Technological readiness and business performance: the mediating effect of social media marketing

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ABSTRACT

Understanding employee readiness towards adopting online marketing platforms is paramount in today's digital economy, as it directly influences the effectiveness and competitiveness of businesses. This study investigates the relationship between employee technological readiness (ETR) and the business performance of micro and small enterprises (MSEs) in developing economies, focusing on data from Yemen. Drawing on the resource-based view theory, the study examined how adopting social media marketing (SMM) mediates this relationship. Data was collected from 362 managers/owners of MSEs in Yemen. The relationship between ETR, SMM, and business performance was examined using partial least squares structural equation modeling. The results show that ETR significantly influences SMM adoption, which impacts the business performance of MSEs. In addition, the study reveals that the relationship between ETR and business performance is partially mediated by SMM adoption. This finding highlights the critical role of employees' readiness for technological advancements in facilitating effective SMM adoption, thereby contributing to the sustainability and success of MSEs.

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1. INTRODUCTION

In today's rapidly evolving market landscape, the utilization of technology is a cornerstone for enhancing business performance by driving efficiency, innovation, and competitive advantage. This is particularly crucial for micro and small enterprises (MSEs), which often operate in competitive environments with limited resources. Through effective utilization of technology, MSEs can reduce costs and increase productivity by automating procedures, optimizing resource allocation, and streamlining operations. Moreover, technology enables MSEs to leverage data analytics and insights to make informed decisions, anticipate market trends, and personalize customer experiences, thereby enhancing customer satisfaction and loyalty. Additionally, technology facilitates collaboration and communication among employees, breaking down silos and fostering a culture of knowledge-sharing and problem-solving. As a result, MSEs have become more agile and adaptable, better equipped to respond to shifting market dynamics and challenges [1]. This technological integration not only positions them for immediate operational improvements but also lays a solid foundation for long-term sustainability and success in an increasingly competitive environment.

The effectiveness of technology utilization in MSEs relies on technologically proficient employees who excel in implementing activities such as digital marketing strategies, customer engagement initiatives, and performance analytics. If employees believe there is a benefit from using the new technology, their

attitudes will favor its adoption. Conversely, they will not be willing to embrace the latest technology if they think it will replace human employees and cause them to lose their jobs [2]. In this regard, employee technological readiness (ETR) plays a crucial role in shaping the business performance of MSEs by serving as a primary driver of successful technology utilization and innovation [3]–[6]. Employees with the knowledge and abilities needed to use digital tools efficiently contribute to streamlined operations, increased productivity, and the ability to reach new markets [7]. Their proficiency in utilizing technology facilitates the smoother adoption of new systems, processes, and innovations within the organization, leading to increased efficiency and agility. Moreover, tech-savvy employees are more adept at identifying and capitalizing on emerging opportunities, driving innovation and sustainable growth for the firm [8].

Among many technological innovations available for businesses, social media has become an essential marketing tool for raising a company's performance [9]–[16]. By enabling MSEs to establish direct, immediate, momentary, and efficient communication channels with their customers [11], [12], social media enhances their capacity to identify and seize commercial opportunities while optimizing the utilization of business resources [13]. Additionally, social media possesses a remarkable ability to engage with clients and foster robust online relationships, making it an invaluable tool for augmenting the performance of MSEs. Consequently, businesses that use social media marketing (SMM) can continue to sell goods and services even in the face of geographic distance since they can easily connect with their target audience during their free time or working hours [14]. Moreover, social media offers a distinctive and cost-effective marketing communication approach [15]. Its efficacy in directly reaching consumers has been empirically demonstrated, compelling businesses to recognize social media's immense potential, such as X, Blogs, YouTube, and Facebook. Consequently, SMM has emerged as the preeminent online marketing platform for MSEs, allowing them to effectively promote their offerings online and attract a substantial consumer base.

