

Research Article 06

The Role of Technological Advancement and E-Marketing on Business Performance of SMEs in Sri Lanka

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Abstract

Small and medium – sized enterprises (SMEs) are significant drivers of innovation, employment and economic growth, especially in developing countries like Sri Lanka. However, SMEs encounter challenges to incorporate technology innovations and e-marketing tactics which are crucial for overall business performance and competitiveness in an increasingly digitalize corporate setting. Although the existing body of literature emphasizes the advantages of digital transformation on businesses, research on the effects of technology advancements and e-marketing techniques on business performance of SMEs in emerging nations like Sri Lanka remains unexplored. This study aims to bridge these gaps by examining the relationship between technology advancements (TA), e-marketing (EMT) and SME business performance which is evaluated through key performance indicators of SMEs (KPIs) such as sales growth, customer satisfaction and market reach. A quantitative research approach is used, with data collected from 300 SMEs across various industries in Sri Lanka according to stratified proportional sampling technique using a structured questionnaire. The findings suggest that both technology advancements and e – marketing activities have a positive relationship with key performance indicators of SMEs in Sri Lanka, however TA has an insignificant relationship and EMT has a significant relationship with KPIs of SMEs. These results illustrate that SMEs in Sri Lanka can improve their overall business performance by integrating more e – marketing strategies into their marketing approach. Based on the findings, this paper provides suggestions for SMEs to make use of data-driven decision making, partnerships with digital service providers and cultivate a digitalize culture in order to achieve competitiveness in the market. Additionally, the study adds to the body of existing literature by offering empirical evidence on the importance of digital transformation in SME performance.

Keywords: Customer satisfaction, digital transformation, e – marketing, market reach, small and medium-sized enterprises, sales growth, technological advancement

Introduction

Small and medium-sized enterprises (SMEs) are generally considered a major driver of economies around the world. 90% of firms in the world are SMEs, and it contribute to around 70% of global employment and to 50% of global GDP (Gu, 2023). SMEs are set to play a crucial role in the Sri Lankan economy as well. 75% of the total firms in the country are SMEs, while contributing to 45% of employment and 52% of the country's GDP. However, research suggests that only 20% of them are going to survive in the first five years after establishment and 80% of them fail (Ministry of Industry and Commerce, 2015). Despite the important role SMEs play in the economy, they often face many challenges in the highly competitive and unsteady modern markets (Indrawati et al., 2020). To overcome these barriers, SMEs are transforming themselves by using modern technologies in their day-to-day operations. Adopting advanced technologies is vital to meet the dynamic consumer demand and to ensure the quality standards (Skoumpopoulou & Crisp, 2020). Researchers have found that innovative technology helps SMEs to become more competitive and streamline their operations, such as decision making (Yazeer & Sachithra, 2024b).

Digital transformation and increasing technological developments in recent years have dramatically changed the business landscape of SMEs, bringing both opportunities and possible challenges (Yazeer & Sachithra, 2024b). Cloud computing, machine learning, artificial intelligence, and data analytics are some recent technology advancements that allow SMEs to reduce entry barriers and increase their market reach, offering tools that can boost output, save expenses, and achieve operational efficiency (Fahad & Hamilton, 2024). Furthermore, E-marketing techniques help SMEs to interact with a worldwide consumer base by offering digital channels such as social media, email marketing and search engines. These e – marketing tools can enable SMEs to increase brand awareness and customer loyalty with a relatively low expense than traditional marketing tools (Diandra et al., 2023).

The role of digital transformation and e – marketing strategies are significant for SMEs to boost their competitiveness, economic stability and growth. However, SMEs find it difficult to adopt these technology advancements due to financial limitation, lack of expertise and lack of infrastructure (Omowole et al., 2024). Despite the growing significance of digital transformation in businesses, there is a significant lack of empirical study on how technology advancements and e-marketing impact on SME business performance in developing nations, particularly in Sri Lanka (Piyumal et al., 2021). While global literature highlights the benefits of these digital tools on competitiveness and consumer engagement (Priandito et al., 2025; Shehadeh et al., 2023), most of these studies are conducted in developed economies. Moreover, there is lack of clarity on which particular performance metrics in SMEs are heavily impacted by TA and EMT within emerging economies (Gamage, 2023; Yazeer & Sachithra, 2024). Thus, this study aims to address these gaps by empirically examining the impact of digital transformation and e – marketing techniques on business performance of SMEs in Sri Lanka. It includes how these aspects contribute to the operational efficiency, market reach and competitive advantage of SMEs. Through the analysis of driving factors and barriers that hinder the adoption rate of advanced technologies and e – marketing, this study seeks to fill a critical gap on how SMEs can successfully leverage digital transformation.

