

Unpacking External Environmental Factors for Digital Marketing Adoption in Restaurants: A Knowledge Management Edge

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Abstract: - Owing to the widespread usage of computers and smartphones around the globe, the way in which businesses communicate with their stakeholders has changed dramatically, leading to the growth of digital marketing. With a special focus on Environmental factors of the TAM-TOE framework, this study explores the context of adoption of digital marketing in the restaurant sector. Data was collected via questionnaires from 504 restaurateurs registered with the Kerala Hotel and Restaurant Association (KHRA). The findings suggest that Competitive Pressure, Customer Pressure, and Regulatory Support are the factors that shape the restaurateurs' perception of the Perceived Ease of Use and Perceived Usefulness. Together, the dominant influence of these factors increases the likelihood of adoption. The result of the study provides valuable insights from an empirical and multi-dimensional perspective to both academicians and practitioners interested in understanding the digital marketing adoption patterns in the restaurant industry.

Key-Words: - Digital Marketing Adoption, Environmental Factors, Restaurant Industry, Perceived Ease of Use, Perceived Usefulness, TAM-TOE Framework, Technology Acceptance.

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1 Introduction

The efficiency of business operations has increased through technological breakthroughs that continuously drive organisational evolution. As technology keeps expanding at a remarkable pace, this era of innovation will witness bigger changes in the coming years. In the last few years, the broad usage and adoption of Information Technology have emerged as an important area of study, [1], [2]. This growing interest strengthens the fact that technology usage improves productivity and creates long-term competitive advantage, which is vital for customer-centric marketing strategies, [3], [4], [5]. Accepting technology and deploying it effectively helps organisations to easily adjust to the rapidly changing environment and improve operations, and strengthens the competitive edge in the market, [6], [7].

Today's businesses try to build business plans that allow them to create and maintain connections effectively with the help of digital strategies. Therefore, it is important to identify factors that influence the digital marketing adoption, as this process is highly complex and dependent on environmental factors. An organisation's decisions to adopt digital marketing practices are influenced by economic conditions, advanced technology,

social trends, and the regulatory framework. A firm's performance is boosted by the adoption of digital technologies, which ultimately enhances the Global Value Chains (GVCs), [8]. Besides these influences, external interventions can alter productivity, profitability, employment, incentives and key outcomes, [9]. Adopting technology-enabled marketing can deliver a competitive edge to the firm in terms of the creation of an information-driven society, [10], [11], human capital, institutional framework, internal interactions and incentives, and, in a larger view, contributes to national development, [12], [13]. Research provides evidence that competitive advantage for human capital comes along with new technology adoption, with job growth and enrichment in the IT sector [14], and knowledge dissemination for leveraging growth [15], [16]. Following this, Knowledge Management (KM) becomes a key function to transform technological opportunities and environmental pressures into pragmatic organisational capabilities. Proper KM practices such as knowledge gathering, exchange and application help the firms to internalise the external information regarding customer behaviour, competitor moves and regulatory changes. Empirical data from the Malaysian hospitality

industry show that KM positively influences innovation performance, with organizational learning and creativity playing a mediating role [17]. Likewise, [18] adds that Knowledge transfer promotes innovation performance among SMEs by initiating collective learning and mutual improvement. For restaurants in Kerala, to encourage similar KM habits—like recording customer feedback, discussing digital campaign trends, and facilitating inter-employee learning—can assist in converting environmental pressures into actionable insights, forcing them to be more prepared for adopting digital marketing tools.

At the macro level, the strategies for the adoption of digital marketing by organisations can significantly contribute to national progress [19], but the cultural difference and diversity among the nations can significantly influence the extent of adoption, [20], [21]. From an industrial perspective, there is a variation from firm to firm, and it is shaped by elements such as competitive pressures, firm-specific characteristics and external interventions. Exploring these factors can help justify the variation and the extent of adoption. The competitive benefit that information technology provides using digital marketing comes from increasing productivity; however, normally, companies are not aware of the newest technology solutions [22] as well as the integration of these various technologies into normal operations, [7], [23].

The ever-increasing competitive constraints that entrepreneurs encounter necessitate that businesses adopt emerging technologies, particularly those that will enable them to establish greater operational efficiencies and become more customer-centric, [24], [25].

The hospitality sector is quickly emerging as a vital driver of revenue in many countries, significantly boosting economies by generating jobs and offering opportunities for immigrants to integrate into the workforce, [26]. The industry is being influenced by powerful competition [27], [28], consequently, innovation has become an essential weapon for businesses seeking to establish or maintain their competitive advantage, [29]. In order to create and maintain customers, it is important for business organisations to employ various digital marketing tools like SEO and social media, especially in the highly competitive hospitality sector, [30]. To be effective, the online communication channels follow a systematic approach which clearly states inputs, outputs and resources required at every stage, [31]. Digital Marketing is now redefining the entire hospitality

industry by rethinking the existing traditional economic models. Being one among the sectors that highly value customer loyalty and credibility, it uses search engines, websites and blogs to reach its target market and build strong relationships with the customers, [32]. With the help of digital marketing tools like influencer marketing, social media and branding, more customer engagement can be achieved in the tourism, hotel and airline industries, [33]. For the Indian hospitality industry to stay competitive, it has become inevitable to adopt digital tools to tailor customer experience and improve operations, [34].

It is important for the hospitality industry, especially restaurants, to focus on good customer service, personalization and technology as they support economic growth, and also create job opportunities, [35]. It is important for the developing economies to resolve their ownership issues, skill development of the workforce, and provide tax incentives in order to grow their economies, [36]. Nevertheless, COVID-19 exerted a serious negative impact on the sector, bringing about a substantial loss of jobs and income, thus underscoring the necessity of funding and safety measures for reopening, [37]. Further, existing research on sustainable restaurants has tended to overlook the holistic long-term viability factor, which could hinder progress, [38]. In order to stay competitive, the restaurants are compelled to adopt digital marketing tools to create and maintain customers, [39]. In the Asia-Pacific region, restaurants are growing and doing well, supported by new technologies, [40], [41]. Creating an effective business environment that promotes teamwork and prioritizes user experience boosts both profitability and customer satisfaction, [36].

2 Literature Review

2.1 TAM-TOE Framework

To comprehend the organization's behaviour in technology adoption, the TAM-TOE framework is utilized. A combination of these two frameworks improves the strength of the model to predict the outcomes, as it clearly looks into the elements that impact the adoption of technologies in various institutions.

The combination of TAM and TOE frameworks greatly strengthens the models concerning the incorporation of technology. Similar models are thus made comprehensive and more effective in explaining intentions of adoption, [42], [43], [44], [45]. The integrated framework has been effectively

used in many technologies, including cloud computing, AI-driven technologies, e-commerce and digital technologies for 3D design, making it adaptable in various contexts, [43], [46]. Within this framework, the competitive pressures and support from trading partners become significant driving forces for embracing technology, whereas external assistance and market dynamics play a vital role as environmental factors, [43], [47], [48].

Moreover, the perceived usefulness (PU) and perceived ease of use (PEU) are more often intermediate variables that explain the association between determinants: technological, organizational and environmental, to actual implementation in technology, [43], [47], [49].

