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Entrepreneurial Leadership and SMEs' Performance: The Antecedent Role of Digital Transformation Readiness

Kepimpinan Keusahawanan dan Prestasi PKS: Peranan Anteseden Kesediaan Transformasi Digital

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Keywords:
[Digital Transformation Readiness; Performance; Entrepreneurial Leadership; SMEs; TOE Model]

ABSTRACT

The primary goal of this paper is to investigate whether digital transformation readiness (technological, organizational, and environmental model) influences entrepreneurial leadership and, if so, to what extent this entrepreneurial leadership affects SMEs' performance. To achieve the study's objective, 337 responses were collected from SMEs' employees (at all administrative levels) in Oman, using the technological, organizational, and environmental (TOE) model. SmartPLS 3 software was used to test hypotheses using structural equation modelling. The findings show that entrepreneurial leadership is positively and significantly influenced by technological and organizational factors. While environmental factors do not have such a significant effect. Furthermore, entrepreneurial leadership positively influenced SMEs performance. Technological and organizational factors can enhance entrepreneurial leadership among SMEs employees in developing economies, which reflected positively on their SMEs' performance. Therefore, decision-makers in SMEs

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consider those factors while preparing the strategic planning and consider digital transformation as a vital antecedent for enhancing the whole performance of their enterprises. Despite the priority that should be given to technological and organizational factors, environmental factors should be more considered.

Kata Kunci:
[Kesediaan Transformasi Digital; Prestasi; Kepimpinan Keusahawanan; PKS; TOE Model]

ABSTRAK

Matlamat utama kertas ini adalah untuk menyiasat sama ada kesediaan transformasi digital (model teknologi, organisasi dan alam sekitar) mempengaruhi kepimpinan keusahawanan dan, jika ya, sejauh mana kepimpinan keusahawanan ini mempengaruhi prestasi PKS. Untuk mencapai objektif kajian, 337 maklum balas telah dikumpulkan daripada pekerja PKS (di semua peringkat pentadbiran) di Oman, menggunakan model teknologi, organisasi dan alam sekitar (TOE). Perisian SmartPLS 3 digunakan untuk menguji hipotesis menggunakan pemodelan persamaan struktur. Dapatan kajian menunjukkan kepimpinan keusahawanan dipengaruhi secara positif dan signifikan oleh faktor teknologi dan organisasi. Sedangkan faktor persekitaran tidak memberikan kesan yang begitu ketara. Tambahan pula, kepimpinan keusahawanan mempengaruhi prestasi PKS secara positif. Faktor teknologi dan organisasi boleh meningkatkan kepimpinan keusahawanan dalam kalangan pekerja PKS dalam membangun ekonomi, yang mencerminkan prestasi PKS mereka secara positif. Oleh itu, pembuat keputusan dalam PKS mempertimbangkan faktor tersebut semasa menyediakan perancangan strategik dan mempertimbangkan transformasi digital sebagai pendahulu yang penting untuk meningkatkan keseluruhan prestasi perusahaan mereka. Walaupun keutamaan yang harus diberikan kepada faktor teknologi dan organisasi, faktor persekitaran harus lebih dipertimbangkan.

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INTRODUCTION

Due to their vital role in the economy, small and medium-sized enterprises (SMEs) are considered as the industry's backbone (Sarvari et al., 2021). The larger the contribution of SMEs to an economy, the more robust the economy's characteristics will be. More than 99 percent of businesses in the European Union (EU) are small and medium-sized enterprises (SMEs), which employ between 50 and 70 percent of equivalent full-time workers. SMEs provide a superior perspective to help them preserve their economic significance in the face of ongoing technological breakthroughs and the digital revolution since they provide more than 50% of the value added to the European economy as a whole (Garzoni et al., 2020). From this viewpoint, academic research has concentrated on the dissemination of digital technologies centred on value propositions and consumer interactions. Digitalization and

specialized technologies are driving innovation in SMEs working in both high-tech and traditional sectors (Matarazzo et al., 2021). Many sectors of the economy, notably SMEs, are undergoing upheavals that need the digitalization of their operations in this digital age (SMEs). To expand and maintain a sustainable competitive edge, SMEs must adapt to changes. One of the most difficulties for SMEs is determining how to boost their digital accessibility, grow their skills to functional value services, and have a strong competitive position to promote the welfare of the community (Abdulquadri et al., 2021).

Digital transformation (DT) has become a prominent topic in recent years in business research and practice. A high standard for DT is the significant changes in society and business brought about by the use of digital technology. While it has been mentioned that enterprises must find ways to innovate with these technologies by creating strategies that take the impact of the digital transformation and improve operational performance (Vial, 2019). According to the definition of digital transformation, it is "a shift in all productivity and employment formation techniques, the application of an adaptive management approach to competing, rapidly satisfying increasing needs, a procedure of recreating an enterprise to digitalize operational processes and establish effective supply chain correlations; operational use of the online platform in configuration, production, advertising, trying to sell, and introducing, and is a data-based management approach. (Ulas, 2019). The term "digital transformation" refers to several distinct constructs that have been extensively discussed in scientific studies of the research. For instance, see (Larjovuori et al., 2018) pre-digitalization, digital maturity and post-digitalization were among the categories of DT processes that were decomposed. These categories were: strategic milestones, guidelines and directions for businesses, customer experience and operational digital transformation, designing DT, converting strategic directions into goals, field implementation of DT, digital transformation at the organizational level, product and service offerings, and building a DT strategy (Deja et al., 2021) .In the literature, the term DT is commonly used interchangeably with the term's digitization and digitalization. These terms are not identical, as they apply to varying levels of digital technology use (Gong & Ribiere, 2021). Nowadays, it appears that the connection between digital skills and organizational challenges throughout a crisis seems to be more relevant than it was initially assumed. Companies needed to measure their level of digital maturity. The authors, Gordon Fletcher and Marie Griffiths, state that "if the objective of a corporate overall digital transformation strategy is to become "digitally mature", this does not consider a short-term task."(Warkentin et al., 2012). Furthermore, firms which are less" digitally mature "are more exposed to issues and less flexible to change than their counterparts. While on the other hand, the pace of digital transformation has picked up so much speed that enterprises are finding it difficult to apply security processes carefully. They develop at an astounding level, and as a result, network problems mount, putting the safety and stability of enterprises at risk of being harmed (Meyer-Hentschel et al., 2020).