Research Questions

1. How do technological advancements affect SMEs' operations and competitiveness?
2. What impact does e – marketing have on market reach and customer engagement of SMEs?

3. To what extent do technological advancements and e-marketing techniques statistically predict sales growth, customer satisfaction, and market reach of SMEs in Sri Lanka?

Research Objectives

1. To examine the impact of technological advancements on operational efficiency and competitiveness.
2. To assess the role of e – marketing in customer engagement and expanding market reach in SMEs
3. To evaluate the extent to which technological advancements and e-marketing initiatives predict variations in SMEs' key performance indicators (KPIs)

Additionally, this study aims to provide practical insights to SMEs, particularly regarding methods of overcoming the challenges and ways to enhance their overall business performance. Moreover, the findings can also be used by policymakers to create a regulatory system that encourages SMEs to digital transformation which will ultimately result in developing country's economy. The study will also contribute to the existing literature by offering contextual understanding of the potential and constraints of technology advancements and e – marketing in emerging economies like Sri Lanka.

Literature Review

Technological Advancements in SMEs

Technological developments have a significant impact on the operations of SMEs. In an increasingly digital market, SMEs must embrace variety of technical tools and platforms such as, artificial intelligence (AI), cloud computing, customer relationship management (CRM) and enterprise resource planning (ERP) to improve sustainability, competitiveness and productivity.

Artificial Intelligence is becoming an increasingly prevalent technology advancement among SMEs. AI technologies can improve customer service, streamline supply chain management, and automate repetitive jobs with chatbots and customized marketing tactics (Diandra et al., 2023). AI adoption not only increases the efficiency and effectiveness of SME operations but also fosters innovation by empowering SMEs to design new products and services that satisfy the evolving consumer demands. Additionally, AI has the potential to identify and analyze ongoing market trends and consumer behavior, helps SMEs to develop effective market plans and gain competitive advantage (Jafarzadeh et al., 2024)

Adoption of cloud computing is another significant advancement in technology. It offers SMEs affordable data management and storage options as well as scalable resources (Suttidee & Savithi, 2025). Cloud-based services make information more accessible and collaboration easier, which is especially a benefit for SMEs, particularly in emerging economies with little IT infrastructure (Moeuf et al., 2017). Furthermore, cloud computing's adaptability enables SMEs to quickly adjust to shifting market needs, improving their responsiveness and flexibility.

Customer relationships management (CRM) systems have become a crucial resource to SMEs, particularly when it comes to increasing customer loyalty and retention. According to studies, CRM systems provide SMEs the ability to monitor and examine consumer behavior, preferences and purchase trends, which generate information for customizing marketing and customer care plans (Nethanani et al., 2024). Furthermore, SMEs can engage in personalized

marketing strategies to enhance consumer loyalty and satisfaction by using the data from CRM systems (Samira et al., 2024). This is especially critical for SMEs as CRM enables entities to optimize the value of their current customers as acquiring new clients is expensive and needs a large number of resources. By establishing connections that set them apart from more established rivals, SMEs in turn acquire a competitive advantage.

Another technological system that SMEs can utilize is enterprise resource planning (ERP), which enables businesses to consolidate important business operations such as, finance, human resources and inventories into a single platform (Senarath et al., 2024). It helps SMEs to reduce operational duplication and improve decision-making precision. Also, ERP solutions help SMEs better manage supply chains, track inventories in real time, and forecast finances, all of which are very helpful for SMEs with little funding (Zaied & Mohmed, 2020). ERP systems streamline operations to improve departmental coordination, increase data accuracy and also lower the expenses related to inefficient processes. With the assist of this technology, SMEs can expand their operations easily and quickly in response to demand fluctuations for their products and services (Zaied & Mohmed, 2020).

Challenges for Technology Adoption

It is clear that these technological advancements provide SMEs with substantial benefits to streamline operations. However, SMEs have to handle several barriers along the way of adopting technology. Most of the SMEs in developing countries struggle to adopt new technologies because of resource limitations such as financial shortages, knowledge gaps and limited infrastructure (Zaied & Mohmed, 2020). Furthermore, outside forces such as market competition, consumer demands and other uncertainties may affect technology integrations (Prause, 2019). Apart from these, high initial cost and maintenance expenses have been identified as a significant challenge, particularly for smaller businesses (Gamage, 2023). Additionally, cybersecurity issues are becoming a big problem as more SMEs are utilizing digital platforms to conduct business online. Due to their comparatively inadequate security infrastructures as compared to larger enterprises, SMEs are frequently the target of cyberattacks (Haastrecht et al., 2021). These cyber-attacks can have serious consequences for SMEs such as financial losses, data theft, and reputational damage. Another obstacle to digital transformation is SMEs' reluctance to change. Employees used to traditional techniques may have an objection to the cultural shift and adjustments to establish business processes that come with SMEs that implement new technologies (Buvár & Gáti, 2023).