Despite the abundance of studies showcasing the benefits and features of SMM for businesses and its potential for enhancing capabilities and leverage, the influence of SMM adoption on MSEs' business performance remains an under-researched topic, particularly in Arab and Middle Eastern countries. This gap may be attributed to the informal management practices prevalent in these regions. This study aims to fill this gap by examining the mediating role of SMM adoption in the relationship between ETR and the business performance of MSEs in Yemen. MSEs in Yemen provide a compelling case for this study due to the dynamic yet challenging business environment they operate. Political instability, economic volatility, and security concerns pose significant obstacles, making it difficult for MSEs to sustain and grow their businesses [17]–[19]. Moreover, MSEs are known to have a high failure rate, especially within the initial two years of operation [20], often due to limited knowledge of business sectors and new marketing means, resulting in low connectivity with their customers [12], [21]. However, amidst these challenges, the widespread use of social media platforms in Yemen offers MSEs a valuable opportunity to overcome barriers related to market reach, customer engagement, and brand visibility.

Figure 1 shows the conceptual framework of this study, which is based on the resource-based view (RBV) theory. Figure 1 visually outlines the connections and interactions between the primary variables, highlighting the theoretical foundation and the pathways hypothesized in the study. The framework demonstrates how the core constructs align with RBV theory, providing a structured approach to understanding the mediating role of SMM adoption in the relationship between ETR and business performance in Yemeni MSEs. According to RBV theory, a firm's performance and competitive advantage are determined mainly by its internal resources and skills rather than outside variables [22]. Firms can use the distinctive collections of resources and skills they have to their advantage to gain long-term competitive advantages. These resources are categorized as non-substitutable, inimitable, rare, and valuable. Non-substitutable resources have no equivalent substitutes, and inimitable resources are difficult for competitors to imitate or replicate. Rival firms uncommonly hold rare resources, whereas valuable resources allow firms to take advantage of opportunities or lessen risks [22]. RBV emphasizes the importance of identifying and leveraging these resources to gain a competitive edge. By effectively developing and utilizing their internal resources, firms can differentiate themselves from competitors, achieve superior performance, and sustain long-term success in their respective industries [23], [24].

Applying RBV theory to the current study, ETR can be viewed as a valuable resource within the MSE, encompassing employees' skills, knowledge, and capabilities related to technology utilization. SMM adoption, on the other hand, represents a strategic capability that enables the MSE to leverage external platforms for marketing activities. Thus, SMM serves as a mediator in the relationship between ETR and the business performance of MSEs, facilitating enhanced customer engagement, brand visibility, and market responsiveness. Consequently, the following hypotheses were formulated for empirical testing: i) H1: ETR has a positive effect on SMM adoption; ii) H2: ETR has a positive effect on the business performance of MSEs; iii) H3: SMM adoption has a positive effect on the business performance of MSEs; and iv) H4: SMM adoption mediates the relationship between ETR and the business performance of MSEs.
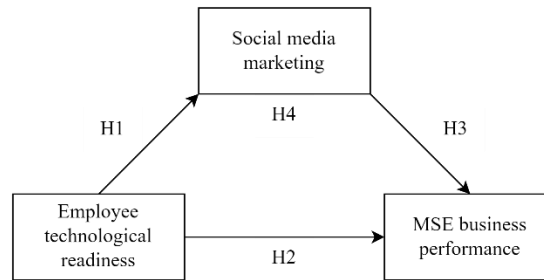
Figure 1. Conceptual framework

2. RESEARCH METHOD

This study employed a descriptive research design to examine the relationship between ETR, SMM, and MSE's business performance. All constructs were measured utilizing items that have previously appeared in the literature. ETR was measured using 13 items covering four dimensions: benefits, security, collaboration, and certainty, adapted from Lai *et al.* [25]. The 8 items for SMM were adapted from Zolkepli and Kamarulzaman [26]. The business performance of MSE was assessed using 8 items covering non-financial and financial performance [27], [28]. All items were evaluated using a 6-point Likert scale, where responses ranged from 1 indicating strongly disagree to 6 indicating strongly agree. Three marketing experts were consulted to evaluate the items and assess the content validity of the questionnaire.

The questionnaire was translated into Arabic using the back-translation method to ensure clarity for respondents who may not be fluent in English [29]. This approach ensured the accuracy of the translation and addressed any potential discrepancies between the English and Arabic versions. Subsequently, a pilot study was conducted with 30 randomly selected managers/owners of MSEs from the Hadramout Governorate in Yemen. This study aimed to evaluate the questionnaire's suitability in terms of terminology, clarity, and completion time. The questionnaire was refined based on suggestions from the pilot test.

