings highlight the need to enhance the usability and accessibility of information on the websites, the clarity of information, and the user experience of university digital platforms. The study adds to the literature by bringing together the Resource-Based View, Dynamic Capabilities Theory, Public Value Theory and Upper Echelons Theory, and by presenting empirical evidence from a context in a developing country in which the use of digital usability and the management of a digital strategy are more powerful drivers of performance than traditional strategic planning.

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1. Introduction

In higher education institutions, conventional administrative structures and strategic planning processes have been employed to ensure performance and sustainability in the long run (Srivastava, 2023). However, the mass spread of digital technologies is fundamentally changing the operational and strategic context of universities, shifting them away from the conventional administrative system towards digitally enabled and data-driven environments (Ordov et al., 2019; Hutapea and Antonius, 2023). This is not just a change in the tools, but also a wider organizational shift in resourcing, processes and value delivery to an ever-growing stakeholder base (Eden et al., 2024).

The literature reveals that the digital transformation has a positive impact on the performance because it improves communication, increases operational efficiency and allows for data-driven decision-making (Alshdaifat et al., 2025; Agarwal et al., 2021). In particular, the digital technologies enable the engagement of the different stakeholders, enhance teaching and learning activities, and facilitate the management of educational processes, all of which can lead to more effective operations and learning outcomes (Prathuraj and Dhanujakshi, 2020; Sirko and Baloch-Daybek, 2021; Santos et al., 2024). Furthermore, digital transformation has been linked to improvements in organizations, such as the increased automation, digital service delivery, and responsiveness to the stakeholders' needs (Peres et al., 2018; Abuion & Abuion, 2022; Chan and Choi, 2025). It

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ISSN 2371-8374 (Online) - ISSN 2371-8366 (Print)
2026 Growing Science Ltd.
doi: 10.5267/j.jpm.2026.8.003

also helps to increase the availability of services, minimize operational disruptions, and enhance information security, all contributing to better performance (Petrov et al., 2022; Mayasari, 2023).

Within this context, practices such as strategic planning, perceived ease of use, and strategy management are continually gaining recognition as important factors for performance. The strategic planning offers guidance on direction and alignment for institutional activities; strategic planning of ease of use of the web site improves the user experience by enhancing the usability of the web site, the accessibility of information, the clarity of information and the effectiveness of digital service delivery; strategic planning of adaptability of the organization promotes its adaptability in dynamic environments and continuous improvement (Kilaj et al., 2023; Dai et al., 2021; Beninger and Robson, 2025). However, although more and more scholars are paying attention to such organizational capacities, the exploration of the different capacities has tended to be done separately and linearly, thereby neglecting the complexity of the interaction between the capacities within the different institutional contexts.

This restriction is especially true in the public sector as institutional restrictions can have an impact on the effectiveness of digital transformation. In Jordan, public universities are managed in a highly centralized administrative system, with little autonomy, financial independence, and strict regulations (Sebaaly, 2019; Mustafa, 2025). These institutional features act as limits on the universities' capacity to shift resources, carry out strategic projects, or flexibly adapt to shifts in technology. Hence, the validity of the conclusions drawn from less constrained institutional settings might be questionable, and questions can be asked about the applicability of models that already exist. In particular, it is unclear whether the traditional organizational motives such as strategic planning, perceived ease of use and strategy management have the same impact in highly regulated institutional settings.

In order to stop this problem, it is necessary to shift from traditional additive ways of thinking to one that views organizational effectiveness as being context dependent. In this context, top management support is a crucial but under-researched organizational aspect. Past research indicates that managerial support has a positive impact on organizational performance, but it becomes more complicated in highly centralized institutional context. Effective managerial participation can foster coordination and implementation, but it can also lead to an inflexible organization, which can hinder strategic planning and innovation efforts. This raises an important theoretical issue about the effect of top management support being uniformly positive or dependent on institutional characteristics and organizational conditions.

To fill this theoretical void, this study adopts an integrated theoretical framework that comprises Resource Based View (RBV), Dynamic capabilities theory (DCT), Public Value theory (PVT) and Upper Echelons theory (UET). RBV helps to understand how resources, such as digital infrastructure, and perceived ease of use can lead to continued performance. According to DCT, the key is to continually update organizational ‘capabilities' to adapt to new technological contexts. PVT emphasizes the need for public organizations to value effective and accessible digital service delivery. Finally, UET gives an understanding of top management characteristics and their impact on strategic decision-making and the organizational outcomes.

In this context, the study proposes that digital transformation drivers are conditional. Under highly constrained institutional conditions, the impact of strategic planning might be less pronounced, while perceived ease of use might lead to more immediate improvements in performance, as it improves users' interaction with institutional digital platforms. strategy management, on the other hand, may have an impact on performance via longer-term organizational adaptability. In addition, the relationships can be reinforced or restricted by the support provided by the top management depending on the institutional context where the DT initiatives are being applied.

There are several contributions to the literature in this study. Firstly, it introduces a contingency-based explanation of digital transformation and shows that strategic planning's, perceived ease of uses, and strategy management's impact are not always present, but vary with institutional constraints. Second, it combines the Resource-Based View (RBV), Dynamic Capabilities Theory (DCT), Public Value Theory (PVT) and Upper Echelons Theory (UET) to offer a more holistic view of the role of (organizational) resources, (organizational) capabilities, perceived ease of use and leadership in organizational performance. Third, it provides empirical support for the notion that perceived ease of use represents an immediate operational capability that helps to improve the performance, and strategy management is more important via longer-term organizational adaptation, with strategic planning potentially limited in very centralized institutional contexts. Third, the study adds to the literature of higher education by offering empirical evidence from the context of public universities in the state of Jordan, thus adding to the understanding of digital transformation in higher education contexts in developing countries. The rest of this paper is structured as follows. The literature review and hypothesis development are provided in Section 2. The methodology of the research is described in Section 3. Section 4 presents the empirical results and Section 5 discusses the results, and concludes the study.

2. Theoretical framework, literature review and hypotheses development

This study is rooted in three theory streams that complement each other: Resource Based View (RBV), Dynamic Capabilities Theory (DCT), and Public Value Theory (PVT). These views give a complete explanation of the impact of strategic planning, perception of ease of use, and strategy management on performances in Jordanian public universities. In order to describe the

contextual role of leadership the framework is expanded by the Upper Echelons Theory (UET) as this explains how the top management support strengthens or constrains the effectiveness of these organisational capabilities.

