**Unpacking the Role of External Environmental Factors of Digital Marketing Adoption in Restaurant Sector – A Study**

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**Abstract**

*With the global proliferation of computers and mobile devices, digital marketing has seen rapid growth. This study investigates the leveraging of digital marketing in the restaurant sector, focusing on the role of technology acceptance and environmental factors through the TAM-TOE framework, specifically emphasizing the environmental dimension. Questionnaires were used to collect the data, with responses drawn from 504 restaurants registered with Kerala Hotel and Restaurant Association (KHRA). The findings reveal that competitive pressure, customer demands, and regulatory support significantly enhance the perceived usefulness of digital marketing, which in turn improves perceived ease of use and drives adoption by businesses. The study accentuates the critical domination of external factors and anticipated advantages in promoting digital marketing adoption. It also provides valuable practical insights through an empirical, multi-dimensional model for researchers and practitioners interested in understanding the factors of digital marketing adoption in the restaurant sector.*

**Keywords**

***Digital Marketing Adoption, Environmental factors, Restaurant industry, Perceived Ease of Use, Perceived Usefulness, TAM-TOE framework, Technology Acceptance.***

**1.Introduction**

Organizations have evolved as the outcome of technological breakthroughs that have made business operations more efficient. As technology continues to grow at an alarming rate, this rapid era of innovation will see even more advancements. The broad utilization and adoption of information technology has come to be an important field of study in the last few years (Panduro, 2023; Simmons et al., 2008). This increased interest follows from the awareness that successful technology use creates long-term competitive advantage, raises flexibility within organizations in volatile markets, boosts productivity, and is crucial for utilizing systems in customer-centric marketing strategies (Sun & Jung, 2024; Urefe et al., 2024; Peltier et al., 2009). The acceptance and effective technological deployment generates lasting market advantages, facilitates adaptation to fast-evolving markets and their associated opportunities, improves business operations, and is essential for utilizing relevant systems in customer-focused marketing practices (Chen et al., 2021; Peltier et al., 2012).

In the sophisticated era, organisations try to develop business strategies that network and connect with their broad customer audience and engage them in business through digital marketing. Exploring the determinants of digital marketing strategy adoption through digital channels is essential. Adopting the digital paths of marketing strategy is complex as it depends on environmental factors. An organisation's decisions to adopt digital marketing practices are influenced by economic conditions, advanced technology, social trends and regulatory framework.  A firm’s performance is boosted by adopting digital technologies, which ultimately enhances the Global Value Chains (GVCs) (Delera et al., 2021). Besides these influences, external interventions can alter productivity, profitability, employment, incentives and key outcomes (Alfaro-Serrano et al., 2021). Adopting technology-enabled marketing can deliver a competitive edge to the firm in terms of the creation of an information-driven society (Tiwari, 2022; Kauffman & Techatassanasoontorn, 2010), human capital, institutional framework, internal interactions and incentives, and in a larger view, contributes to national development (Blichfeldt & Faullant, 2021; Lee & Grewal, 2004; Lall, 1992). Research provides evidence that competitive advantage for human capital comes along with new technology adoption, with job growth and enrichment in the IT sector (Plumwongrot & Pholphirul, 2022), and knowledge dissemination for leveraging growth (García-Lopera et al., 2022; Swan & Newell, 1995). At the macro level, the strategies for the adoption of digital marketing by organisations can significantly contribute to national progress (Gagnon & Toulouse, 1993), but the cultural difference and diversity among the nations can significantly influence the extent of adoption (Zhang et al., 2018; Steers et al., 2008).At the industry level, there is a variation from firm to firm and is shaped by elements such as competitive pressures, firm-specific characteristics, and external interventions. Exploration of these factors can help justify the variation and the extent of adoption. The competitive benefit that information technology provides using digital marketing is through increasing productivity; however, normally, companies are not aware of the newest technology solutions (Im et al., 2007) as well as the integration into normal operations of these various technologies (Felicetti et al., 2023; Peltier et al., 2012).

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 (Pengchao et al., 2023; Mohr et al., 2010).