Investments in information technology (IT) are created mainly to facilitate and support innovation (Bagale et al., 2021). As a result, SMEs began incorporating electronic technology into their operations to increase their participation (Troise et al., 2022). Meanwhile, unlike large businesses, SMEs are unable to invest significant capital in digital technology. As a result, adopting technology and digitalizing SME activities was not as straightforward as anticipated (Parker & Castleman, 2007). "Internal knowledge, technological capability, firm

size, limited funding, and a scarcity of resources" have all impacted SMEs' digitalization initiatives. Despite these limitations, various academics explored the factors influencing SMEs' implementation of digital technology from a range of perspectives (Klein & Todesco, 2021). Any technology's effectiveness and influence on corporate performance are dependent on firms properly adopting it, hence it is vital to understand the determinants associated with technology adoption. Whereas SMEs are more adaptable, speedier, and less limited, resource restrictions and knowledge gaps frequently prevent small businesses from evaluating and implementing digitalization possibilities. This leads us to ask: how can SMEs successfully use their limited resources to pursue digital and data-driven innovations while limiting the probability of failure that might follow from implementing their corporation's DT? (Barann et al., 2019).

The Technology-Organization-Environment (TOE) model invented by Tornatzky and Fleischer is used in the current investigation (Tornatzky et al., 1990). The TOE dimensions of the organization have been linked in numerous studies, providing a more holistic view of the factors driving the adoption of technology (Abed, 2020).The TOE model is an effective paradigm for understanding SMEs' adoption of IT-based innovation (Bhatti et al., 2020) on technology adoption in SMEs has been undertaken to date, he finds that the TOE framework has a strong theoretical foundation, and empirical backing, and has been utilized to investigate technology adoption.

In the Omani context, however, its vast geographical area and small population distinguish Oman (Alraja et al., 2021; Hussein et al., 2017). As well as more than 80% of the population has access to telecommunications infrastructure, including landlines and/or cell phones, as well as Digital services, SMEs in Oman are expected to adopt digital technology. Oman, like the other Gulf Cooperation Council (GCC) countries, is significantly dependent on oil. Due to the obvious soaring oil prices, the nation is compelled to offer a way forward through economic diversification in terms of sustainable development (Hussein et al., 2017).On the other hand, leadership is critical in guiding and supporting an organization through a digital business shift. Leadership in the context of digital business transformation is still in its infancy. Moreover, this study up to the knowledge of the researcher is the only study that discussed entrepreneurial leadership, as a mediator between digital transformation readiness factors on the performance of SMEs (Larjovuori et al., 2018). Thus, in this study, we will look at the potential effects of "technological, organizational, and environmental factors" on the digitalization of SMEs' activities. Because there is uncertainty about the extent to which SMEs in Oman can truly convert into digital firms and the variables affecting this transformation, the major goal of this article is to explore the influence of critical elements impacting digital transformation readiness on the performance of SMEs in Oman through entrepreneurial leadership.

The next parts give a concentrated overview of the literature, a discussion of pertinent theory, and hypotheses. Following this are the methods and findings sections, which are then followed by the discussion of their implications in relation to the literature, with specific attention paid to both limits and suggestions for future research.

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RESEARCH FRAMEWORK AND HYPOTHESES DEVELOPMENT

The Theory of Reasoned Action (TRA), Diffusion of Innovations (DOI), Technology Acceptance Model (TAM), Technology Organization Environment Framework (TOE), The Theory of Planned Behavior (TPB), Task-technology Fit (TTF), and United Theory of Acceptance and Use of Technology (UTAUT) have been identified as the most empirically used and base structure of extended theoretical representations of technology acceptance studies (Jayawardena et al., 2020). Several technology adoption studies have used the TOE framework because it provides a valuable analytical framework for examining the adoption and assimilation of various forms of IT innovation in institutional level (Oliveira & Martins, 2011b). To examine technology innovation adoption at the business level, the TOE framework incorporates technological, organizational, and environmental aspects (Sila, 2013). The technical environment (e.g., technology availability and technology characteristics) addresses the suitable technologies accessible to companies, whereas the organizational context addresses organizational aspects and resources such as hierarchy, volume, structure, kind of company, and so on. The environmental context, the third component, describes environmental qualities such as government rules, consumers, competition, and so on. The TOE framework is congruent with the DOI theory, which stresses human qualities as well as organizational internal and external variables as drivers of organizational innovativeness. These correspond to the TOE framework's technological and organizational environments. The TOE framework includes environmental variables, which are not covered in the DOI model, in addition to technical and organizational settings. The environmental setting simultaneously constrains and provides possibilities for technological innovation(Chandra & Kumar, 2018). Prior research in the context of SMEs shown that the (technological, organizational, and environmental) (TOE) model was widely used to investigate few information systems difficulties, and it is experimentally verified in this setting (Qalati, Li, et al., 2020). In contrast to previous research (Green et al., 2012) argued that linear models may be combined with a unified theory of technology acceptance or a technology acceptance model and its application. According to (Qalati, Galvan, et al., 2020) they don't pay attention to organizational and environmental factors. The technical background includes relevant established and upcoming technologies. The organizational context describes the firm's size, managerial level, and scope. Environmentally, businesses, government agencies, and the sector as a whole are referred to as "environmental context." Because of incorporating both human and non-human drivers, the TOE framework surpasses traditional models like the technology acceptance model (Awa et al., 2017). The TOE paradigm is compatible with the theories of contingency, resource-based perspective, and diffusion of innovation (AlSharji et al., 2018).