Resource-Based View (RBV) is a theory which posits that a firm's sustainable organizational performance is related to its ability to acquire, develop, and utilize valuable, rare, and hard-to-imitate resources, such as technological resources, managerial resources, and innovation-related resources (Barney, 1991). From this point of view, strategic planning serves as a basis for associating institutional resources with organizational priorities, with perceived ease of use and strategy management being valuable organizational capabilities that reduce the cost of operations and improve services delivery (Nicolás-Agustín et al., 2022; Baslyman, 2022; Vasiliev, 2023; Mustafa, 2025). The effective alignment of these capabilities helps universities enhance their coordination, operational efficiency and performance (Vial, 2019; Guerra et al., 2023).

Dynamic Capabilities Theory (DCT) complements RBV as it involves continuous sensing, seizing and reconfiguring of the internal and external resources based on technological and environmental change (Teece, 2018). In the university context, strategic planning, perceived ease of use and strategy management are organizational capabilities that can help to succeed in the digital transformation process, as strategic planning helps to define clear goals, purpose, and direction for digital transformation (Endres et al., 2022; Mikalef and Pateli, 2017), perceived ease of use can facilitate the access of users to the institutional information, the usability of websites and efficient interaction with them digitally, and strategy management can help the universities with the adoption of advanced technologies such as cloud computing, artificial intelligence, and digital platforms to improve the efficiency of their operations, responsiveness, and the quality of decision-making.

Public Value Theory (PVT) goes further and suggests that the performance of public universities should be measured not only in terms of the efficiency of the internal operations of the university, but also in terms of the value they add to society, which includes stakeholder satisfaction, accountability, accessibility, and institutional legitimacy (Moore, 1995; Alford, 2002). From this point of view, perceived ease of use can be used to create public value by enhancing access to the information of the institution, making it easier for users to interact with the services of the university, and improving the service experience of the stakeholders (Nicolás-Agustín et al., 2022; Wu and Chiu, 2015).

Within this theoretical framework, top management support is an important enabler. Based on Upper Echelons Theory (Hambrick and Mason, 1984), the knowledge, strategic orientation, and commitment of senior leaders can affect resource allocation, coordination of resources, and support of strategic planning, perceived ease of use, and strategy management initiatives. In line with RBV and DCT, leadership commitment enhances effective use of institutional resources and capabilities, and PVT emphasizes leadership in delivering public value, and in fulfilling stakeholder expectations, through institutional activities. Senior leaders have the power to shape organisational culture, technology use and remove bureaucracy to make strategic planning more effective, make technology easier to use and make strategy management more effective to improve performance through their strategic decisions.

2.1 Strategic planning and performance

Enhancement of performance within the context of higher education became more reliant on how well universities were able to convert long-term priorities into concerted operational responses that were responsive to technological and organizational change (Abednego et al., 2023; Bosire and Kinyua, 2022). In the context of the framework, strategic planning was a structured management effort that facilitated institutional missions' alignment, decisions on resource allocation and services delivery objectives. Previous studies indicated that companies with coherent planning systems showed better performance results due to the lack of strategic ambiguity and enhanced coordination among organizational units as a result of planning practices (Pedro and Teixeira, 2021; Hasan et al., 2025).

Instead of being a formally formal administrative action, strategic planning assisted the alignment of institutional priorities to operational execution actions. This integration contributed to the strengthening universities' capacity to respond to growing demands from stakeholders in terms of access, transparency and efficiency of services. The findings from previous studies indicated that institutions with organised planning practices were more congruent with organisational objectives and institutional processes, resulting in higher effectiveness of the institution in terms of administration and academic units (Garad et al., 2025; Moreno-Menéndez et al., 2025; Andrews, 1971; Mintzberg and Lampel, 1999).

Strategic planning strengthened the capability of institutions in terms of performance, as it helped identify and mobilise the resources of the organisation to sustain future development goals. The resource-based perspective implied that the difference in performance as observed among institutions could be attributed to differences in the capacity of the institutions to marshal internal resources and align strategic efforts in an effective manner (Barney, 1991). Planning systems, in the context of higher education institutions, supported this process of coordination and improved the communication between departments and strengthened the linkage between the institutional priorities and the activities that were implemented. Also, strategic planning facilitated integration of technological initiatives in institutional development agendas (Dhlamini, 2025) and this led to performance. Universities have increasingly implemented planning mechanisms that help them integrate their vision of digital transformation priorities, enhance their digital service delivery and incorporate innovation initiatives into long-term

institutional planning (Butt et al., 2024). These processes helped to create institutional flexibility and strengthened decision-making mechanisms at an organizational level, particularly within the context of high levels of technological innovation and competition in the field of quality and service in education.

Additionally, institutional monitoring mechanisms were strengthened by applying structured planning which facilitated ongoing monitoring of progress in the strategic goals. Institutions with well-developed planning systems were identified to have a better fit between the choice of resource allocation and priorities of the institution which contributed to the efficiency of system functioning and quality of the services provided to stakeholders (Ghonim et al., 2022; Begičevic Ređep et al, 2026; Palazzi et al., 2025). The conditions supported development of institutional capacity for ongoing performance improvements. Therefore, strategic planning can optimize performance by solidifying the connection between organizational priorities, digital transformation efforts, and how the organization's operations are executed. Given the above arguments, the following hypothesis is suggested:

H1: *Strategic planning positively enhances performance.*

2.2 Perceived Ease of Use and performance

As the world becomes more digital, perceived ease of use is emerging as a key organizational skill that helps higher education institutions make services more accessible, information more readily delivered, and the effectiveness of digital communication with stakeholders increases. As universities continue to rely on institutional websites and digital platforms to support academic and administrative activities, the quality of these digital services has emerged as an important determinant of performance. Previous research indicated that accessibility, information clarity, ease of navigation, and well-designed interfaces in digital service positively affect the efficiency of services, user satisfaction, and organizational responsiveness, all of which are user-oriented digital services. This study revealed that user-oriented digital services that are highlighted and described in the literature such as accessibility, information clarity, ease of navigation, and well-designed interfaces positively affect the efficiency of services, user satisfaction, and organizational responsiveness.

