

# **Mediating Role of Social Media Adoption in the Relationship between Technology, Organization, Environment Factors and SME Performance**

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## **ABSTRACT**

Globalization and digitization have brought about new challenges and opportunities for Small and Medium-sized Enterprises (SMEs). Many SMEs have turned to social media to reach a larger audience and build better relationships with potential and existing customers. Despite the challenges posed by the end of the civil war in 2009 and the COVID-19 pandemic, many people from the Northern Province, especially in Jaffna, have started SMEs that rely on virtual and physical markets for business survival. The results from this study confirmed that the technological factor significantly directly influences the SME's performance in Jaffna. The results also revealed that social media adoption significantly influences SMEs' performance. Further, employing the TOE framework, this study evidenced that relative advantage, cost-effectiveness, compatibility, interactivity, entrepreneurial orientation, and customer pressure significantly influence social media adoption. In contrast, top management support and competitive pressure have an insignificant influence. This implies that SMEs in Jaffna strengthen the relationship between social media and SMEs' performance. The most common social media platforms firms use are Facebook and WhatsApp; both were considered cost-effective. The speed, ease of use, interactive nature, and ability to reach a large numbers of customers make social media essential for SMEs in developing countries. Against the backdrop of continuous debate on the advantages and disadvantages of Social Media adoption by SMEs in developing countries, this research offers a comprehensive view of important aspects, allowing owners, executives, and managers to understand the actual significance of Social Media. This work facilitates their understanding of how the effective administration of Social Media adoption can improve SME performance in several aspects.

**KEYWORDS:** Social media adoption, TOE factors and SMEs' performance

## **Introduction**

Small and medium enterprises (SMEs) have become an energetic and influential sector of the world economy. Thus, telecommunication and information technology play a significant role in growing the performance of SMEs (Qalati, 2021). Also, SMEs are influential in economics regarding their contribution to national output, employment, and the share of firms operating in countries.

In Sri Lanka, SMEs are the backbone of the economy and can be found in all sectors of the economy. The SME sector in Sri Lanka accounts for 52% of the GDP and 45% of the total employment whilst making up more than 75% of the total number of enterprises in the country. Given the emphasis on SMEs in Sri Lanka, it would be helpful to develop greater strategic insight into their use of information and communication technology, IT, and social media. The advancement of new technology plays an essential role in the economy. The fast-growing concerns towards employment generation in Sri Lanka create a challenge to not only individual but also the government. The government is highly boosting the SME sector in Sri Lanka. Therefore, understanding the factors affecting the SMEs' performance and social media adaptation will benefit the owners and directors to control and enhance their business profitably and to promote their countries.

Several factors are affecting SMEs' performance also. SMEs can use social media because of its ease of use, low cost, technical manageability, and ability to connect with many potential consumers. SM adoption is growing exponentially among businesses and is considered a key strategy. The research aims to consider the needs of SM from a business-to-consumer viewpoint. Some studies have examined the use of SM to advance business practices and their effects on an organization's performance. This study desires to examine the impact of technology, organization, and environment as essential factors in the performance of small and medium-sized enterprises. It also investigates the mediating role of social media adoption in Sri Lanka. Previous studies have examined the effect of Social Media on SMEs and its mediating role. However, a few areas remain investigated, such as SMEs' use of digital platforms and the impact on SMEs' durability.

This research extends previous work on technological, organizational, and environmental characteristics. Also, researchers can get a clear idea about factors affecting SMEs' performance and examine the mediating role of social media adoption in Sri Lanka.

## **Literature review**

Very few models have examined SM adoption from the viewpoint of SMEs (Lee, 2022). Insufficient research has been done on the factors influencing the adoption choice stages, with inadequate attention paid to the implementation and confirmation stages or the post-adoption phases (Kawaljeet, 2014). This study investigates the adoption of Social media by SMEs as a starting point for addressing this deficiency. It considers the Technology-Organization-Environment (TOE) and Diffusion of Innovation, two critical theoretical notions (DOI).

## **Technology-Organization-Environment Theory**

The Technology-organization-environment (TEO), or the TOE framework, was created by Tornatzky and Fleisher (1990). It expresses factors that impact technology adoption and its possibility. TOE characteristic describes how a company adopts and implements technological innovations influenced by the technological context, the organizational context, and the environmental context (Tornatzky *et al.*, 1990).

Thus, these three measurements dominate how an entity sees the need for, searches for, and adopts new technology.