Impact of Technological Advancement on SME Business Performance

Technological advancements have had a major impact on how SMEs operate. In an increasingly digital market, SMEs must embrace a variety of technical tools and platforms to improve sustainability, competitiveness, and productivity. Improvement of productivity and operational efficiency is one of the main advantages of technology adoption in SMEs. According to research, SMEs can see significant increases in productivity when they incorporate information and communications technology (ICT) into their operations (Akinwale et al., 2017). For instance, 70% of employees who had internet access revealed that using online tools can enhance their productivity (Buhari & Antony Athithan, 2024). Moreover, cloud computing adoption has been emphasized as an affordable way to enhance service delivery and streamline operations in SMEs (Pramuka & Pinasti, 2020). Cloud-based solutions' scalability and flexibility let SMEs respond promptly to market needs, strengthening their competitiveness (Moeuf et al., 2017). Additionally, by robotic automation processes, SMEs can increase overall efficiency by streamlining processes, lowering human error, and directing their scarce human resources into more intricate, valuable tasks (Axelson et al., 2020).

Another major significance of technology adoption is enhancing financial performance. According to research, SMEs' financial results can be greatly increased by the efficient usage of information technology. For example, studies discovered that proper technology investments result in improved financial performance, especially during difficult periods like the COVID-19 pandemic (Hidayat & Muniroh, 2021). This is consistent with Yusuf's findings, which showed that investment in technology helps SMEs to improve their competitive positioning, which lowers costs and boosts productivity (Yusuf, 2017). Additionally, it has been demonstrated that integrating technologies, such as the Internet of Things (IoT), improves corporate performance. IoT deployment greatly aids in SMEs' acceptance of technology, which improves overall performance and operational efficiency (Haseeb et al., 2019).

Studies have also mentioned that digital technologies such as AI and big data can lead SMEs to enhanced operational processes and better alignment with market demands (Teng et al., 2022). This digital transformation is crucial for SMEs to survive in a highly digitalized marketplace. Additionally, studies have discovered that e – e-commerce has a big effect on business success because it gives SMEs new ways to connect with consumers and streamline processes (Q. Chen & Zhang, 2015). SMEs now need to be able to perform business and market online, particularly in the wake of the pandemic, which accelerated the transition to digital platforms (X. He & Zhang, 2010). Overall, SMEs have been able to create a competitive edge in their respective industries in addition to increasing productivity and lowering operating costs by incorporating different technological breakthroughs into their company models.

E-Marketing in SMEs

E – marketing solutions are increasingly used in SMEs at present in order to increase their visibility, interact with their customers and boost overall performance. Many studies mention that SMEs need to incorporate digital marketing techniques to remain competitive in the modern marketplace (Diandra et al., 2023).

Social media marketing is one of the main e – e-marketing strategies used by SMEs. Social media sites like Facebook, Instagram, and Twitter give small businesses less expensive means to interact with clients and reach a wider audience (Lestari et al., 2024). According to studies, social media marketing is essential, especially in the context of developing nations, since it enables SMEs to implement controllable and reasonably priced marketing techniques that can result in substantial returns (Ndiege, 2019). Furthermore, the informal and flexible nature of SMEs makes them more responsive to marketing tactics like social media marketing (W. He et al., 2015).

Email marketing is another vital digital marketing tool that enables SMEs to directly communicate with customers and potential clients. Studies suggest that email marketing is an effective strategy for increasing sales and fostering client connections (Kurniawan et al., 2023). Research states that SMEs can employ a variety of digital communication techniques, such as email campaigns, to market their goods and services, increasing client retention and engagement (Dwivedi et al., 2021). Email marketing campaigns are made more effective by the ability to segment email lists and customize content, which makes it an effective tool for SMEs.

For SMEs, search engine optimization (SEO) is also a crucial e-marketing tactic. SMEs may increase their visibility and draw in organic visitors by optimizing their websites for search engines (J.-C. Chen & Sénéchal, 2023). Studies suggest that this marketing tool is effective for businesses with low funds, such as small businesses. And, SMEs must increase the usage

of SEO and e-commerce strategies in order to stay competitive and satisfy consumers in rapidly changing markets (Ijomah et al., 2024). Greater web traffic, better search engine ranks and eventually better sales performance can result from using effective SEO solutions.