Previous studies have invariably pointed to the ease by which digital platforms enable more efficient communication with economic actors and stakeholders of the university, making the access to institutional information easier and lowering the time and effort spent in accessing services. Good digital interfaces can enhance users' experiences by making the information easy to understand, clear and comprehensible, and thus enhance institutional responsiveness and enable sustainable performance improvements. In the public universities, the perceived ease of use is helpful in achieving the effectiveness of the University by easing the access to university information, enhancing communication with stakeholders and facilitating the efficient delivery of digital services. Good institutional websites help to lower hurdles to finding information, enhance user experience, and help to build ties between universities and their stakeholders. These enhancements ultimately help to provide better performance in digitally enabled higher education settings.

Given these arguments, the following hypothesis is suggested:

In an accessible manner and thus enable effective communication and improve the quality of institutional services. Thus, enhancing the perceived ease of use has been linked to increased operational efficiency and performance in technology-rich learning settings. Perceived ease of use is an organizational capability from the perspective of the Resource-Based View (RBV) that enables universities to leverage their digital resources more effectively in generating value for their stakeholders. Similarly, Dynamic Capabilities Theory proposes that the institutions that continuously improve the quality of their digital service are more likely to meet the changing technological needs and expectations of the stakeholders.

H2: *Perceived ease of use positively enhances performance.*

2.3 Strategy management and performance

In a higher education context, the importance of strategy and management to improve performance in an era of rapid technological change and growing requirements in terms of service quality and organizational performance efficiency became more evident (Quttainah and Ayadi, 2024). The universities adopted innovation-related managerial practices to integrate digital technologies into administrative systems and help to build flexible organizational structures to meet complex environmental needs. It was assumed that companies with an organised approach to strategy management had better results because the use of the practices helped to coordinate the technological investment with the priorities of the company (Endres et al., 2022; Stankevičienė et al., 2025).

The relationship between strategy management and performance may be theoretically described with the resource-based view which stresses the strategic value of resources for increasing competitiveness and sustainability of the organization. This viewpoint implied that the institutions that were successful in managing the resources that were related to innovation produced better performance results due to better use of the knowledge resources and technological infrastructure (Barney, 1991). The

strategy management in the digitally empowered institutional environment allowed for the development of dynamic capabilities related to the organizational adaptability and enhancement of the link between strategic processes and operational execution processes (Hasan et al., 2025).

The initiatives of digital transformation also enhanced the role of the strategy management to the performance of institutions by enhancing the accuracy of planning and helping to make data-driven decisions in various organizational units (Uršič and Čater, 2025). The use of new technology such as AI, cloud computing and integrated digital management systems improved the coordination of administrative activities and the productivity of the institutions, thanks to the increased efficiency of the ways of operating (Chowdhury et al., 2022; Mikalef and Pateli, 2017). These developments enabled universities to be more responsive to the needs of the stakeholders and environment.

Performance was also improved through strategy management by improving internal mechanisms of knowledge sharing that facilitated the allocation process of resources based on evidence and further increased organizational learning potential. Researchers found in the past that organizations with a strong innovation practice showed a stronger integration between administrative and technological systems, and coordination of departments that resulted in a stronger organizational effectiveness (Xia et al., 2024). These allowed institutions to have a better institutional capacity to implement initiatives of digital transformation successfully.

Organizational adaptability was the other mechanism that was important between strategy management and performance improvement. The innovation-oriented strategies had more responsiveness to technological changes and environmental uncertainty among institutions and improved their capacity to maintain their performance outcomes over time (Patnaik et al., 2022). Digital innovation programs in the higher education context facilitated multi-disciplinary communication between the institutional units and harmonized the academic services with the administrative units and external actors. These innovations have increased the flexibility of institutions and efficiency in delivering services (Li, 2020; Teece, 2018). Moreover, digital practices that are innovation-focused enhanced operational efficiency through complexity of coordination and enhanced communication effectiveness among levels of an organization. It was also suggested in the earlier study that digital technologies were more inclined towards the customization of services and reduced costs of administrative processing that directly influenced the improvement of performance in knowledge-based institutions (Iddrisu and Fuseini, 2025). The mechanisms led to strengthening of institutional capabilities and effectiveness of technological integration in universities through strategy management. Based on this, the following hypothesis was hypothesized:

H_3: *Strategy management positively enhances performance.*

2.4 The moderating role of top management support

One of the mechanisms that can boost the effectiveness of strategic and digital transformation efforts in HEIs is top management support. Leadership commitment, a critical factor, has been reported to play an important role in the successful implementation of the organizational strategies, especially in the context of technological change and institutional complexity (Zhang et al., 2023). To enhance the efficiency and performance of institutions, universities rely on the ease of use and innovative practices that are adopted. But, for these efforts to be effective, top management must be actively involved, and they must support and enable institutional transformation processes (Atieh et al., 2026).

Theoretically, the effect of top management support as a moderator can be explained in two ways, namely the Resource-Based View (RBV) and the Upper Echelons Theory (UET). According to the Resource-Based View, leadership commitment is an essential organizational resource that can support successful coordination between organizational assets and strategic directions, and, consequently, the successful implementation of institutional initiatives. The active role of the leadership in supporting the allocation of technological resources and the readiness of the organization for digital transformation. At the same time, Upper Echelons Theory suggests that strategic orientations, technological awareness, and leadership characteristics of top managers impact the organization's outcomes (Ruokonen and Ritala, 2026). Leadership is a factor that reinforces the execution of strategic initiatives and the effectiveness of organizational efforts in the digital transformation environment to increase performance.

Collaboration between academic and administrative units is also easier with top management support, which helps universities better meet the needs of digital transformation. Leadership engagement fosters the use of digital technologies, helps embed digital platforms in institutional systems and increases employee trust in change efforts (Sacavém et al., 2025). These circumstances help to make institutions more ready to change and to make the strategic projects that are introduced throughout the universities more effective. In addition, strong leadership fosters effective communication between strategic decision-makers and operational units, helping to align institutional priorities with operational results more effectively (Twabu, 2025).

Leadership involvement enhances the link between institutional priorities and operational implementation with regard to strategic planning. The greater the top management support, the more coordination between organizational units and the more consistent the planning activity will be with the institutional development objectives (Maley et al., 2024). Leadership

commitment also strengthens monitoring processes that support the effective implementation of digital transformation projects and enhances coordination between strategic planning and digital transformation efforts (Altassan et al., 2025). Therefore, the stronger the leadership support, the greater the contribution of strategic planning to performance.