2.2 Environmental Factors (EF)

Various factors influence a firm's digital marketing adoption and social media marketing strategies, primarily customer Pressure and Competitive Pressure. The firms need to understand these factors to improve their visibility and overall business performance. This is the relationship between the implementation of technology and competitive forces, which can only be understood when trying to understand how small businesses respond to changes in market conditions. The diffusion of technological change will vary depending on factors within the environment in which small firms operate, [20], [50], [51]. In unstable and transformative contexts, organizations need to establish technologies that enable them to respond effectively to changing market requirements as well as reduce uncertainty while ensuring their survival, [52], [53], [54], [55]. However, many aspects of the literature that discuss diffusion fail to deliver models that detail how an organization can react to vague and unstable environments with the insertion of technological advancements, [7], [56]. This is especially for the entrepreneurs in search of ways to remain afloat in highly challenging contexts or turbulent ones, [7]. The environment as such plays a decisive influence on both technology adoption and competitive advantage.

According to [57], strong environmental factors are necessary to uplift service innovation that promotes a competitive advantage by reducing the negative impacts of IT adoption. While considering smaller businesses, it is important to understand the fact that competition does not have a direct impact on technology adoption, while the size of the business and knowledge of employees do act as key predictors, [58]. [7], put forward the idea that generally, in small businesses, environmental factors can influence technology adoption mostly

through a mediating variable, as highlighted by [59]. According to [60], the most common factors considered for studying sustainable technology adoption are environmental regulations and firm characteristics.

Similarly, in the same way, according to [61], community pressure in predicting technology adoption is minimal compared to environmental regulation and pressure from the market. Also, in the automotive industry, the supply chain pressure for conformity to standards or regulations, market and industrial challenges, and benchmarking of logistics partners significantly drive the adoption of these digitalization technologies, [62].

2.3 Competitive Pressure (CUP)

Across various industries, competitive pressure acts as a major driver of technology adoption, affecting both initial adoption and continued usage of technologies by considering environmental factors and firm-specific characteristics. To maintain or improve competitiveness, businesses tend to implement new technologies, even though the exact dynamics differ by industry and region. This technology-driven trend is particularly observed in industries like telecommunications, high-tech, and supply chain management, [63], [64], [65], [66]. In order to stay competitive within the market, businesses facing high competition often opt for technology to strengthen their position in the market [63]. With the increase in competition, the businesses strive for better efficiency, which will compel the organisations to use technology to simplify the operations and to stand strong in the market, [67], [68].

In process industries, CUP is generally observed to be the driver of digital technology adoption, resulting in greater innovation in products as well as services, [12]. However, in developing countries, Customer Pressure holds more influence than CUP, suggesting that businesses with a strong market position embrace new technologies, [69].

In highly competitive industries such as SMEs, CUP is observed as a key factor pushing businesses to embrace social media marketing, [70], [71]. Competition in the industry strengthens the influence of both competitive and customer pressure in the adoption of technologies, [70]. The uptake of digital marketing and social CRM strategies is influenced by technological factors (e.g., cost, advantages), organizational factors (e.g., management support, IT expertise), and environmental factors (e.g., customer and competitive pressures), [70], [71].

The function of CUP is driving digital marketing adoption, especially in the case of Malaysian SMEs, where CUP strongly influences social media marketing adoption [70]. PEU and PU act as bottom-line mediators in the process, as businesses opt to adopt technology when it is beneficial and easy to use, [72], [73]. For instance, in SMEs, the perceived usefulness has clearly shown improvement in e-commerce adoption, which boosted the performance, while the complexity related to digital tools was reduced by the perceived ease of use, [72]. The working of these factors is sequential as CUP improves ease of use, which increases perceived usefulness, driving higher adoption rates, [72], [73], [74].

The crucial mediators that link CUP to digital marketing adoption are PEU and PU. When CUP drives businesses to adopt digital marketing, it is important to mention that the real adoption is founded on how these tools are beneficial and how easy they are to use. Therefore, it can be a realization for policymakers and managers to develop approaches to enhance the adoption of digital marketing. Thus, the hypothesis formulated is:

H₁: PU and PEU serially mediate the relationship between competitive pressure and digital marketing adoption.

2.4 Customer Pressure (CP)

In order to align with the changing customer expectations, businesses are undergoing pressure from their customers to adopt digital marketing tools, [70], [71], [75]. This pressure also expands to social CRM strategies adoption, highlighting the importance of managing effective customer relationships through digital platforms, [71].

The central factors of TAM, PEU and PU determine how CP determines the uptake of digital tools, highlighting the fact that these factors act as key mediators between CP and digital marketing adoption. In the Tanzanian telecom industry, perceived usefulness, a tool that enhances job performance, has a favourable influence on adoption, [76]. The same is in the case of e-marketing in Indonesia [77]. It is also observed that PEU boosts the mobile-CRM adoption in Jordan [78] and in Indonesian digital payment platforms [79]. Studies clearly observe that there exists a serial median model where CP first affects the ease of use, and then improves the usefulness, and gradually leads to adoption. For example, PEU had an influence on Taiwanese consumers' intention for online purchase, [80]. Also, in Malaysian SMEs, social media marketing adoption was influenced by

CP, that too when PEU and PU acted as mediators [70]. Understanding these can help businesses to comprehend the need to adopt digital tools and align them with the needs of the customers to facilitate better adoption. Accordingly, the following hypothesis is developed:

H₂: PU and PEU serially mediate the relationship between customer pressure and digital marketing adoption.

2.5 Regulatory Support (RS)

Industrial structure, technical service provider availability, business environment, regulatory framework, interaction with the stakeholders, and so on are the factors included in the environmental context, [81], [82]. Rapid innovations are usually made by those businesses that are categorized under quickly growing industries, [81]. Considering the environmental context as one of the most influential factors for adopting technological innovations, it also acts as the driving force for technological and organizational contexts, [83]. In addition, the adoption of environmentally sustainable information technologies is entertained within this context, [84].

By establishing resources and frameworks that aid businesses in including innovative technologies, regulatory support plays a vital role in the adoption of digital marketing tools. For businesses categorized under SMEs, operational assistance and strategic support are the core elements of e-commerce adoption, [85]. In B2B organizations, PU influences the integration of social media [74], while the simplification of marketing tools usage is done by Perceived Ease of Use, [86]. As evidenced by the studies conducted in Algerian SMEs, PU and PEU are identified as vital factors for technology adoption, whose accessibility is enhanced with the help of external factors, [87].

Considering the retail industry, a vital aspect for encouraging e-business technology adoption is regulatory support, which emphasises the role of the regulatory framework in enabling the utilization of digital tools in multiple sectors, [88]. However, in the case of blockchain technology adoption in Malaysian SMEs, regulatory support did not prove to be significant; while other elements such as competitive pressure, complexity and cost were found to be significant, [64]. Speaking in a wider framework of technology adoption, telecommunication policies that generally encourage regulatory independence and liberalization of markets typically promote the adoption of innovative technologies. A regulatory system that considers public interest by including the private partners will be advantageous, while those policies

that do not allow technology adoption will make the digital divide bigger [89]. Therefore, the following hypothesis is formulated:

H₃: PU and PEU serially mediate the relationship between regulatory support and digital marketing adoption.

3 Purpose

Among the TOE factors, the present study explores the impact of environmental factors on the adoption of digital marketing by restaurants in Kerala. This investigates how the external environmental conditions influence the decision to integrate digital marketing, which is a prominent tool for maintaining competitiveness in the industry. Using TAM's key factors, PEU and PU, the study tends to explain how the technology acceptance aligns with environmental factors. The observations of the study aim to provide actionable insights to the decision makers and restaurant owners for employing the respective technologies to improve business performance in this rapidly changing environment. The study considers CUP, CP and RS as determinants that affect the DMA. By examining the serial mediating role of TAM's PEU and PU, the study aims to provide a better understanding of how the external factors, when combined with the attitudinal factors of TAM, influence the digital marketing adoption decision. The study expects to expand the understanding of factors that contribute to the transition of the restaurant industry's digital solution.