Mobile marketing is another effective e-marketing tool for SMEs as more people use smartphones for browsing and purchasing products and services. SMEs can successfully engage in customer bases by utilizing mobile marketing techniques like SMS campaigns and mobile-friendly websites (Eze et al., 2019). Studies have found that the sustainability of SMEs is positively impacted by internet usage, particularly mobile marketing (Handaru & Safariningsih, 2025). The trend of using smartphones and to accommodate an increasing number of mobile phone users drives SMEs to adopt mobile marketing strategies.

Challenges for E-Marketing in SMEs

Although there are numerous drivers that encourage SMEs to adopt e-marketing strategies, it is not an easy process, as SMEs have to deal with several barriers when implementing these strategies. Resource constraints of one of the primary barriers for SMEs to adopt digital marketing. Studies mention that a lack of financial resources is among the main obstacles for e-marketing adoption, as SMEs often operate with limited budgets (Patimo & Dollado, 2021). With less amount of resources, SMEs often find it difficult to invest in technologies such as website development and search engine optimization (SEO) that are crucial for e-marketing (Kumar, 2022). As a result, it is pretty challenging for SMEs to successfully compete with larger companies that have more considerable marketing expenses if they lack sufficient resources. In addition to other resource constraints, studies illustrate that SMEs do not possess sufficient infrastructure that require to implement e-marketing strategies (Patimo & Dollado, 2021). Their ability to interact with customers online and use data analytics to guide marketing decisions may be hampered by this lack of resources.

Furthermore, studies also mention that organizational culture is critical for SMEs to adopt digital marketing. However, SMEs' resistance to change will hinder the adoption of e-marketing strategies (Dlodlo & Dhurup, 2013). Security threats also stand as a significant challenge to the adoption of digital marketing. SMEs may be discouraged from embracing digital marketing to the fullest extent possible by the growing frequency of cyber threats due to worries about data breaches and online fraud (Renaud & Ophoff, 2021). The fact that many SMEs lack of expertise and resources necessary to put strong cybersecurity safeguards in place adds to this anxiety (Renaud & Ophoff, 2021). Consequently, these security threats associated with e-marketing channels may cause hesitation in implementing these tactics, ultimately affecting their business performance as they might not meet the growing demands in the market.

Impact of E-Marketing on Business Performance of SMEs

In spite of the obstacles, e-marketing has a significant impact on SMEs' business performance. It has been illustrated that e-marketing techniques such as social media marketing and email campaigns increase consumer involvement and brand awareness (Nurlan et al., 2024). Studies argue that e-marketing channels enable SMEs to stay competitive in the global market and address the dynamic preferences of consumers, which eventually enhances customer engagement (Budiarto et al., 2022). SMEs can reach new markets and develop strong relationships with customers through the effective implementation of digital marketing strategies. Furthermore, e-marketing can enable internationalization for SMEs. According to studies, e-marketing strategies are essential for SMEs in the internationalization process as they allow SMEs to reach new markets and grow their customer base (Ivanauskienė et al.,

2015). A SME's growth potential and market reach can be greatly enhanced by having the ability to interact with foreign clients via digital channels.

E – marketing can also encourage innovation in SMEs. Studies suggest that internet marketing is essential to foster innovation and enhance overall business performance (Aziz & Omar, 2013). SMEs can acquire vital information about consumer demands and market trends by implementing e-marketing techniques. This information can then be used to guide the creation of new products and improvements to existing services (Husnah et al., 2024). This alignment with consumer demands and market trends results in increased customer satisfaction and engagement, ultimately impacting business profitability growth.

Furthermore, e-marketing platforms' interactive features facilitate the development of personalized marketing programs, which are quite successful at retaining customers. By using data collected from consumer interactions to customize their offers and marketing messages to individual tastes and buying patterns, SMEs may provide a personalized experience that traditional marketing frequently cannot match (Massoudi et al., 2023). For example, SMEs use email marketing to communicate about their products to a target customer base based on their purchase and browsing history, which encourages them to repeat purchases (Defau & Zauner, 2023).

Moreover, SMEs may enhance customer engagement as e-marketing channels promote user-generated content (UGC). Social media product shares, customer reviews, and testimonials serve as endorsements, which are frequently seen as more reliable than brand-generated content, and it is essential to build brand trust among customers (Romero-Rodríguez & Castillo-Abdul, 2023). User-generated content (UGC) not only increases brand trust but also improves engagement by allowing potential customers to engage with SME businesses in a more authentic and intimate way (Saura et al., 2023). This can aid SMEs in reaching a wider audience, building a more loyal and engaged customer base that actively promotes their brands.