Oman is continuously striving to diversify its economy and reduce its dependency on hydrocarbons. Economic diversification aims to promote rapid economic growth. The government plans and moves forward to attract more foreign direct investment, so creating more job opportunities to meet the problem of growing job market entrants. The government also takes concrete steps to encourage more private investment in the economy, specifically in small and medium-sized enterprises (SMEs) (Almaimani & Johari, 2015). Small - five to nine employees with an annual revenue of OMR 25000 to OMR 250000. According to the Ministry of Commerce and Industry, a medium-sized enterprise has ten to ninety-nine employees and a yearly revenue of OMR 250000 to OMR 1.5 million (MoCI) (Khan, 2018).

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It has been stated that there is a shortage of managerial skills and financial assistance needed to build the backbone of SMEs. According to Eniola and Entebang (2013), SMEs are in desperate need of technical competence and support, and the biggest problem they confront is managing their resources. According to Farsi and Toghraee (2014), the government should implement adequate regulatory regulations to address the challenges that SMEs confront in terms of skills and expertise in implementing new technologies in order to bring about successful innovation. According to Khan and Krishnamurthy (2016), policymakers should develop policies to instill the entrepreneurial spirit in the minds of young people and to help SMEs overcome challenges.

When it comes to technology adoption, organizational context refers to how the organization's character and behavior management interacts with the dynamics of its surroundings; "organizational leadership." Then, in a dynamic, complicated, and unpredictable competitive environment, an entrepreneurial leader who is unique from behavioral leaders is require(Aldaas et al., 2022; Arifin et al., 2016). As a result, the most significant characteristic of entrepreneurial leadership is regarded as producing value by uncovering new possibilities and developing new tactics to obtain competitive advantages. Entrepreneurial leaders see entrepreneurship as a means to achieve a competitive advantage and outperform competitors (Amir et al., 2012). Furthermore, in the 1990s, studies focus on CE -Corporate Entrepreneurship or entrepreneurial leadership within organizations- as possibility of achieving and boosting the corporation's opportunities to grow the capabilities necessary to generate innovative technologies (Arifin et al., 2016). Numerous prior research have found a link between entrepreneurial leadership and organizational performance. The above link was studied using many research methodologies, such as meta-analysis, empirical, and conceptual methods. Those empirical research were able to show a direct association between the two variables. Empirical researches have proven that entrepreneurial leadership creates positive performance and related it to the expansion of SMEs (Sawaean & Ali, 2020). Entrepreneurial leadership has been found to boost organisational performance in the Malaysian SMEs sector (Rahim & Ramli, 2015). However, SMEs should be creative and proactive; more precisely, they must engage in organisational entrepreneurship, to meet their objectives and aims. (Awad et al., 2020).

Digital Transformation

Despite the many concerns regarding security and privacy towards using new technology and digitalizing the work (Alkhariji et al., 2021; Badr et al., 2021; Bou-Chaaya et al., 2021; Chicha et al., 2021; Tsou et al., 2021) most enterprises globally try to digitalize their work process using different types of recent technologies such as Integrating blockchain technology in those processes (Dargahi et al., 2022) or using big data analytics tools (Imran et al., 2022), social media tools such as Facebook to enhance the enterprises' performance (Alraja et al., 2020) and enterprise systems such as business intelligence(Alkhaldi et al., 2017) which helps them analyze the impact of multi factors on their business (De et al., 2021). Digitization is the process of converting a physical resource to a digital one (digitalization) (Henriette et al., 2016). The most important part of DT is that businesses must use modern digital technologies to stay competitive. The idea is to use digital platforms and the Internet to offer both online and offline services (Mergel et al., 2019). Therefore, digitalization of business processes will continue because modern consumers are drawn to a

wide range of technological innovations Because of their speed and relative ease of use, as well as the growing of mobile technologies that allow search, payment, and other tasks, they enable the reduction of health hazards (Mitrofanova et al., 2022).

The TOE framework distinguishes three main sets of characteristics affecting a company's tendency to process innovations: technology, organization, and environment (Baker & Baker, 2012). The TOE framework is well-founded in theory and empirical evidence and has been applied to the study of technology adoption (Oliveira & Martins, 2011a). The current study's constructs were identified through a survey of the literature on technology adoption in SMEs. The next sections examine the elements that influence each of the three basic constructs, as well as the process of developing hypotheses.

