

CONSUMER BEHAVIOR-BASED DIGITALIZATION FOR COMPETITIVENESS OF THE CULINARY SME INDUSTRY IN MANADO

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ARTICLE HISTORY

Received : 20-10-2025

Revised : 07-11-2025

Accepted : 30-11-2025

KEYWORDS

MSMEs;
Digitalization;
Consumer Behavior;
Competitiveness;
Sustainability

ABSTRACT

One of the national strategic goals is digital transformation, and 30 million MSMEs are expected to become digital by 2024. Nevertheless, Manado culinary MSMEs, especially those in the Flamboyan Street Food District, continue to experience a digital divide because consumer behaviour is becoming increasingly reliant on social media content, online reviews, and electronic money transfer systems. The proposed study will help develop a consumer-behaviour-based digital strategy model to enhance the competitiveness and sustainability of culinary MSMEs. An explanatory mixed-methods research design was used to gather quantitative data (100 digital consumers) using PLS-SEM and qualitative data (in-depth interviews, FGDs, and direct observations of MSME actors). The results show that customer engagement strongly mediates the influence of digital strategy on competitiveness and that competitiveness is a strong personal contributor to business sustainability. The qualitative findings indicate that digital literacy, regular online promotion, and enabling infrastructure are essential to the adoption of digital technology. In general, this study has found that consumer-focused digital approaches can enhance the competitiveness and sustainability of MSMEs in the culinary industry in Manado. Practical recommendations include the establishment of digital marketing strengths, multi-stakeholder cooperation, and the adoption of context-related technologies in line with the local culture and groups.

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INTRODUCTION

Digital transformation is a development agenda that has taken priority in the development of the Indonesian economy, with the goal of integrating 30 million MSMEs into the national digital ecosystem by the year 2024 (Biro Humas Kementerian Kominfo, 2024). Culinary MSMEs are not only food product suppliers in Manado City, but also gastronomic tourism destinations that strengthen regional identity (Kotler & Keller, 2016; Rahayu et al., 2022). The Flamboyan Street Food neighborhood is a good example of a food destination with a huge potential of being transformed into a digitally enabled creative economy.

Despite this possibility, a deep-rooted digital divide can still be observed. The use of technology as a marketing tool has not yet been maximized by many culinary MSMEs, although consumer habits have already shifted towards the

use of online reviews, social media feedback, delivery services, and electronic payment systems (Chaffey & Smith, 2022; Creswell & Plano Clark, 2018; Grewal, Hulland, Kumar, & Pandey, 2020; Kartajaya et al., 2021; Rapp et al., 2013). This discrepancy demonstrates a growing disconnect between the level of MSME readiness to use digital tools and consumer wants, since consumers are increasingly utilising digital tools.

Existing studies prove that digitalisation might help MSMEs increase their competitiveness (Mazzarol, n.d.; Sari & Sinambela, 2024). However, a range of challenges, such as poor technological literacy, lack of resources, and operational costs, still hinder the success of digital adoption (Widayati & Augustinah, 2019). Mangindaan (2014, 2025) stresses in the wider case of culinary tourism that there is a necessity for an all-encompassing geotourism framework that incorporates community involvement, sense of place, and destination creation. To supplement this viewpoint, highlights the significance of digital consumer trust, behavioral intention, and financial inclusion barriers in defining the adaptations made by MSMEs in the digital economy. All of these are indicative of the idea that MSMEs cannot be empowered through technological adoption alone, but rather by comprehending the local dynamics and consumer behavior in a specific context (Walangitan et al., 2020; Walangitan, 2025; Walangitan & Sagai, 2023).

The originality of the research is that MSMEs digitalization is combined with digital consumer behavior in a mixed-methods paradigm. The quantitative component examines the structural characteristics between digital strategy, consumer behavior, engagement, competitiveness, and sustainability through the use of PLS-SEM, whereas the qualitative component investigates the experience of the MSME, challenges perceived, and how these are dealt with. Sustainability is another feature that expands the scope of analysis by aligning the digital strategy formulation with long-term resilience goals.

In this respect, this research aims to determine digital consumer behavior trends in the selection of culinary products, assess the impact of the digital approach on the competitiveness and sustainability of MSMEs, and subsequently examine the threats and opportunities that have emerged when adopting digital technology within the culinary MSME sector. The ultimate aim is to come up with an overall-digital-strategy-based framework of consumer behaviors elicited in a methodologically adequate and context-based way that can further reinforce competitiveness and sustainability.

Research Questions

1. What are the effects of digital consumer behaviors in shaping the digital strategies of culinary MSMEs in Manado?
2. To what extent do digital strategies have an impact on customer engagement, competitiveness, and sustainability?
3. What are the threats and opportunities for culinary MSMEs to change to digital technologies?
4. What are the ways of formulating digital strategies that are based on consumer behavior in order to improve competitiveness and long-term sustainability?