4 Methodology

The study uses the quantitative research method to assess the hypothesised relationships. Both the measurement and structural model of analysis were analyzed by Structural Equation Modeling (partial least squares, PLS-SEM), including the serial mediation effects. PLS-SEM was selected because it is suitable for prediction-oriented studies, complex model structure and non-normal data distributions. Since the sample size of 504 and the nature of the exploratory study is TAM-TOE integrated framework, PLS-SEM has the strength to estimate the path relations. In order to estimate the standard errors and confidence intervals of all the structural paths, bootstrapping of 5000 resamples with 95% level of confidence was used.

The data analysis has been carried out in two steps that include measurement model (reliability, convergent and discriminant validity) and structural

model (path coefficients, effect sizes, coefficient of determination and predictive relevance) assessment. Testing the significance of relationships and mediation effects between hypotheses was done through bootstrapping.

Direct interviews were conducted to test the model as part of an empirical study. Data from 504 respondents who were actively utilising digital marketing were collected over a period of six months. A zonal-based sampling strategy was employed, one district representing one zone – South (Thiruvananthapuram), Central (Ernakulam), and North (Kozhikode). The selected districts had the highest number of restaurants as per the report of the Kerala Hotel and Restaurant Association (KHRA), ensuring the adequate representation of the restaurant population across the state.

Figure 1 represents the conceptual framework for the study.

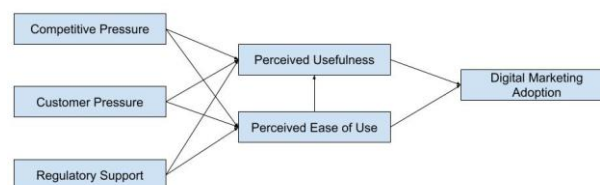


Fig. 1: Conceptual framework

Source: Created by the authors

5 Analysis and Results

The participants in the study included restaurant owners and managers, providing important conclusions. The respondents were considered to have a better understanding of their organization. Even though the sample selection was random owing to cultural factors and organisational structure, it clearly showed an imbalance, with 96.0% male. Demographically, 44.6% were over 50 years of age, 40.3% had completed their higher secondary level education, and 49.2% had an industry experience of more than 11 years. Furthermore, 82.23% of the respondents preferred using social media marketing to promote their business, and 93.5% were actively engaged in e-commerce platforms, with Swiggy (39.65%) being the most preferred food delivery application. Overall, the demographic findings offered insights into Kerala's digital marketing landscape.

The results from Table 1 indicate that Cronbach's Alpha of all variables was above 0.70, confirming the reliability of variables, validating the measurement instruments' reliability as per [90].

Table 1. Reliability

Variables	Cronbach's Alpha	No. of Items
CUP	0.792	6
CP	0.879	4
RS	0.848	3
PU	0.834	4
PEU	0.760	5
DMA	0.858	5

Source: Primary data

Table 2. Item loadings, composite Reliability (CR), and Average Variance Extracted (AVE)

Latent Variables	Items	Loadings	CR	AVE
CP	CP1	0.71	0.909	0.627
	CP2	0.672		
	CP3	0.659		
	CP4	0.66		
	CP5	0.641		
	CP6	0.671		
CUP	CUP1	0.72	0.866	0.62
	CUP2	0.659		
	CUP3	0.635		
	CUP4	0.636		
RS	RS1	0.822	0.909	0.769
	RS2	0.803		
	RS3	0.826		
PU	PU1	0.609	0.891	0.674
	PU2	0.6		
	PU3	0.628		
	PU4	0.627		
PEU	PEU1	0.626	0.839	0.513
	PEU2	0.666		
	PEU3	0.607		
	PEU4	0.59		
	PEU5	0.603		
DMA	DMA1	0.674	0.899	0.64
	DMA2	0.676		
	DMA3	0.659		
	DMA4	0.703		
	DMA5	0.596		

Source: Primary data

CR and AVE were considered for the validation of the reliability and measurement model (Table 2). All the constructs' CRs exceeded 0.70, varying from 0.837 to 0.909, indicating good internal consistency.

All AVE values stayed above 0.50, confirming the convergent validity, [91]. Among the constructs, the AVE of Regulatory Support was the strongest (0.769). The item loadings were also above the threshold of 0.50, indicating strong support. Therefore, it can be concluded that the findings supported the reliability and convergent validity of the measurement model.

Table 3. Discriminant Validity

	CP	CUP	RS	PU	PEU	DMA
CP	0.792					
CUP	0.567	0.787				
RS	0.255	0.208	0.877			
PU	0.557	0.558	0.478	0.821		
PEU	0.555	0.616	0.305	0.667	0.716	
DMA	0.492	0.516	0.266	0.562	0.607	0.8

Source: Primary data

Note: β - Path Coefficient, SE- Standard Error, LLCI – Lower Level Confidence Interval, ULCI – Upper Level Confidence Interval

The Discriminant Validity was evaluated using the criterion of [92], stating that the square root of each construct's AVE should be greater than its correlation with other constructs. This condition was met for all constructs, confirming the distinctiveness. Here, in Table 3, it is evident that the square root of AVE for CP (0.792) exceeds the other constructs like Competitive Pressure (0.567) and Digital Marketing Adoption (0.492). Similarly, Perceived Usefulness (0.821) and Digital Marketing Adoption (0.8) also met the criterion, confirming the distinct nature of the constructs.

5.1 Direct Effects

The study analyzes the major drivers affecting digital marketing adoption. CP, $\beta = 0.257$, $p < 0.001$, CUP, $\beta = 0.403$, $p < 0.001$, and RS, $\beta = 0.360$, $p < 0.001$ are factors that significantly augment PU to affirm their importance in how perceptions regarding the value of using digital marketing are framed within the firm. There exists a significant relationship between PU and PEU, $\beta = 0.680$, $p < 0.001$, such that firms considering digital marketing valuable are easy to use. A stronger influence of DMA is observed through the significant relationships of PU ($\beta = 0.670$, $p < 0.001$), PEU ($\beta = 0.669$, $p < 0.001$), which aligns with the empirical outcomes reached by [87]. These findings, consistent with the TAM, emphasize the significance of CUP, supporting the findings made by [93], CP, aligning with the findings made by [94], RS, aligning with the findings made by [95],

PU, and PEU in driving digital marketing adoption (Table 4). Standard errors and confidence intervals for direct effects were obtained by using bootstrapping.