The target population for this study consisted of micro and small industrial enterprises identified in the directory published by the Yemen Ministry of Industry and Trade [30]. This directory includes a total of 27,123 MSEs operating within the manufacturing sector. It provides crucial information such as company names, locations, contact details, and business activity descriptions, making it an ideal sampling frame for the study. The study adopted a systematic random sampling approach to select the sample, in which the population elements were identified, listed, and randomly selected for participation. To maximize the response rate, 384 self-administered questionnaires were distributed in person to respondents who are managers or owners of MSEs in the main governorates of Hadramout, Sanaa, and Aden. Each target company was approached with the request that the respondent be either the owner or the manager. Since owners often also serve as managers, they typically possess comprehensive knowledge of the firm and are deeply involved in decision-making processes [31]. Respondents were assured that their responses would remain confidential and anonymous. By the end of the data collection period, 362 completed questionnaires were obtained, reflecting an impressive response rate of 94.3%.

Most respondents were owners at 67%, while 33% were managers. Most of the respondents were male (86%). This is hardly surprising considering the average Yemeni business owner and management demographics, where traditional norms discourage women from entering the workforce. Most respondents were between the ages of 21-30 (58%) and held a postgraduate or university degree (92.5%). This implies that the decision-makers in MSEs are typically younger and better educated. More than half of the surveyed respondents possessed less than 5 years of experience in the industry (55%), while 45% reported having between 6 to 10 years of experience. Regarding the age distribution of the firms, a significant majority of MSEs had been operational for over 3 years. The predominant sector represented among the sampled companies was food products and beverages, comprising 40.1%. A substantial proportion of the companies identified as micro-enterprises, with 77.4% having less than three employees, while 22.6% were categorized as small enterprises, with 4 to 9 employees. Approximately 1-3 of the companies reported an average monthly sale of SR5,000 (30.1%).

3. RESULTS AND DISCUSSION

The proposed model was analyzed using structural equation modeling (SEM) with SmartPLS 3.2.7 partial least squares (PLS)-SEM proves effective for analyzing complex model structures and evaluating

interactions. Another enormous advantage of PLS-SEM is that it does not necessitate customarily distributed data, making it suitable for studies with small sample sizes and exploratory research [32], [33]. Furthermore, PLS-SEM enhances the accuracy of estimates concerning mediating and moderating effects through effective measurement error correction [34].

3.1. Assessment of measurement model

The initial stage in SEM involves validating the measurement model by assessing the construct measures' internal consistency reliability, convergent validity, and discriminant validity. For the construct reliability, the individual Cronbach's alpha coefficients were tested to measure the reliability of each construct in the measurement model. The results in Table 1 indicated that the Cronbach's alpha coefficients of the 9 constructs ranging from 0.778–0.926 were more significant than the recommended level of 0.70 [35]. 3 measures were used to assess the convergent validity: factor loadings, composite reliability (CR), and average variance extracted (AVE). Hair *et al.* [35] suggested that all the item loadings should be more than 0.70, the CR values should be 0.70 or greater, and the AVE values should not be lower than 0.50. The factor loadings for all items exceed the cut-off value of 0.70. CR values, which depict the degree to which the construct indicators demonstrate the latent construct, ranged from 0.869 to 0.941, higher than the recommended value of 0.70. The AVE values, which indicate the total variation in the indicators that the latent construct accounts for, were above the cut-off value of 0.50, falling between the range of 0.501 to 0.798.

Table 1. Convergent validity

First order	Second order	Item	Loading	Alpha	CR	AVE
Benefits		B1	0.816	0.778	0.869	0.689
		B2	0.859			
		B4	0.816			
Security		S1	0.884	0.837	0.902	0.752
		S2	0.858			
		S4	0.861			
Collaboration		C1	0.893	0.842	0.904	0.760
		C2	0.846			
		C3	0.876			
Certainty		T1	0.934	0.912	0.940	0.798
		T2	0.918			
		T3	0.741			
		T4	0.963			
	ETR	Benefit	0.732	0.914	0.928	0.501
		Security	0.804			
		Collaboration	0.825			
		Certainty	0.871			
SMM adoption		SM1	0.861	0.926	0.941	0.694
		SM2	0.849			
		SM3	0.854			
		SM4	0.823			
		SM5	0.816			
		SM6	0.808			
		SM8	0.817			
Financial performance		FP1	0.802	0.911	0.934	0.739
		FP2	0.797			
		FP3	0.913			
		FP4	0.894			
		FP5	0.887			
Non-financial performance		NFP1	0.886	0.812	0.889	0.727
		NFP2	0.845			
		NFP3	0.826			
	MSE business performance	FP	0.956	0.916	0.932	0.631
		NFP	0.878			