RESEARCH METHOD

This study uses a mixed methods design with an explanatory approach, in which quantitative analysis is conducted first to test the relationship between variables, then deepened through qualitative analysis to provide a more comprehensive understanding (Walangitan, 2025). This approach was chosen because the issue of MSME digitalization cannot only be understood from the perspective of numbers or consumer statistics, but also needs to be explored in depth from the experiences and strategies of the business actors themselves.

The quantitative stage was conducted through a survey of one hundred consumers who had transacted with culinary MSMEs in the Flamboyan Street Food area, Manado. The questionnaire instrument was designed based on indicators of digital consumer behavior, MSME digital strategies, customer engagement, competitiveness, and sustainability. The data was then analyzed using Partial Least Square Structural Equation Modeling (PLS-SEM) techniques with SmartPLS software. This analysis allowed researchers to assess the validity and reliability of the instruments, test direct and indirect relationships between variables, and evaluate the strength of the model through the R^2 value.

The qualitative phase was carried out to supplement the quantitative findings. Ten culinary MSME players working in Flamboyan Street Food were involved in in-depth interviews, focus group discussions (FGD), and participatory observation. The data obtained were analyzed in NVivo software using thematic analysis, which allowed recording of the main patterns in regard to digital promotion strategies, technology adoption issues, and perceptions of business actors regarding consumer behavior changes.

The main variables in this study consisted of digital consumer behavior, infrastructure, and technology acceptance readiness as exogenous variables; MSME digital strategies and customer engagement as mediating variables; competitiveness and sustainability as endogenous variables; and technology adoption as a moderating variable. This

combination of variables was chosen to reflect the empirical reality faced by culinary MSMEs in the digitization process while explaining how consumer behavior plays a role in strengthening business competitiveness. The present methodological design of this study offers a quantitative image of how digitalization influences competitiveness, but also brings a more insightful view of how culinary MSMEs have adapted to the changes in digital consumer behavior in Manado.

RESULT AND DISSCUSION

The results of this study are presented in two stages, namely quantitative findings based on PLS-SEM analysis and qualitative findings based on NVivo thematic analysis, which are then integrated to obtain a more comprehensive understanding.

RESULT

Respondent Identity

Quantitative data were obtained through a survey of 100 digital consumers, who were predominantly male (66 people) and female (34 people). Age data show that the majority are in the productive age group: young adults (18–30 years old) numbered 39 people (39%) and adults (31–50 years old) numbered 38 people (38%), for a total of 77 people (77%). The rest consisted of teenagers (16–17 years old), totalling 10 people (10%), and elderly people (51+ years old), totalling 13 (13%). None of the respondents were under the age of 16 years. The dominance of the productive age group would render the sample appropriate when investigating workers, university students, or adult consumers.

The employment data show that the student/university student group is the most dominant with 32 people (32%), followed by civil servants/TNI/POLRI with 24 people (24%), and entrepreneurs with 21 people (21%). The private employee group consisted of 13 people (13%), while lecturers only numbered four people (4%). There were also respondents with specific professions, such as musicians, artists, cultural practitioners, advocates/lawyers (1-2 people each), housewives (3 people), and unemployed people (1 person). The data show that the majority of respondents were young people (students) and civil servants, with a significant proportion of entrepreneurs, reflecting the diversity of socioeconomic status in the sample.

The frequency of visits to Flamboyan MSMEs in the last month was dominated by the 2-3 times a month group (38 people / 38%), followed by once a month (25 people / 25%) and 4-6 times a month (19 people / 19%). A total of 11 people (11%) visited more than 6 times, indicating high loyalty, while 7 people (7%) had not visited at all in the past month, mainly due to distance or inactivity. This pattern indicates that Flamboyan MSMEs have a stable base of regular customers, but still have room to increase the frequency of visits from monthly visitors and reach non-visitors.

Of the 100 respondents, the majority (49 people, 49%) ordered culinary products digitally 1–2 times a month, followed by 24 people (24%) who had never ordered at all in the past month. A total of 16 people (16%) ordered 3–5 times, and 11 people (11%) ordered more than five times, indicating the existence of a loyal customer segment that actively purchases digitally. This trend suggests that despite the fact that so many people have begun to make use of the digital form of ordering, it is yet inviting massive improvement in terms of adoption and non-users (24%) with the help of promotions, ease of access, and incentives.

The fact that most respondents belonged to the productive age group with high rates of digital activity also proves the topicality of this study to the digital consumer segment that contributes actively to the formation of orientation patterns in demand. In this regard, Manado consumers may be regarded as buyers as well as community champions who intuitively advertise the popularity of SMEs through social media and online reviews.

Quantitative

Measurement Model (Outer Model)

The measurement model is evaluated to ensure that the indicators used are appropriate for measuring the research construct.

