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Challenges of educational leaders' utilization of educational portal information systems

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ABSTRACT

The study aims to determine the challenges that hinder the adoption of educational portal information systems by Omani educational leaders, in order to explore the manner through which their capabilities can be improved. Moreover, the study uses quantitative research through the questionnaire as the main research instrument. The research population consisted of all educational leaders of the educational portal information systems in the Sultanate of Oman. The research sample included 96 individuals from the study population, selected using a convenience sampling method. Moreover, the study findings concluded that the challenges hinder the adoption of educational portal information systems obtained a moderate response degree, whereas the requirements for developing educational portal information systems obtained a very high response degree. Moreover, there were no statistically significant differences in the challenges hinder the adoption of educational portal information systems and the requirements for their development attributed to the variable of gender, years of experience, technological competency, and job position. Lastly, the study recommends the necessity to encourage leaders to participate in workshops and to keep educational leaders continuously updated on the latest improvements of the educational portal is necessary.

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1. INTRODUCTION

Enhancing student learning experiences and attaining high-quality education depends heavily on educational leadership [1]. Educational leaders play critical roles in leading change initiatives in schools [2]. Throughout the whole policy-making process, educational leaders at the school, district, or system levels are important policy players. They also assist educators, parents, students, and other stakeholders in the field in developing and implementing collaborative education policies that are advantageous to all parties. By doing this, they promote fundamental principles and policy objectives and methodically increase the ability of educational institutions and systems to successfully achieve their goals [3].

Modern technology has succeeded in changing the educational landscape [4]. Information systems increase the efficacy of the educational process by shifting the traditional administrative processes related to dealing with educational data and exchanging information [5]. More effective methods and resources are available now than ever before to help leaders in local communities and schools stay connected with updates from the Ministry of Education. Educational portals are becoming a practical choice for communication

technology that makes use of connectivity and information provided or received mainly through wired or wireless networks to share, store, and update knowledge and information dynamically [6].

The educational portal characteristics, such as automated procedures, cost savings, simpler routines for staff, centralized data systems, easy access to information, and easy connection with other users and departments, are effective in improving employee performance [7]. To make full use of the educational portal, certain requirements must be fulfilled to enable educational leaders to effectively adopt them. System quality, information quality, and service quality are positively correlated with customer satisfaction when perceived usefulness is high while using educational portal information systems [8].

Educational leaders' ability to succeed in educational institutions largely depends on how they employ technology in their daily practices and the efficient handling of diverse information systems [9]. The greatest challenge facing the Ministry of Education is to raise the technological skills of its professionals to operate in a globally connected world [10]. The main problem lies in the fact that the number of school principals who use the educational portal in the Sultanate of Oman is very limited, in addition to the low familiarity of some school principals with how to deal with management information systems, and the lack of relevant training programs in this regard. Therefore, it has become of utmost importance to work to investigate the most prominent challenges that hinder them from the effective use of information systems and educational portals and develop several solutions to overcome these challenges [9]. After reviewing a wide range of Omani studies that address the topic of the educational portal, it has become apparent that there is a challenge with its implementation by some school administrations, leading to variations in the quality of performance and organizational practices. This calls for further research and investigation [7]. Recognizing the obstacles and demands imposed by information and communication technology (ICT), many studies have been conducted to determine educational leaders' needs and demands that must be fulfilled by the Ministry of Education to activate and use ICT to improve administrative and instructional procedures [11]. Based on what has been mentioned, the researcher sees the statement of the problem to revolve around determining the challenges that face educational leaders while utilizing educational portal information systems and shed light on requirements for further development. The study is going to investigate three significant questions:

i) What are the challenges that hinder the adoption of educational portal information systems by Omani educational leaders?
ii) What are the requirements for developing educational portal information systems to ease their use by Omani educational leaders?
iii) Are there statistically significant differences in the responses of the study sample regarding the challenges hindering the adoption of educational portal information systems and the requirements for their development attributed to study variables (gender, years of experience, technological competency, and job position)?