In the same way, leadership commitment positively affects perceived ease of use initiatives, as the institutional digital platforms and online services can be continuously improved. Top management support leads to investment in user-centric digital services, accessible and easy-to-use institutional websites, and increases the organization's readiness for technological change (Hsu et al., 2019). Leadership also helps to coordinate among IT units and administrative units that provide digital services (Dióssy et al., 2025). These conditions lead to improved quality digital service and increase the impact of digital service on performance.

Similarly, the effectiveness of strategy management initiatives in universities is also improving with leadership commitment. To implement practices that are oriented towards innovation, it is crucial that the investments in technology, knowledge integration processes, and institutional priorities align (Rajan et al., 2021). This alignment is facilitated by top management support and enhances employees' readiness to engage in digital transformation efforts (Bindel Sibassaha et al., 2025). Leadership involvement also helps to build a culture within the organization that promotes knowledge sharing, experimentation, and the implementation of innovative digital solutions (Naim et al., 2024). These conditions enhance the capacity of universities to deal with technological change and to get the most out of the performance gains of strategy management. Overall, top management support enhances strategic planning, perceived ease of use, and strategy management by encouraging resource coordination, organization readiness for technological change and strategic priorities and implementation. This means it is expected that leadership support will increase the relationship between these organizational capabilities and performance.

H_{4a}: *Top management support positively moderates the relationship between strategic planning and performance.*
H_{4b}: *Top management support positively moderates the relationship between perceived ease of use and performance.*
H_{4c}: *Top management support positively moderates the relationship between strategy management and performance.*

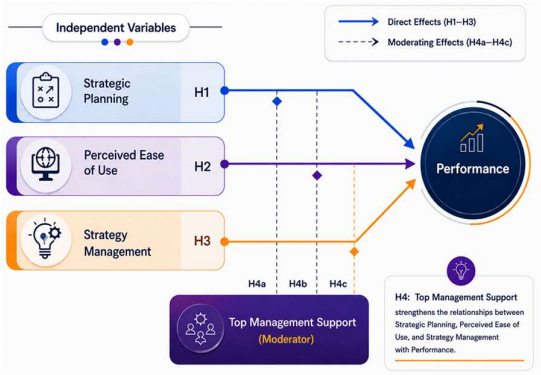

Fig. 1. Research model and theoretical framework

2. Data and methodology

2.1 Study design, sample size and procedure

The research design that was used in the study was a quantitative research design to examine the effect of technology on the performance of the education sector and if the top management moderated the effect. The survey questionnaire was designed to provide a data collection instrument to test the hypothesis that were proposed. The purposive sampling method was adopted in order to make sure that only respondents who had the knowledge and experience that were relevant were included. The target populations were academic and administrative staff at Universities in Jordan particularly in managerial, technological and decision-making roles. This is because they have a direct relation with the processes of digital transformation and performances, and they can provide informed and reliable answers throughout the objectives of the study. The minimum sample size was determined with the help of G*Power software and it was determined as 85 (Faul et al., 2007). Furthermore, Hair et al. (2017) suggest that the sample size for partial least squares structural equation modeling (PLS-SEM) needs to be at least ten times the number of indicators and a sample size of over 200 is adequate to estimate complex models. Furthermore, Krejcie and Morgan (1970) have provided a table that shows a sample size of approximately 366 respondents will be adequate to represent 7,699 employees. The number of valid answers (384) is greater than the minimum suggested by G*Power, Hair et al. (2017), and Krejcie and Morgan (1970). This means that the number of subjects is sufficiently large to ensure that the results are statistically powerful, reliable and can be generalized. The time frame of collecting data was between May and September 2024. The questionnaire has been filled online on the target population to achieve good response rates and representation. Four hundred questionnaires were sent out, 384 valid responses were received out of which the response rate

was 96. In order to evaluate the possibility of the non-response bias, an independent sample t-test was performed, to compare the early responses (collected during the first two weeks) and the late responses (collected during the last two weeks). There were no statistically significant differences ($p > 0.05$) in the findings and hence there is no likelihood that the non-response bias will affect the findings. Table 1 is a summary of the response rates. Of the questionnaires distributed (n=400), 384 were returned and considered to be valid with 12 questionnaires undelivered and 4 questionnaires incomplete. This is a good response rate of 96 per cent, meaning that the response is very high, thus making the data very reliable and representative.

Table 1
Summary of response rates

Questionnaire	**400**
Undelivered	**12**
Uncompleted	**4**
No. of responses	**384**
Response rate (384/400)	**96 %**

Source(s): Authors owns work

3.2 Measures

The assessment of Strategic Planning was done with four items adapted from Johnsen (2017) that cover the university's mission, goal orientation, employees focus on organizational goals and programmed priorities. Four items adapted from Sanmukhiya (2019) were used to assess Perceived Ease of Use for website usability, ease in finding information, clarity of website information and website design. Four items were used to assess Strategy Management based on Endres and Huesig (2022): business intelligence, long-term portfolio management, strategic planning and scenario management for digital transformation. Four items from Johnsen (2017) were used for measuring performance. The items investigated were financial status, quality of services, operational efficiency and the impact of university websites on the quality of student performance. Finally, the moderating variable for this study, Top Management Support, was measured through 4 items adapted from Do Thi Hong Van (2025) and measured by the knowledge of digital technology, proactive support for digital transformation, continuous learning for new digital technologies, and strategic direction for digital transformation of the leader. Responses on all items were on a 5-point scale, with 1 indicating strongly disagree, and 5 indicating strongly agree. All measurement items and their respective sources are listed in Table 2. Before the primary data collection, the questionnaire was analyzed by experts in management and digital transformation for content and clarity. Their comments were used to make a few minor word changes and clarify some of the questionnaire items. A pilot study was then carried out to test the instrument reliability. Cronbach's alpha was used to test the internal consistency of all constructs, which ranged above the recommended level of 0.70 (Sekaran & Bougie, 2016).

