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EVALUATING LEADERSHIP IN E-LEARNING: A JORDANIAN PERSPECTIVE USING TOE THEORY

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ABSTRACT
Purpose: *Employing the TOE (Technology, Organization, Environment) Theory as its conceptual framework, this e-learning case study highlights Jordan's educational system. It explains the reasons for its core purpose, which is to test the hypotheses concerning the intricate links between the processes of absorbing new technologies, managing organizations, and their surroundings, as well as the efficacy of e-learning leadership.*
Methodology: *The study incorporates a detailed research design along with appropriate sampling, customized for the education system in Jordan. Reform, with the introduction of different basic statistical techniques like regression within e-learning, evaluates the relationships of technology and organization, environment, and e-learning leadership.*
Findings: *The study's findings contribute to both the theoretical and practical understanding of the role of e-learning leadership in Jordan as they provide a better understanding of how these variables interact with each other.*
Significance: *this study makes a significant contribution to improving e-learning experiences and outcomes in the area, throughout Employing a quantitative research strategy*
Keywords: Leadership in E-Learning, Technology, Organization, Environment.

INTRODUCTION
The emergence of the digital age has brought forth many improvements especially in education, and one of such improvements is e-learning which has become the means of providing education in today's society (Mustapha & Kashefian-Naeeini, 2017). In terms of a global understanding, the scope of e-learning is much wider than it is possible to imagine and its use is steadily becoming more and more common. It is worth defining within the present growing environment that the role of effective management in e-learning is pivotal as it greatly influences the standards and effectiveness of online learning process (Alawamreh & Elias, 2016). Unmoving, notwithstanding the common understanding of the wide reach of e learning, the fact under e learning in context of Jordan provides a unique angle which addresses the broader debate. Located in a central position of the Middle East, Jordan has in recent years embraced e-learning as one of the strategies to enhance her education delivery system providing quality and affordable learning solutions (Hasan, 2019; SALARI, 2016). Analyzing the region of this study from the perspective of e-learning leadership offers an understanding of the complexities, challenges, and strategies used taking into

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account the culture and economy in the region. In the Middle eastern context, this makes Jordan a very interesting country to study the aspect of e learning leadership in America. Considering the geographical location of the country in the heart of the Middle East and its strong commitment towards the promotion of education, as well as the interaction of socio-cultural as well as economic factors, provides a new perspective towards the study of e-learning leadership (AlHamad, Al Qawasmi, & AlHamad, 2014; H. Rawash, Alawamreh, Obeidat, & Nawafleh, 2023).

In Jordan, the adoption of e-learning has been positively embraced in an effort to better the state of education in the country. Evidence of the country's persistence in trying to offer the best education without leaving anyone behind is found in its success on e-learning. Nevertheless, this path is fraught with complications and challenges (Abualoush, Obeidat, Aljawarneh, Al-Qudah, & Bataineh, 2022; Al-Shboul, 2013). From the perspective of learners and trainers, the study reveals the variety of experiences and issues related to e-learning leadership. This understanding of context provides insight into the situation within Jordan, explains the reasons for and the particulars of e-learning leadership (Al-Mawadieh, Aldarabah, Alj-aafreh, Alawamreh, & Angawi, 2024; Obeidat et al., 2021). Mounting barriers related to socio-cultural attributes, economic conditions and educational infrastructure of Jordan lead to some differences from other regions (Alramammnh, Al-Sabayleh, Abzakh, Sakarneh, & Alawamreh, 2024). This study investigates these distinctive features sweeping through the practices of educational leadership in Jordan, the barriers they face and creative ways they have adopted to aid competent e-learning leadership. We hope that by examining the e-learning leadership in the Jordanian environment, we are able to expand the discourse regarding e-learning leadership (Bowers, 2020; Eisheh, Deeb, Alshehab, Almasri, & Alawamreh, 2024). One of the prospects afforded by this scrutiny is the positive change it can bring to the existing educational situation in Jordan and also provide further ideas to other regions that face similar e-learning barriers. In the later parts of the study, we shall extend our research on the e-culture ship indices of the A squared non-slave in Jordan using the Technology-Organization-Environment (TOE) model and make recommendations on how to maintain and grow e-learning in this specific region.