More informed decision-making can result from recognizing and resolving the difficulties educational leaders encounter while adopting educational portal information systems. Educational leaders may better utilize current technology and data by identifying these difficulties and devising solutions to solve them. Through the removal of barriers and enhanced use of educational portal information systems, administrators may maximize their time and resources, resulting in higher production and efficiency in educational establishments. The identification of obstacles in the use of educational portal information systems might point out areas in which educational leaders could need further assistance and training. This offers the chance for professional development programs designed to tackle particular issues and provide leaders with the abilities and information they need to use these technologies efficiently. To facilitate their adoption by educational leaders, it is important to examine the requirements for the development of educational portal information systems. Finally, it guarantees user acceptance and engagement, long-term sustainability, user-friendly interfaces, effective workflows, tailored solutions, and seamless integration, which results in the successful deployment and usage of these systems at educational institutions.

Educational portal is a web application that offers specific services to users over the internet are frequently referred to as portals [12]. An educational portal is an online gateway environment that enables users with a variety of educational interests to access educational materials and information [13]. The educational portal is defined in the current study as a set of administrative information systems for educational leaders in the General Office of the Ministry of Education and its affiliated directorates to facilitate the work of leaders by obtaining the required data and information.

Information systems are defined as the sources of information that support decision-making. These systems have a prominent role in raising the level of organizational performance by providing the necessary information to educational leaders [14]. Information systems are defined in the current study as systems and applications that work to improve and develop the performance of educational leaders.

Educational leaders is the process of influencing an organized group toward accomplishing its goals is the definition of leadership [15]. The term “educational leaders” refers to administrators who have official

leadership roles at the school, district, and system levels, such as head teachers, vice-principals, and principals [3]. In the current study, educational leaders are used to refer to leaders in the General Office of the Ministry of Education in the Sultanate of Oman who hold the job title (Department Assistant Director-Department Director-Assistant General Director-General Director) and who are entrusted with directing workers in the educational field.

2. LITERATURE REVIEW

Education is a cornerstone of society, and how well educational leadership is executed has a significant impact on how students learn. Principals and other school administrators are examples of educational leaders who can impact and change learning settings [16]. Leadership has a significant role in raising school accomplishments and promoting effective learning, which benefits institutions and society as a whole. Successful school leadership requires individuals possessing several distinguishing traits that assist the school in achieving its objectives at the student, teacher, and societal levels [17].

Despite the importance of leadership in schools, the challenges and difficulties facing school leaders are many. Educational leaders continue to have difficulties in determining exactly what data to be utilized and how they can benefit from them. That is to say, using data to promote instruction and track administrative work is a problem for administrators. Strong leadership and the utilization of data are supported by the literature, but there is not enough solid empirical proof. Evidence of effective leadership techniques that leverage data to promote favorable student or overall school results should be clearly established [11], especially while keeping in mind that ICTs are essential parts of everyday life. They are vital resources for the growth of new knowledge-based economies [18].

The Internet is a vast hypertext information space that allows users of all kinds to search and locate content across a variety of domains. A plethora of publicly accessible portals are currently available in the educational/instructional domain. Educational portals encourage the use of ICT for learning and help users obtain reliable information according to their needs [19]. Online educational portals are becoming more and more popular since the majority of people in today's world spend most of their time in front of a computer and browsing the Internet [20], [21]. Official education policies should encourage principals to use the Internet more frequently on platforms like social media groups, email, and educational portals [22].

One of the reasons for Oman's 2040 Vision is to investigate new avenues and advancements in the educational system [23]. The primary entry point for users to access a variety of online services linked to education in the Sultanate of Oman is the educational portal offered by the Ministry of Education [7]. The "Educational Portal" information system was launched by the Sultanate of Oman's Ministry of Education in 2007. The Ministry of Education's goal is to gather and store the data. Every day, thousands of workers, educators, learners, and parents utilize it for a variety of purposes. It keeps track of all educational data. The Oman Education Portal has a lot of information on user interactions and activities. Analysis of this vast amount of data can help educators identify students who require more support to raise student performance levels. The information retrieved may lead to the discovery of new information, which will help decision-makers in the field of education have a better grasp of how students behave [24].