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 (Backman et al., 2017). The industry is being influenced by powerful competition (Panova & Zernenkova, 2023; Blum, 1996), consequently innovation has become an essential weapon for businesses seeking to establish or maintain their competitive advantage (Delhi, 2024; Cooper & Edgett, 1999). In the tough hospitality sector, digital marketing methods such as SEO and social media are vital for businesses to draw in and sustain customers (Bhandari & Sin, 2023). Effective internet marketing communication employs a systematic model that outlines inputs, outputs, and relevant online tools at each process stage (Semerádová & Vávrová, 2016). By rethinking existing economic models, digital marketing has the capacity to redefine hospitality industry. This sector emphasizes credibility and customer loyalty in online marketing, utilizing search engines, websites, and blogs to effectively reach target markets and build strong customer relationships (Ocampo et al., 2021). More customer engagement in the travel, hotel, and airline industries can be achieved through digital marketing methods like influencer marketing, social media, and branding (Digital Marketing Strategies for Tourism, hotel, and Airline Industries, 2019). To stay competitive, for the Indian hospitality industry, it is vital to adopt digital tools to tailor customer experience and operational efficiencies (Munjal & Singh, 2021).

It is important for hospitality industry, especially restaurants to focus on good customer service, personalization, and technology as they support the economic growth and also creates job opportunities (Svitlana, 2023). 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 (Elmont, 1995). Nevertheless, the pandemic of COVID-19 has had a serious negative effect on the sector, ensuing a large loss of jobs and income, underscoring the necessity of funding and safety measures for reopening (Dube et al., 2020). Further, existing research on sustainable restaurants tends to overlook holistic long-term viability which could hinder progress (Higgins-Desbiolles et al., 2017). In order to stay competitive, the restaurants are compelled to adopt digital marketing tools to create and maintain customers (Alt, 2021). In Asia-Pacific region the restaurants are growing and doing well supported by new technologies (Martin-Rios et al., 2020; Hing et al., 1998). Creating an effective business environment that promotes teamwork and prioritize user experience boosts both profitability and customer satisfaction (Svitlana, 2023).

**2.Literature review**

*2.1.TAM-TOE Framework*

To comprehend the adoption pattern of technology by organizations, 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 adoption of technologies in various institutions.

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 toward adoption (Bryan & Zuva, 2021; Gangwar & Date, 2016; Gangwar et al., 2015; Gangwar et al., 2015b; Gangwar et al., 2014). 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 (Herrieth & Rahim, 2023; Gangwar & Date, 2016). Within this framework, the competitive pressures and support from trading partners are significantly driving forces for embracing technology, whereas external assistance and market dynamics play a vital role as environmental factors (Na et al., 2022; Gangwar & Date, 2016; Awa et al., 2015).

Moreover, perceived usefulness (PU) and perceived ease of use (PEOU) are more often intermediate variables that explain the relationship between determinants: technological, organizational, and environmental to actual implementation in technology (Na et al., 2022; Henao‐Ramírez & López-Zapata, 2021; Gangwar & Date, 2016).

*2.2. Environmental Factors*

The determinants of conducting digital marketing and social media strategies within firms are multi-faceted, hence the identification of them; most of all, from consumer expectations and dynamics in the competitive arena, requires essential determination on the part of the organization seeking to achieve greater visibility through digital means, with optimized marketing effectiveness as well. 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 the factors within the environment where small firms operate (Akpan et al., 2020; K & Muthu, 2020; Zhang et al., 2006). 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 (Karademi̇R & Ozgeldi, 2022; Salamzadeh et al., 2022; Min & Kim, 2021; Kim & Pae, 2007). However, many aspects of the literature which discusses diffusion fail to deliver models that detail how an organization can react to vague and unstable environments with an insertion of technological advancements, respectively (Zhang & Bang, 2023; Peltier et al., 2012). This is especially for the entrepreneurs in search of ways to sustain afloat in highly challenging contexts or turbulent ones (Peltier et al., 2012). The environment itself plays a decisive role in shaping both technology adoption and competitive advantage.