Technology, organization, and environment are the three variables that impact SMEs, according to the TOE model (concerning the adoption of social media and its impact on SMEs performance). Later (Abed, 2020) highlighted that the TOE paradigm had been used to analyze technological adoption and innovation, including social media technology. It has strong theoretical underpinnings as well as significant empirical backing. The TOE framework (Tornatzky *et al.*, 1990) and diffusion of innovation theory (Rogers, Diffusion of innovations, 1962) have been utilized frequently in technological adoption. However, in the case of SMEs, the TOE paradigm has consistently gained empirical validation (Abed, 2020). The first context, "Technological," covers all essential technologies for the firm, both those already in use there and those readily available in the market but not yet in use. The second context, "The Organizational," relates to the features and assets of the company, such as employee linkages, internal communication channels, firm size, and the number of slack resources. This setting impacts the adoption and implementation decisions in several different ways. First, procedures that connect internal organizational units or cross internal borders encourage creativity (Galbraith, 1973).

Adoption is correlated with the availability of informal linking agents such as product champions, boundary spanners, and gatekeepers. The third context, termed "The Environmental," also comprises the industry's organizational structure, the existence or absence of technical service providers, and the regulatory landscape. Industry structure has been studied in various ways, including how fierce competition encourages innovation adoption (Mansfield, 1968).

### **DOI Theory**

It is widely acknowledged (Rogers, 2003) that the Diffusion of Innovation (DOI) model is among the most influential and all-encompassing in technology adoption. In addition, this concept is empirically tested and used in various disciplines, including history, economics, technology, and education. Diffusion is "the process in which an innovation is shared over time among the members of a social system through certain routes" (Rogers, 2003).

The Innovation-Decision Process is the fundamental idea of DOI, defined as "an information-seeking and information-processing activity, where an individual or organization is motivated to reduce ambiguity regarding the benefits and drawbacks of an innovation" (Rogers, 2003). There are five continuous steps in the innovation-decision process, which go in the following order: knowledge, persuasion, decision, implementation, and confirmation. Technical professionals who are outsourced or change specialists can help with this. This study aims to address one of these issues by creating a best practice framework or model for how to adopt a technical innovation (improving knowledge at all levels), specifically Social media adoption inside SMEs.

The adopter is believed to require some support during the final stage, "The Confirmation," when deciding whether to continue the adoption procedure.

The decision to stop using the invention may be made due to adopting a superior innovation or because its performance during the implementation stage made it less enticing and compelling.

TOE and DOI are preferred as they remain the two most popular and widely utilized theories on organizational innovation and technology adoption. As a result (Digital, 2011) considers TOE to be one of the more crucial future areas in empirical research due to the model's shown value in analyzing various innovations and situations. These two models will help develop a new model when combined in the research-specific context of Social Media adoption by SMEs.

### **Empirical studies**

Innovations that remain but are not yet in use at the entity also influence innovation; by defining the limits of what is possible and showing companies ways technology can enable them to develop and adapt new tools (Sinica, 2013). Thus, the technological factor is among the critical factors in assessing the adoption of social media and was used in existing literature, (Rana, 2019) under the TOE framework. Therefore, social media is an innovative technology that contributes to increasing customer interaction between customers and entities (Maroufkhani, 2020). On the other hand, the organizational context refers to the company's traits and assets, such as its size, level of centralization, degree of formalization, managerial structure, human resources, amounts of slack resources, linkages among employees, and culture (Angeles, 2013). Hence, creating inter-organizational collaboration mechanisms is essential in meeting the needs of technological coordination associations and enabling supply chain partnerships. Also, the top management can boost significant organizational changes by developing and communicating a clear image of the company's strategy, core values, and role of technology in meeting this strategy; next, sending consistent signals, both internal and external to the firm about the value of the innovation; and lastly through creating a team responsible for crafting a vision relevant to the technology innovation (Tushman and Nadler, 1986). It was explained that the survival of SMEs highly depends on their ability to exploit opportunities in the marketplace (Steininger *et al.*, 2014). The article examines three aspects of environmental impact: competitive intensity, competitive pressure, and the bandwagon effect. According to Canedo, Morais, Patro, Camargo, Machado, Eloy, Mendonça, and Sousa in *Information and Communication Technology (ICT) Governance Processes* (2020), competitive intensity develops when there are many competitors and few opportunities. Additionally, (Braojos-Gomez, 2015) established a conceptual framework for social media and provided evidence that the diffusion of innovation (DOI) theory is the source of elements in the TOE framework. As a result, the DOI provided support for this survey.