The Sultanate of Oman's Ministry of Education's Portal is a component of its initiatives to strengthen community ties and advance information services. Information from both regional and centralized sources is included in the education database on the portal. This includes Ministry of Education-wide statistics as well as basic school-level information on students, staff, and school inventories. It also includes news and information for national and local stakeholders. It also covers information on various modes of communication such as the Internet, mobile devices, and phones, together with learning support software to aid students in independent research. In addition, it also contains monitoring mechanism for student development through reporting; and resources that help students and instructors communicate outside of the classroom [25].

The Omani Ministry of Education portal simplifies administrative procedures and enables many users—administrators, instructors, students, and even parents—to complete various transactions online. Users may access a variety of programs through the portal, including the school management system (SMS), which electronically converts all administrative tasks in schools. It offers a variety of electronic services and gives thorough information about schools, students, instructors, and ministry staff. The learning management system (LMS) is another application that is connected to the portal. It manages all aspects of education, including the publication of e-learning materials such as audio and video files, digital texts, and e-books, which help teachers present the material to students in an engaging manner. The document management system (DMS), which keeps track of and archives user-sent electronic documents, is likewise connected to the site. In addition to reducing the amount of paper transactions, this system offers an audit trail for all papers sent back and forth between users. The interface portal system (IPS) provides access to all three of the previously stated systems, which are connected with one another [26].

To successfully develop an educational portal, an institution must engage in holistic planning with all relevant parties. It is necessary to evaluate all institutional procedures that the portal system may impact. The outcome of this comprehensive planning should be a strategy for the system's implementation and maintenance [27]. There are several necessary steps to assist educational leaders in utilizing educational portal information systems. These steps include facilitating the login process to the educational portal and implementing intensive training courses for school administrations conducted by relevant entities within the Ministry of Education. This is to ensure the optimal utilization of the educational portal and work towards providing modern, high-specification laptops for the administration in educational institutions [7]. Thus, it is imperative that all members of the school administration team get ongoing training on how to activate all aspects of their jobs correctly [9].

The first step in strengthening the E-Portal in Oman is to conduct a thorough study of the informational needs of current and prospective users, how often they use the information on the portal, and how valuable and accurate they believe the material to be. A skill study of the present workforce and information providers might come next. The identification of training programs required by pertinent staff in all directorates, including regional directorates and schools, might result from the latter study to enhance E-Portal usage. For all staff members, the Ministry of Education might provide or sponsor brief training sessions on information access and utilization. It could also mandate that frequent operational reports be posted on the site at predefined intervals, such as yearly reporting on in-service training and school supervisors [28].

Many studies have been conducted at the local level to determine the effectiveness of educational portals and challenges hinder their adoption. Abaker and Al-Shehhi [7] investigate how the educational portal affects workers' performance at the Sultanate of Oman's Ministry of Education. According to the results, employee performance appears to be positively affected by the use of instructional portal technology. The findings also show that, as compared to employee performance under the prior manual method, employee performance has grown following the implementation of educational portal services. Al-Mahdhur [9] determines how the educational portal may improve Omani school administration's performance in light of e-governance standards from the principals' point of view. The findings revealed that the performance of the school administration is greatly impacted by educational portals, particularly when it comes to the cognitive and technological aspects of e-governance. Al-Alawi [29] aimed to discover the drawbacks of implementing electronic management (Oman Educational Portal) in the Ministry of Education from the IT staff viewpoint. The results revealed that there are administrative, financial, and technical challenges related to human resources) that hinder implementing the electronic management in the Ministry of Education.

The Omani Ministry of Education should keep a careful eye on technological advancements to ensure ongoing progress. When planning and designing technological services, it is important to include all relevant parties and offer them a voice. Furthermore, user and staff views should be taken into account while evaluating the present educational portal offerings. Modern technological services, including the requirement for mobile applications, must also be offered. It is recommended that technology services be periodically evaluated and that appropriate instruments and efficient procedures be used to ensure compliance with new and international standards [7]. Al-Alawi [29] recommended giving the Ministry of Education sufficient funding to undertake electronic management and appropriate training courses for staff members who will be using the Oman educational portal to embrace electronic management. Additionally, there is a need for developing a system of reinforcement and connecting it to the anticipated performance as well as the outcomes of the Ministry of Education's actual implementation of electronic management.