Overview of e-learning leadership in universities

In this era of rapid and excellent change of trends in e-learning, the leaders in the universities' e-learning sphere are of great importance. E-learning leaders develop, direct, and implement the long term strategy for the development of digital education projects. They relate such electronic learning activities with the institutional mission and education objectives. They make provisions for management of selection and use of 'Learning Management Systems' LMS and sacralization, which ought to be in light with the educational goals of the institution (Zheng, Yin, & Li, 2019). Making sure that quality standards are met is some of the working structures of e-learning leaders. They work hand in hand with the professors to ensure that they develop interesting and instructional courses that are offered in the web and ensure that quality is maintained. In this case, they engage to the equally important task of helping faculty members transition to e-learning. E-learning leaders provide faculty training, resources, and other assistance to improve their ability to teach online (Farhan, Talib, & Mohammed, 2019). In the area of e-learning, these executives are focused on the student's perspective in the online courses. Also, they guarantee that the support systems are put in place, are accessible, and today encourage or request that feedback be given in addressing the e-learning course. The embracing of the qualitative and quantitative of e-learning

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is the norm, with heads of e-learning being data-driven decision-makers. They measure and analyze concerns on student achievement, effectiveness of courses and technologies and many more for the purpose of continual improvement. Staying up to date with the latest trends and developments in e-learning is highly important for e-learning executives. They positively search for things like virtual reality, artificial intelligence and even adaptive learning systems to improve the online education process. There is also a great emphasis on the legal compliance and validity of the courses offered to students, which in most cases has proven quite challenging to implement. This includes meeting the different requirements of the students and dealing with issues of privacy and multiple jurisdictions. The other aspect is the effective management of the diverse financial resources available. E-learning leaders request and control budgetary support for the development and implementation of the e-learning programs and infrastructure. In addition, they help to engage faculty, staff, and administrators in the advocacy for e-learning in the university and promote brand emancipation and evolution. There could have been a shift in the functions and importance of e-learning leadership in universities since my last update in January 2022. To make sure you have the most accurate and relevant information, specific university websites, educational publications, or professional organizations are recommended. (ALJAWARNEH, Kader ALOMARI, ALOMARI, TAHA, & OBEIDAT, 2022; Leithwood, Sun, & Schumacker, 2020; Otair, Abualoush, Obeidat, & Bataineh, 2022).

Research Hypothesis

The following research hypothesis can be applied to this study on leadership in e-learning as seen through the lens of the Theory of Opportunity (TOE):

H1: Technology has a significant effect on leadership in e-learning.

H2: Organization has a significant effect on leadership in e-learning.

H3: environment has a significant effect on leadership in e-learning.

METHODOLOGY

The adopted research methodology for the study inches closer to the first by incorporating a quantitative component through administering prepared surveys and questionnaires. It also helps in collecting quantitative data regarding reactions and opinions of the participants. Accessibility and data collection across a wider audience is guaranteed by the survey's online format.

Participants

Employing a purposive sampling approach, a cohort of 200 undergraduate students (N=200) was selected from a range of academic programs at the Al-Salt College for Human Sciences, which is a part of Balqa Applied University. This sample was carefully balanced in terms of gender, comprising 120 females and 80 males, thus ensuring a well-rounded representation. These students came from diverse academic disciplines and backgrounds, contributing to the study's overall diversity. Each sample member actively engaged in the research by providing responses to the questionnaire items, resulting in a dataset of 200 fully completed responses for subsequent analysis. This method not only maintained gender equilibrium but also guaranteed a diverse representation of educational backgrounds, ultimately enhancing the research's reliability.

Instrument

The authors of this work employed a five-point rating scale in this case and measured respondents' reactions. Resolution was reached as agreement option rated between "1 & 5" where one is for a 'strongly disagree' response and five for 'strongly agree' There are five Likert response units in the Served according to an intention – with this Likert scale the authors hoped to measure the full

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spectrum of participants attitudes towards the research question (Alkadi, Masuadi, Mohamed, Mohamud, & Farook, 2022). Hanson, 2015. Such an approach conceptualized that respondents willingly hold such attributes, hence the association of the importance of each of the specifically identified items within the context of national belonging. In this particular case group of researchers aimed out to incorporate diverse opinions regarding the research movement. Negative objects are treated separately and reversed which is one of the principal control measures by this group (Doshi, Karunakar, Sukhabogi, Prasanna, & Mahajan, 2021).