Technological Factors

This demonstrates the extent to which SMEs utilize information technology (Nguyen et al., 2015). Nevertheless, technology is viewed as a critical component of successful digitalization adoption (Parida et al., 2019). For example, it has been adopted for very core tasks such as Learning systems, machine learning, and deep learning, and digital learning, users' trust in social media, employment, big data and mobile cloud security. Also, it has been proved that the use of technology has positive impact on a SME's innovativeness (Ključnikov et al., 2022). This essential aspect plays a vital role in digitalization adoption since it encompasses technical infrastructure, personnel expertise with technology, and understanding of using and executing this technology in customer interactions. Additionally, when firms have an acceptable level of information technology resources, this boosts SMEs' potential to effectively adopt IT and convert their activities and procedures in the o digital economy (Gutierrez et al., 2015).

Organizational Factors

The size of the organization results in an increase in internal expenses, such as those associated with searching and storing. On the other hand, because of the digitalization of the organization, investment in technology suitable for the extent of the organization will encourage companies to minimize their internal, search, and storage expenses (Alraja et al., 2021). Further research indicates that the company size is an important factor in determining its digitalization adoption (Awa et al., 2015). According to prior studies, large organizations tend than small firms to embrace digitalization (Amankwah-Amoah et al., 2021). Furthermore, the predicted advantages and negatives influence digitalization adoption significantly (Khayer et al., 2020). In any regard, large organizations are more bureaucratic than small businesses, which can hinder decision-making, and collaboration will become more difficult (Stentoft et al., 2020). Since working within SMEs is defined by its own set of beliefs and practices, if the IT deployed is relevant to those practices and beliefs, SMEs' transforming their tasks and procedures into digital enterprises will be enhanced (Alraja et al., 2021).

Environmental Factors

An important signal for companies to digitalize their activities, which is also regarded as a driver of potential clients, is the level to which individuals are linked to the internet. Further factors that may influence a company's adoption of digitalization include the environment in

which the company performs and the strength of its competitors (Simoes et al., 2019). For example, Voza et al (2022) explored the perception of digitization in terms of environmental objectives and sustainability in the SME sector (Voza et al., 2022). The environmental element, as employed in this study, relates to the environment whereby SMEs are expanding. This condition includes a number of stakeholders with the ability to influence SMEs by either aiding or impeding their transformation into digital enterprises (Ghobakhloo & Ching, 2019).

Entrepreneurial Leadership

In today's tumultuous and competitive corporate world, entrepreneurial behaviors across contexts are critical for fostering innovation and adaptation to a changing environment (Ranjan, 2018) advocate for strategic management to incorporate an 'entrepreneurial mindset', particularly in high-velocity situations of competition and change. As a result, emphasizing the concept of 'EL' is a critical first step in this direction. The notion of EL has grown in importance as organizations strive to improve their performance, adaptability, and long-term survival (Sandybayev, 2019). Entrepreneurial leadership happens at the juncture between entrepreneurship and leadership. In a competitive environment, EL becomes a critical factor in cultivating an entrepreneurial attitude and culture(Ranjan, 2018). EL is the capacity to persuade others to manage resources strategically, emphasizing both opportunities- and advantage-seeking behaviors (Huang et al., 2014). If we compare entrepreneurial leadership to other known leadership concepts, it is still relatively uncharted territory. Earlier research hypothesized that corporate success is dependent on strategic management, which allows for the separation between performance predictors and outcomes (Ahmad et al., 2019). Prior research has examined the relationships between entrepreneurial approach and business performance, but none of the studies has examined this relation through entrepreneurial leadership between digital transformation readiness factors and performance, particularly in small to medium-sized enterprises (SMEs) (Hair et al., 2010). Thus, there is a dearth of literature devoted to this particular relationship, necessitating further investigation. The following hypotheses have been proposed by the researcher based on the literature that has been addressed above.

H1: Technological factors significantly influence the entrepreneurial leadership in SMEs.
H2: Organizational factors significantly influence entrepreneurial leadership in SMEs.
H3: Environmental factors significantly influence the entrepreneurial leadership in SMEs.
H4: Entrepreneurial leadership significantly influence the performance of SMEs

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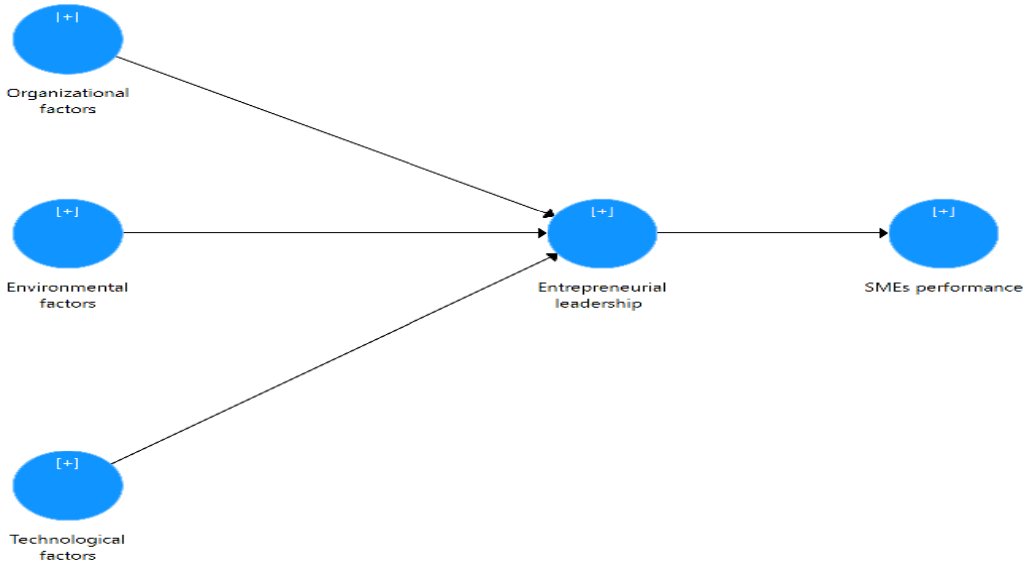
Figure 1: Proposed Research Model