To establish discriminant validity, each construct's square root of AVE was compared with the correlations between that construct and others in the model [36]. Tables 2 and 3 present the results, indicating that the square root of the AVE for each construct was more significant than its correlations with other constructs. This demonstrates that all constructs in the study were distinct, affirming the outer model's sufficient discriminant validity. Furthermore, none of the correlations exceeded 0.85, indicating that the multicollinearity problem was not a concern [37].

Table 2. Discriminant validity: first-order construct

Construct	B	S	C	T	FP	NFP	SMM
B	**0.830**						
S	0.502	**0.868**					
C	0.528	0.546	**0.871**				
T	0.482	0.586	0.619	**0.893**			
FP	0.536	0.595	0.577	0.608	**0.860**		
NFP	0.620	0.646	0.635	0.669	0.699	**0.852**	
SMM	0.503	0.624	0.550	0.632	0.629	0.689	**0.833**

Table 3. Discriminant validity: second-order construct

Construct	ETR	BP	SMM
ETR	**0.808**		
BP	0.794	**0.856**	
SMM	0.719	0.705	**0.833**

3.2. Hypothesis testing

In the second stage of PLS data analysis, the structural model was applied to test hypotheses regarding the relationships among critical constructs. Table 4 presents the results of hypothesis testing. H1 confirmed that ETR significantly influences the adoption of SMM ($\beta=0.714$, $p<0.01$). H2 found that ETR substantially impacts the business performance of MSEs ($\beta=0.777$, $p<0.01$). H3 demonstrated a significant favorable influence of SMM adoption on the business performance of MSEs ($\beta=0.210$, $p<0.01$). Lastly, H4 substantiated that SMM mediates the relationship between ETR and business performance within MSEs ($\beta=0.163$, $p<0.01$). These findings emphasize the critical role of ETR and SMM adoption in enhancing MSEs' business outcomes, highlighting implications for managerial practice in leveraging technological readiness and social media strategies effectively.

Table 4. Path coefficients of hypotheses testing

	Path	β	Std. error	t-value	p-value	Result
H1	ETR → SMM	0.714	0.028	27.703	0.000	Supported
H2	ETR → BP	0.777	0.060	11.967	0.000	Supported
H3	SMM → BP	0.210	0.066	3.130	0.002	Supported
H4	ETR→ SMM → BP	0.163	0.053	3.064	0.002	Supported

3.3. Coefficient of determination, effect size, and predictive relevance

Table 5 shows the coefficient of determination, effect size, and predictive relevance of the structural model. R^2 denotes the proportion of variance in the endogenous variable that is accounted for by the exogenous variables. Based on the general guideline by Hair *et al*. [38], the R^2 values of 0.25, 0.50, and 0.75 can be considered weak, moderate, and substantial. The R^2 for the model was 0.682, which indicated that the study's exogenous variable could moderately explain the overall variance of MSEs' business performance. Q^2 is a metric that quantifies how well the model and its parameter estimations reproduce the observed values [32]. A model is considered predictively relevant if Q^2 is more significant than zero [39]. As the Q^2 value of this model was 0.397, cross-validated redundancy measures showed that the structural model for this study had predictive relevance. Finally, effect size (f^2) analysis was applied to determine which variable was more important in explaining the endogenous variable. According to Cohen's [40] classification, the range values for the impact of f^2 at the structural level are defined as follows: 0.02 (small effect), 0.15 (medium effect), and 0.35 (large effect). Notably, both ETR and SMM greatly impacted the business performance of MSEs.