3. RESEARCH METHOD

The research utilized the quantitative approach, which Mohammed [30] defined as “a set of tools or methods used by decision-makers to address a specific problem or to rationalize the administrative decision to be made regarding a particular situation. This approach assumes the availability of sufficient data related to the problem and also requires the identification of hypotheses and factors that directly or indirectly affect the situation.” The research population consisted of all educational leaders of the Educational Portal Information Systems in the Sultanate of Oman. The research sample included 96 individuals from the study population, selected using a convenience sampling method.

3.1. Characteristics of the research sample

Table 1 shows the distribution of the study sample according to their characteristics. The distribution includes four main variables. These variables are gender, years of experience, technological competency, and job position. Each variable includes different categories.

Table 1. Distribution of the study sample according to their characteristics

Variables	Categories	Frequencies	Percentage (%)
Gender	Male	50	52.1
	Female	46	47.9
	Total	96	100
Years of experience	Less than 5 years	33	34.4
	From 5 to less than 10 years	31	32.3
	10 years and above	32	33.3
	Total	96	100
Technological competency	Low	14	14.6
	Moderate	35	36.5
	High	47	49.0
	Total	96	100
Job position	School principal	3	3.1
	Assistant school principal	5	5.2
	General director or assistant general director	41	42.7
	Department head	21	21.9
	Supervisor	14	14.6
	Senior teacher	12	12.5
	Total	96	100

3.2. Research tool and the verification of its validity and reliability

The researcher constructed a questionnaire, and its validity and reliability were confirmed through various methods. The questionnaire was sent to experts to assess the linguistic formulation, clarity, and relevance of the statements. The experts reached an agreement of 82%, thus the finalized questionnaire comprised 36 statements distributed across two axes. Internal consistency validity was confirmed by applying the questionnaire to a pilot sample of 15 individuals. The internal consistency validity was calculated using Pearson's correlation coefficient between each statement's score and the total score of the axis to which the statement belongs in the questionnaire, all of which were statistically significant at the 0.01 significance level [31]. The general construct validity for each axis was verified by finding the correlation coefficients between the dimensions and the total score of the axis. The correlation coefficients for the dimensions with the total score of the first axis ranged between (.745**-.890**), and for the second axis, they ranged between (.849**-.880**), all statistically significant at the 0.01 significance level. The five-point Likert scale (strongly disagree, disagree, neutral, agree, and strongly agree) was used for scoring the research tool, where responses were scored: strongly disagree=1, disagree=2, neutral=3, agree=4, and strongly agree=5.

Tables 2 and 3 show the Cronbach's alpha reliability coefficients for the two axes of the questionnaire. Table 2 indicates that Cronbach's alpha reliability coefficients were calculated for the dimensions and the total score of the first axis. The Cronbach's alpha values for the dimensions ranged between (.964-.977), and the reliability coefficient for the axis was (.977), indicating high reliability. These reliability values suggest that the questionnaire is suitable for application and that its results can be relied upon and trusted.

Table 3 indicates that Cronbach's alpha reliability coefficients were calculated for the dimensions and the total score of the second axis. The Cronbach's alpha values for the dimensions ranged between (.865-.973), and the reliability coefficient for the axis was .931, indicating high reliability. These reliability values suggest that the questionnaire is suitable for application and that its results can be relied upon and trusted.

Table 2. Cronbach's alpha reliability coefficients for the dimensions of the first axis

No.	Dimensions	Statement	Cronbach's alpha reliability coefficients
1	The first dimension: limited technological competency	4	.965
2	The second dimension: insufficient training	4	.964
3	The third dimension: resistance to change	4	.972
4	The fourth dimension: limited resources and infrastructure	4	.977
	Total score	16	.977

Table 3. Cronbach's alpha reliability coefficients for the dimensions of the second axis

No.	Dimensions	Statement	Cronbach's alpha reliability coefficients
1	The first dimension: system quality	4	.865
2	The second dimension: service quality	4	.917
3	The third dimension: information quality	4	.973
4	The fourth dimension: professional development	4	.945
5	The fifth dimension: ongoing support	4	.899
	Total score	20	.931

3.3. Statistical methods

The researcher used SPSS to analyze the data using various statistical methods. These included frequencies, percentages, means, standard deviations, and Pearson's correlation coefficient. Additionally, Cronbach's alpha, T-Test, and One-Way ANOVA were applied to extract the results.