According to Ojha et al. (2020) and Chiu and Yang (2018), strong environmental factors are necessary to uplift service innovation that promotes competitive advantage by reducing the negative impacts of IT adoption. While considering smaller businesses, it is important to understand the fact that competition is not having a direct impact on technology adoption, while size of the business and knowledge of employees do act as key predictors (Thong, 1999). Peltier et al. (2012), put forward the idea that generally in small businesses, environmental factors can influence technology adoption mostly through a mediating variable, as highlighted by Sichoongwe (2023). According to Fu et al. (2018), most common factors that are considered for studying sustainable technology adoption are environmental regulations and firm characteristics.

Similarly, in the same way, according to Luken and Van Rompaey (2007), 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 regulation, market and industrial challenges, and benchmarking of logistics partners significantly drive the adoption of these digitalization technologies (Simoes et al., 2019).

*2.3. Competitive Pressure*

Across various industries, competitive pressure act as a major driver of technology adoption, affecting both initial adoption as well as continued usage of technologies by considering the environmental factors and firm-specific characteristics. To maintain or improve the competitiveness, the businesses tend to implement new technologies, even though the exact dynamics differ by industry and region. This particular trend is usually observed in industries such as telecommunications, high-tech, and supply chain management (Alaskar et al., 2020; Wong et al., 2019; Low et al., 2011; Majumdar & Venkataraman, 1993). Businesses facing intense competition often employ technology as a tool to strengthen their market position (Alaskar et al., 2020). Businesses that are motivated by competition and efficiency are more likely to continue the usage of technology and reap its benefits (Obal, 2017; Zhu et al., 2006).

Generally, in process industries, competitive pressure drives the digital technology adoption, which lead to greater innovation in product and also services (Blichfeldt & Faullant, 2021). However, in developing countries, it is observed that customer pressure tends to have more influence on technology adoption than that of Competitive pressure, suggesting that firms with significant market position embrace new technologies (Correa et al., 2010).

In highly competitive industries such as SMEs, competitive pressure is observred as a key factor pushing businesses to embrace social media marketing (Abbasi et al., 2022; Ahani et al., 2017). Competition in the industry strengthens the impact of both competitive and customer pressure in adoption of technologies (Abbasi et al., 2022). 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) (Abbasi et al., 2022; Ahani et al., 2017).

The function of competitive pressure in driving digital marketing adoption, especially in case of Malaysian SMEs, where competitive pressure strongly influences the adoption of social media marketing (Abbasi et al., 2022). PEOU and PU acts as bottom-line mediators in the process, as businesses opt to adopt technology when it is beneficial and easy to use (Addison, 2021; Sugandini et al., 2021). For instance, in SMEs, perceived usefulness has clearly shown improvement in e-commerce adoption, which boosted the performance, while the complexity related with digital tools was reduced by perceived ease of use (Addison, 2021). The working of these factors is in a sequential manner as competitive pressure improves ease of use, which increases perceived usefulness, driving higher adoption rates (Addison, 2021; Sugandini et al., 2021; Siamagka et al., 2015).

The crucial mediators that link competitive pressure to digital marketing adoption are PEOU and PU. When competitive pressure drives businesses to adopt digital marketing, it is essential to mention that the actual adoption is founded on how these tools are beneficial and how easy are they to use. Therefore, it can be a realization to the policymakers and managers to develop strategies to enhance the adoption of digital marketing. therefore, the hypothesis formulated is:

*H1: Perceived usefulness and perceived ease of use serially mediate the relationship between competitive pressure and digital marketing adoption.*

*2.4. Customer Pressure*

In order to align with the changing customer expectations, businesses are undergoing pressure from their customers to adopt digital marketing tools (Tiago & Veríssimo, 2014; Abbasi et al., 2022; Ahani et al., 2017). This pressure also expands to social CRM strategies adoption, highlighting the importance of manging effective customer relationship through digital platforms (Ahani et al., 2017).