Table 4. Direct effects (Bootstrapped path coefficients)

Path	β	SE	LLCI	ULCI	p-value	Decision
CP → PU	0.257	0.043	0.174	0.340	<0.001	Supported
CUP → PU	0.403	0.042	0.321	0.484	<0.001	Supported
RS → PU	0.360	0.043	0.278	0.443	<0.001	Supported
PU → PEU	0.680	0.041	0.601	0.759	<0.001	Supported
PU → DMA	0.670	0.041	0.591	0.749	<0.001	Supported
PEU → DMA	0.669	0.041	0.590	0.748	<0.001	Supported

Source: Primary data

Note: β - Path Coefficient, SE- Standard Error, LLCI – Lower Level Confidence Interval, ULCI – Upper Level Confidence Interval

Effect size (f^2) was examined to assess the relative impact of each exogenous construct on endogenous variables, following [96] guidelines (0.02 = small, 0.15 = medium, 0.35 = large). The effect size (f^2) results indicate medium effects of CP (0.159), CUP (0.264), and RS (0.183) on PU, while PU shows a large effect on PEU (0.462), and PEU demonstrates a large effect on DMA (0.447). This suggests that perceived usefulness and perceived ease of use play dominant roles in driving digital marketing adoption.

5.2 Indirect Effects

The indirect effects of CP, CUP and RS on Digital Marketing DMA through PU and PEU were analysed with the help of mediation analysis. For CP, high indirect effects were found to flow through PU (0.0762, LLCI = 0.031, ULCI = 0.1239), PEU (0.0658, LLCI = 0.0407, ULCI = 0.0962), and the serial path through both (0.0795, LLCI = 0.0502, ULCI = 0.1118). CUP further demonstrated significant mediation effects through PU (0.2292, LLCI = 0.1735, ULCI = 0.286), PEU (0.0788, LLCI = 0.0352, ULCI = 0.1238), and the serial path (0.0672, LLCI = 0.0427, ULCI = 0.0967). Mediation via PU was statistically significant for RS (0.0457, LLCI = 0.0222, ULCI = 0.07), whereas mediation through PEU was not significant (-0.005, LLCI = -0.0812, ULCI = 0.0078). However, the serial mediation path was supported (0.0568, LLCI = 0.04, ULCI = 0.0771). These results in Table 5

show PU and PEU as the major mediators between external pressures and DMA, thus highlighting the need to nurture these perceptions for better digital marketing adoption. Bootstrapping was employed to examine the indirect effects of CP, CUP, and RS on DMA through PU and PEU.

Table 5. Indirect Effects (Bootstrapped Mediation Results)

Indirect Paths	Indirect Effect	SE	LLCI	ULCI	Decision
CP→PU→DMA	0.0762	0.0234	0.031	0.1239	Supported
CP→PEU→DMA	0.0658	0.0142	0.0407	0.0962	Supported
CP→PU→PEU→DMA	0.0795	0.0156	0.0502	0.1118	Supported
CUP→PU→DMA	0.2292	0.0284	0.1735	0.286	Supported
CUP→PEU→DMA	0.0788	0.0224	0.0352	0.1238	Supported
CUP→PU→PEU→DMA	0.0672	0.0136	0.0427	0.0967	Supported
RS→PU→DMA	0.0457	0.0122	0.0222	0.07	supported
RS→PEU→DMA	-0.005	0.0065	-0.0812	0.0078	Not supported
RS→PU→PEU→DMA	0.0568	0.0094	0.04	0.0771	supported

Source: Primary data

Conclusively, as indicated in Table 5, PU and PEU have major mediating effects on relationships between external pressures (CP, CUP and RS) and DMA. CP and CUP exhibit considerable indirect impacts by PU and PEU and their serial interaction, which means complete mediation. In the case of RS, PU mediation and serial path are significant, but the indirect path between PEU is not significant, indicating that mediation is partially completed. These results indicate that perceived usefulness and perceived ease of use should be increased to better convert environmental pressures into the adoption of digital marketing, as suggested by [97].

Table 6. Structural Model Results (R^2 , Q^2 and Effect Sizes f^2)

Path	β	p	f^2	R^2	Q^2
CP → PU	0.26	<0.001	0.159	0.606	0.595
CUP → PU	0.40	<0.001	0.264		
RS → PU	0.36	<0.001	0.183		
PU → PEU	0.68	<0.001	0.462	0.462	0.462
PEU → DMA	0.67	<0.001	0.447	0.447	0.440

Source: Primary data. Note: R^2 and Q^2 are reported only for endogenous constructs

Table 6 shows the results of the structural model, including effect sizes (f^2), coefficients of determination (R^2), and predictive relevance (Q^2). The findings show that Customer Pressure (f^2 = 0.159) and Competitive Pressure (f^2 = 0.264) have a

medium impact on Perceived Usefulness, with the impact of Regulatory Support ($f^2 = 0.183$). Perceived Usefulness indicates a high effect on Perceived Ease of Use ($f^2 = 0.462$), but Perceived Ease of Use indicates a high effect on Digital Marketing Adoption ($f^2 = 0.447$) in line with the recommendation of [96]. The values of R^2 indicate that it contains a strong explanatory power of Perceived Usefulness (0.606), Perceived Ease of Use (0.462), and Digital Marketing Adoption (0.447). Moreover, Q^2 values greater than zero affirm sufficient predictive significance of the model.

The path analysis for the model indicating Digital Marketing Adoption with mediating effects are shown in Figure 2.

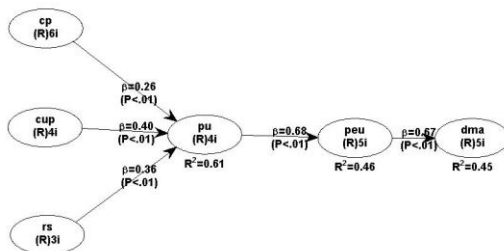


Fig. 2: Path Analysis Model- Digital Marketing Adoption with Mediating Effects

Source: Created by the authors

6 Theoretical Implications

With the application of Partial Least Squares, applying the TAM-TOE framework to examine the adoption of digital marketing in Kerala's restaurant industry holds significant theoretical implications. The importance of the framework lies in how environmental factors influence the adoption. An integration of TAM-TOE provides a thorough understanding of the process of adoption and serves as a tool for academicians and practitioners of the hospitality industry who promote and study digital marketing in the restaurant sector. Apart from this, the PLS enhances a better understanding of the adoption process, opening ways to explore complex relationships and subtle patterns of the data. This highlights the importance of using various analytical tools to obtain a more holistic view of the adoption process within the restaurant segment of the hospitality industry.

The findings also clearly support the view that Organisational Learning and Knowledge Management (KM) encourage a firm to adopt new technologies and strengthen the capacity for innovation. According to [98], successful knowledge sharing in hospitality companies

enhances innovation, service quality and sensitivity to market change. Where restaurants develop systems for harvesting and disseminating digital knowledge, employees tend to perceive technology as more valuable and easier to use. In this manner, KM serves as a bridge in the TAM-TOE model, translating environmental pressures into collective learning, thus supporting the adoption of digital marketing.

7 Practical Implications

The findings and their practical implications for policymakers and restaurant firms include the following:

First, it recognizes environmental factors as the key influencer in the adoption of digital marketing tools, while simultaneously recognizing factors from PEU and PU factors into any designed policy initiative regarding how digital marketing could improve the adoption of practice to influence change.

It expands customer access to information, thus reaching out to more people. Two-way communication via digital marketing allows customers to share their opinions and also to provide feedback about the products. At the same time, it provides businesses with more opportunities to communicate information regarding their services. Digital marketing allows restaurants to pass effective brand messages, which also aids in developing a good brand image among customers. Using digital marketing, restaurants can establish connections with their target markets and potential customers, which can lead to long-term relationships and partnerships.