Table 2
Survey measurement items

Variables (items)	**Questions**	**Source**
Strategic Planning (SP)	The university orients a sense of mission. The university agenda focuses on the important issues. The university enhances employees' focus on goals. The university defines clear program priorities.	Johnsen (2017)
Perceived ease of use (PEOU)	The university website is user-friendly The university website offers easy information to find The university website information is easy to understand The university website is well designed	Sanmukhiya (2019)
Strategy Management (SM)	The university utilizes business intelligence The university has long-term portfolio management The university has strategic planning The university has scenario management for digital transformation.	Endres & Huesig (2022)
Performance (PERF)	The university maintains its financial condition to support digital development. The university delivers high quality and website services. The university manages the operations in an efficient manner. The university website contributes to improving the university's overall performance	Johnsen (2017)
Moderating variable: Top Management Support (TM)	Our leaders possess strong digital technology knowledge. Our leaders are proactive in promoting digital transformation. Our leaders actively learn about and keep up with emerging digital technology trends. Our leaders inspire and provide clear direction for digital transformation across the organization.	Do Thi Hong Van (2025)

Source(s): Authors' own work

3.3 Descriptive profile of respondents

Table 3 shows the demographic features of the respondents. The results indicated that there was an equal number of males and females with 53.39% males and 46.61% females, which means that there were not many biases of gender in the sample. The age group with the largest number of respondents is 45-64 years (more than two-thirds). This portrays an experienced and mature workforce which possesses a huge academic and administrative knowledge. There is little representation of employees of early career, as a very small proportion of the respondents are under the age of 35. In terms of academic rank, the group of full professors is the largest (38.28%), then there are associate professors (21.09%), and assistant professors (14.06%). In addition, various roles are represented in universities, as the lecturers and administrative staff also make up a

large proportion of the sample. Experience-wise, the sample is highly experienced with a large percentage of the respondents (more than 60%) having over 15 years of academic experience. This helps to reinforce the validity of the responses as participants are given a good opportunity to be well-informed about the processes in the institution and the efforts undertaken to transform digitally. When it comes to qualification in the field of education, the vast majority of the respondents have a Ph.D. level (69.01%) followed by those with a master's level (26.04%). This indicates a very educated sample, and the data obtained were also very rich and reliable. Another advantage of the sample is that it comprised a few Jordanian higher education institutions (public universities) to achieve the institutional representation and to make the findings more general as illustrated in Table 4.

Table 3
Demographic variable

Demographic variable	Category	Count	Percentage
Gender	Male	205	53.39%
	Female	179	46.61%
Age	25–34	17	4.43%
	35–44	93	24.22%
	45–54	129	33.59%
	55–64	132	34.38%
	65+	13	3.39%
Academic rank	Full Professor	147	38.28%
	Associate Professor	81	21.09%
	Assistant Professor	54	14.06%
	Lecturer (Part-time)	57	14.84%
	Administrator	45	11.72%
Years of experience (in academia)	Less than 1 year	7	1.82%
	1–5 years	22	5.73%
	6–10 years	45	11.72%
	11–15 years	77	20.05%
	16–20 years	122	31.77%
	More than 20 years	111	28.91%
Highest degree earned	Diploma	0	0.00%
	Bachelor's	19	4.95%
	Master's	100	26.04%
	Ph.D. / Doctorate	265	69.01%

Table 4
Overview of Institutions/Universities

No.	Institutions/University	Size (employees)	Position
1	University of Jordan	1500+	Standard positions*
2	Yarmouk University	1500+	Standard positions*
3	Mut'ah University	1500+	Standard positions*
4	University of Jordan for Science and Technology	1500+	Standard positions*
5	Al Al-Bayt University	1500+	Standard positions*
6	The Hashemite University	1500+	Standard positions*
7	Balqa' Applied University	250-1500	Standard positions*
8	Hussein Bin Talal University	250-1500	Standard positions*
9	Tafilah Technical University	250-1500	Standard positions*
10	German-Jordanian University	250-1500	Standard positions*

Note: *Standard positions include: Full Professor, Associate Professor, Assistant Professor, Lecturer (Part-time), and Administrator.
Source(s): Authors' own work

3.4 Common method bias

Since all the data in the current study were collected from a single source, a self-report questionnaire, common method bias (CMB) could be assessed. In order to overcome this issue, the single-factor test of Harman was held (Podsakoff et al., 2003). It demonstrated that there was no single dominant factor as the total variance was due to a single factor that was less than 40 percent of the total variance. This means that common method bias is not a serious problem in this study and the results may be less influenced by common method bias.

4. Results

In the current study SPSS 26 was used for descriptive analysis and SmartPLS 4 as PLS-SEM. Data analysis consists of two important steps: the first step is the assessment of the measurement model and the second is the assessment of the model.

4.1 Measurement model

The measurement model was analyzed to measure the reliability and validity of the constructs used in the study, which included strategic planning (SP), perceived ease of use (PEOU), strategy management (SM), performance (PERF), and top management support (TM). Internal consistency reliability, convergent validity and discriminant validity were assessed in line with Hair et al. (2017). All indicator loadings were greater than 0.70 as shown in Table 5 (Construct validity and reliability for all variables) and Fig. 2 (Measurement model), which showed an acceptable indicator reliability. The internal consistencies of all the constructs were high as reflected by Cronbach's alpha scores that varied from 0.822 to 0.917. Similarly, the composite

reliability values (rho_a and rho_c) were between 0.823 and 0.942, which further supports construct reliability. Furthermore, the values of average variance extracted (AVE) also ranged from 0.653 to 0.801 which are larger than the threshold value of 0.5 and point to convergent validity. In general, the results of this study indicate that the measurement model has acceptable reliability and convergent validity.

Table 5
Construct validity and reliability for all variables

Construct	Cronbach's Alpha	CR (rho_a)	CR (rho_c)	AVE
SP	0.864	0.877	0.907	0.710
PEOU	0.822	0.823	0.882	0.653
SM	0.891	0.894	0.925	0.755
TM	0.855	0.886	0.901	0.696
PERF	0.917	0.919	0.942	0.801

Source(s): Authors' own work

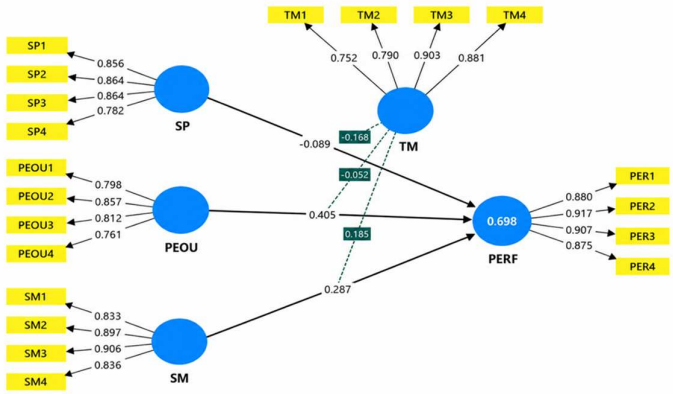

Fig. 2. Measurement model

In addition, to examine discriminant validity, the Fornell–Larcker criterion was used. As illustrated in Table 6 (Fornell–Larcker criterion), the correlation of each construct with its own item is greater than the correlation of each construct with others as the square roots of the AVEs of each construct (diagonal values) are greater than the correlation. These results confirm that all the constructs included in this study are found to have good discriminant validity.