Despite numerous attempts, there is no widely agreed definition of social media. These attempts have been noted and identified in several contexts, including communication, technical, and social ones (Rahbi, 2017). Social media are "technologies that enable and promote engagement, collaboration, and communication through debate, voting, comments, and the sharing of information" (Malita, 2011).

The benefits of social media use in the context of SMEs have been stated to include greater productivity, systems integration, increased competitiveness, cost reductions, and the provision of a collaborative environment (Irhas and Yuni, 2020).

Social media platforms are not owned by or under the control of organizations. Additionally, (Pee, 2018) makes the case that businesses and their stakeholders, such as current and potential customers, collaborate to produce social media content cooperatively. The pressure from customers and competitors, which ultimately affects an organization's decision on whether to adopt or not, may assist in illuminating variation in a company's adoption of social media. According to Pee's study, which includes qualitative interviews with managers, pressure from important stakeholders might also impact the adoption choice. Marketing activities are emerging as a new way of doing business, supported and allowed by using social media and allowing firms to establish a closer relationship with stakeholders (Olanrewaju *et al.*, 2020). (El-Gohary, 2012) has shown that substantial execution costs are an important barrier to using social media, along with a lack of innovative knowledge and abilities regarding how to use it. However, academics assert little has been written about the potential advantages of social media adoption for SMEs (Bakri, 2017).

Modern internet developments have transformed the idea of "service failures and recovery plans" from a duopolistic client focus to a global web quality. To understand the adaptation, use, and satisfaction of social media, numerous scholars have looked at various motivations. This study focuses on the mediating function of SMEs' adoption of social media.

Numerous studies have demonstrated how technology may boost productivity and streamline company processes (Res, 2020). Considering the lack of previous empirical studies, specifically from Sri Lanka, there is a gap in the literature regarding studies that have examined the mediating role of social media adoption and moderating effects of performance in the relationship between the TOE characteristics (technological, organizational, environmental) and SMEs performance in the context of the Jaffna, Sri Lanka. This study will therefore fill this research gap. Therefore, this study examines the effect of the mentioned independent variables on SMEs' Performance in the Jaffna. It also investigates the indirect role through the mediating role of social media adoption of the SME's performance. In Sri Lanka, most studies have been done engaging SMEs' performances without considering the mediating role of the sector. Prior research provided mixed and broad results, a positive relationship, and some other negative relationships.

## **Methodology**

### **Sample**

As per the information the Small and Medium Enterprise Development Authority (SMEDA) shared, the researchers targeted solely the small and medium-sized enterprises operating in the Jaffna district for their study. The researchers then selected 100 SMEs from diverse industries, including education, healthcare, wholesale and retail, textile, restaurant, and hotel businesses, for the study.

The selection criteria for these SMEs were based on their basic social media experience and potential to benefit from social media marketing.