Table 1. Cross Loading

Construct/Variable	Composite reliability (rho_c)	Average variance extracted (AVE)	Fornell Larcker	Status
ATD (Z)	0.886	0.661	0.813	Valid
CE (M2)	0.906	0.707	0.841	Valid

DS (Y)	0.908	0.712	0.844	Valid
KI (X2)	0.901	0.696	0.834	Valid
PKD (X1)	0.878	0.591	0.769	Valid
SDU (M1)	0.864	0.681	0.825	Valid
SUST (Y')	0.934	0.781	0.884	Valid
ATD (Z)	0.889	0.800	0.895	Valid

According to the above table, the measurement model assessment indicated that all measurement constructs of the study satisfied the validity and reliability requirements needed in PLS-SEM. Three key pointers can be used to support this conclusion: Composite Reliability (CR), Average Variance Extracted (AVE), and the Fornell-Larcker criterion. To begin with, every construct has a Composite Reliability (CR) above 0.70, 0.864 to 0.934. These values indicate that both constructs exhibit a high level of internal consistency and reliably measure what they are meant to measure. Second, there is also an average variance extracted (AVE) above the 0.50 mark for all constructs. The greatest AVE was in the sustainability construct (0.781), followed by CE (0.707), DS (0.712), KI (0.696), SDU (0.681), ATD (0.661), and PKD (0.591). This means that the construct describes over 50 percent of the variance of the indicators of the construct, which is the necessity of convergent validity.

Third, the results of the Fornell–Larcker Criterion show that the square root of the AVE for each construct is higher than its correlations with other constructs. For example, the Fornell–Larcker values for CE (0.841), DS (0.844), and SUST (0.884) were all higher than their inter-construct correlations. This proves that discriminant validity was attained, that is, each construct was empirically different from the other. With all these criteria fulfilled (CR, AVE, and Fornell–Larcker), it can be concluded that all constructs in this study are valid and reliable and therefore appropriate for further analysis in the structural model (inner model).

In addition, the measurement model evaluation showed that all constructs met the required validity and reliability indicators in PLS-SEM. First, all indicator outer loadings were above the necessary minimum of 0.70, which means that all indicators made significant contributions to the factor that they represent. This demonstrates that all items are valid in terms of convergent validity. Second, all variables had Composite Reliability (ρ_c) above 0.70, with a value of 0.864 to 0.934 that validates the high internal consistency of the constructs to be used in the structural model. Third, all constructs had AVE values above 0.50 (CE = 0.707, SUST = 0.781, and KI = 0.696). This indicates that its indicators account for and explain over 50 percent of their corresponding constructs, hence meeting convergent validity. Fourth, the Fornell–Larcker results show that the square root of each construct's AVE is higher than its correlations with other constructs, meaning that each variable has an adequate discriminant capability. Therefore, it can be concluded that the overall measurement model is valid and reliable, and all constructs meet the requirements to proceed with structural model testing.

Structural Model (Inner Model)

Structural model testing is conducted to assess the relationships between constructs in the study.

Tabel 2. Inner Model Evaluation

No	Hipotesis	β (Path Coef)	P-Value	Keterangan Hasil
1	Digital consumer behavior (X1) has a positive effect on the digital strategy of Flamboyant MSMEs (M1).	0.282	0.001	Significant , H1 Accepted
2	Infrastructure readiness (X2) has a positive effect on the digital strategy of Flamboyant MSMEs (M1).	0.394	0.000	Significant , H2 Accepted
3	Technology readiness (X3) has a positive effect on the digital strategy of Flamboyant MSMEs (M1).	0.165	0.075	Not Significant H3 Rejected
4	The digital strategy of Flamboyant MSMEs (M1) has a positive effect on customer engagement (M2).	0.392	0.000	Significant , H4 Accepted
5	Customer engagement (M2) has a positive effect on the competitiveness of Flamboyant MSMEs (Y).	0.414	0.000	Significant , H5 Accepted
6	The competitiveness of Flamboyant MSMEs (Y) has a positive effect on sustainability (Y').	0.433	0.000	Significant , H6 Accepted
7	Customer engagement (M2) mediates the effect of digital strategy (M1) on the competitiveness of Flamboyant MSMEs (Y).	0.162	0.008	Significant , H7 Accepted
8	Competitiveness (Y) mediates the effect of customer engagement (M2) on sustainability (Y').	0.179	0.008	Significant , H8 Accepted

9	Competitiveness (Y) mediates the effect of digital strategy (M1) on sustainability (Y').	0.070	0.047	Significant, H9 Accepted
10	Digital technology adoption (Z) moderates the effect of digital strategy (M1) on customer engagement (M2), strengthening the relationship at higher levels of technology adoption.	-0.112	0.233	Not Significant, H10 Rejected

The structural or inner model analysis examines the strength of the causal relationship of the latent variables in how it was developed in the research hypotheses. According to the SmartPLS findings presented in the table above, some of the relationships were identified as significant, some operated through mediation processes, and some were empirically non-significant. These results provide a summary of the interaction of digital consumer behavior, infrastructure preparedness, technology preparedness, digital strategy, engagement, competitiveness, and sustainability in Flamboyen MSMEs as a component of the Manado geotourism ecosystem based on culinary.