4. RESULTS AND DISCUSSION

4.1. Presentation and analysis of the results of the first question

To answer first question, the mean and standard deviation were calculated for the dimensions of the challenges that hinder the adoption of educational portal information systems. These dimensions were then ranked in descending order according to the mean for each dimension, as shown in Table 4. The table indicates that the challenges hindering the adoption of educational portal information systems had a mean of 3.37, a standard deviation of .673, with a moderate response degree. This can be attributed to the fact that, despite the importance and effectiveness of the role of educational leadership in schools, there are several challenges and difficulties that school leaders face. Limited resources and infrastructure are among the most prominent difficulties affecting the adoption of educational portal information systems by educational leaders in Omani schools. Limited Internet connectivity can hinder the effective use of these systems, and the lack of readily available support services can impede leaders' ability to solve browsing problems efficiently. This result aligns with the findings of Al-Alawi [29], which aimed to discover the drawbacks of implementing electronic management (Oman Educational Portal) in the Ministry of Education from the IT staff's viewpoint. The results revealed that there are administrative, financial, and technical challenges related to human resources that hinder the implementation of electronic management in the Ministry of Education.

Table 4. Means and standard deviations of the sample responses on the dimensions of the first axis: challenges hinder the adoption of educational portal information systems

No.	Dimensions	Mean	SD	Rank	Response degree
1	The first dimension: limited technological competency	3.13	.816	3	Moderate
2	The second dimension: insufficient training	3.22	.984	2	Moderate
3	The third dimension: resistance to change	3.12	.865	4	Moderate
4	The fourth dimension: limited resources and infrastructure	4.03	.743	1	High
	The overall mean	3.37	.673		Moderate

4.2. Presentation and analysis of the results of the second question

To answer the second question, the mean and standard deviation of the dimensions of requirements for developing educational portal information systems were calculated, and then these dimensions were arranged in descending order according to the mean for each dimension. Table 5 indicates that it is evident that requirements for developing educational portal information systems had a mean of 4.48, a standard deviation of .262, and a very high response degree. This can be attributed to the fact that working on the development and improvement of educational portal systems may require providing some basic standards and needs to ensure the efficient development of educational portal information systems. The system should have adaptive and integrated capabilities to reduce the need for manual data entry. Additionally, the portal should include communication tools that facilitate interaction among educational leaders. Moreover, it is necessary to keep educational leaders informed of updates, enhancements, and new features of the educational portal.

Table 5. Means and standard deviations of the sample members' responses regarding the dimensions of the second axis: requirements for developing educational portal information systems

No.	Dimensions	Mean	SD	Rank	Response degree
1	The first dimension: system quality	4.37	.532	5	Very high
2	The second dimension: service quality	4.53	.424	2	Very high
3	The third dimension: information quality	4.62	.404	1	Very high
4	The fourth dimension: professional development	4.48	.391	3	Very high
5	The fifth dimension: ongoing support	4.38	.437	4	Very high
	The overall mean	4.48	.262		Very high

In light of what has been mentioned, to successfully develop an educational portal, an institution must engage in holistic planning with all relevant parties. It is necessary to evaluate all institutional

procedures that the portal system may impact. The outcome of this comprehensive planning should be a strategy for the system's implementation and maintenance [27]. There are several necessary steps to assist educational leaders in utilizing educational portal information systems. These steps include facilitating the login process to the educational portal and implementing intensive training courses for school administrations conducted by relevant entities within the Ministry of Education. This is to ensure the optimal utilization of the educational portal and work towards providing modern, high-specification laptops for the administration in educational institutions [7]. Thus, it is imperative that all members of the school administration team get ongoing training on how to activate all aspects of their jobs correctly [9].

4.3. The presentation and analysis of the results of the third question

4.3.1. Statistical differences according to the gender variable

A t-test was utilized to identify statistical differences based on the gender variable. Table 6 indicates that there were no statistically significant differences regarding challenges hinder the adoption of educational portal information systems and the requirements for their development attributed to the gender variable. This can be attributed to the fact that the perceptions of the sample individuals regarding these challenges and requirements do not differ according to their gender, as all educational leaders in Omani schools may encounter the same challenges affecting their ability to utilize educational portal information systems. Therefore, they have a comprehensive understanding of the necessary requirements to address these challenges.