RESEARCH METHODOLOGY

Despite different sorts of government assistance, the potential for expansion of the SME sector in Oman is limited by a variety of reasons, including bureaucracy, scarce funding, a lack of competencies and resources, inefficient management, low technology, fierce rivalry, international economic considerations, the cost and unavailability of trained personnel, and other critical supports that have enabled this industry to thrive in other nations. Effective leadership and entrepreneurial attitudes are required to overcome these barriers(Imran & Aldaas, 2020). The government has increased its efforts to assist SMEs, especially in the context of economic diversification (Central Bank of Oman, 2017). Additionally, Oman's SMEs, like those in other nations, contribute significantly to GDP growth, employment opportunities, and technology (Public Authority for SMEs Development, 2014). Omani SMEs, for instance, represent for 90% of all firms, constitute 15-20% of GDP, and create 40% of Oman's population.

Different criteria and standards are used to define SMEs. For instance, the World Bank (2017) defined SMEs using three criteria: number of workers, total assets, and yearly sales. As we examine the criteria utilized, we can see that there are differences in the cutoffs (lower and higher boundaries), number of workers, and sales turnover in the various classifications. The OECD defines a SME as a company that employs up to 249 people, with the following breakdown: (a) micro companies have 1–9 workers, (b) small businesses have 10–49 employees, and (c) medium businesses have 50–249 employees (OECD 2017). Previously, SMEs in the Sultanate of Oman were defined purely by the number of employees. The Ministry of Commerce and Industry (MOCI) amended the rules in 2012 and incorporated two indicators/ criteria to differentiate between micro, small, and medium-sized enterprises: staff count and sales turnover (Muscat daily, June 29th, 2012). In Oman, micro-enterprises are classified as organizations with fewer than 5 employees and annual sales of less than RO 100,000, whereas small businesses have 6–25 employees and annual sales ranging from RO100,000 to RO500,000. Medium-sized businesses employ 26–99 people and have yearly

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sales ranging from RO 500,000 to RO 3,000,000.There is a variation in the metric (number of workers) between the OECD and MOCI. Large firms are defined as those with more than 100 employees.

Sampling

The needed data were gathered with a questionnaire developed to examine the impact of technological, organizational, and environmental factors on the entrepreneurial leadership among the SMEs employees in Oman. As well as, to examine the impact of this leadership style affect the SMEs performance. The study instrument was constructed using validated studies The TOE model's three dimensions were measured using five items for technical variables, four items for organizational aspects, and five items for environmental elements. Previous study validated and implemented these variables (Alraja et al., 2021; Chege & Wang, 2020). The entrepreneurial leadership scales were built using four items from (Fontana & Musa, 2017). While the performance of SMEs is measured using four items adapted from (Tseng & Lee, 2014), with few modifications to accommodate the study context. Because the participants were instructed not to say anything that would expose their personality, we proclaimed the goal of the study, the directions for completing the questionnaire, as well as the significance of respecting the participants' private and confidentiality. The questionnaire is organized into two parts: (1) SMEs' and respondents' profiles (see table 1), then (2) adopted factors. All variables-related items were structured on a seven-point Likert scale. To ensure that questions were understood and were clear, as well as to improve them, a pilot study was done with six SMEs leaders; based on their comments, certain items were adjusted or omitted. Following a review of the questionnaire, a pilot study was conducted by using the questionnaire to collect data from 30 employees working in SMEs. The data was analyzed and the final version of our questionnaire was ready for distribution. The questionnaire was electronically disseminated to workers at SMEs in the Oman. We got 426 replies; 89 of those returned surveys were not analyzed because respondents provided the identical response to all items. As a consequence, there were 337 valid surveys for analysis. Because the data were collected by questionnaire, we must determine the internal consistency of the construct and the measure's validity. To do this, a factor analysis and reliability test were conducted. Additionally, a skewness test was used to determine the data's normality. While the developed hypotheses have been explored using structural equation modelling.

Table 1: SMEs Profile

SME Age	1-5 years	167	49.6
	6-10 years	67	19.9
	11-15 years	22	6.5
	15-20 years	35	10.4
	More than 20 years	46	13.6
Total		**337**	**100.0**
SME Size	Less than 10	133	39.5
	10 - 19 employees	90	26.7
	20 - 49 employees	80	23.7
	50 - 99 employees	34	10.1
Total		**337**	**100.0**
Local or international	Local	312	92.6
	International	25	7.4
Total		**337**	**100.0**

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Table 2: Respondent Profile

Respondent age	18-24 years	103	30.6
	25-34 years	148	43.9
	35-44 years	59	17.5
	45-59 years	26	7.7
	60 years and more	1	0.3
Respondent education level	High school or below	52	15.4
	2-year college degree	96	28.5
	Bachelor degree	159	47.2
	Master degree or above	30	8.9
Respondent gender	Male	115	34.1
	Female	222	65.9
Job level	Primary-level employee	150	44.5
	Primary-level manager	73	21.7
	Middle-level manager	71	21.1
	High-level manager	43	12.8

FINDINGS

Measurement Assessment

The normal distribution was ensured using skewness and kurtosis tests, all the calculated values were in the acceptable range +2 to -2 (presented in Table 3). Further, the values of outer loading have exceeded the threshold ≥ 0.70 (Hair et al., 2010). Moreover, all the adopted constructs achieved the threshold value of > 0.70 [54] for Cronbach's alpha (α) and composite reliability (CR).