### Conceptualization

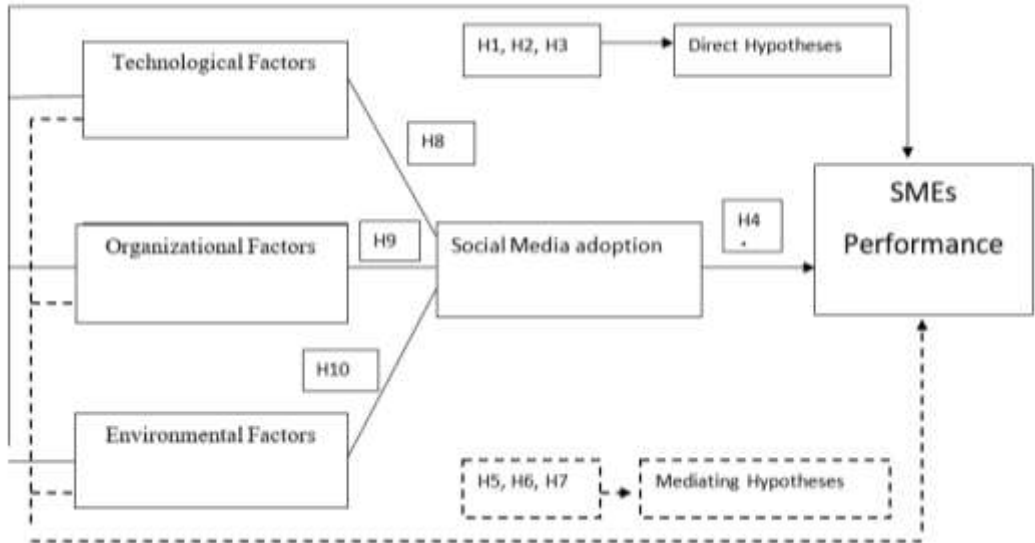


Figure 1: Conceptualization of the study

### Operationalization

Table 1: Operationalization

Variables	Indicators	Measurement
Technological factors	Relative Advantage, Cost effectiveness, Comparability, Interactivity an Visibility	Questionnaire 10-15
Organizational factors	Top Management Support and Entrepreneurial orientation	Questionnaire 15-20
Environmental Factors	Competitive Industry, Competitive pressure, Bandwagon effect	Questionnaire 20-26
Social media adoption	Information Accessibility, Social media marketing, Customer relationship	Questionnaire 26-31
SME's performance	Sales growth, geographical area growth, quantity growth, customer base	Questionnaire 31-39

**Hypotheses of the study**

- H<sub>1</sub>: Technological factor has a significant effect on SME performance.
- H<sub>2</sub>: Organizational factor has a significant effect on SME performance.
- H<sub>3</sub>: Environmental factors have a significant effect on SME performance.
- H<sub>4</sub>: Social Media adoption has a significant effect on SME performance
- H<sub>5</sub>: Social media adoption significantly mediates the relationship between technology factors and SME performance.
- H<sub>6</sub>: Social media adoption significantly mediates the relationship between organizational factors and SME performance.
- H<sub>7</sub>: Social media adoption significantly mediates the relationship between environmental factors and SME performance.
- H<sub>8</sub>: Technological factors have a significant relationship with social media adoption.
- H<sub>9</sub>: Organizational factors have a significant relationship with social media adoption.
- H<sub>10</sub>: Environmental factors have a significant relationship with social media adoption.

**Methods of Analyzing Data**

The data analysis is carried out using SPSS (Version 20.0) as it helps in avoiding human errors while analyzing the data. Initially, all the data are checked for normality and reliability. Then, descriptive statistics are used to explain the demographic characteristics and calculate the frequencies of the collected data. Multiple regression helps in estimating the relationship between 'TOE factors, SMEs' performance, and social media adoption. The Sobel test is used to identify the mediating relationship between variables.

**Data Analysis**

**Table 2: Descriptive Statistic**

	Gender	Age	Education	Position	Industry sector	Firmage	No of Employees	Use of SM as a marketingtool	Budget Allocated	Social Media platformused	
N	Valid	100	100	100	100	100	100	100	100	100	
	Missing	0	0	0	0	0	0	0	0	0	
Skewness		1.373	.035	1.156	-.238	-.100	.072	1.314	-.687	1.281	.869
Std. Error		.241	.241	.241	.241	.241	.241	.241	.241	.241	.241
Kurtosis		-.119	-1.084	-.311	-1.498	-.527	-.631	.378	-.773	.703	-.495
Std. Error		.478	.478	.478	.478	.478	.478	.478	.478	.478	.478

Based on the above-described table, If the Skewness is between -2 to +2 and the Kurtosis is between -7 to +7 that is normally distributed data.

**Table 3: Analysis of Reliability Cronbach's Alpha**

Variables		Cronbach's alpha
Technological Construct	Relative advantage	0.962
	Cost-effectiveness	0.927
	Compatibility	0.92
	Interactivity	0.919
	Visibility	0.916
Organizational Construct	Top management support	0.931
	Entrepreneurial orientation	0.975
	Competitive intensity	0.953
Environmental Construct	Competitive pressure	0.893
	Bandwagon effect	0.886
	Social media for marketing	0.945
SM Adoption	Customer relationship	0.657
	Information Accessibility	0.794
	SMEs Performance	0.955

Source: Survey data

The output of reliability statistics obtained Cronbach’s Alpha value of most of the factors are nearly 0.900 or more than 0.900; based on SMEs' performance in the reliability test can be concluded that this research is reliable. Testing the reliability of the proven results of the questionnaire is a valid and reliable performance. Three independent variables, one mediating variable and a dependent variable, were calculated for this reliability test.