Table 6. Means, standard deviations, and T-values indicating the significance of differences among the sample members' opinions

Axis	Gender	No.	Mean	SD	Calculated (T) value	Degrees of freedom	Significance level	Significance
The first axis: challenges hinder the adoption of educational portal information systems	Male	50	3.48	.676	1.667	94	.099	Not sig.
	Female	46	3.25	.658				
The second axis: requirements for developing educational portal information systems	Male	50	4.47	.230	-.078	94	.938	Not sig.
	Female	46	4.48	.295				

4.3.2. Statistical differences according to the variable of years of experience

One-Way ANOVA was utilized to identify statistical differences according to the variable of years of experience, as illustrated in the Table 7. The table indicates that that there were no statistically significant differences regarding the challenges hinder the adoption of educational portal information systems and the requirements for their development attributed to the variable of years of experience. This can be attributed to the fact that differences in years of experience among the sample individuals of educational leaders do not influence their attitudes towards the challenges hinder the adoption of educational portal information systems and the requirements for their development. This indicates that years of experience are not considered influential factors on the attitudes and perspectives of educational leaders.

Table 7. Results of the One-Way ANOVA for differences in the responses of the study sample

Axes	Source of variance	Sum Squares	Degrees of freedom	Mean squares	(F) value	Significance
The first axis: challenges hinder the adoption of educational portal information systems	Between groups	.195	2	.098	.212	.810
	Within groups	42.874	93	.461		
	Total	43.070	95	--		
The second axis: requirements for developing educational portal information systems	Between groups	.057	2	.028	.409	.666
	Within groups	6.443	93	.069		
	Total	6.500	95	--		

4.3.3. Statistical differences according to the variable of technological competency

One-Way ANOVA was utilized to identify statistical differences based on the variable of technological competency, as illustrated in the Table 8. The table indicates that were no statistically significant differences regarding the challenges hinder the adoption of educational portal information systems and the requirements for their development attributed to the variable of technological competency. This can be attributed to the fact that regardless of the varying levels of technological competency among the sample individuals, their perception of the challenges hindering the adoption of educational portal information

systems and the requirements to address them remains unaffected. This may be because all sample individuals need to constantly stay updated on all the updates, improvements, and new features of the educational portal.

Table 8. Results of the One-Way ANOVA for identifying the differences in the responses of the study sample

Axes	Source of variance	Sum squares	Degrees of freedom	Mean squares	(F) value	Significance
The first axis: challenges hinder the adoption of educational portal information systems	Between groups	.201	2	.101	.218	.804
	Within groups	42.869	93	.461		
	Total	43.070	95	--		
The second axis: requirements for developing educational portal information systems	Between groups	.011	2	.005	.076	.927
	Within groups	6.489	93	.070		
	Total	6.500	95	--		

4.3.4. Statistical differences according to the variable of job position

One-Way ANOVA was utilized to identify statistical differences according to the variable of job position, as illustrated in the Table 9. The table indicates that there were no statistically significant differences regarding the challenges faced by educational leaders in using educational portal information systems and the necessary requirements for their development that can be attributed to the variable of job title. This can be attributed to the fact that the different job positions of educational leaders do not affect their views on the challenges that hinder the adoption of educational portal information systems and their requirements. This may be due to the need for all educational leaders to participate in workshops, conferences, and webinars with technology experts, and to receive continuous training on how to simplify administrative tasks using the educational portal.

Table 9. Results of the One-Way ANOVA for identifying the differences in the responses of the study sample

Axes	Source of variance	Sum squares	Degrees of freedom	Mean squares	(F) value	Significance
The first axis: challenges hinder the adoption of educational portal information systems	Between groups	.999	5	.200	.427	.829
	Within groups	42.071	90	.467		
	Total	43.070	95	--		
The second axis: requirements for developing educational portal information systems	Between groups	.250	5	.050	.719	.611
	Within groups	6.250	90	.069		
	Total	6.500	95	--		