Table 5. Coefficient of determination, predictive relevance, and effect size

Construct	R^2	Q^2	f^2	Interpretation
Full model	0.682	0.397		
ETR			1.000	Large
SMM			0.515	Large

3.4. Discussion

Drawing on the RBV as its theoretical foundation, the results of this study emphasize how crucial it is for Yemeni MSE managers/owners to understand the significant advantages of implementing SMM in their

business practices. ETR, which reflects employees' competence and willingness to engage with technology, is a crucial internal resource that MSEs can leverage to harness SMM platforms' external capabilities effectively. When employees are technologically ready, they are more adept at leveraging social media platforms effectively, thereby enhancing the organization's online presence, customer engagement, and market reach. This adoption of SMM, in turn, directly impacts MSEs' business performance by driving sales, improving brand visibility, and fostering customer loyalty. Moreover, SMM also mediates the relationship between ETR and business performance, as it facilitates the transformation of technological readiness into tangible business outcomes. MSEs that integrate SMM effectively enhance their operational efficiencies and strengthen their competitive positioning in the marketplace. However, the successful integration of SMM hinges on MSEs' ability to cultivate and support employees' technological skills, aligning organizational objectives with technological capabilities to maximize the benefits of social media platforms. Thus, while ETR and SMM adoption independently contribute to MSEs' performance, their synergistic interaction underscores the critical importance of strategic alignment and continuous innovation in navigating the digital landscape and achieving sustainable competitive advantage.

Based on these findings, several practical implications can be drawn for MSEs in Yemen seeking to improve their performance through the effective management of ETR and the adoption of SMM. Firstly, MSEs should prioritize investing in ETR by enhancing employees' technological skills and ability to adopt new technology applications. This investment ensures a smoother integration of technological advancements into business operations, empowering employees with the confidence and competence needed to leverage new tools effectively. By providing training and resources, MSEs can help their workforce understand the functionalities of emerging technologies, reducing learning curves and minimizing disruptions during the adoption phases. Additionally, fostering a culture of continuous learning and adaptability can further enhance employee engagement and innovation, ultimately leading to improved operational efficiency and competitive advantage in a rapidly changing business environment.

Moreover, enhancing the business performance of MSEs can be achieved by focusing on the significant impact of ETR. MSEs should foster positive employee attitudes toward new technologies through targeted training programs and supportive policies that promote readiness, capability, and ongoing support for technology adoption. Additionally, strategically utilizing SMM is crucial, given the proven link between SMM adoption and improved MSE performance. Companies should develop strategies that leverage social media platforms effectively, dedicating resources to training employees in SMM tools and aligning these efforts with broader corporate goals. Finally, integrating ETR and SMM can significantly enhance performance by recognizing their synergistic relationship. By equipping employees with the skills to use social media platforms adeptly, MSEs can improve internal collaboration, strengthen external relationships, and make more informed strategic decisions, ultimately leading to substantial improvements in organizational effectiveness and competitive advantage.

This study has several limitations to consider. First, it focuses on Yemeni MSEs in the industrial sector, so further research is needed to include MSEs from diverse industries, as performance factors may differ. Comparative studies across countries would also improve the generalizability of the findings. Second, this study uses cross-sectional data, which may not capture the long-term effects of ETR and SMM adoption. Future research should use longitudinal methods to provide a more comprehensive evaluation of these factors. Thirdly, while this study utilized a quantitative approach, future research could combine both qualitative and quantitative methods to yield more comprehensive insights. Additionally, other factors affecting MSE performance should be explored.

4. CONCLUSION

ETR is a vital internal resource that can significantly improve the overall business performance of MSEs in Yemen. Technologically proficient employees are better equipped to strengthen the company's online presence, engage customers more effectively, and expand market reach. These capabilities drive substantial improvements in both financial and non-financial business outcomes. Notably, SMM plays a crucial role in mediating the relationship between ETR and business performance, while also strengthening MSEs' competitive edge by improving operational efficiencies. The success of integrating SMM depends on MSEs' ability to upskill employees and align these technological capabilities with organizational goals. This alignment ensures that the synergy between ETR and SMM creates a sustainable competitive advantage and fosters continuous innovation. Ongoing investment in employee training and technological resources will be essential to adapt to evolving market trends and maintain long-term business success.

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