First, Digital Consumer Behavior (X1) was significantly related to MSME Digital Strategy (M1) ($\beta = 0.282$; $p = 0.001$). This shows that the more digitally oriented the behavior of Flamboyen consumers, such as searching for information online, on social media, and in reviews online, the greater the impetus toward MSMEs adopting digital strategies. This finding is consistent with the digital consumer behavior theory and the results reported by Walangitan (2023), which highlights that alterations in online consumer dynamics are central to MSME marketing approaches.

Second, Infrastructure Readiness (X2) is a key factor in the Digital Strategy of MSMEs ($\beta = 0.394$; $p = 0.000$). Digital infrastructure, that is, internet networks, technological devices, and digital payment systems, can play a significant role as a base on which to build digital strategies among Flamboyen MSMEs. It serves the regime of the Knowledge-Based View (KBV) and agrees with the findings of Mangindaan (2014, 2025), who claimed that infrastructure preparedness is one of the pillars of local economic development in geotourism-based areas.

Third, Technology Readiness (X3) has no significant effect on the MSME Digital Strategy ($\beta = 0.165$; $p = 0.075$). This indicates that the individual and psychological preparedness of MSME actors is not yet a compelling aspect of deciding on digital strategy implementation in Flamboyen. It is also a pointer that personal technological capability is not yet established, or external forces like market pressure and customer demand are more influential in fueling digital adoption.

Moreover, the results indicate that Customer Engagement (M2) is greatly influenced by the MSME Digital Strategy (M1) ($\beta = 0.392$; $p = 0.000$). This implies that the more effective the adoption of digital strategies, including the composition of creative content, engagement using the online platform, and use of social media, the greater the consumer engagement. These results prove the ideas of digital marketing engagement and substantiate the works of Mangindaan (2025) and Walangitan (2023), who note the necessity of community-based digital marketing to develop consumer interaction.

Customer Engagement (M2) also significantly influenced MSME Competitiveness (Y) ($\beta = 0.414$; $p = 0.000$). High consumer involvement through loyalty, interaction, and positive preferences enhances the competitiveness of Flamboyen MSMEs in the tourism industry. This result confirms customer value theory and the Resource-Based View (RBV), which asserts that engagement is a source of competitive advantage that is difficult for competitors to imitate.

Next, MSME Competitiveness (Y) significantly influenced sustainability (Y') ($\beta = 0.433$; $p = 0.000$). This implies that MSMEs with greater competitive advantages have a higher probability of survival and development. This observation is consistent with the theory of sustainable competitive advantage and the focus presented by Mangindaan (2025) that competitiveness is the basis of sustainability in the culinary geotourism framework.

Several important indirect mediating pathways were identified. Customer Engagement mediates the effect of Digital Strategy on Competitiveness ($\beta = 0.162$; $p = 0.008$). Competitiveness mediates the effect of Customer Engagement on Sustainability ($\beta = 0.179$; $p = 0.008$). Competitiveness also mediated the effect of Digital Strategy on Sustainability ($\beta = 0.070$; $p = 0.047$). These findings support the idea that digital strategies can impact sustainability due to engagement and competitiveness, which means that M1 and M2 play a key role in value-transition processes.

However, contrary to the initial expectation, the moderating effect of Digital Technology Adoption (Z) on the relationship between MSME Digital Strategy and Customer Engagement was not significant ($\beta = -0.112$; $p = 0.233$). This implies that the more advanced the technology adopted by the company, the less impact digital strategies would have on consumer engagement.

Overall, it can be concluded that the structural model demonstrates that the core relationships among digital strategy, engagement, competitiveness, and sustainability form the strongest and most empirically consistent pathway. These results highlight the importance of the fact that the effective digital transformation of MSMEs is based not only on

technology adoption but also on how digital strategies serve to build more effective relationships with customers and become stronger competitors.

Qualitative

Qualitative analysis was conducted through in-depth interviews, focus group discussions, and field observations of ten culinary MSME actors in the Flamboyan Street Food area. Thematic analysis was conducted using NVivo software aided by data and resulted in the creation of four central themes, which describe the processes of using digitalization in culinary MSMEs.

Theme 1: Changes in Consumer Behavior

MSME players realize that consumers now seek more culinary information through social media, online reviews, and delivery platforms. This affects how consumers make decisions. One MSME player said:

“Now people trust reviews on Instagram or TikTok more than our own promotions.”

This change confirms that consumers are important actors in determining the direction of MSME digital strategies. Consumers now rely on social media and online reviews when choosing culinary options.

Theme 2: Limited Digital Literacy

Most MSME players find it difficult to manage their social media accounts consistently. The content uploaded often consists only of menus without a clear communication strategy. One respondent said:

“We know the importance of online promotion, but we are confused about how to create interesting content. Sometimes we just post menus, without any strategy.”