Additionally, SMEs can use analytical tools to assess the market reach and engagement through e-marketing, which yields insights that help SMEs to improve results and optimize marketing strategies (O'Dwyer et al., 2009). Real-time information on consumer interactions, engagement levels, and conversion metrics is available through platforms like Google Analytics, Facebook Insights, and email monitoring software. These insights assist SMEs in identifying the most effective elements of their marketing initiatives, enabling them to manage resources and optimize programs for maximum impact (Kabiraj & Joghee, 2023). SMEs will be able to continuously enhance their engagement tactics by data-driven adaptations, which will ultimately result in increased conversion rates and steady market expansions.

Hypotheses of the Study

The study's hypotheses were established based on research questions and objectives in order to determine the effect of technological development and use of e-marketing activities on important performance indicators of SMEs in Sri Lanka.

Previous studies suggest that technological advancements have a significant effect on SMEs, especially when it comes to key performance indicators (KPIs) like revenue growth, operational effectiveness, and competitiveness in the market (Marino et al., 2024). Additionally, the implementation of additional technologies may indicate a greater level of digital knowledge, which could increase operational efficacy, decision-making and overall business success (Patria et al., 2023).

H1: There is a significant positive impact of technological advancements on key performance indicators of SMEs in Sri Lanka

Past literature suggests that e-marketing techniques, such as social media marketing, are cost-effective and lead SMEs to financial and non-financial gains (Salam et al., 2021). Furthermore, e-marketing channels possess the ability to engage directly with customers, which enhances brand awareness and consumer loyalty, which are crucial aspects of business growth (Mitreva et al., 2022).

H2: There is a significant positive impact of E-marketing activities on key performance indicators of SMEs in Sri Lanka

Conceptual Framework

The conceptual framework of the research is grounded on previous studies, which determine technological advancements and e-marketing efforts as important drivers of the performance of SMEs. Previous studies illustrate that AI, CRM, and ERP systems, which are examples of technological innovations (IV1), contribute to improved operational effectiveness and strategic decision-making (Gollangi et al., 2024; Mhaskey, 2024). Similarly, enhanced customer engagement, revenue growth, and market expansion have been associated with e-marketing techniques (IV2) like social media marketing, e-mail marketing, and SEO (Ama, 2024; Nuseir et al., 2023). The dependent variable in this work is business performance, which is determined by key performance indicators (KPIs) such as sales growth, customer satisfaction and market reach (Mhango & Shaju, 2023; Westin, 2024).

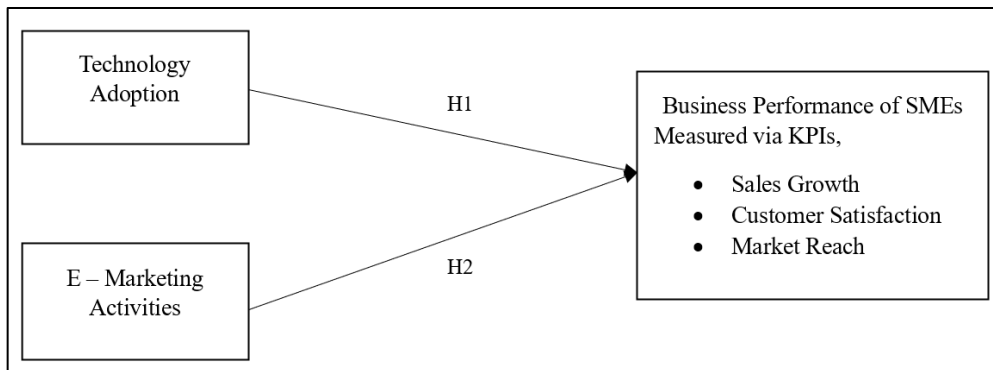


Figure 1: Conceptual Framework

Source: Developed by the researcher based on previous literature (2024)

Table 1: Supporting Studies Used to Develop Conceptual Framework

Component	Supporting Studies
Technology Adoption → Business performance	(Gollangi et al., 2024; Mhaskey, 2024).
E-Marketing Activities → Business performance	(Ama, 2024; Nuseir et al., 2023)
KPI Dimensions	(Mhango & Shaju, 2023; Westin, 2024).

Source: Compiled by the author based on previous literature (2024)

Research Methodology

This study uses a quantitative research design to examine the impact of technological advancements and e-marketing techniques on the business performance of SMEs. Data from SME owners is gathered using a cross-sectional survey method, which allows for statistical examination of the correlations between variables. The target population for this study is small and medium-sized enterprises in various industries such as manufacturing, retail, services and technology. A SME is defined in Sri Lanka as enterprises that have less than 300 employees and an annual turnover is not exceeding Rs. 750.00 Mn (Ministry of Industry and Commerce, 2015). A stratified proportional sampling technique is used, and a sample of 300 SMEs is selected from the Western province of Sri Lanka, which has a significant 40% of all SMEs in the country (Ministry of Industry and Commerce, 2015).