Table 6
Fornell–Larcker Criterion

Construct	SP	PEOU	SM	TM	PERF
SP	**0.843**				
PEOU	0.666	**0.808**			
SM	0.615	0.771	**0.869**		
TM	0.703	0.659	0.612	**0.834**	
PERF	0.614	0.781	0.707	0.671	**0.895**

Source(s): Authors' own work

Multiple fit indices, including the normed fit index (NFI), Chi-square, d_G, and d_ULS were also used to assess the overall model fit. The value of SRMR (0.065) was less than the recommended value (0.08), which indicates good model fit (see Table 7: Model fit criteria). Similarly, the NFI was greater than 0.90 and d_ULS and d_G were in acceptable ranges, which further confirmed the model's goodness of fit. Altogether, these results suggest that the measurement model is an acceptable fit for the observed data and can be used to evaluate the structural model.

Table 7
Model fit criteria

	Saturated model	Estimated model
SRMR	0.065	0.065
d_ULS	0.895	0.892
d_G	0.492	0.484
Chi-square	545.219	522.907
NFI	0.924	0.931

Source(s): Authors owns work

SmartPLS 4 was used to test the proposed relationships using PLS-SEM due to its applicability in analyzing complex research models without requiring multivariate normality in the data. Standard errors and t-values, as well as statistical significance of the proposed hypotheses were estimated using bootstrapping with 5,000 resamples.

4.2 Structural model

Structural relationships should be assessed after obtaining confirmation of the adequacy of the measurement model. The constructs listed in table 8 (Measurement model) showed acceptable reliability and validity. Indicator loadings, composite reliability and average variance extracted (AVE) were above recommended cutoff scores, indicating that the measurement model was appropriate for measurement of the structural model.

Table 8
Measurement model

Variables	Items	FL	CR	AVE
Strategic Planning (SP)	SP1	0.856	0.907	0.710
	SP2	0.864		
	SP3	0.864		
	SP4	0.782		
Perceived ease of use (PEOU)	PEOU1	0.798	0.882	0.653
	PEOU2	0.857		
	PEOU3	0.812		
	PEOU4	0.761		
Strategy Management (SM)	SM1	0.833	0.925	0.755
	SM2	0.897		
	SM3	0.906		
	SM4	0.836		
Top Management Support (TM)	TM1	0.752	0.901	0.696
	TM2	0.790		
	TM3	0.903		
	TM4	0.881		
Performance (PERF)	PER1	0.880	0.942	0.801
	PER2	0.917		
	PER3	0.907		
	PER4	0.875		

Note: FL = Factor Loading; CR = Composite Reliability; AVE = Average Variance Extracted. Recommended thresholds: FL ≥ 0.70, CR ≥ 0.70, and AVE ≥ 0.50. Source(s): Authors owns work

Next, the structural interrelationships were tested by means of a Partial Least Squares Structural Equation Modeling (PLS-SEM) test involving bootstrapping (5000 resamples). Based on the results shown in Table 9 (Path coefficient assessment) and Figure 3 (Structural model), it can be seen that the path that is found to have the greatest positive influence on performance is Perceived ease of use (PEOU → PERF: β = 0.405, t = 3.425, p = 0.001), followed by Strategy management (SM → PERF: β = 0.287, t = 2.578, p = 0.010) and Top management support (TM → PERF: β = 0.242, t = 3.132, p = 0.002). Based on these results it is clear that perceived ease of use, strategy management and leadership support are significant in improving performance. On the other hand, the direct path of strategic planning to performance is not statistically significant (SP → PERF: β = -0.089, t = 1.181, p = 0.238), indicating that strategic planning alone may not be enough to enhance performance in the context studied.

Table 9
Path Coefficient Assessment

Path	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Hypotheses
H_1: SP → PERF	-0.089	-0.082	0.075	1.181	0.238	Not Supported
H_2: PEOU → PERF	0.405	0.390	0.118	3.425	0.001	Supported
H_3: SM → PERF	0.287	0.299	0.111	2.578	0.010	Supported
H_{4a}: TM × SP → PERF	-0.168	-0.156	0.073	2.315	0.021	Supported
H_{4b}: TM × PEOU → PERF	-0.052	-0.044	0.125	0.415	0.678	Not Supported
H_{4c}: TM × SM → PERF	0.185	0.163	0.119	1.553	0.120	Not Supported

Source(s): Authors owns work

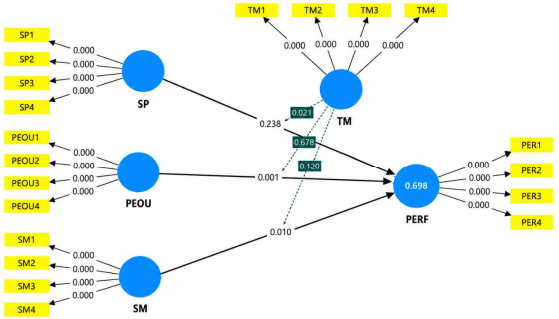

Fig. 3. Structural Model

Source(s): Authors owns work

Moderating effects were then examined as shown in Table 10 (Moderation effects). The results show that top management support has a significant moderating effect on the relationship between strategic planning and performance (TM × SP → PERF: β = -0.168, t = 2.315, p = 0.021). But there were no significant moderating effects in the relations between PEOU and PM (TM × PEUO → PM: β = -0.052, t = 0.415, p = 0.678) and between SM and PM (TM × SM → PM: β = 0.185, t = 1.553, p = 0.120). These results indicate that the positive effects of perceived ease of use and strategy management on performance are not significantly influenced by top management support.

Table 10
Moderation Effects of Top Management Support

Path	P-value	Significance
TM × SP → PERF	0.021	Supported — Negative and statistically significant: indicates TM moderates the effect of Strategic Planning on Performance (dampening/modifying effect).
TM × PEOU → PERF	0.678	Not Supported — No statistical evidence that TM moderates the effect of Perceived ease of use on Performance.
TM × SM → PERF	0.120	Not Supported — Positive but not statistically significant: no strong evidence that TM moderates the effect of strategy management on Performance.