**Table 4: Regression analysis results – Factors affecting SMEs’ performance**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.018	.151		6.741	.000
	Technological Factors	1.816	.200	2.038	9.101	.000
	Organizational Factors	1.773	.298	1.943	5.961	.000
	Environmental Factors	.819	.215	.917	3.809	.000
	F statistics				187.476	.000 <sup>b</sup>
	R square					0.850

a. Dependent Variable: SMEs Performance



The value of adjusted R squared is 0.850. R square implies a variation of 85.0% in the performance of SMEs with TOE factors. The f value is 187.476, and the significant value is 0.000 (P<0.01); the model is significant at a confidence level of 99%.

There is a significant impact on the Technological factors and SMEs' performance as the Coefficient (B) is 1.816. The associated p-value is less than 0.01 at the significance level. Therefore, there is a direct linkage between the variables. The findings support the hypothesis (H1), as the technological factor significantly affects SMEs performance.

$$SMEs\ Performance = (1.018 + 1.816 * Technical\ Factors) + (1.773 * organization\ factors) + (0.819 * environment\ factors) \quad [1]$$

There is a significant impact on the Organizational factors and SMEs performance as the Coefficient (B) is 1.773. The p-value is less than 0.01 at the significance level of 99% in the study, and there is a direct linkage between the variables. Therefore, the findings support the hypothesis (H<sub>2</sub>), as the Organizational factor significantly affects SMEs performance. There is a significant impact on the Environmental factors and SMEs performance as the Coefficient (B) is 0.819 (equation 1). The p-value is less than 0.01 at the significance level of 99% in the study, and there is a direct linkage between the variables. Therefore, the hypothesis (H<sub>3</sub>) is supported by the findings as the Environmental factor has a significant effect on SMEs performance.

**Table 5: Regression analysis results – Factors affecting SMEs’ performance and SM adoption**

	Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.503	.115		13.027	.000
	Technological Factors	.221	.102	.328	1.452	.001
	Organizational Factors	.100	.027	.144	.439	.006
	Environmental Factors	.308	.154	.456	1.878	.005
	F statistics				183.373	.000 <sup>b</sup>
	R square					.847

a. Dependent Variable: SM adoption

$$SM\ adoption = 1.503 + (0.221 * Technological\ factors) + (0.100 * organizational\ factors) + (0.308 * environmental\ factors) \quad [2]$$

The adjusted R<sup>2</sup> value of 0.847 shows that about 84.7% of the variation in the value of social media adoption is represented by the change in TOE factors (equation 2). The f value is 183.37, and the significant value is 0.000 (P<0.01); the model is significant at a confidence level of 99%. Furthermore, there is a significant relationship between the Technological factors and mediating variable as the p-value is 0.001, which is less than the study's significance level (P<0.01). Therefore, there is a direct linkage between the variables.

There is a significant relationship between the Organizational factors and mediating variable as the p-value is 0.006, which is less than 0.01 of the study's significance level (P>0.01). Therefore, there is a direct linkage between the variables. There is a significant relationship between the environmental factors and mediating variables as the p-value is 0.005, which is less than 0.05 of the study's significance level (P<0.01). Therefore, there is a direct linkage between the variables.

**Table 6: Regression analysis results – SM adoption and SMEs’ performance**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.159	.293		.541	.590
	SM adoption	1.113	.072	.842	15.452	.000
	F statistics				238.753	.000 <sup>b</sup>
	R square					.706

a. Dependent Variable: SMEs Performance

$$SME\ Performance = 0.159 + 1.113 * SM\ adoption \quad [3]$$

The value of adjusted R squared is 0.706. Adjusted R squared implies a variation of 70.6% in the performance of SMEs with SM adaption (equation 3). The F value is 238.75, and the significant value is 0.000 (P<0.01); the model is significant at a confidence level of 99%.

There is a significant relationship between social media adoption on SMEs performance as the p- value is 0.000, which is less than 0.01 of the significance level (P<0.05) of the study, and there is a direct linkage between the variables. Therefore, the hypothesis (H<sub>4</sub>) is supported by the findings, as SM adoption has a significant effect on SMEs performance.