This highlights the need for training in creative content and guidance in digital marketing. MSME players have difficulty managing effective digital content.

Theme 3: Infrastructure and Cost Challenges

MSME players also face obstacles in the form of unstable internet access and digital promotion costs that are considered expensive. One business owner said:

“If you want to advertise on a platform, the costs are quite expensive. So we only rely on regular posts, but even those have limited reach.”

Barriers to internet access and digital promotion costs hinder the optimization of promotion. These limitations hinder the optimal reach of MSME digital promotion.

Theme 4: Opportunities for Collaboration and Ecosystem Support

Despite facing challenges, MSME players still see opportunities for growth through collaboration with the government, local communities, and digital platforms. One respondent emphasized:

“If there are training or mentoring programs specifically for culinary MSMEs, it would definitely be very helpful. We need guidance on how to sell online effectively.”

This finding confirms that MSMEs not only need individual strategies, but also broader ecosystem support for sustainable digital transformation. Business owners recognize the importance of collaboration with the government, communities, and digital platforms.

Next, thematic analysis visualization through Word Cloud, which is a visualization of thematic analysis results using NVivo, shows the dominant themes in the text data. The two largest words, “digital” and “consumer,” are the main focus of the analysis, indicating that the research topic focuses on digital transformation and the role of consumers. Other prominent words, such as “actors,” “government,” “technology,” “marketplace,” “strategy,” and “payment” indicate the ecosystem involved, including business actors, public policy, technological infrastructure, and consumer behavior and preferences in the digital economy.



Generally, this word cloud demonstrates the dynamics of interaction among different players in the online environment, but more so how consumers respond to or are manipulated by changes in technology, policies, and business strategies. The occurrence of words in the qualitative data is an indicator of key concerns that keep coming up consistently in the data, including the significance of digital platforms (e.g., marketplaces), the role of government regulation, and the difficulties and possibilities of businesses adopting digital innovation.

This study has shown that the digital transformation of Flamboyant MSMEs as a subset of the culinary geotourism ecosystem in Manado is heavily conditioned by the dynamics of digital consumer behavior, infrastructure readiness, implementation of digital strategy, level of customer engagement, competitiveness, and mediation mechanisms between the variables. The quantitative outcomes made by the use of the PLS-SEM model coupled with the qualitative responses given by the MSME actors and consumers ensure a comprehensive perspective of how MSMEs in the Flamboyant area can manage to adapt to the changing consumer behavior and technological changes. This place-making corresponds to the occurrence of the Holistic Geotourism approach suggested by (Mangindaan, 2014, 2025b), which states that human, technological, cultural, and community economic aspects influence the success of local culinary tourism.

The relationship between the two variables was found to be significant, which also validates the fact that digital consumer behavior is one of the key drivers of MSME strategy in the digital space. Consumers in Flamboyant strongly depend on digital reviews, social media content, and online recommendations to make culinary decisions. This finding is validated by the profile of respondents, with the majority of consumers in the productive age brackets and highly digitally literate. This further supports the idea that MSME digital plans are being changed as a result of the demands of digitally conscious consumer groups. These are similar to Walangitan & Sagai (2023) study and the theory of digital consumer behavior (Schiffman & Wisenblit, 2019), as well as Mangindaan's (2025a) belief that tourist and consumer digital behavior maximizes the visibility of culinary tourism destinations.

Infrastructure readiness also has the strongest influence on MSME digital strategies. Internet connections, computer equipment, and electronic money transfer systems make the digitalization of Flamboyant MSMEs possible. The obstacles revealed in the qualitative analysis included a lack of equipment and poor Internet connectivity. This supports the conclusions made by Oliveira and Martins (2011) and Mikalef et al. (2020) and validates the KBV framework and Mangindaan's (2014) view on the significance of destination infrastructure in facilitating the development of community-based geotourism (Mangindaan, 2014; Mikalef et al., 2020; Oliveira & Martins, 2011).

Nonetheless, MSME technology readiness does not significantly impact digital strategy development. This means that market pressure and consumer demand precondition the digitalization of Flamboyant MSMEs on the one hand because technical maturity is not a condition at the internal level at the same level. Extensive interviews showed that most of the MSME actors were engaging in digital practices out of self-motivation, since their competitors had the same experiences but were more practical in using social media. This is similar to the results of Walangitan, (2024) on low levels of digital self-efficacy among MSMEs, thus the reason why readiness is not a leading factor in the adoption of strategies.

Digital strategies help improve customer engagement. Consumers are devoting more time to visuality, online interaction, and reviewing. In the framework of culinary geotourism, virtual interaction contributes to the creation of destination narratives and the connection of MSMEs with visitors. This observation aligns with the existing body of information about digital marketing (Chaffey & Smith, 2022; Grewal, Hulland, Kumar, & Swaminathan, 2020) and enables Mangindaan to support the statement that digital narratives are an effective way to reinforce the identity of culinary destinations (Mangindaan, 2025b, 2025a).