Source(s): Authors owns work

In addition, the effect size (f^2) and predictive relevance (Q^2) were used to evaluate the explanatory power of the model. Results for effect size and predictive relevance, as shown in Table 11, indicate that perceived ease of use ($f^2 = 0.20$) has a moderate effect on performance, while strategy management ($f^2 = 0.10$) and top management support ($f^2 = 0.08$) have small to moderate effects. The effect size for strategic planning is negligible ($f^2 < 0.02$) and is in line with its non-significant direct association with performance. Similarly, the moderation effects are small and most of them are statistically insignificant, except for the interaction of top management support and strategic planning ($f^2 = 0.04$). Furthermore, the model also exhibits good predictive relevance with a value of Stone–Geisser Q^2=0.41 which suggests a good predictive capability. Moreover, the coefficient of determination (R^2) value of the performance presented in Figure 3 is 0.698 which shows that the percentage of the variance of performance explained by the proposed model is 69.8%.

Table 11
Effect size (f^2) and predictive relevance (Q^2)

Construct / Relationship	f^2 Effect Size	Interpretation
SP → PERF	< 0.02	Negligible effect
PEOU → PERF	0.20	Moderate effect
SM→ PERF	0.10	Small to moderate effect
TM → PERF	0.08	Small to moderate effect
TM × SP → PERF	0.04	Small moderating effect
TM × PEOU → PERF	< 0.02	Negligible moderating effect
TM × SM → PERF	< 0.02	Negligible moderating effect
Endogenous Construct	**Q^2 Value**	**Interpretation**
Performance (PERF)	0.41	High predictive relevance

Source(s): Authors owns work

5. Discussion and conclusion

The main purpose of this study was to investigate the role of Strategic Planning (SP), Perceived Ease of Use (PEU), Strategy Management (SM), and their relationship with the performance of Jordanian public universities. A study was also conducted to examine if the connections of the variables are moderated by Top Management Support (TM) in the context of digital transformation.

Results show that perceived ease of use exerted the strongest influence on the performance of the university and therefore the role of easy-to-understand and use digital platforms in strengthening and improving the effectiveness of the University is emphasized. This aligns with earlier research showing that the ease of use and digital infrastructure can enhance organizational performance by improving operational efficiency, enabling access to information, and fostering better collaboration among organizational units (Dai et al., 2021; Khatir & Madani, 2024; Kratochvil, 2025). This aligns with the research that shows that digital transformation helps organizations to improve their performance by using resources more effectively and deliver services with improved efficiency (Chandekar et al., 2021; Vasiliev, 2023; Chi et al., 2025). Public Value Theory (PVT) suggests that accessible and user-friendly digital services can help to create public value by making services more accessible, making stakeholders happier, and enhancing the quality of the services that public higher education institutions offer.

The results also show that there is a strong positive association between strategy management and performance, and once again indicate the role of strategy management as a source of organization's adaptability and responsiveness of the institution. Previous studies have shown that strategy management capabilities are related to improved organizational performance (Beninger & Robson, 2025; Khatir & Madani, 2024), and this study's findings are consistent with those previous results. In the context of Dynamic Capabilities Theory (DCT), strategy management can be interpreted as an institutional capability that allows universities to reconfigure their resources, processes and technological priorities in response to the fast-changing digital environments. However, this relationship is relatively small, indicating that the performance improvements from strategy

management might take time to implement and could be contingent upon the readiness and capabilities of the organization and its alignment with the prevailing institutional culture (Mirajkar et al., 2024; Endres et al., 2022).

By contrast, no statistically significant relationship between strategic planning and performance is found. This discovery dispels the myth that an organization's effectiveness always increases with the presence of strategic planning. While some prior research has highlighted the positive role of strategic planning in organizations' performance (Kilag et al., 2023; Hashim et al., 2022), the current results imply that planning activities are inadequate if they are not properly linked to implementation mechanisms and digital transformation initiatives. This outcome could also be attributed to the institutional features of Jordanian public universities with their relatively centralized administrative structure and regulatory environment, which may have an adverse effect on institutional flexibility. In this context, strategic planning won't necessarily lead to performance gains unless complemented by good execution, resource allocation and ongoing adjustment to technological advances.

Unlike strategic planning, perceived ease of use can have more tangible and short-term impacts on the operation of institutional digital platforms by enhancing users' engagement with them. This may be the reason that perceived ease of use is more related to performance than formal planning practices. The finding is also in line with the suggestion of Dacholfany et al. (2021) that "disconnected strategies are unlikely to yield tangible institutional outcomes. Therefore, the lack of significant relationship between strategic planning and performance found in this study could be attributed to implementation challenges, lack of clear strategic priorities, lack of follow-up mechanisms, and organizational rigidity.

The moderation analysis offers further insights when it comes to top management support. The results indicate that the relationship between strategic planning and performance is moderated by top management support, which has a statistically significant negative effect. The fact that this is contrary to expectations indicates that management involvement is not always an enhancement to the effectiveness of strategic planning, especially where this involvement reinforces rigid planning procedures, too much centralization, or too much bureaucratic control. The level of managerial intervention can be a barrier to decentralized decision-making and a constraint on organizational flexibility and the capacity of academic and administrative units to adjust strategic plans to the changing demands of digital transformation in highly centralized public universities. Therefore, if the role of strategic planning is mainly directive and controlling, it can weaken rather than strengthen the contribution of strategic planning to performance with the support of top management.

The results can be explained by the Upper Echelons Theory (UET) that highlights the importance of characteristics, strategic orientations, and decision-making styles of senior managers in determining organizational outcomes. Thus, the effectiveness of top management support is not only related to the extent of support that it provides but also on how that support is provided. By contrast, the moderating role of top management support in the relationship between perceived ease of use, strategy management and performance is not found to be statistically significant. These results indicate that the operational/organizational properties of perceived ease of use and strategy management might be more important factors for the performance gains than differences in top management support.

The findings also have implications for the Resource-Based View (RBV), Dynamic Capabilities Theory, Public Value Theory and Upper Echelons Theory from a more general theoretical perspective. Perceived ease of use and strategy management can be regarded as useful organizational capabilities which could lead to better institutional performance from the RBV point of view (Barney, 1991). The results also indicate that the importance of the capabilities can be constrained by how they are used and how well they fit institutional needs. Likewise, the findings align with DCT suggesting the need for flexibility and adaptability in an organization as well as constant renewal of its capabilities in the fast-evolving digital world. In general, findings suggest that there may be more direct and powerful links between operationally relevant digital capabilities and university performance than with more traditional planning without adaptive implementation practices (Baslyman, 2022; Kilag et al., 2023; Chi et al., 2025).