Sample Size Determination

According to the study done by Wolf, Harrington, Clark, & Miller (2013), sample size requirement is defined based on the number of latent variables and indicators, strength of factor loadings and regressive paths, type of model, and degree of missing data. Also, the study revealed that the sample sizes of 30-460 are appropriate to give meaningful patterns of association between sample size and parameters and highlight the limitations of rules of thumb. The priori sample size calculator, developed according to the criteria mentioned above and according to Figure 2, required a minimum sample of 112, and the actual collected sample size of 300 is sufficient for the study.

Primary data is collected through a structured questionnaire, consisting of five-point Likert scale (1= Strongly Disagree, 5= Strongly Agree) questions to capture respondents' perception.

To analyze the collected data, the study uses descriptive analysis to summarize the respondents' characteristics and multiple regression analysis, Pearson correlation analysis, and ANOVA testing to examine the relationships between key variables of the study. The data were analyzed using SPSS version 23.

Results and Interpretations

Table 2: Descriptive Statistics

		Response	%
Type of Business	Manufacturing	57	19
	Retail	42	14
	Services	52	17.3
	Agriculture	64	21.3
	Tourism	39	13
	Other	46	15.3
Annual Turnover	Below 100Mn	61	20.3
	101Mn - 300Mn	64	21.3
	301Mn - 500Mn	49	16.3
	501Mn - 700Mn	59	19.7
	More than 701Mn	67	22.3
Age of the Firm	Below 5 yrs	45	15
	6 - 10 yrs	42	14
	11 - 15 yrs	40	13.3
	16 - 20 yrs	40	13.3
	21 - 25 yrs	54	18
	26 - 30 yrs	42	14
	Above 31 yrs	37	12.3
Type of Ownership	Sole proprietorship	94	31.3
	Partnership	102	34
	Company	104	34.6
No. of Employees	Less than 10	43	14.3
	11-50	39	13
	51-100	37	12.3
	101-150	28	9.3
	151-200	38	12.7
	201-250	41	13.7
	251-300	41	13.7
	More than 300	33	11

Source: Authors' (2024)

First, the reliability and validity of the questionnaire were tested by Cronbach's value, and all values exceeding 0.7 indicate the reliability and validity of the data collection instrument (Peters, 2018). Table 2 illustrates the details of the respondents and analyzes them according to company-wise information.

From the sample, the agricultural sector represents the highest number of respondents (21.3%), while the lowest number of respondents is from the tourism industry (13%). Most of

the SMEs in the data sample are generating more than Rs. 701 Mn (22.3%), and the Rs. The 301 Mn – 500 Mn range has the least proportion (16.3%). Furthermore, the age of the firms is relatively even across most of the ranges except for the 21 – 25 years range, which represents 18% of the sample firms. And Businesses under 05 years old are also rather prevalent, indicating a consistent rise in new ventures. When it comes to the type of ownership, most of the firms in the data sample are companies (34.6%). 14.3% of firms have fewer than 10 employees working, which are the smallest enterprises. Finally, businesses with more than 300 employees make up 33 (11%) of the sample. This category represents the larger organizations.

Table 3 demonstrates the relationships between key variables for a sample (N) of 300.

Table 3: Correlation Analysis

		EMT	TA	KPI
EMT	Pearson Correlation	1	0.209**	0.373**
	Sig. (2-tailed)		0.000	0.000
TA	Pearson Correlation	0.209**	1	0.145*
	Sig. (2-tailed)	0.000		0.012
KPI	Pearson Correlation	0.373**	0.145*	1
	Sig. (2-tailed)	0.000	0.012	
**. Correlation is significant at the 0.01 level (2-tailed).				
*. Correlation is significant at the 0.05 level (2-tailed).				

Source: SPSS output (2024)

The correlation between Technological Advancements (TA) and SME Key Performance Indicators (KPI) is weakly positive, with a Pearson correlation coefficient of 0.145. This implies that as Technological Advancements (TA) increase, SME Key Performance Indicators (KPI) show a slight improvement. This relationship is statistically significant at the 0.05 level, with a p-value of 0.012.

The correlation between E-Marketing Activities (EMT) and Technological Advancements (TA) is weakly positive, with a Pearson correlation coefficient of 0.209. This suggests that as E-Marketing Activities (EMT) increase, Technological Advancements (TA) tend to increase slightly. The relationship is statistically significant at the 0.01 level, with a p-value of 0.000.