The central factors of TAM, PEOU and PU determines how customer pressure determine the uptake of digital tools, highlighting the fact that these factors act as key mediators between customer pressure and digital marketing adoption. In case of Tanzanian telecom industry, perceived usefulness, a tool which enhances the job performance has a favourable impact on adoption (Chille et al., 2021). The same is in the case of e-marketing in Indonesia (Adam et al., 2021). It is also observed that PEOU boosts the mobile-CRM adoption in Jordan (Al-Gasawneh et al., 2022) and in Indonesian digital payment platforms (Siagian et al., 2022). Studies clearly observe that there exists a serial median model where customer pressure first affects ease of use, then improves the usefulness, and gradually leads to adoption. For example,PEOU had influence on Taiwanese consumers intention towards online purchase (Moslehpour et al., 2018). Also, in Malaysian SMEs, social media marketing adoption was influenced from customer pressure, that too when PEOU and PU acted as mediators (Abbasi et al., 2022). Understanding these can help businesses to understand the need of adopting digital technologies and align it with the need of the customers to facilitate better adoption. Hence, the following hypothesis is formulated:

*H2: Perceived usefulness and perceived ease of use serially mediate the relationship between customer pressure and digital marketing adoption.*

*2.5. Regulatory Support*

Industrial structure, technical service provider availability, Business environment, regulatory framework, interaction with the stakeholders, etc are the factors that are included under the environmental context (Baker, 2011; Oliveira & Martins, 2010). Rapid innovations are usually made by those businesses which are categorized under quickly growing industries (Baker, 2011). Considering environmental context as one of the most influential factors for adopting technological innovations, it also acts as the driving force for technological and also organizational contexts (Bramley & Ouzman, 2018). In addition, adoption of environmentally sustainable information technologies is entertained with in this context (Ullah et al., 2023).

By establishing resources and frameworks, that aids businesses to include 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 factors that influence e-commerce adoption (Grandon & Pearson, 2004). In B2B organizations, PU influences the integration of social media (Siamagka et al., 2015), while simplification of marketing tools usage is done by Perceived Ease of use (Gefen & Straub, 2000). As evidenced by the studies conducted in Algerian SMEs, PU and PEOU is identified as vital factors for technology adoption, whose accessibility is enhanced with the help of external factors (Diouani et al., 2023).

Considering the retail industry, a vital aspect for encouraging the e-business technology adoption is regulatory support, which highlights the role of regulatory framework in facilitating the use of digital technologies in multiple sectors (Zhu & Kraemer, 2005). However, in 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 was found to be significant (Wong et al., 2019). Speaking in a wider framework of technology adoption, telecommunication policies that generally encourages regulatory independence and liberalization of markets typically promotes the adoption of innovative technologies. A regulatory that considers public interest by including the private partners will be advantageous while those policies that does not allow technology adoption will make the digital divide bigger (Howard & Mazaheri, 2009). Therefore, the following hypothesis is formulated:

*H3: Perceived usefulness and perceived ease of use serially mediate the relationship between regulatory support and digital marketing adoption.*

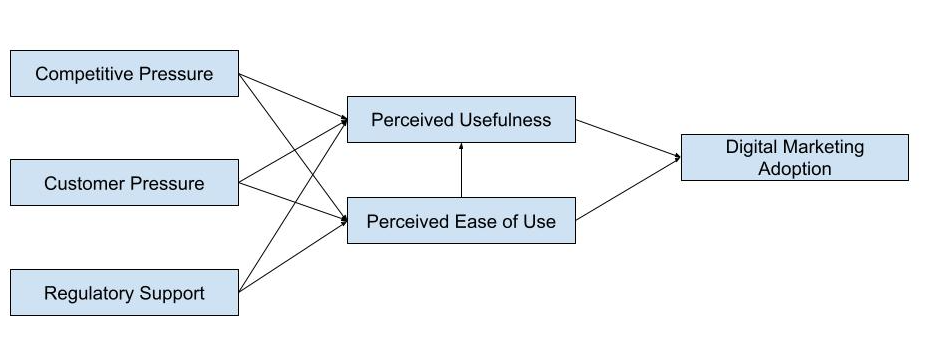
**3.Purpose**

Among the TOE factors, this study explores the effect of Environmental factors on digital marketing adoption among 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- PEOU 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 Competitive pressure, Customer pressure, and Regulatory support as determinants that affect the digital marketing adoption. By analysing the serial mediating role of TAM’s PEOU and PU, the study aims to provide better understanding on how the external factors when combined with the attitudinal factors of TAM influence the digital marketing adoption decision. This research strives to enhance the understanding of factors that lead to the transition to digital solutions in the restaurant sector.