The findings of this study align with several previous studies concerning the challenges and requirements for adopting educational portal information systems. The first challenge identified—limited technological competency—resonates with the work of Al-Alawi [29], who highlighted technical barriers faced by educational staff in Oman. This is further supported by Sossa *et al*. [18], who emphasized the importance of digital inclusion for educational leadership. The second major challenge, insufficient training, is echoed by Abaker and Al-Shehhi [7], who stressed the necessity of professional development in maximizing the use of educational technologies. Banoğlu *et al*. [22] similarly highlighted the need for continuous leadership training in using educational tools, which strengthens the argument for addressing this issue. The third challenge, resistance to change, is consistent with Al-Mahdhur [9], who pointed out that unfamiliarity with e-governance practices hinders school leadership. Also, Chandler [11] observed resistance to data-driven approaches, which correlates with the findings in this study.

Regarding the requirements for development, system quality was identified as a critical factor, in line with Osman [6], who stressed the need for robust and reliable systems to support educational initiatives. Similarly, Alshaher [14] noted that strategic information systems directly impact organizational performance, supporting this study's focus on enhancing system quality. Service quality and ongoing support, which are essential to successful system adoption, are also backed by Tetteh *et al*. [27], who emphasized the importance of user-friendly interfaces and ongoing technical support. The empirical contributions of this study are also consistent with Alawi *et al*. [24], who found that educational portals in Oman have significant potential to improve decision-making and leadership performance when adequately supported. Moreover, previous studies [20], [23] highlighted the critical role of infrastructure and training in ensuring the successful implementation of new educational technologies, reinforcing this study's recommendation for continuous system updates and user training.

The theoretical contribution of this study builds on the previous works [15], [16], who both stressed the pivotal role of leadership in improving learning environments. In particular, this study complements

Creswell [31] methodological approach by using quantitative research to identify leadership challenges and opportunities. This contribution aligns with the research of Jeelani *et al*. [20], who emphasized the increasing relevance of educational portals for modern learning environments. The findings of Abaker and Al-Shehhi [7], who looked into comparable educational issues in Oman, also support the study's recommendations for thorough planning and training for leaders.

4.4. Practical implications

The findings of this study have important practical implications for educational practice and policy, particularly in the Sultanate of Oman. This study identifies the barriers to adopting educational portal information systems, such as limited technological competency, insufficient training, and resistance to change, and provides a clear roadmap for addressing them. Educational institutions can use these findings to create targeted professional development programs that improve leaders' technological skills and familiarity with these systems. Furthermore, policymakers can use these findings to develop policies that encourage the use of technology in educational administration. This could include investing in infrastructure, developing ongoing support mechanisms, and ensuring that educational leaders receive regular updates on system improvements, all of which are critical for maximizing the benefits of educational portals while also improving the overall efficiency and effectiveness of educational management.

5. CONCLUSION

The study reveals that the adoption of educational portal information systems in the Sultanate of Oman faces moderate challenges, particularly in areas like technological competency, training, and resistance to change. Despite these challenges, the requirements for the development of these systems are recognized as very high, indicating a strong demand for improvements in system quality, service quality, information quality, and ongoing support. The study also finds no significant differences in the challenges and development requirements based on gender, years of experience, technological competency, or job position, suggesting that these issues are universally experienced by educational leaders.

To address these challenges, it is essential to encourage educational leaders to engage in continuous professional development through workshops, conferences, and webinars with technology experts. Ensuring that these leaders are regularly updated on the latest advancements in educational portals is crucial for maintaining their competency and enthusiasm. The system itself should be adaptable and integrated to reduce manual data entry, further enhancing its usability. Comprehensive training programs that cover both basic computer skills and advanced functions of the portals are recommended to build leaders' confidence in using these systems effectively. Looking forward, future research should explore the role of educational leadership in driving digital transformation within schools, particularly through the implementation of educational portals. Additionally, developing a proposed model for educational portal information systems in Omani schools, informed by global best practices, could provide a framework for future improvements and adoption.

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C : **C**onceptualization
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Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

INFORMED CONSENT

We have obtained informed consent from all individuals included in this study.

ETHICAL APPROVAL

The research has complied with all the relevant national regulations and institutional policies in accordance with the tenets of the Helsinki Declaration and has been approved by the author's institutional review board or equivalent committee.

DATA AVAILABILITY

The data that support the findings of this study are available on request from the corresponding author [YNSAH].

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