Customer involvement eventually emerges as a major competitive driver of MSMEs. Close consumer relationships lead to customer loyalty, word-of-mouth, and a sense of organic promotion that serves the competitive strength of Flamboyan MSME. This supports the RBV) and research indicating that customer relations are valuable and limited resources that enhance sustainable competitiveness (Barney, 1991; Chen & Barnes, 2007; Walangitan et al., 2024).

In addition, competitiveness is a critical factor that contributes to MSME sustainability. Business continuity can be maintained and added to MSMEs with reputable status, consistent product quality, and online brands. Within the context of culinary geotourism, competitiveness is based on more than just business performance, which is the capacity to maintain the local culinary identity as part of the cultural heritage. This corresponds to the notion of sustainable competitive advantage (Kotler & Keller, 2016) and the priority of community-driven destination sustainability (Mangindaan, 2025).

The mediation pathways further demonstrate that the effects of digital strategy and engagement on sustainability operate via competitiveness. This highlights that digital strategies can only be used to help build sustainability when they increase interaction, boost competitiveness, and establish meaningful differentiation for consumers. These mediation mechanisms are consistent with customer value models in the marketing literature, which assert the importance of community engagement and competitive capacity for destination longevity (Kumar & Reinartz, 2016).

Nevertheless, the adoption of digital technology had no significant moderating effect. This means that, despite the fact that the digital tools, their use is not yet strategic to enhance the power of digital strategies. Actors in MSMEs have uneven posting patterns, limited stories, and inadequate knowledge of online interaction strategies. This implies that the adoption of technology is not yet a strategic digital capability. These results are consistent with the qualitative results and support the idea that the technological adaptation of MSME is at the initial level.

In general, the research outcomes highlight that the implementation of technology is not the only factor that defines the success of Flamboyan MSMEs in the culinary geotourism context, but also how digital strategies result in interactions, competitiveness, and sustainable performance of business operations. The merging of both quantitative and qualitative results underlines the fact that MSME digital transformation processes should be oriented toward reinforcing community capacity, enhancing infrastructure, raising the level of digital literacy, and using local gastronomies as a component of destination identity formation.

Theoretical Implication

This study makes several theoretical contributions to the digital consumer behavior literature, MSME strategy, and sustainability. First, it will combine digital consumer behavior, digital infrastructure preparedness, technology acceptance preparedness, MSME digital strategy, customer engagement, competitiveness, and sustainability within the same framework. Such an integrated model supports the reality that the influence of digital involvement is not only predetermined by the nature of psychology but also by environmental readiness and the reaction of the company.

Second, the research work is based on the implementation of the Technology Readiness Index (TRI), Technology Acceptance Model (TAM), and Unified Theory of Acceptance and Use of Technology (UTAUT) to local culinary MSMEs. The addition of the MSME digital strategy and customer engagement variable as a mediating variable demonstrates that the readiness and acceptance of technology have no direct effects on the competitiveness and sustainability of MSMEs, rather indirectly through mediating factors to the digital interactions that MSMEs design and manage.

Third, the sustainability aspect, as viewed by consumers, enhances the application of the Triple Bottom Line (TBL) and corporate social responsibility (CSR) concepts at the MSME level. The findings indicate that social and environmental practices may be evaluated with meaningful results considering the consumer's perspective, not only in large-scale companies but also in smaller local enterprises.

Fourth, this study adds value to the customer engagement literature by depicting engagement as a connecting point between digital strategies and long-term success, such as competitiveness and sustainability. This is in line with the fact

that engagement has not only been connected with short-term loyalty but also with more long-range consequences for the firm.

The methodological implication of construct integration between multiple theoretical traditions into a single empirical specimen is that further research can test, perfect, or expand upon this specific empirical specimen in other sectors, regions, or business types.

Practical Implication

The results of this study have some practical implications for culinary MSMEs, area managers in Flamboyan, and local policymakers. First, online consumer behavior has a dominant influence on the development of MSMEs online strategies and interaction with customers, which subsequently boosts their competitiveness and sustainability. Thus, MSME owners should be keen to utilize social media, food delivery, and other online platforms to raise product awareness, build relationships with consumers, and act swiftly to prevailing trends.

Second, the Flamboyan area requires digital infrastructure to expand the scope of technology. Access to the Internet and WiFi, quality electricity, and digital devices are vital for facilitating digital transactions. National partners (local governments, area managers, and associated players) working with local governments to work on this infrastructure will provide MSMEs with a more enabling digital ecosystem.

Third, digital literacy and positive user experience can be enhanced by the extent to which consumers are ready to accept technological innovations. Anxiety towards technology and reluctance to visit digital services continuously could be minimized with the help of short training, a program of digital literacy based on a community, and an easy design of the platforms.