**4.Methodology**

The study applied quantitative approach to test the hypothesized relationships and conducted direct interviews as part of an empirical study to test the model. Data were collected for six months, focusing on people actively involved in digital marketing. A total of 504 completed questionnaires were gathered from participants in different parts of Kerala after careful gathering. The study has been based on the three main zones, South, Central, and North, and surveyed districts that have the maximum number of registrations under Kerala Hotel and Restaurant Association. Representative districts are Thiruvananthapuram, Ernakulam, and Kozhikode.



*Figure 1: Conceptual framework*

**5.Analysis and Results**

Restaurant owners and managers took part in this research, offering several important conclusions. The participants, identified as owners and managers, were considered to have the most comprehensive understanding of their organization’s operations and environment. Although respondents were randomly selected, cultural factors and the organizational structure of restaurants led to a predominantly male sample. The demographic analysis showed that 44.6% of participants were over 50 years old, and an overwhelming 96.0% were male. Regarding education, 40.3% had completed Higher Secondary School (HSE), and 49.2% had more than 11 years of experience in the industry. The data also revealed that 82.23% of the restaurateurs preferred social media marketing as a digital tool, while 93.5% actively engaged with e-commerce platforms. Additionally, 39.65% identified Swiggy as their preferred food delivery service. This study offers valuable insights into the digital marketing preferences and practices of restaurant operators in Kerala.

Table 1: Reliability

|  |  |  |
| --- | --- | --- |
| Variables | Cronbach’s Alpha | Number of Items |
| Competitive Pressure | 0.792 | 6 |
| Customer Pressure | 0.879 | 4 |
| Regulatory Support | 0.848 | 3 |
| Perceived Usefulness | 0.834 | 4 |
| Perceived Ease of Use | 0.760 | 5 |
| Digital Marketing Adoption | 0.858 | 5 |

*Source: Primary data*

Table 1 shows all constructs achieved Cronbach's Alpha above 0.70, confirming reliability. Competitive Pressure scored 0.792, Customer Pressure 0.879, Regulatory Support 0.848, PU 0.834, PEoU 0.760, and Digital Marketing Adoption 0.858. These results validate the measurement instruments' reliability per Tenenhaus et al. (2005).

Table 2: Item loadings, composite Reliability, and Average Variance Extracted

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Latent Variables | Items | Loadings | Composite Reliability (CR) | Average Variance Extracted (AVE) |
| Customer Pressure | CP1 | 0.71 | 0.909 | 0.627 |
|  | CP2 | 0.672 |  |  |
|  | CP3 | 0.659 |  |  |
|  | CP4 | 0.66 |  |  |
|  | CP5 | 0.641 |  |  |
|  | CP6 | 0.671 |  |  |
| Competitive Pressure | CUP1 | 0.72 | 0.866 | 0.62 |
|  | CUP2 | 0.659 |  |  |
|  | CUP3 | 0.635 |  |  |
|  | CUP4 | 0.636 |  |  |
| Regulatory Support | RS1 | 0.822 | 0.909 | 0.769 |
|  | RS2 | 0.803 |  |  |
|  | RS3 | 0.826 |  |  |
| Perceived Usefulness | PU1 | 0.609 | 0.891 | 0.674 |
|  | PU2 | 0.6 |  |  |
|  | PU3 | 0.628 |  |  |
|  | PU4 | 0.627 |  |  |
| Perceived ease of use | PEU1 | 0.626 | 0.839 | 0.513 |
|  | PEU2 | 0.666 |  |  |
|  | PEU3 | 0.607 |  |  |
|  | PEU4 | 0.59 |  |  |
|  | PEU5 | 0.603 |  |  |
| Digital Marketing Adoption | 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 used for the validation of reliability and the validity of the measurement model. All CR values of constructs were above 0.70, ranging from 0.839 to 0.909, with high internal consistency. All AVE values were greater than 0.50, ranging from 0.513 to 0.769, hence establishing convergent validity (Bagozzi & Yi, 1988). Regulatory Support had the strongest AVE at 0.769. Other constructs were also valid where Customer Pressure scored 0.627, and Digital Marketing Adoption achieved 0.64. Item loadings are supportive where all exceeded a threshold of 0.50. Findings provided evidence supporting the reliability and convergent validity of 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*