DATA ANALYSIS AND FINDINGS

Using PLS analysis is a most useful active tool when it comes to data analysis. It is quite efficient in exploring severe high dimensional problems through the search for different factors for the independent and dependent variables. Simply put, PLS is used in processing large amounts of data and in constructing models for forecasting. This approach has many areas of applications in this domain enabling reduction of data complexity to enable researchers make better decisions for the next step (Asghari, Khorrami, & Garmarudi, 2020; Qawaqneh, Ahmad, & Alawamreh, 2023).

Evaluation of the Measurement Model

Richter et al. (2016) stressed that the perspective of the evaluation of the survey within the PLS procedure comprised both reflective and formative constructs. The reasons with regard to quality were based on two aspects, which were reliability and validity, and these two aspects helped to gauge the constructs in question. Reliability relates to the degree Lord determined the degree to which the proposed instrument would yield consistent measures of the intended aspect. In contrast, the validity sought the extent to which the instrument performed its function that aimed at measuring the particular issue as explained by Sekaran & Bougie, 2016, p. 197. In this study, the evaluation of the measurement model was performed in three steps: assessing the reliability of indicator items, checking convergent validation, and testing discriminant validity. At this stage, as shown in Figure 1 the measurement model was tested with 16 reflective indicators including T3. It was noted that item T3 was factor loading below 0.50. According to Sarstedt et al. (2011), factors with a loading value of between 0.40 and 0.70 may be eligible for removal as long as the removal of the factor would increase the threshold level of the composite reliability CR. Therefore in this study, these particular indicators were eliminated under essential statistical treatments of the PLS algorithm test.

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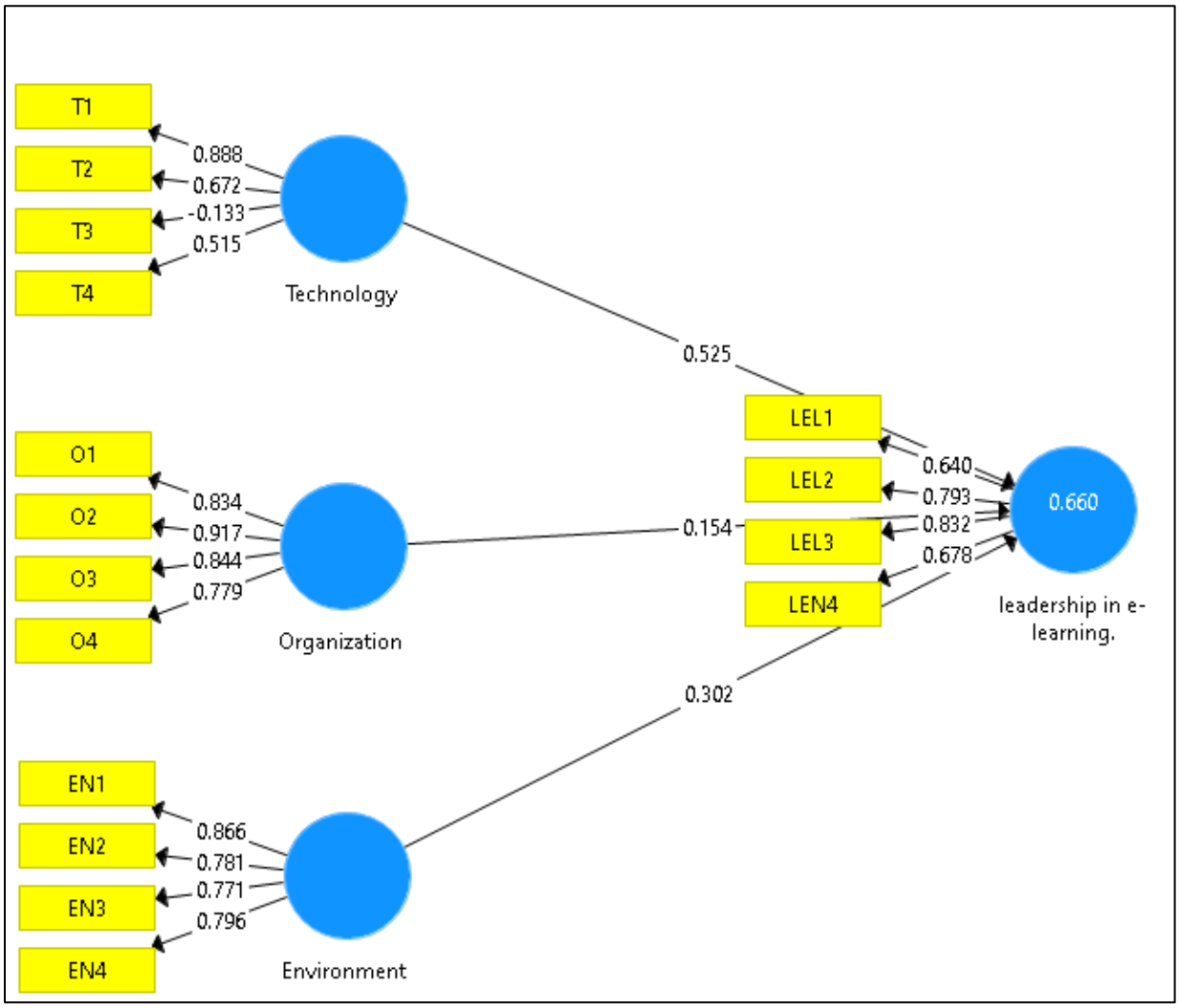