From a pragmatic perspective, restaurant owners ought to encourage systematic KM practices, allowing for the exchange of marketing-oriented knowledge among employees. Sharing lessons from digital campaigns, obtaining feedback from customers, and competitor monitoring will build the confidence of the employees in using digital tools. [17] has established that KM practices improve the innovation performance, which was mediated by the construct's organisational learning and creativity. By establishing KM systems like digital repositories and team debriefs, restaurants will be able to convert external opportunities into stronger digital marketing adoption. Encouraging a healthy organisational culture is also important as the policy makers can create an environment with adequate resources, training, and culture, which will encourage innovations that improve overall business performance.

8 Conclusions, Limitations, and Future Research Avenues

This study bridges an important research gap by exploring how restaurants in Kerala adopt digital marketing. It gives an in-depth understanding of how environmental factors impact the adoption of technology by integrating the TAM-TOE framework. The strongest environmental factor drivers were observed to be CUP, CP and RS. Also, the TAM factors, PEU and PU showed a good influence on the adoption trend. The study underscores the need to align the existing environmental situations with digital marketing infrastructure for the successful implementation of digital marketing. With the help of PLS-SEM, the analysis not only brings new findings but also confirms the existing ones. The findings reveal that environmental factors play a key role in the digital marketing adoption process and provide insights to academicians, policymakers, and industry experts.

8.1 Limitations and Future Research Agenda

Despite the contributions, the study holds some limitations. Relying on self-reporting data on the TAM-TOE framework may introduce some bias. In view of this, future researchers can consider including both quantitative and qualitative methods so as to provide a holistic view of the factors that influence the digital marketing adoption process. Another limitation is that the data collection was done through direct and online interviews and phone calls, making room for the possibility of varied results as the industry develops in the future. No comparison was made with that of other industries, which opens an avenue for future researchers to understand how adoption differs in industries like pharmaceuticals or healthcare. Additionally, this study focused only on the environmental factors among the various TOE factors. Including organisational and environmental factors in the future research agenda will provide a broader understanding of the adoption. Lastly, the effect of internal factors like KM was not included. Future research can include the same within the restaurants to support the usage of digital marketing adoption.

References:

- [1] Panduro, A. F. (2023). Technologies applied to information control in organizations: A review. *Delete Journal*, 3, 1–6. <https://doi.org/10.47909/dtr.02>.
- [2] Simmons, G., Armstrong, G. A., & Durkin, M. G. (2008). A Conceptualization of the Determinants of Small Business Website Adoption. *International Small Business Journal Researching Entrepreneurship*, 26(3), 351–389. <https://doi.org/10.1177/0266242608088743>.
- [3] Sun, Y., & Jung, H. (2024). Machine Learning (ML) Modeling, IoT, and Optimizing Organizational Operations through Integrated Strategies: The Role of Technology and Human Resource Management. *Sustainability*, 16(16), 6751. <https://doi.org/10.3390/su16166751>.
- [4] Urefe, O., Odonkor, T. N., Obeng, S., & Biney, E. (2024). Innovative strategic marketing practices to propel small business development and competitiveness. *Magna Scientia Advanced Research and Reviews*, 11(2), 278–296. <https://doi.org/10.30574/msarr.2024.11.2.0122>.
- [5] Peltier, J. W., Schibrowsky, J. A., & Zhao, Y. (2009). Understanding the antecedents to the adoption of CRM technology by small retailers. *International Small Business Journal Researching Entrepreneurship*, 27(3), 307–336. <https://doi.org/10.1177/0266242609102276>.
- [6] Chen, L., Jiang, M., Jia, F., & Liu, G. (2021). Artificial intelligence adoption in business-to-business marketing: toward a conceptual framework. *Journal of Business and Industrial Marketing*, 37(5), 1025–1044. <https://doi.org/10.1108/jbim-09-2020-0448>.
- [7] Peltier, J. W., Zhao, Y., & Schibrowsky, J. A. (2012). Technology adoption by small businesses: An exploratory study of the interrelationships of owner and environmental factors. *International Small Business Journal Researching Entrepreneurship*, 30(4), 406–431. <https://doi.org/10.1177/0266242610365512>.
- [8] Delera, M., Pietrobelli, C., Calza, E., & Lavopa, A. (2021). Does value chain participation facilitate the adoption of Industry 4.0 technologies in developing countries? *World Development*, 152, 105788. <https://doi.org/10.1016/j.worlddev.2021.105788>.
- [9] Alfaro-Serrano, D., Balantrapu, T., Chaurey, R., Goicoechea, A., & Verhoogen, E. (2021). Interventions to promote technology adoption in firms: A systematic review. *Campbell*

- Systematic Reviews, 17(4), e1181. <https://doi.org/10.1002/cl2.1181>.
- [10] Singapore, G. a. P. M. B. C., & Tiwari, S. P. (2022). The Impact Of New Technologies On Society: A Blueprint For The Future. <https://doi.org/10.31435/rsglobal/053>.
- [11] Kauffman, R. J., & Techatassanasoontorn, A. A. (2010). New theoretical perspectives on technology adoption. *Information Technology and Management*, 11(4), 157–160. <https://doi.org/10.1007/s10799-010-0080-3>.
- [12] Blichfeldt, H., & Faullant, R. (2021). Performance effects of digital technology adoption and product & service innovation – A process-industry perspective. *Technovation*, 105, 102275. <https://doi.org/10.1016/j.technovation.2021.102275>.
- [13] Lall, S. (1992). Technological capabilities and industrialization. *World Development*, 20(2), 165–186. [https://doi.org/10.1016/0305-750x\(92\)90097-f](https://doi.org/10.1016/0305-750x(92)90097-f).
- [14] Plumwongrot, P., & Pholpirul, P. (2022). Are Robots stealing jobs? Empirical evidence from 10 developing countries. *Economics of Innovation and New Technology*, 32(6), 873–889. <https://doi.org/10.1080/10438599.2022.2051020>.
- [15] García-Lopera, F., Santos-Jaén, J. M., Palacios-Manzano, M., & Ruiz-Palomo, D. (2022). Exploring the effect of professionalization, risk-taking and technological innovation on business performance. *PLoS ONE*, 17(2), e0263694. <https://doi.org/10.1371/journal.pone.0263694>.
- [16] Swan, J. A., & Newell, S. (1995). The role of professional associations in technology diffusion. *Organization Studies*, 16(5), 847–874. <https://doi.org/10.1177/017084069501600505>.
- [17] Patwary, A. K., Aziz, R. C., & Hashim, N. a. a. N. (2022). Investigating tourists' intention toward green hotels in Malaysia: a direction on tourist sustainable consumption. *Environmental Science and Pollution Research*, 30(13), 38500–38511. <https://doi.org/10.1007/s11356-022-24946-x>.
- [18] Ibidunni, A. S., Mozie, D., & Ayeni, A. W. A. (2020). Entrepreneurial characteristics amongst university students: insights for understanding entrepreneurial intentions amongst youths in a developing economy. *Education + Training*, 63(1), 71–84. <https://doi.org/10.1108/et-09-2019-0204>.
- [19] Gagnon, Y., & Toulouse, J. (1993). Adopting new technologies: an entrepreneurial act. *Technovation*, 13(7), 411–424. [https://doi.org/10.1016/0166-4972\(93\)90025-q](https://doi.org/10.1016/0166-4972(93)90025-q).
- [20] Zhang, M., Macpherson, A., & Jones, O. (2006). Conceptualizing the learning process in SMEs. *International Small Business Journal Researching Entrepreneurship*, 24(3), 299–323. <https://doi.org/10.1177/0266242606063434>.
- [21] Steers, R. M., Meyer, A. D., & Sanchez-Runde, C. J. (2008). National culture and the adoption of new technologies. *Journal of World Business*, 43(3), 255–260. <https://doi.org/10.1016/j.jwb.2008.03.007>.
- [22] Im, S., Mason, C. H., & Houston, M. B. (2007). Does innate consumer innovativeness relate to new product/service adoption behavior? The intervening role of social learning via vicarious innovativeness. *Journal of the Academy of Marketing Science*, 35(1), 63–75. <https://doi.org/10.1007/s11747-006-0007-z>.
- [23] Felicetti, A. M., Corvello, V., & Ammirato, S. (2023). Digital innovation in entrepreneurial firms: a systematic literature review. *Review of Managerial Science*, 18(2), 315–362. <https://doi.org/10.1007/s11846-023-00638-9>.
- [24] Pengchao, W., Chenglin, L., Mian, L., & Bhaumik, A. (2023). Navigating the new normal: Strategies for Business Resilience in a Post-pandemic world. *International Journal for Multidisciplinary Research*, 5(6). <https://doi.org/10.36948/ijfmr.2023.v05i06.8093>.
- [25] Mohr, J., Sengupta, S., & Slater, S. (2010). *Marketing of high technology products and innovations: 3rd edition*. Upper Saddle River, NJ: Prentice, ISBN: 9788131761076.
- [26] Backman, M., Klaesson, J., & Öner, Ö. (2017). Innovation in the hospitality industry. *Tourism Economics*, 23(8), 1591–1614. <https://doi.org/10.1177/1354816617715159>.
- [27] Panova, I. O., & Zernenkova, D. S. (2023). Методи оцінки конкурентоспроможності підприємств ресторанної галузі (Methods for assessing the competitiveness of enterprises in the restaurant industry). *Business Inform*, 5(544), 229–234. Accessed: December 15, 2025. <https://doi.org/10.32983/2222-4459-2023-5-229-234>.
- [28] Blum, S. C. (1996). Organizational trend analysis of the hospitality industry: preparing