Discriminant validity was assessed using Fornell and Larcker's (1981) criterion, requiring that the square root of each construct's AVE exceeds its correlations with other constructs. The square root of AVE for each construct met this condition, confirming distinctiveness. For example, Customer Pressure (√AVE = 0.792) was higher than its correlations with other constructs, including Competitive Pressure (0.567) and Digital Marketing Adoption (0.492). Similarly, the highest √AVE is seen in Regulatory Support, which is 0.877 and more than all correlations. Other constructs such as Perceived Usefulness are 0.821 and Digital Marketing Adoption 0.8 also had high discriminant validity. These results prove that the model's constructs are distinct and well-measured.

**5.1. Direct Effects**

The study analyzes major drivers affecting digital marketing adoption. Competitive Pressure, β = 0.257, p < 0.001, Customer Pressure, β = 0.403, p < 0.001, and Regulatory Support, β = 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 whereby, β = 0.680, p < 0.001 such that firms considering digital marketing valuable are easy to use. More influence towards DMA has come through the relationships between the dimensions; PU (β = 0.670, p < 0.001), PEU (β = 0.669, p < 0.001) justify the empirical outcomes reached by Diouani et al., 2023. These findings, consistent with the TAM, emphasize the importance of Competitive Pressure supporting the findings made by Suvorova & Karpenko, 2023, Customer Pressure, aligning with the findings made by Pașcalău et al., 2024; Regulatory Support, aligning with the findings made by (Chen, 2020) PU, and PEU in driving digital marketing adoption (Table 4).

Table 4: Hypothesis Testing Results for Path Coefficients

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Hypotheses | Path Coefficient (β) | Standard Error (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 |

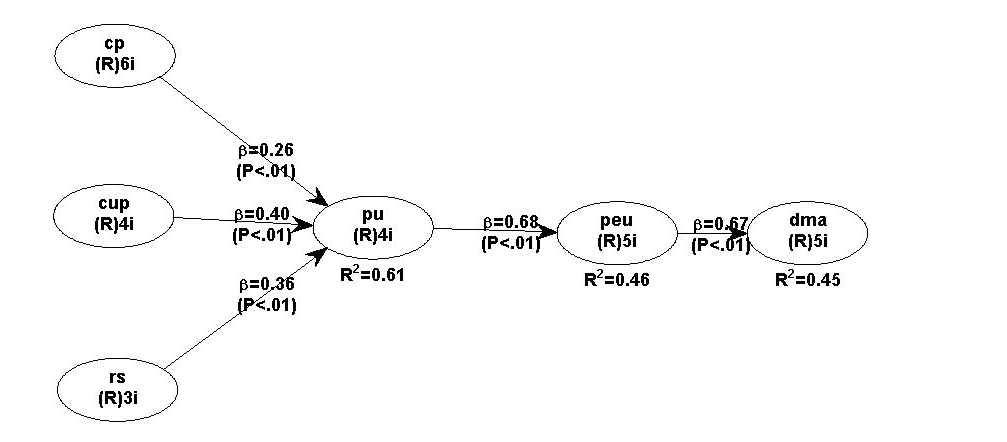
*Source: Primary data*

**5.2. Indirect Effects**

The indirect effects of Customer Pressure (CP), Competitive Pressure (CUP), and Regulatory Support (RS) on Digital Marketing Adoption (DMA) through PU and PEU was 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 adoption of digital marketing.

In conclusion, as shown in Table 5 for mediation analysis, PU and PEU play such significant roles in the relationships between external pressures such as Customer Pressure, Competitive Pressure, and Regulatory Support with Digital Marketing Adoption, aligning with the findings made by Kwon et al., 2021. The idea is that enhancing the two perceptions of usefulness and easiness is crucial to more effectively leveraging the pressures and driving digital marketing initiatives.