Figure 1. Measurement Model

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As it is shown in Table 1, the convergent validity for each construct was performed using the Average Variance Extracted (AVE). Convergent validity is the degree to which two measures of constructs that are supposed to be related, are in fact related, as stated by Hair Jr. et al. (2016). In this study, a cut off base AVE of 0.5 was achieved due to previous studies on AVE (Cheah, Memon, Ting, Chuah, & Thurasamy, 2019). The results indicate that Origination has the highest value of AVE (0.714) while Technology was the lowest acceptable value at (0.381). To sum up, all AVE values conformed to the standards set for claims of convergent validity.

In addition, the Composite Reliability (CR) values provided in Table 1 were used to evaluate the internal consistency for the individual constructs or factors. The CR varying measure yields the generally accepted minimum level of 0.70. In this study, the CR values for each construct ranged between 0.604 and 0.609 which are all above the cut-off point. As a result, it can be concluded that the variables assessed in this study met the criterion of convergent validity requirements as determined by the set benchmark criteria.

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Table 1
Results of the Measurement Model

Variable	Items	Factor Loading	Composite Reliability (CR)	Average Variance Extracted (AVE)>50%
Technology	T1	0.880	0.604	0.381
	T2	0.672		
	~~T3~~	~~0.133~~		
	T4	0.515		
Organization	O1	0.834	0.909	0.714
	O2	0.917		
	O3	0.844		
	O4	0.779		
Environment	EN1	0.866	0.880	0.64
	EN2	0.781		
	EN3	0.771		
	EN4	0. 796		
leadership in e-learning	LEL1	0.640	0.827	0.547
	LEL2	0.793		
	LEL3	0.832		
	LEL4	0.678		

Similar procedures to those adopted here in determining the discriminant validity of the studied constructs i.e.6- 19 was applied for testing these hypotheses. In line with these criteria, evidence for discriminant validity of a construct would manifest when the figure for the average variance extracted is greater than average correlations with all the other variables (Babin, Griffin, & Hair Jr, 2016). As shown in table 2, the Fornell and Larcker criterion suggest that the results are such that no construct fails the discriminate validity tests since the squared correlation of each construct is less than the average variance extracted. Chinomona et al, (2013) suggest that, if the outcome of the discriminating validity for leadership in e-learning is found to be too low, then this can be considered overlooked.

Table 2.
Assessment of Discriminant Validity (Fornell & Larcker, 1981)

	Environment	Organization	Technology	leadership in e-learning.
Environment	0.804			
Organization	0.328	0.845		
Technology	0.525	0.453	0.817	
Leadership in e-learning.	0.628	0.491	0.753	0.740

Evaluation of the Structural Model

The structural model in this research as it is more commonly called the inner model. This part yields the cause and effect for all the constructs that were studied in the process. It follows,