**Table 7: Regression analysis results – SM adoption and SMEs’ performance**

Model	Unstandardized		Standardized	t	Sig.
	Coefficients				
	B	Std. Error	Beta		
(Constant)	.047	.212		.221	.826
Technological Factors	1.973	.171	2.214	11.571	.000
Organizational Factors	1.703	.252	1.866	6.764	.000
Environmental Factors	.600	.185	.672	3.245	.002
SM adoption	.709	.113	.536	6.275	.000
F statistics				206.651	.000 <sup>b</sup>
R square					.893

a. Dependent Variable: SMEs Performance

$$\begin{aligned}
 \text{SME Performance} &= 0.47 + (1.973 * \text{Technological factors}) + (1.703 * \text{Organizational Factors}) \\
 &+ (0.600 * \text{Environmental Factors}) + (0.709 * \text{SM adoption})
 \end{aligned}$$

The above table shows that the value of R<sup>2</sup> and Adjusted R<sup>2</sup> has improved compared to the results of Step 1. R<sup>2</sup> value has increased from 0.854 to 0.897, and the Adjusted R<sup>2</sup> value from 0.850 to 0.893. This improvement in value shows that the variation in the SME’s performance is more appropriately defined by including the mediating variable SM adoption in the model (equation 4). The independent and mediating variables represent about 89.3% of the variation in SMEs’ performance. Furthermore, the F-ratio has increased from 187.476 to 206.651, thus showing that a more accurate prediction of SME’s performance could be made now. Finally, the p-value of the mediating variable is less than the significant level of the study (P< 0.05), thus showing the significant contribution of the mediating variable in the model. Furthermore, mainly to determine the form of mediating effect in the model, the p-value technological factor (independent variable) is analyzed. Though the p-value is less than the significant value of the study 0.000< 0.01, it is 0, showing the full mediating effect of Social media adoption in the model.

**Table 7: Sobel test results**

Independent variables	Depended variables	Meditating variables	Test statistics	St.error value	P value
Technology factors	SMEs performance	Social media adoption	2.1456	0.1146	0.03189
organizational factor	SMEs performance	Social media adoption	3.6017	0.03090	0.00032
Environmental factors	SMEs performance	Social media adoption	1.9834	0.1728	0.04712

This value shows a significant mediating effect ( $P < 0.05$ ) on technological factors and SMEs' performance. Therefore, hypothesis H5 is supported. The Sobel test p-value significantly mediates ( $P < 0.05$ ) organizational factors and SMEs' performance. Therefore, hypothesis H6 is supported. The above global test p-value shows a significant mediating effect ( $p < .05$ ) on environmental factors and SMEs' performance

## Conclusion and Recommendation

The results from this study confirmed that the technological factor significantly influences the SME's performance directly in Jaffna. The results also revealed that social media adoption significantly influences SMEs' performance. At the same time, organizational and environmental factors have a positive statistically significant impact on SMEs' performance. In addition, media adoption mediates the relationship between technological, organizational and environmental factors and SMEs' performance. The Technological factor mediating effect in the model, the p-value in the global test for the Technological factor is analyzed. Though the p-value is less than the significant value of the study  $0.0318 < 0.05$ , it shows showing the mediating effect of SM adoption is present in the model. The organizational factor mediating effect in the model is analyzed, and the p-value is less than the significant value of the study  $0.0003 < 0.05$ ; it shows showing the mediating effect of SM adoption is present in the model. The Environmental factor mediating effect in the model is analyzed, and the p-value is less than the significant value of the study  $0.047 < 0.05$ ; it shows that the mediating effect of Social Media adoption is present in the model.

This result contradicts the findings of Ahmad *et al.* (2019), who studied social media adoption and its impact on firm performance. Their results showed that social media adoption did not affect SMEs' performance (Ahmad and Abu Bakar, 2019). However, the present study showed a significant positive effect on the relationship between social media adoption and SMEs performance. This implies that SMEs in Jaffna strengthen the relationship between social media and SMEs' performance. Against the backdrop of continuous debate on the advantages and disadvantages of Social Media adoption by SMEs in developing countries, this research offers a comprehensive view of important aspects, allowing owners, executives, and managers to understand the actual significance of Social Media. This work facilitates their understanding of how the effective administration of Social Media adoption can improve SMEs performance in several aspects.

The results yielded were interesting; using the TOE framework, this study evidenced that relative advantage, cost-effectiveness, compatibility, interactivity, entrepreneurial orientation, and customer pressure have a significant influence on social media adoption. In contrast, top management support and competitive pressure have an insignificant influence. Despite this, budget allocation remains less than 25%. Furthermore, 37% of SMEs studied only used Social Media minimally for marketing. The most common media types firms use are Facebook and WhatsApp; both were considered cost-effective. The speed, ease of use, interactive nature, and ability to reach large customers make Social Media essential for SMEs in developing countries.

Engaging existing and prospective customers, creating and sharing content, and monitoring competitors' activities via Social Media are possible benefits for organizations that embrace SM marketing activities.

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