Furthermore, the correlation between E-Marketing Activities (EMT) and SME Key Performance Indicators (KPI) is moderate, with a Pearson correlation coefficient of 0.373. This indicates that higher levels of E-Marketing Activities (EMT) are moderately associated with better performance in SME Key Performance Indicators (KPI). The relationship is statistically significant at the 0.01 level, with a p-value of 0.000.

Overall, while all three variables exhibit positive relationships, the strongest correlation is between E-Marketing Activities (EMT) and SME Key Performance Indicators (KPI), indicating that E-Marketing Activities (EMT) have a more significant impact on KPI than Technological Advancements (TA).

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.380 ^a	0.144	0.138	1.42398
a. Predictors: (Constant), TA, EMT				
b. Dependent Variable: KPI				

Source: SPSS output (2024)

Table 5: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	101.406	2	50.703	25.005	0.000 ^b
Residual	602.230	297	2.028		
Total	703.637	299			
a. Dependent Variable: KPI					
b. Predictors: (Constant), TA, EMT					

Source: SPSS output (2024)

Table 6: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	14.835	1.339		11.081	0.000
EMT	0.248	0.038	0.359	6.533	0.000
TA	0.071	0.055	0.070	1.279	0.202
a. Dependent Variable: KPI					

Source: SPSS output (2024)

The regression analysis's correlation coefficient (R) of 0.380, as shown in the model summary table, suggests a moderately positive association between the dependent variable (KPI) and the predictors (Technological Advancements and E-Marketing Activities). The independent variables account for about 14.4% of the variance in the KPI, according to the R Square value of 0.144. After adjusting sample size and predictor count, the Adjusted R Square is 0.138, suggesting a modest decline in explanatory power. The average difference between the actual and expected KPI values is represented by the Standard Error of the Estimate, which is 1.42398.

The ANOVA table reveals that the regression model significantly explains the variation in the dependent variable, KPI. The Regression Sum of Squares is 101.406, indicating the portion of variance in KPI explained by the independent variables (Technological Advancements and E-Marketing Activities). The Residual Sum of Squares is 602.230, representing the unexplained variance in KPI. The Total Sum of Squares is 703.637, combining both the explained and unexplained variance. The degree of freedom for the regression model is 2, corresponding to the two independent variables (TA and EMT), while the degree of freedom for the residual is 297, indicating the total number of observations minus the number of predictors and the constant. The Mean Square for regression is 50.703, calculated by dividing the regression sum of squares by its degrees of freedom, and the Mean Square for residual is 2.028, calculated similarly for the residual sum of squares. The F-statistic is 25.005, which

indicates that the regression model explains the variance in KPI much better than random chance. The p-value is 0.000, showing that the model is statistically significant, meaning that the independent variables (TA and EMT) have a significant effect on KPI. The regression equation for predicting KPI based on E-Marketing Activities (EMT) and Technological Advancements (TA) is as follows:

$$\text{KPI} = 14.835 + 0.248(\text{EMT}) + 0.071(\text{TA})$$

The coefficients table provides the values of the regression model, showing the relationship between the dependent variable (KPI) and the independent variables (E-Marketing Activities and Technological Advancements). Here's a breakdown of each component. Constant (14.835): The constant represents the interception of the regression model, which is the predicted value of KPI when both E-Marketing Activities (EMT) and Technological Advancements (TA) are zero. In this case, the constant value is 14.835, meaning that when both predictors are absent, the predicted KPI is 14.835. E-Marketing Activities (EMT): The Unstandardized Coefficient for EMT is 0.248, indicating that for every one-unit increase in E-Marketing Activities, the KPI is expected to increase by 0.248 units, holding Technological Advancements constant. The Standardized Coefficient (Beta) for EMT is 0.359, which shows the strength and direction of the relationship between EMT and KPI in standardized terms. A higher Beta value indicates that EMT has a stronger effect on KPI compared to TA. The t-value for EMT is 6.533, and the p-value is 0.000, which shows that the relationship between EMT and KPI is statistically significant at the 0.01 level. Technological Advancements (TA): The Unstandardized Coefficient for TA is 0.071, meaning that for every one-unit increase in Technological Advancements, the KPI is expected to increase by 0.071 units, assuming E-Marketing Activities remain constant. The Standardized Coefficient (Beta) for TA is 0.070, indicating a very weak relationship between TA and KPI when compared to EMT. The t-value for TA is 1.279, and the p-value is 0.202, which suggests that the relationship between TA and KPI is not statistically significant, as the p-value is greater than the typical significance threshold of 0.05.