Table 3: Results of Measurement Assessment

Variable	Item	Mean	STDEV	Skewness	Kurtosis	Alpha	CR	AVE	VIF (outer)	Loadings
Tech	Tech1	5.48	1.38	-1.25	1.38	0.87	0.91	0.66	1.82	0.76
	Tech2	5.61	1.30	-1.15	1.24				2.12	0.82
	Tech3	5.61	1.36	-1.39	1.98				2.15	0.83
	Tech4	5.59	1.30	-1.14	1.18				2.45	0.86
	Tech5	5.63	1.34	-1.25	1.25				2.06	0.81
Org	Org1	5.75	1.28	-1.32	1.80	0.89	0.92	0.70	1.96	0.79
	Org2	5.68	1.36	-1.30	1.49				2.38	0.84
	Org3	5.63	1.26	-0.94	0.48				2.59	0.86
	Org4	5.67	1.22	-1.02	0.66				2.42	0.84
	Org5	5.67	1.43	-1.55	1.34				2.15	0.84
Env	Env1	5.58	1.26	-1.17	1.60	0.86	0.90	0.71	1.92	0.82
	Env2	5.51	1.41	-1.25	1.50				1.96	0.84
	Env3	5.47	1.46	-1.09	0.82				2.28	0.88
	Env4	5.52	1.34	-1.14	1.42				1.98	0.82
EL	EL1	5.57	1.38	-1.42	1.98	0.84	0.89	0.68	1.73	0.78
	EL2	5.54	1.31	-1.06	1.08				1.93	0.83
	EL3	5.62	1.38	-1.38	1.97				1.99	0.82
	EL4	5.56	1.34	-1.21	1.46				2.18	0.85

SMEs	SMEsP1	5.94	1.26	-1.52	1.37	0.87	0.91	0.73	2.18	0.86
	SMEsP2	5.86	1.28	-1.49	1.43				2.17	0.84
	SMEsP3	5.91	1.26	-1.53	1.49				2.16	0.84
	SMEsP4	6.03	1.21	-1.34	1.42				2.21	0.86

Model Validity

The results of the average variance extracted (AVE) test for all variables were > 0.50 (Hair et al., 2019), (Fornell & Larcker, 1981), (Alraja, 2022) which ensured convergent validity. Moreover, the Fornell-Larcker criterion (Table 4) confirmed the discriminant validity (Fornell & Larcker, 1981).

Table 4: Fornell-Larcker Criterion

	EL	Env	Org	SMEsP	Tech
EL	0.82				
Env	0.49	0.84			
Org	0.63	0.55	0.84		
SMEsP	0.52	0.38	0.52	0.85	
Tech	0.61	0.58	0.66	0.45	0.82

The cross-loadings showed in Table 4 (Hair et al., 2019). As well as the heterotrait-monotrait (HTMT) ratios (Henseler et al., 2015), were less than the optimal HTMT values < 0.85, (see Table 6). Therefore, the adopted model in the current study demonstrates the presence of discriminant validity.

Table 5: Cross-loadings

	EL	Env	SMEsP	Org	Tech
EL1	**0.78**	0.38	0.34	0.50	0.50
EL2	**0.83**	0.48	0.46	0.53	0.53
EL3	**0.82**	0.33	0.43	0.50	0.48
EL4	**0.85**	0.41	0.46	0.54	0.51
Envi1	0.38	**0.82**	0.35	0.49	0.49
Envi2	0.42	**0.84**	0.33	0.41	0.42
Envi3	0.46	**0.88**	0.33	0.51	0.57
Envi4	0.37	**0.82**	0.25	0.44	0.48
SMEsP1	0.48	0.38	**0.86**	0.53	0.46
SMEsP2	0.40	0.29	**0.84**	0.35	0.33
SMEsP3	0.40	0.29	**0.84**	0.38	0.35
SMEsP4	0.47	0.32	**0.86**	0.49	0.38
Orga1	0.52	0.44	0.37	**0.79**	0.63
Orga2	0.50	0.48	0.41	**0.84**	0.59
Orga3	0.54	0.49	0.43	**0.86**	0.52
Orga4	0.51	0.49	0.46	**0.84**	0.50
Orga5	0.56	0.40	0.51	**0.84**	0.53
Tech1	0.39	0.48	0.29	0.50	**0.76**
Tech2	0.50	0.41	0.34	0.50	**0.82**

Tech3	0.52	0.51	0.37	0.49	**0.83**
Tech4	0.55	0.52	0.41	0.60	**0.86**
Tech5	0.52	0.47	0.39	0.61	**0.81**

Table 6: HTMT

	EL	Env	Org	SMEsP	Tech
EL					
Env	0.57				
Org	0.73	0.63			
SMEsP	0.59	0.43	0.58		
Tech	0.71	0.67	0.75	0.50	

Analysis of Structural Model

The variance inflation factor (VIF) test was performed to eliminate any potential mistakes caused by excessive correlations between the adopted latent variables (Duan et al., 2012). All calculated values were 3.3, respectively (refer to Tables 3 and 7). Thus, the lack of multicollinearity issues was established and validated by the prior test, namely Harman's single factor test stated previously.