5.1 Practical implications

The results of this research provide context dependent and practical implications for university leaders and policymakers in resource-limited settings of public higher education such as Jordan. Considering the high influence of perceived ease of use on performance, universities need to focus on redistributing scarce budgets on high-impact digital service platforms as opposed to general and diffused digitization initiatives. The investments should be directed towards integrated platforms which will make the management operations easier, give an easy access to data and will improve the efficiency of decision making so that the money invested will provide measurable benefits of better performance.

Furthermore, the beneficial nature of strategy management also brings up the importance of systematic and practical innovation processes as opposed to more broadly-based innovation-seeking policies. Colleges are being encouraged to adopt specific "innovation public management tools," such as "internal innovation laboratories" and "small-scale competitive funding programs," as well as "cross-functional committees that support incremental, low-cost innovation projects. Such mechanisms are especially appropriate in limited situations, when massive investments might not be an option, but continuous improvement is needed to improve the performance.The non-significant influence of strategic planning suggests that

traditional, static approaches to planning cannot be effective in the dynamic digital environments. In this regard, it is necessary to move towards more flexible and adaptive planning frameworks by the University (also rolling plans) that can be regularly updated and are consistent with the goals of Digital Transformation. This transformation will support institutions to respond more effectively to the changing needs in organizations, and to changes in technology, and make strategic planning more relevant and effective.

The results further indicate that top management support should not be a directive one but an enabling and facilitating one. In practice this means reducing unnecessary centralization, decentralizing administration and implementing team decision-making processes which make organizations more agile. It is particularly crucial in low-discretion environments, where high hierarchy can impede responsiveness and creativity.

Finally, perceived ease of use has an important impact on performance but it does not necessarily lead to access or inclusion and requires policy-based implementation. Universities must thus make certain that digital transformation projects are inclusive in nature, by enhancing access to digital platforms, tackling the problem of digital divide and introducing systems that can support the needs of a diverse student population. This will ensure that digital transformation is not just efficient but also beneficial for the greater good of the society and equal access to higher education in particular.

5.2 Theoretical contributions

The research study is important as it takes the work a step further by going beyond an additive approach and providing a more contextual view of digital transformation in higher education. While previous research has focused on strategic planning, perceived ease of use and strategy management as separate performance drivers, the current findings suggest that the effectiveness is linked to the condition of the institution particularly in the restricted environments encountered in terms of decreased flexibility and availability of resources. This introduces an important boundary condition in the existing literature, which suggests that such time-honored processes as strategic planning may not be explanatory in the absence of adaptive processes and implementation.

The analysis based on the Resource-Based View (RBV) gives empirical evidence that perceived ease of use and strategy management are the strategic resources which add up in the performance of the institutions directly. Nevertheless, the results can be utilized to develop RBV further by differentiating between operational digital resources that produce instant performance enhancements and innovation capabilities that have a slower but stronger impact on organizational performance due to adaptation. This distinction provides a more subtle interpretation of the formation of value by diverse kinds of resources in digital environments.

The paper also makes a contribution to the Dynamic Capabilities Theory (DCT) by highlighting the need to consider contextual constraints with respect to the effectiveness of organizational capabilities. While DCT mentions the adaptability and reconfigurability of resources, it is pointed out that these are influenced by the rigidity of institutions and do not necessarily lead to performance gains without the support of flexible structures and conducive environments. This outcome is an improvement on the theory because it demonstrates the value of context in determining effectiveness in a capability.

With regards to Public Value Theory (PVT) the paper is a critical analysis of the supposed relationship between perceived ease of use and public value of the society. Despite the fact that current literature tends to relate perceived ease of use with improved access and inclusion, the results presented in this paper indicate that access and inclusion are not automatic and require planning and support through policies. This changes the theoretical approach of seeing digital technologies as a source of value-making per se to the understanding that public value is produced under certain institutional and policy circumstances. Lastly, the research adds to Upper Echelons Theory (UET) because it shows that the effect of the support of top management is not always positive but depends on the context. The result shows that the managerial intervention in some cases reduces the flexibility of the organization, particularly when it bolsters inflexible organizational structures. This brings in some subtle knowledge of the effects of leadership whereby managerial influence may facilitate performance or hinder the same based on its exercise. Thus, this research offers a holistic and theory-based model to explain the relationship among digital governance, digital innovation potentials, and leadership relationship in a limited institutional context and its link to higher education performance.

5. Limitations and directions for future research

Although the current study has been very strong and insightful in terms of identifying the determinants of performance in Jordanian public universities, it has several limitations that need to be noted, which also present opportunities to further studies in the future. Firstly, the study is conducted in a specific and applicable empirical context of the Jordanian public universities as a case study to examine the digital transformation in higher education. While this context helps with internal consistency and contextual relevance of the results, further research could extend the model to other institutional and national contexts to make it more applicable to other contexts and increase generalizability.

Second, the study design is cross sectional and this design is appropriate to capture the relationship between variables within a period of time. However, given the dynamic and temporal aspects of the digital transformation and innovation processes, future studies may adopt longitudinal research methods to capture more information about the dynamic and temporal aspects of the relationships. The current design, however, serves as a good example of the relationships between the different structures, and is in line with previous research of similar empirical nature.

Thirdly, a purposeful sampling method is used in which the respondents are required to have relevant experience and expertise in the academic and administrative context. This enhances the relevance and quality of data collected. This method could be used by future researchers because they could use the probability-based sampling methods to enhance the representativeness of the results.

Lastly, the research is concentrated on the main organizational variables such as the strategic planning, digital service qua perceived ease of use laity, and strategy management as the main sources of performance, and top management support as the moderating variable. While this narrow model facilitates a clear theoretical-based analysis, the next research could include other contextual factors that will also have a greater explanatory power of the model such as organizational culture, digital maturity and leadership styles.

Acknowledgement

This publication is part of the project TED2021-130104B-I00, funded by "MICIU/AEI/10.13039/501100011033/ and by the European Union NextGenerationEU/PRTR" and of the R+D+I project PID2021-124396NB-I00, funded by MICIU/AEI/10.13039/501100011033 and by "ERDF A way of making Europe".

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