These findings partially achieve objective 1 by demonstrating that SMEs can benefit by utilizing technologies like AI, CRM, and ERP; however, their efficiency in enhancing SMEs' business performance is not statistically strong. These results contrast with the findings from more digitalized settings such as (Buhari & Antony Athithan, 2024; Nethanani et al., 2024), where technology advancements significantly enhance corporate performance.

However, objective 2 is strongly supported by the result of this study, confirming that e-marketing activities significantly improve consumer engagement and market reach in Sri Lankan SMEs. This is consistent with earlier research that shows a direct link between social media marketing, SEO, and e-mail marketing with increased revenue, brand awareness and customer loyalty (Ama, 2024; Mhango & Shaju, 2023).

Furthermore, EMT has the majority of the predictive capacity as TA makes a little contribution to the model according to the results. By emphasizing that TA is statistically insignificant in this context and establishing EMT as a significant predictor, this model partially satisfies objective 3.

Based on the results, the following hypotheses can be accepted:

H1: There is a significant positive impact of Technological Advancements on the Key Performance Indicators (KPIs) of SMEs in Sri Lanka.

This hypothesis can be accepted as the unstandardized coefficient for Technological Advancements (0.071) indicates a positive relationship with KPIs, although the relationship is not statistically significant ($p = 0.202$).

H2: There is a significant positive impact of E-Marketing Activities on the Key Performance Indicators (KPIs) of SMEs in Sri Lanka.

This hypothesis can also be accepted, as the unstandardized coefficient for E-Marketing Activities (0.248) shows a positive relationship with KPIs, and the relationship is statistically significant ($p = 0.000$).

In conclusion, while Technological Advancements have a positive effect on KPIs, E-Marketing Activities have a statistically significant positive impact on the KPIs of SMEs in Sri Lanka.

Conclusion and Recommendation

This study examines the role of technological advancements and e-marketing activities on the business performance of small and medium-sized enterprises in Sri Lanka. The findings indicate that both technological advancements and e-marketing activities have a positive relationship with key performance indicators of SMEs, which aligns with previous literature (Eid & El-Gohary, 2013). However, the relationship between TA and KPIs shows a statistically insignificant relationship, demonstrating a divergence from the research which have been conducted in more digitally mature environments. This difference can be explained by the local limitations (constraints imposed by infrastructure, skill labour shortage, and aversion to changes) that are considered major innovation barriers within the Sri Lankan small and medium enterprises industry (Yazeer & Sachithra, 2024). EMT and KPIs show a statistically significant relationship, which shows that e-marketing has a slightly strong influence on SMEs' business performance. This result is compatible with previous research, which indicates that digital marketing activities significantly contribute to enhancing customer engagement and market expansion (Mhango & Shaju, 2023). It is possible to consider that the effectiveness of EMT can be explained by its comparatively low cost, wide access, and operational simplicity, especially contributing to SMEs with small funds and lacking sufficient levels of digital infrastructure (Rassool & Dissanayake, 2019).

Moreover, EMT is the most significant predictor of variations in Sri Lankan SMEs' business performance metrics than TA. These results align with (Merín-Rodríguez et al., 2024), who argues that front-facing, customer-oriented provides more benefits for SMEs in the early stages of digital maturity, such as Sri Lankan SMEs. Conversely, back-end systems such as AI and ERP are more costly and need more support, which may not be feasible for most of the Sri Lankan SMEs (Wadugedara et al., 2018).

The study provides significant insights for policymakers, SME owners, and future scholars based on the findings of the study. Since e-marketing techniques were found to be the most effective predictor of business performance metrics, SMEs should invest more in digital marketing strategies by allocating more budget to digital marketing rather than costly technologies, and also SMEs need to prioritize social media platforms for marketing purposes due to high reach and low cost (Ravi et al., 2021). Furthermore, given the performance impact and low level of technical barriers, SME owners and policymakers are recommended to conduct training programs focusing on e-marketing tools such as Google Ads, Facebook Business Manager, and Mailchimp.

Even though technological innovation such as AI, CRM, and ERP are promoted for the digital transformation of SMEs, the study has found a statistically insignificant impact on business performance in the Sri Lankan context. Thus, SMEs should conduct a cost-benefit analysis before investing in such complex technologies, and emphasis ought to be made on incremental improvements, like the enhancement of the functionality of a specific site, the implementation of a cloud-based accounting system, or basic CRM applications capable of empowering e-marketing activities.

Moreover, academics have given insights to explore more on moderating variables such as digital infrastructure availability, workplace culture, and digital literacy in future studies since TA did not show a statistically significant impact on SME business performance. Additionally, it is better to use a mixed-method approach in future research to gain both statistical evidence and rich narrative context by conducting interviews and focus-group discussions to examine the lived experience with technological and digital marketing aspects of SME owners.

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