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therefore, that the structural model technology is concerned with the evaluation of the research questions stated as hypothesis concerns these relationships. With this in mind, this paper used ß path coefficients in order to test six hypotheses. These measures of association have values ranging from -1 to +1 where +1 is said to be a very strong relationship and -1 a very strong negative relationship according to Hair Jr et al (2016). While considering such a relationship the value of t when it reaches to a minimum pre-specified value suggests that the assumed coefficient would be statistically significant at that error probability level. For instance, a t-value of above 1.96 indicates a high probability of the statistical level of significance which is accompanied by a p value of less than 0.05. The table in 4 provides the graph illustrating the degree of uncertainty concerning the estimated relationships constructed towards the predictor variables to the response variable. Such intervals also serve as a reasonable limit within which the researchers will confidently state that actual parameter lies. These instruments are crucial in assessing the credibility and accuracy of the PLS regression model estimates, such that researchers can confidently determine the strength and importance of relations that exist in the covert structure. Bootstrapping is the most common way to determine these confidence ranges, allowing PLS coefficient estimates to be secure and valid.

Table 4.
Confidence intervals

	Original Sample (O)	**Sample Mean (M)**	**2.5%**	**97.5%**
Environment -> leadership in e-learning.	0.298	0.293	0.192	0.377
Organization -> leadership in e-learning.	0.169	0.175	0.071	0.269
Technology -> leadership in e-learning.	0.491	0.491	0.398	0.573

The determination coefficient and the path coefficients significa nce or beta values are the two main areas of evaluation in relation to the goodness of fit of the structural model. Hair et al. (2011) states that the higher the adjusted determination coefficient, the more plausible it becomes to explain the exogenous variable's variance using endogenous variables, hence the more complex the structural equation. The analysis performed in the last results section 4.2 to test the research hypotheses presented in figure 2 and table 5 shows that all of the research hypotheses proposed are accepted. On the contrary, the results indicate that Technology has significant and positive impact on leadership in e-learning (ß = 0.491, t = 10.876, p < 0.05), thus supporting H1. Correspondingly, the results show that Organization has also significant and positive impact on leadership in e-learning (ß = 0.169, t = 3.237, p < 0.05) and therefore H2 is confirmed. In addition, the results show that Emotion also has a significant and positive effect on leadership in e-learning (ß = 0.298, t = 6.438, p < 0.05) and thus supports H3.

Table 5
Hypothesis Testing

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Environment -> leadership in e-learning.	0.298	0.293	0.046	6.438	0.000

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Organization -> leadership in e-learning.	0.169	0.175	0.052	3.237	0.001
Technology -> leadership in e-learning.	0.491	0.491	0.045	10.876	0.000