Fourth, the findings demonstrate that efficient digital strategies and high customer engagement are the primary mechanisms that connect digital consumer behavior with the competitiveness and sustainability of MSMEs. In practice, MSMEs must create appropriate online-based content, maintain a two-sided dialogue with clients, benefit online promotions, and have convenient non-cash payment systems. These have an opportunity to enhance emotional and behavioral involvement, such as sharing content, writing reviews, and referring others to the business.

Lastly, the research reveals that consumers pay more attention to social and environmental concerns in MSMEs. This implies that business-related practices, such as the creation of environmentally friendly packaging, waste disposal, employee treatment, and charity to the surrounding community, can be further sources of competitive advantage for MSMEs in the digital age.

Prohibition and Future Orientation.

This study has several limitations. First, it focuses on a particular situation, culinary MSMEs in the Flamboyan zone. Consequently, the findings are unlikely to be generalizable, and the model might not completely depict the situations in other sectors or geographical locations that have a different digital culture, infrastructure, and consumer base.

Second, the study employs cross-sectional data collected at a given time and carries on consumers' self-perceptions. The design cannot be used to measure changes in digital behavior, MSME strategies, or patterns of engagement over time. Longitudinal designs would be applicable to future research to provide better insight into causal relationships and dynamics over time.

Third, perception-based survey instruments measure all critical constructs, which are subject to response bias. Future research can use self-reported data along with more objective measures, including digital transaction data, platform usage, and MSME performance data.

Fourth, the digital proposal model focuses on variables related to digital behavior, infrastructure, technology readiness, MSME digital strategies, customer engagement, competitiveness, and sustainability. Other factors that could be important, such as management skills, government backing, the wider macroeconomic environment, or local socio-cultural traditions, were omitted.

In response to these restrictions, the model in future research might be expanded to other forms of businesses and geographic areas, use mixed-method designs allowing quantitative and qualitative data, and add other variables, including policy support, innovation capacity, or the importance of digital communities. Such studies would create a bigger picture of the digital ecosystem around MSMEs and the effects of the situation on long-term competitiveness and sustainability.

CONCLUSION

This indicates that the digitalization of culinary MSMEs in Manado, relying on consumer behavior, can be discussed as an efficient strategy aimed at enhancing their competitiveness and sustainability. Quantitative findings reveal that customer engagement is a mediating factor between digital strategy and competitiveness, and that competitiveness has a significant impact on business sustainability. This means that online transformation not only enhances short-term performance but also leads to the long-term resilience of a highly competitive market.

This is supported by qualitative evidence, which showed that four key issues that need to be addressed are ever-digitized consumer behavior, low digital literacy, infrastructure and cost issues, and intersectoral work. These points reveal that effective digital transformation is possible only with the help of ecosystem support, as opposed to individual initiatives by MSMEs.

This finding is consistent with the holistic geotourism viewpoint that illustrates the importance of the government and communities, businesses, and consumers in forming sustainable competitiveness founded on local values. In a conceptual sense, the significance of this research is that the principle of holistic competitiveness is put into practice, where the fundamental interactions among human beings, technology, and the community are the focal points of regional digitalization. In practice, the results suggest enhancing digital literacy and community-based support, infrastructure enhancement and technological support, and multi-party cooperation. These measures will increase the competitiveness of Manado culinary MSMEs and preserve sustainability based on cultural and community identity.

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APPENDIX. QUANTITATIVE RESEARCH INSTRUMENT

Variable	Conceptual Definition	Operational Definition	Dimension & Indicator	Theory	Code	Statement Item
X1 Digital Consumer Behavior	Patterns of actions and preferences of consumers in searching for, selecting, and purchasing culinary products through digital media.	The level of frequency and tendency of consumers to use digital media to interact and transact.	Digital Information Search – Search frequency	CDJ	PKD1	I often look for references for food and beverages through Instagram, Google, or TikTok.
			Digital Information Search – Dependence on digital information	Digital Consumer Behavior	PKD2	I rely on social media to decide on my food choices.
			Digital Social Influence – Influence of reviews or influencers	TPB, eWOM	PKD3	I tend to try foods that are going viral on social media.
			Digital Social Influence – Friends or environment recommendations	TPB	PKD4	I often follow suggestions from friends on social media when trying food products.
			Digital Trust – Trust in reviews and ratings	Trust Theory	PKD5	I trust customer reviews on apps such as GoFood or ShopeeFood.
			Digital Trust – Credibility of digital information	Kotler, Ajzen	PKD6	I trust food product information that I find online.
			Ease and Convenience – Practicality of digital transactions	TAM	PKD7	I feel more comfortable ordering food digitally than buying directly in person.
			Ease and Convenience – Satisfaction with platform usage	TAM	PKD8	I feel satisfied using food ordering applications.
X2 Digital Infrastructure Readiness	Consumers perception of the availability and quality of digital infrastructure in Flamboyan.	The level of consumer confidence that the physical environment and technology support digital activities.	Digital Infrastructure – Internet connection quality	TOE	KI1	The internet connection quality in Flamboyan is very good for digital transactions.
			Digital Infrastructure – WiFi accessibility	Digital Divide Theory	KI2	There are enough public WiFi access points in the Flamboyan area.
			Digital Infrastructure – Electricity stability	TOE	KI3	The electricity infrastructure in Flamboyan is stable for using digital devices.