- for change. *International Journal of Contemporary Hospitality Management*, 8(7), 20–32.
<https://doi.org/10.1108/09596119610152023>.
- [29] Cooper, R. G., & Edgett, S. J. (1999). *Product Development For The Service Sector: Lessons From Market Leaders*. ISBN: 9780738201054.
- [30] Bhandari, R., & Sin, M. V. A. (2023). Optimizing digital marketing in hospitality industries. *Startupreneur Business Digital (SABDA Journal)*, 2(1), 1–11.
<https://doi.org/10.33050/sabda.v2i1.263>.
- [31] Semerádová, T., & Vávrová, J. N. (2016). Using a systemic approach to assess Internet marketing communication within hospitality industry. *Tourism Management Perspectives*, 20, 276–289.
<https://doi.org/10.1016/j.tmp.2016.09.007>.
- [32] Ocampo, L., Besabella, O., Fallore, M., Guinandal, A. R., Merabueno, A., Himang, C. M., & Yamagishi, K. (2021). An integrated AHP-TOPSIS for evaluating online marketing strategies for the hospitality industry. *International Journal of Asian Business and Information Management*, 12(3), 1–28.
<https://doi.org/10.4018/ijabim.20210701.0a11>
- [33] José, D. S., & Silva, O. L. (2019). Digital Marketing strategies for tourism, hospitality, and airline industries. In *Advances in marketing, customer relationship management, and E-Services book series*.
<https://doi.org/10.4018/978-1-5225-9783-4>.
- [34] Munjal, S., & Singh, A. (2021). Conclusion: Going digital is the only way forward for the Indian tourism and hospitality industry. *Worldwide Hospitality and Tourism Themes*, 13(2), 291–295. <https://doi.org/10.1108/whatt-09-2020-0119>.
- [35] Svitlana, P. (2023). Організація бізнес-процесів у готельно-ресторанному бізнесі (Organization of Business Processes in the Hotel and Restaurant Business) . *Modern Economics*, 38(1), 117–124. Accessed: December 15, 2025.
[https://doi.org/10.31521/modecon.v38\(2023\)-18](https://doi.org/10.31521/modecon.v38(2023)-18).
- [36] Elmont, S. (1995). Tourism and food service. *Cornell Hotel and Restaurant Administration Quarterly*, 36(1), 57–63.
<https://doi.org/10.1177/001088049503600120>
- [37] Dube, K., Nhamo, G., & Chikodzi, D. (2020). COVID-19 cripples global restaurant and hospitality industry. *Current Issues in Tourism*, 24(11), 1487–1490.
<https://doi.org/10.1080/13683500.2020.1773416>.
- [38] Higgins-Desbiolles, F., Moskwa, E., & Wijesinghe, G. (2017). How sustainable is sustainable hospitality research? A review of sustainable restaurant literature from 1991 to 2015. *Current Issues in Tourism*, 22(13), 1551–1580.
<https://doi.org/10.1080/13683500.2017.1383368>.
- [39] Alt, R. (2021). Digital transformation in the restaurant industry: current developments and implications. *Journal of Smart Tourism*, 1(1), 69–74.
<https://doi.org/10.52255/smarttourism.2021.1.1.9>.
- [40] Martin-Rios, C., Zizka, L., Varga, P., & Pasamar, S. (2020). KITRO: technology solutions to reduce food waste in Asia-Pacific hospitality and restaurants. *Asia Pacific Journal of Tourism Research*, 25(10), 1128–1135.
<https://doi.org/10.1080/10941665.2020.1773513>.
- [41] Hing, N., McCabe, V., Lewis, P., & Leiper, N. (1998). Hospitality trends in the Asia- Pacific: a discussion of five key sectors. *International Journal of Contemporary Hospitality Management*, 10(7), 264–271.
<https://doi.org/10.1108/09596119810240852>.
- [42] Bryan, J. D., & Zuva, T. (2021). A review on TAM and TOE framework progression and how these models integrate. *Advances in Science Technology and Engineering Systems Journal*, 6(3), 137–145.
<https://doi.org/10.25046/aj060316>.
- [43] Gangwar, H., & Date, H. (2016). Understanding cloud computing adoption: A model comparison approach. *Human Systems Management*, 35(2), 93–114.
<https://doi.org/10.3233/hsm-150857>.
- [44] Gangwar, H., Date, H., & Ramaswamy, R. (2015). Understanding determinants of cloud computing adoption using an integrated TAM-TOE model. *Journal of Enterprise Information Management*, 28(1), 107–130.
<https://doi.org/10.1108/jeim-08-2013-0065>.
- [45] Gangwar, H., Date, H., & Raoot, A. (2014). Review on IT adoption: insights from recent technologies. *Journal of Enterprise Information Management*, 27(4), 488–502.
<https://doi.org/10.1108/jeim-08-2012-0047>.
- [46] Herrieth, O. C., & Rahim, A. R. A. (2023). A Systematic Review and Proposition of an E-Commerce Framework for African SMES:

- Integrating TAM and TPB into TOE Framework. *International Journal of Business & Management Studies*, 04(07), 15–37. <https://doi.org/10.56734/ijbms.v4n7a3>.
- [47] Na, S., Heo, S., Han, S., Shin, Y., & Roh, Y. (2022). Acceptance Model of Artificial Intelligence (AI)-Based Technologies in Construction Firms: Applying the Technology Acceptance Model (TAM) in Combination with the Technology–Organisation–Environment (TOE) Framework. *Buildings*, 12(2), 90. <https://doi.org/10.3390/buildings12020090>.
- [48] Awa, H. O., Ojiabo, O. U., & Emecheta, B. C. (2015). Integrating TAM, TPB and TOE frameworks and expanding their characteristic constructs for e-commerce adoption by SMEs. *Journal of Science and Technology Policy Management*, 6(1), 76–94. <https://doi.org/10.1108/jstpm-04-2014-0012>.
- [49] Henao- Ramírez, A. M., & López-Zapata, E. (2021). Analysis of the factors influencing adoption of 3D design digital technologies in Colombian firms. *Journal of Enterprise Information Management*, 35(2), 429–454. <https://doi.org/10.1108/jeim-10-2020-0416>.
- [50] Akpan, I. J., Udoh, E. A. P., & Adebisi, B. (2020). Small business awareness and adoption of state-of-the-art technologies in emerging and developing markets, and lessons from the COVID-19 pandemic. *Journal of Small Business & Entrepreneurship*, 34(2), 123–140. <https://doi.org/10.1080/08276331.2020.1820185>.
- [51] K, S., & Muthu, N. (2020). Growing dynamisms’ of business and technology/ Global perspective. *International Review of Business and Economics/International Review of Business and Economics*, 4(2), 358–362. <https://doi.org/10.56902/irbe.2020.4.2.64>.
- [52] KarademiR, İ., & Ozgeldi, M. (2022). The effect of Industry 4.0 maturity on company performance in manufacturing companies. *International Journal of Scientific Research and Management (IJSRM)*, 10(04). <https://doi.org/10.18535/ijssrm/v10i4.em9>.
- [53] Salamzadeh, A., Hadizadeh, M., Rastgoo, N., Rahman, M. M., & Radfard, S. (2022). Sustainability-Oriented innovation foresight in international new technology based firms. *Sustainability*, 14(20), 13501. <https://doi.org/10.3390/su142013501>.
- [54] Min, S., & Kim, J. (2021). Effect of opportunity seizing capability on new market development and small and medium-sized enterprise performance: Role of environmental uncertainty in the IT industry. *Asia Pacific Management Review*, 27(2), 69–79. <https://doi.org/10.1016/j.apmr.2021.05.004>.
- [55] Kim, N., & Pae, J. H. (2007). Utilization of new technologies: organizational adaptation to business environments. *Journal of the Academy of Marketing Science*, 35(2), 259–269. <https://doi.org/10.1007/s11747-007-0032-6>.
- [56] Zhang, C., & Bang, H. (2023). How does dynamic capability adjust Chinese firms’ capabilities to adapt to environment changes? *Korea International Trade Research Institute*, 19(1), 103–127. <https://ssrn.com/abstract=4391185>.
- [57] Ojha, D., Struckell, E., Acharya, C., & Patel, P. C. (2020). Managing environmental turbulence through innovation speed and operational flexibility in B2B service organizations. *Journal of Business and Industrial Marketing*, 36(9), 1627–1645. <https://doi.org/10.1108/jbim-01-2020-0026>.
- [58] Thong, J. Y. (1999). An integrated model of information systems adoption in small businesses. *Journal of Management Information Systems*, 15(4), 187–214. <https://doi.org/10.1080/07421222.1999.11518227>.
- [59] Sichoongwe, K. (2023). Is it time for malawi to change its economic growth engine? Evidence from new structural economics. *Journal of Management Small and Medium Enterprises (SMEs)*, 16(3), 483–494. <https://doi.org/10.35508/jom.v16i3.13002>.
- [60] Fu, Y., Kok, R. A., Dankbaar, B., Ligthart, P. E., & Van Riel, A. C. (2018). Factors affecting sustainable process technology adoption: A systematic literature review. *Journal of Cleaner Production*, 205, 226–251. <https://doi.org/10.1016/j.jclepro.2018.08.268>.
- [61] Luken, R., & Van Rompaey, F. (2007). Drivers for and barriers to environmentally sound technology adoption by manufacturing plants in nine developing countries. *Journal of Cleaner Production*, 16(1), S67–S77. <https://doi.org/10.1016/j.jclepro.2007.10.006>.
- [62] Simoes, A., Oliveira, L., Rodrigues, J. C., Simas, O., Dalmarco, G., & Barros, A. C. (2019). Environmental Factors Influencing the Adoption of Digitalization Technologies in Automotive Supply Chains. 2019 IEEE International Conference on Engineering,

- Technology and Innovation (ICE/ITMC), 1–7.
<https://doi.org/10.1109/ice.2019.8792639>.
- [63] Alaskar, T. H., Mezghani, K., & Alsadi, A. K. (2020). Examining the adoption of Big data analytics in supply chain management under competitive pressure: evidence from Saudi Arabia. *Journal of Decision System*, 30(2–3), 300–320.
<https://doi.org/10.1080/12460125.2020.1859714>.
- [64] Wong, L., Leong, L., Hew, J., Tan, G. W., & Ooi, K. (2019). Time to seize the digital evolution: Adoption of blockchain in operations and supply chain management among Malaysian SMEs. *International Journal of Information Management*, 52, 101997.
<https://doi.org/10.1016/j.ijinfomgt.2019.08.005>.
- [65] Low, C., Chen, Y., & Wu, M. (2011). Understanding the determinants of cloud computing adoption. *Industrial Management & Data Systems*, 111(7), 1006–1023.
<https://doi.org/10.1108/02635571111161262>.
- [66] Majumdar, S. K., & Venkataraman, S. (1993). New technology adoption in US telecommunications: The role of competitive pressures and firm-level inducements. *Research Policy*, 22(5–6), 521–536.
[https://doi.org/10.1016/0048-7333\(93\)90016-b](https://doi.org/10.1016/0048-7333(93)90016-b).
- [67] Obal, M. (2017). What drives post-adoption usage? Investigating the negative and positive antecedents of disruptive technology continuous adoption intentions. *Industrial Marketing Management*, 63, 42–52.
<https://doi.org/10.1016/j.indmarman.2017.01.003>.
- [68] Zhu, K., Dong, S., Xu, S. X., & Kraemer, K. L. (2006). Innovation diffusion in global contexts: determinants of post-adoption digital transformation of European companies. *European Journal of Information Systems*, 15(6), 601–616.
<https://doi.org/10.1057/palgrave.ejis.3000650>.
- [69] Correa, P. G., Fernandes, A. M., & Uregian, C. J. (2010). Technology adoption and the investment Climate: Firm-Level evidence for Eastern Europe and Central Asia. *The World Bank Economic Review*, 24(1), 121–147.
<https://doi.org/10.1093/wber/lhp021>.
- [70] Abbasi, G. A., Rahim, N. F. A., Wu, H., Iranmanesh, M., & Keong, B. N. C. (2022). Determinants of SME's social Media Marketing adoption: Competitive industry as a moderator. *SAGE Open*, 12(1).
<https://doi.org/10.1177/21582440211067220>.
- [71] Ahani, A., Rahim, N. Z. A., & Nilashi, M. (2017). Forecasting social CRM adoption in SMEs: A combined SEM-neural network method. *Computers in Human Behavior*, 75, 560–578.
<https://doi.org/10.1016/j.chb.2017.05.032>.
- [72] Addison, S. (2021). Impact of advancement of technology, competitive pressure, user expectation on continuous digital disruption: mediating role of perceive ease of use. *Open Journal of Business and Management*, 09(04), 2013–2079.
<https://doi.org/10.4236/ojbm.2021.94109>.
- [73] Sugandini, D., Suwardi, S., & Ghofar, A. (2021). Impact of e-Commerce adoption on marketing performance. *RSF Conference Series Business Management and Social Sciences*, 1(3), 277–284.
<https://doi.org/10.31098/bmss.v1i3.329>.
- [74] Siamagka, N., Christodoulides, G., Michaelidou, N., & Valvi, A. (2015). Determinants of social media adoption by B2B organizations. *Industrial Marketing Management*, 51, 89–99.
<https://doi.org/10.1016/j.indmarman.2015.05.005>.
- [75] Tiago, M. T. P. M. B., & Veríssimo, J. M. C. (2014). Digital marketing and social media: Why bother? *Business Horizons*, 57(6), 703–708.
<https://doi.org/10.1016/j.bushor.2014.07.002>.
- [76] Chille, F. J., Shayo, F. A., & Kara, N. S. (2021). Adoption of mobile marketing in the telecommunication industry of Tanzania: the effects of perceived usefulness, ease of use, and customer's knowledge. *European Scientific Journal ESJ*, 17(12), 160.
<https://doi.org/10.19044/esj.2021.v17n12p160>.
- [77] Adam, M., Ibrahim, M., Idris, S., Saputra, J., & Putra, T. R. I. (2021). An investigation of e-marketing and its effect on the consumer buying decision during COVID-19 pandemic in Aceh Province, Indonesia: A mediating role of perceived risk. *International Journal of Data and Network Science*, 6(1), 115–126. Accessed on December 15, 2025.
<https://doi.org/10.5267/j.ijdns.2021.9.016>.
- [78] Al-Gasawneh, J. A., Khoja, B. A., Al-Qeed, M. A., Nusaira, N. M., Hammouri, Q., & Anuar, M. M. (2022). Mobile-customer relationship management and its effect on post-purchase behavior: The moderating of perceived ease of use and perceived