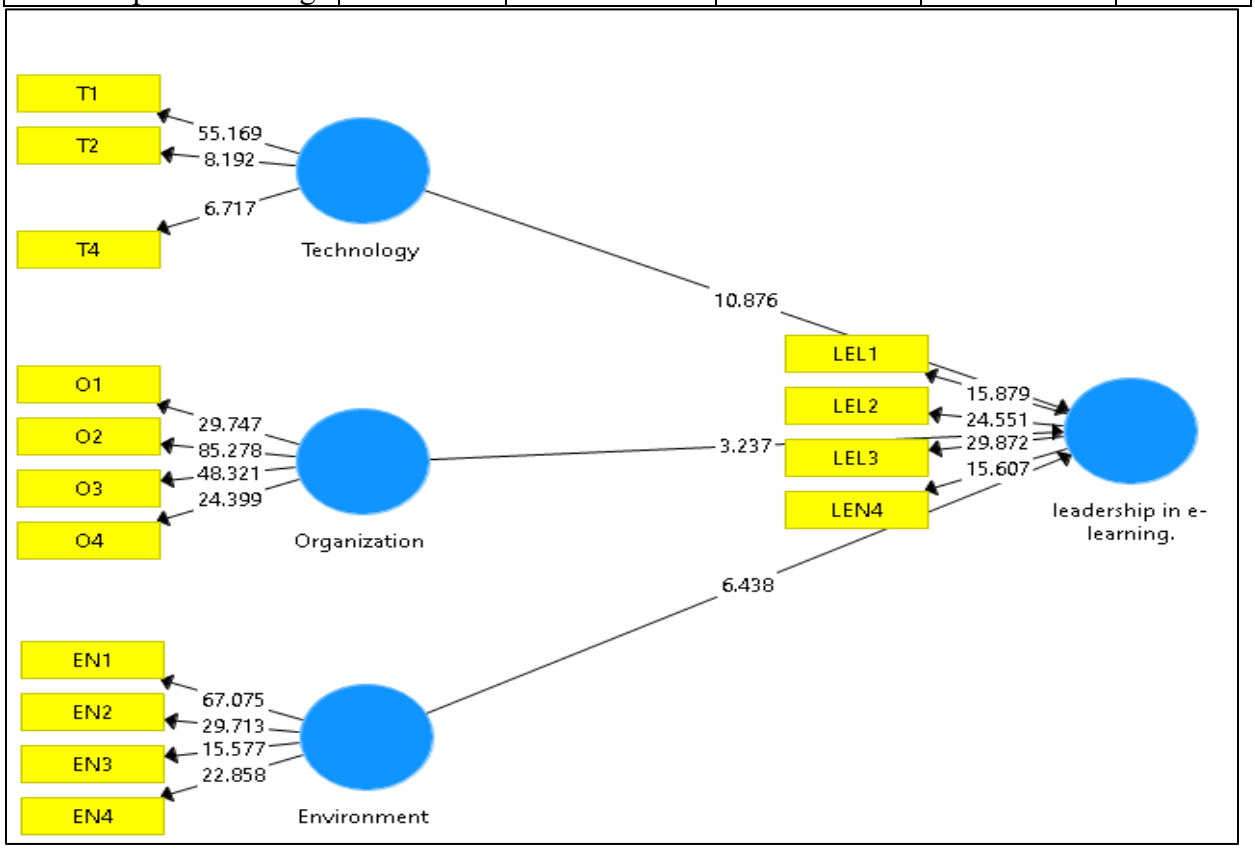

Figure 2. Structural model

DISCUSSIONS

Concerning all the hypotheses in a research study, the most notable and constructive is the increase in our understanding of the area of research concerned. This is seen in the direction of Investigating Leadership in E-Learning: The Jordanian Scenario through the TOE Theory, as it can be noted that the model and the theoretical framework contribute significant insights on leadership in e-learning in Jordan. In this regard, the success of this study in solving all the research hypotheses helps to support and extend the development of e-leadership among the unique cultural surroundings of Jordan–(Souza, Siqueira, & Reinhard, 2017; Thi, Lim, & Al-Zoubi, 2014). In particular, the application of the TOE (Technology-Organization-Environment) Theory to this domain provides a more sophisticated understanding of the interplay of these elements and leadership in e-learning (Thi et al., 2014). Such contribution adds on the pool of evidence on the leadership concepts as well as their significance to e-learning. However, the findings of the research present important practical significance for educational institutions, policy makers and e-learning practitioners in the Jordanian context. The validation of all the proposed relationships implies that the adoption of technology, organizational variables and environment factors determine the effectiveness of leadership in e-learning (AbuAkel & Ibrahim). This understanding can help explain which decision-making approaches and strategies are most suitable for optimizing leadership in the

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context of online education. If it is proved that technology, organization, environment and leadership positively correlate with one another, then this research will provide the corridors for e-learning improvement in Jordan. Such insights could help leaders and decision makers in achieving a more effective use of technology, changing the organization, and the learning environment, and, hence, improving students' and learners' e-learning experiences and outcomes. The focus on the Jordanian perspective is important as it adapts the research to the particular socio-cultural and contextual factors of the region (H. N. Rawash, 2021). The result of this study provides an area-based understanding of e-learning leadership dynamics which is very imperative to the education system in Jordan.

CONCLUSION

The omnipresent affirmation of each and every research hypothesis called for in this study is a remarkable degree of success in supporting the development of the theories of e-learning leadership within the Jordanian context. Such substantiated hypotheses provide evidence confirming the intricate interdependence between technology, organizations, and the external environment and leadership, which in turn operates within the framework of e-learning. It is evident that the insights provided by such relationships are significant and can help the education sector, policymakers and practitioners of e-learning in Jordan. Considering the importance of technology, organizational culture and structure, as well as the environment in developing such leadership, such educational stakeholders can be more effective in making decisions and formulating policies that will enhance leadership on e-learning. In addition, the detail about how the study is constructed to the case of Jordan is important. It modifies the research to the particular socioeconomic cultural setup of the area. This kind of perspective captures important ideas relevant to the education sector of Jordan. It helps us understand more about the leadership of e-learning and offers ways to improve the e-learning experience as well as results for learners and students in this particular context.

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