Table 7: R^2

	R Square	R Square Adjusted
EL	0.474	0.469
SMEsP	0.266	0.264

Furthermore, the dependent variables such as entrepreneurial leadership and SMEs performance were evaluated in relation to the total variance using the coefficient of determination, R2. Table 7 shows that organizational, environmental, and technical variables explained 47.4 proportion of the variance in entrepreneurial leadership, whereas entrepreneurial leadership accounted 26.6 percent of the variance in SMEs performance.

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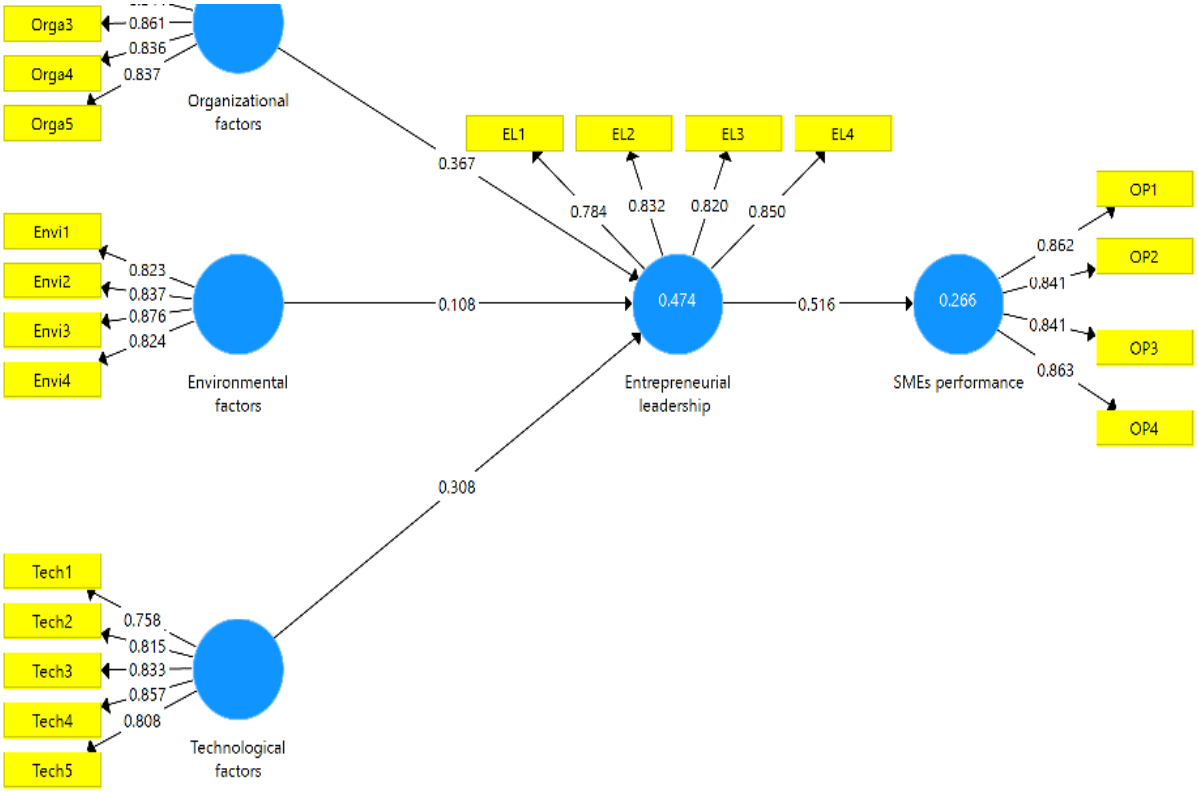
Figure 2: Structural Model Path Coefficients



The structural model path coefficients represented in Figure 2 demonstrates the values of all path coefficients (β) of the model's construct relationships at the level 5% error probability and t value > 1.96 (see table 8). Using PLS, bootstrapping algorithm with 5000 bootstrap samples.

Table 8: Hypotheses Test Results

Hypothesis	Path	β coefficients	T Statistics	P Values	Result
H1:	Tech → EL	0.31	3.76	0.00	Support
H2:	Org → EL	0.37	3.68	0.00	Support
H3:	Env → EL	0.11	1.65	0.10	Reject
H4:	EL → SMEsP	0.52	9.30	0.00	Support

Technological factors demonstrated significant effect on entrepreneurial leadership ($\beta = 0.31$; $p < 0.05$). Further, the organizational factors shows significant influence on entrepreneurial leadership ($\beta = 0.37$; $p < 0.05$). While, environmental factors has no significant effect on entrepreneurial leadership ($\beta = 0.11$, $p > 0.05$)> therefore, the H1, and H2 are supported while, H3 is rejected. Furthermore, entrepreneurial leadership demonstrated very significant impact on SMEs performance ($\beta = 0.52$, $p < 0.05$). Thus, the hypotheses (H4) supported.

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DISCUSSION

Researchers employed somewhat different components for the technical, organizational, and environmental settings in each of the empirical experiments that tested the TOE framework. In essence, researchers agreed with (Angeles, 2014)) that the three TOE contexts impact adoption, but these researchers subsequently claimed that there is a unique set of characteristics or measurements for each given technology or setting being researched. For example, in (Zhu et al., 2012)), the authors believe that one relevant component in the technological context that influences e-business adoption is "technology readiness." Similarly, these writers suggest that "firm size," "global reach," and "financial resources" are important aspects to investigate in order to understand how the organizational context influences e-business adoption. Furthermore, when academics want to understand how the environmental context impacts e-business adoption, they should include the "regulatory environment" and "competitive intensity." Different variables impact the acceptance of different sorts of technologies. Likewise, various national/cultural settings and sectors will have distinct influences. As a result, numerous research investigations employ various criteria for technical, organizational, and environmental settings. Until far, the majority of the theoretical development associated with the TOE framework has been devoted to enumerating the numerous criteria that are significant in various adoption scenarios. There are no new constructions in the framework. There has been little theoretical synthesis. There has been little criticism.As a result, the TOE architecture has changed relatively little since its inception(Baker & Baker, 2012).