- usefulness. *International Journal of Data and Network Science*, 6(2), 439–448. Accessed on December 15, 2025. <https://doi.org/10.5267/j.ijdns.2021.12.010>.
- [79] Siagian, H., Tarigan, Z. J. H., Basana, S. R., & Basuki, R. (2022). The effect of perceived security, perceived ease of use, and perceived usefulness on consumer behavioral intention through trust in digital payment platform. *International Journal of Data and Network Science*, 6(3), 861–874. Accessed on December 15, 2025. <https://doi.org/10.5267/j.ijdns.2022.2.010>.
- [80] Moslehpour, M., Pham, V., Wong, W., & Bilgiçli, İ. (2018). E-Purchase intention of Taiwanese consumers: sustainable mediation of perceived usefulness and perceived ease of use. *Sustainability*, 10(1), 234. <https://doi.org/10.3390/su10010234>.
- [81] Baker, J. (2011). The Technology–Organization–Environment Framework. In *Integrated series on information systems/Integrated series in information systems* (pp. 231–245). https://doi.org/10.1007/978-1-4419-6108-2_12.
- [82] Oliveira, T., & Martins, M. F. (2010). Understanding e- business adoption across industries in European countries. *Industrial Management & Data Systems*, 110(9), 1337–1354. <https://doi.org/10.1108/02635571011087428>.
- [83] Bramley, R. G. V., & Ouzman, J. (2018). Farmer attitudes to the use of sensors and automation in fertilizer decision-making: nitrogen fertilization in the Australian grains sector. *Precision Agriculture*, 20(1), 157–175. <https://doi.org/10.1007/s11119-018-9589-y>.
- [84] Ullah, I., Khan, M., Rakhmonov, D. A., Bakhritdinovich, K. M., Jacquemod, J., & Bae, J. (2023). Factors affecting digital marketing adoption in Pakistani small and medium enterprises. *Logistics*, 7(3), 41. <https://doi.org/10.3390/logistics7030041>.
- [85] Grandon, E. E., & Pearson, J. (2004). Electronic commerce adoption: an empirical study of small and medium US businesses. *Information & Management*, 42(1), 197–216. <https://doi.org/10.1016/j.im.2003.12.010>.
- [86] Gefen, D., & Straub, D. (2000). The relative importance of perceived ease of use in IS adoption: A study of E-Commerce Adoption. *Journal of the Association for Information Systems*, 1(1), 1–30. <https://doi.org/10.17705/1jais.00008>.
- [87] Diouani, H., Graa, A., & Bechelaghem, K. (2023). “Digital marketing adoption factors in algerian small and medium enterprises: a tam approach.” *Management & Marketing*, 21(1), 134–150. <https://doi.org/10.52846/mnmk.21.1.08>.
- [88] Zhu, K., & Kraemer, K. L. (2005). Post-Adoption Variations in Usage and Value of E-Business by Organizations: Cross-Country Evidence from the Retail Industry. *Information Systems Research*, 16(1), 61–84. <https://doi.org/10.1287/isre.1050.0045>.
- [89] Howard, P. N., & Mazaheri, N. (2009). Telecommunications reform, internet use and mobile phone adoption in the developing world. *World Development*, 37(7), 1159–1169. <https://doi.org/10.1016/j.worlddev.2008.12.005>.
- [90] Tenenhaus, M., Vinzi, V. E., Chatelin, Y., & Lauro, C. (2004). PLS path modeling. *Computational Statistics & Data Analysis*, 48(1), 159–205. <https://doi.org/10.1016/j.csda.2004.03.005>.
- [91] Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, 16(1), 74–94. <https://doi.org/10.1007/BF02723327>.
- [92] Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.1177/002224378101800104>.
- [93] Suvorova, S., Karpenko, Y., & "Platinum, P. E. P. F. (2023). The effect of digital marketing on increase in the competitiveness of domestic business. *Economic Scope*. Accessed: December 15, 2025. <https://doi.org/10.32782/2224-6282/184-29>.
- [94] Paşcalău, S., Popescu, F., Bîrlădeanu, G., & Gigaauri, I. (2024). The effects of a digital marketing orientation on business performance. *Sustainability*, 16(15), 6685. <https://doi.org/10.3390/su16156685>.
- [95] Chen, Y. (2020). Improving market performance in the digital economy. *China Economic Review*, 62, 101482. <https://doi.org/10.1016/j.chieco.2020.101482>.
- [96] Cohen, J. (1988). Set correlation and contingency tables. *Applied Psychological Measurement*, 12(4), 425–434. <https://doi.org/10.1177/014662168801200410>

- [97] Kwon, W., Woo, H., Sadachar, A., & Huang, X. (2021). External pressure or internal culture? An innovation diffusion theory account of small retail businesses' social media use. *Journal of Retailing and Consumer Services*, 62, 102616. <https://doi.org/10.1016/j.jretconser.2021.102616>.
- [98] Hallin, C. A., & Marnburg, E. (2007). In Times of Uncertainty in the Hotel Industry: Hotel Directors' Decision- Making and Coping Strategies for Dealing with Uncertainty in Change Activities. *Scandinavian Journal of Hospitality and Tourism*, 7(4), 364–388. <https://doi.org/10.1080/15022250701695077>.

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- Swetha Rajagopal conducted the writing, reviewing, editing, data analysis, and conceptualization of the study.
- Vidhya Vinayachandran supervised the research and contributed to the review process and conceptualization.

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