			Digital Infrastructure – Availability of digital devices	Consumer Behavior	KI4	There are shared digital devices such as interactive screens or digital kiosks in Flamboyan.
X3 Technology Acceptance Readiness (TAR)	Initial psychological readiness of consumers to accept digital technology.	The level of optimism, innovativeness, and mental preparedness of consumers toward digital technology.	Optimism – Benefits of technology	TRI	TAR1	I am optimistic that digital technology brings great benefits to my culinary shopping experience.
			Innovativeness – Tendency to try new technology	TRI, IDT	TAR2	I tend to be interested in trying new digital technologies for purchasing food or beverages.
			Discomfort – Technology anxiety	TRI (Inhibitor)	TAR3	I feel anxious about using complex digital technologies.
			Mental Readiness – Readiness to adopt technology	TRI adaptation	TAR4	I have prepared myself to use more advanced digital technologies.
M1 MSME Digital Strategy	Consumers perception of MSME digital strategies in marketing and service.	The level of consumer evaluation of MSME digital content, interaction, platforms, promotion, and services.	Digital Content – Content quality and relevance	Content Marketing	SD1	The MSME frequently posts attractive and informative content on social media.
			Digital Platform – Product presence on platforms	Digital Channel	SD2	I can easily find MSME products on apps such as GoFood or ShopeeFood.
			Digital Promotion – Access to discounts and campaigns	Digital Promotion	SD3	I often receive promotions or discounts from MSMEs on digital platforms.
			Digital Interaction – MSME responsiveness	Digital CRM	SD4	The MSME quickly responds to my questions on social media or apps.
			Digital Payment – Availability of payment methods	Fintech Acceptance	SD5	The MSME provides digital payment options that I need.
M2 Customer Engagement	The level of active and emotional involvement of consumers with MSMEs digitally.	The cognitive, emotional, and behavioral level of consumers in interacting with digital MSMEs.	Cognitive Engagement – Active thinking	Hollebeek CE	CE1	I often think about this MSME brand even when I am not buying.
			Cognitive Engagement – Active attention	Hollebeek CE	CE2	I pay attention to content and information from this MSME.
			Emotional Engagement – Emotional closeness	Relationship Marketing	CE3	I feel a sense of closeness with this MSME brand.
			Emotional Engagement – Enjoyment of interaction	CE Theory	CE4	I feel happy when interacting with this MSME content.
			Behavioral Engagement – Sharing, reviews, advocacy	Hollebeek	CE5	I often share this MSME content with friends on social media.

Y MSME Competitiveness	Consumers perception of the competitive advantages of MSMEs.	Consumers assessment of product uniqueness, service quality, innovation, and trust.	Behavioral Engagement – Active interaction	Relationship Marketing	CE6	I actively give comments or feedback to the MSME on social media.
			Product Differentiation – Product uniqueness	Porter	DS1	The MSME products have unique taste and packaging compared with others.
			Service Quality – Satisfaction with digital service	Service Quality	DS2	I am satisfied with the MSME digital services (response, delivery, packaging).
			Product Innovation – Menu or product updates	Innovation Theory	DS3	The MSME frequently updates its menu in line with trends.
Y' Sustainability	The ability of MSMEs to survive and provide long-term social and environmental impact.	Consumers perceptions of the social and environmental practices of MSMEs.	Trust – Reputation and consistency	Brand Trust	DS4	The MSME I regularly buy from is trustworthy and consistent in its quality.
			Social – Employee welfare	TBL, CSR	KS1	The MSME hires staff fairly and treats them well.
			Social – Community contribution	SRPB	KS2	The MSME cares about the community or social issues around it.
			Environment – Environmentally friendly	TBL	KL1	The MSME uses environmentally friendly packaging.
Z Digital Technology Adoption	Consumers willingness and readiness to use digital technology.	Perceptions of usefulness, ease of use, intention, and supporting conditions.	Environment – Environmental concern	CSR	KL2	The MSME cares about environmental issues in its business processes.
			Perceived Usefulness – Technology benefits	TAM	AT1	Digital technology helps me transact for food more efficiently.
			Ease of Use – Ease of use	TAM	AT2	Food ordering applications are easy to learn.
			Behavioral Intention – Continuing intention	UTAUT	AT3	I intend to continue using digital services to buy food.
			Facilitating Conditions – Facilities and infrastructure	UTAUT	AT4	I have sufficient devices and internet connection to transact digitally.