It was also revealed that SMEs' perceived compatibility with e-commerce was a key influence in e-commerce adoption. The company's acceptance selection is dependent on the present infrastructure. If the existing infrastructure is incompatible with e-commerce technology, adoption may fail. If the technology is incompatible with SMEs, adoption will be difficult or impossible to initiate in the first place (AlSharji et al., 2018). This is reinforced by (Alam et al., 2011)), who found that technological compatibility influenced the adoption of e-commerce among Malaysian SMEs. Likewise, Grandon and Pearson (2004) observed that technological compatibility influences e-commerce adoption positively. Furthermore, previous study found that the organization's culture, beliefs, and recommended work habits were all associated to e-commerce acceptance ((Grandon & Pearson, 2004)). Lastly, (Saffu et al., 2008) stated that SMEs who want to implement e-commerce in their businesses must guarantee that the organizational culture, infrastructure, and e-commerce are all in harmony.

The primary objective of this study is to determine the critical elements of technological, organizational, and environmental (digital transformation) that influence entrepreneurial leadership which in turn affect SMEs performance. Furthermore, the structural equation modelling method is utilized to verify the correlation and test the impact mentioned effects.
Women represent only about (66 %) of respondents, reflecting the innovative and entrepreneurial characteristics of women in the area's rise of the SMEs sector. More than 50% percent of respondents demonstrate a high education level which contribute in building SMEs, and the majority of participants are under the age of 34. Additionally, more than 65 % of the respondents are working in SMEs that have less than twenty employees.

To test the hypothesis, (SEM) results reveal that (organizational, and technological) variables are indeed essential, with standard regression weights of 0.367 for organizational variables, and 0.308 for technological variables. Additionally, at the P0.05 threshold of significance, both computed results were statistically significant. This means that "organizational, and technological" factors both have a substantial influence on entrepreneurial leadership.

Such results illustrate preliminary studies and conclusions in the research that SMEs with an adequate degree of technology resources and organizational support may digitalize their operations (Alraja et al., 2021)which may support the SMEs leaders and enhance their entrepreneurial characteristics. Moreover, SMEs' capacity for digital transformation is boosted when their attitudes and activities fit with the technical resources they employ (Ramdani et al., 2009) as well as the organizational support. Furthermore, the sector in which SMEs exist has an impact on their ability to accept and use information technology (Pathan et al., 2017). Furthermore, the study reviled that entrepreneurial leadership has a positive and significant effect on SMEs' performance. Thus, once the elements influencing entrepreneurial leadership adoption are discovered, they may be used to assist develop policies that increase the rate of adoption. As a result, small business owners and managers should adopt plans and policies that facilitate their businesses' digital transition, regarding the possibility for digital transformation to improve businesses' performance. Whereas SME owners must aim to establish an organizational and technological platform that supports digitalization as an alternative for completing the bulk of SME operations, hence enhancing SME profitability. Likewise, SMEs must engage in digital technology and its elements to increase their global competitiveness, as they have been shown to have a massive effect on firm growth; they should also take into account the assistance of decision-makers who will support their SMEs in converting into digital businesses. Given that, organizational and technological aspects are influencing positively and significantly the entrepreneurial leadership in SMEs, and even though the environment had no significant effect on entrepreneurial leadership but decision-makers at SMEs give more importance to such factors as they, later on, have a more significant effect on SMEs sustainability (Alraja et al., 2022).

CONCLUSION

The purpose of this article was to conduct a review of the literature on the factors representing digital transformation, as well as their effect on entrepreneurial leadership in small and medium-sized businesses (SMEs), and how this type of leadership could affect the SMEs performance. We found out that the majority of authors connect their research to the TOE framework because it takes a technological, organizational, and environmental perspective. Despite the abundance of literature on digital transformation, there is still a dearth of study on the aspects associated with digital transformation and SMEs. Hence, in the future, more research is needed on start-ups and a greater emphasis TOE Model as an under-researched driver of digital change. Furthermore, (SEM) was developed to assess the study's hypotheses and to explore the relationships between (technological, organizational, and environmental) aspects and SME digitalization.

However, the study found that at the P0.05 level, only two constructs of TOE components are significant (organizational and technological). This suggests that the factors affecting the

model selected have a considerable impact on SMEs' capacity to digitize their business operations or processes. Likewise, this study adds to the existing domain of research for SME employees and leaders and this sector's adoption of digitalization in a range of methods. Future research is expected to focus more on the environmental factors and investigate their important role especially if they are connected to SMEs sustainable performance.

Further, since each country has its definition of a small firm, our results must be understood through the lens of the Omani definition. This affects correlations with other research studies beyond Oman, reducing the generalizability of conclusions on a global level. Future research may seek to do a merge comparison whilst considering the guidelines for grouping countries. More, this study does not indicate the industry sector to which SMEs belong. Thus, the model might be evaluated for a given sector or by undertaking a comparative study of SME digitization levels by business type. Nevertheless, duplication in a developing country generally or the Gulf Cooperation Council (since Oman is a part of the GCC) can supply scientific information for assessing the degree of digitalization across small and medium-sized enterprises within these nations, and the digitalization effect on entrepreneurial leadership and SMEs performance as well.

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