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



**6.Theoretical implications**

There are very significant theoretical implications in using the TAM-TOE framework to analyse the adoption of digital marketing in Kerala's restaurant industry, especially using the Partial Least Squares analysis. The first of them is the proof of the relevance and application of the TAM-TOE framework in illustrating how the environmental factors influence digital marketing adoption. Integrating the elements of technology acceptance and environmental influences, this framework offers a comprehensive view on the adoption process. It thereby makes TAM-TOE a useful tool for researchers and practitioners who are involved in and motivate the adoption of digital marketing tools.

Further, PLS analysis in this regard facilitates a better understanding of the adoption phenomenon by opening avenues to explore complex relationships and to capture subtle patterns in data. This further reinforces the fact that different types of analytical methods should be used for a more holistic understanding of adoption processes in the restaurant sector of the hospitality industry

**7.Practical implications**

Findings and their practical implications to policymaker and restaurant firms include; firstly, it recognizes environmental factors as key influencings in adoption process toward the restaurant firms concerning adoption of digital marketing practices while simultaneously recognizing factors from PEU and PU factors into any designed policy initiative regarding how digital marketing could improve on adoption of practice to influence change.

It expands customer access to information, thus reaching out to more people. Two-way communication by digital marketing allows the two parties by increasing the power of customers in giving opinions and providing information about products and increases business's avenues for giving back information about services. Digital marketing allows restaurants to pass effective brand messages, which also aids in developing a good brand image among the customers. Using digital marketing, restaurants can establish connections with their target markets and potential customers, which can lead to long-term relationships and partnerships.

Furthermore, there is a need to foster organizational culture that will encourage and support the adoption of digital marketing. The policymakers must work towards establishing an enabler environment where restaurants feel motivated to embrace digital marketing. This may be possible through the availability of sufficient resources, comprehensive training, and promotion of culture that will appreciate and support the successful execution of digital marketing initiatives.

**8.Conclusions, Limitations, and Future research avenue**

This paper bridges a significant gap in the literature by looking at how restaurants in Kerala, India, are embracing digital marketing. The study makes an in-depth organizational level look into the external factors impacting digital marketing adoption through combining TAM and the TOE framework. Competitive pressure, customer demand and regulatory support are some key environmental factors that force businesses to adopt digital marketing, as well as TAM constructs PEU and PU that are found to considerably influence adoption. The study lays emphasis on aligning the available current environmental infrastructure with a digital marketing system for appropriate implementation in the restaurant sector. Through PLS-SEM, the analysis both confirms previous relationships and reveals fresh insights, enriching our understanding of digital marketing adoption in restaurants. The practical implications of this research are relevant to academics, policymakers, and industry practitioners, especially those in hospitality. This study adds to the literature by highlighting the critical role that environmental factors play in shaping digital marketing decisions in the restaurant sector.

*8.1. Limitations and Future Research agenda*

Despite some notable achievements, this study has a few limitations. First, the reliance on the TAM-TOE framework involves self-reported data and subjective perceptions, which may lead to biases and measurement inaccuracies. To address this issue, future research could adopt methods that integrate both quantitative and qualitative approaches, providing a more well-rounded understanding of the environmental factors influencing digital marketing adoption. The evaluation of the conceptual model in restaurants was based on direct, telephonic, and online interviews, capturing only a specific point in time. It’s important to recognize that the effects of digital marketing may shift as the industry evolves.

Additionally, this study does not include a comparative analysis to explore how contextual factors impact digital marketing adoption across different industries. Future research could consider comparing digital marketing adoption in the restaurant sector with other industries like healthcare or pharmaceuticals to gain broader insights. Regardless of a nation’s economic status—whether developed or developing—further exploration is necessary to clarify the causal relationships behind digital marketing adoption. Finally, this research focused exclusively on environmental factors within the TOE framework. Including Technological and Organizational factors in future studies would offer a more comprehensive perspective.

**Ethical statement**

This research adheres to ethical principles, including obtaining informed consent from all participants, safeguarding their confidentiality, and strictly following established ethical guidelines and protocols throughout the study.

**Funding**

The research received no external funding.

**Declaration of competing interest**

The authors declare that there are no conflicts of interest.

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