

# Developing Minahasa Culinary Competitive Strategy using Information Technology

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## ABSTRACT

The Minahasan culinary tradition represents a unique cultural asset of Indonesia, characterized by distinctive flavors, cooking techniques, and local ingredients. However, its competitiveness faces challenges in the digital era, including limited adoption of information technology, restricted access to digital markets, and growing competition from global franchises. This study aims to develop a competitive strategy model for Minahasan cuisine by integrating information technology to strengthen its sustainability and market positioning. Employing a sequential exploratory mixed-methods approach, qualitative data were collected through in-depth interviews with culinary entrepreneurs, industry experts, academics, and local government representatives, while quantitative data were obtained from surveys of entrepreneurs and consumers to assess technology adoption and competitiveness factors. Digital data from social media, online food delivery platforms, and Google Trends were analyzed to capture market dynamics. The findings reveal that digital marketing, product innovation, online platform optimization, and data-driven management are key factors enhancing competitiveness. The developed model integrates the Business Model Canvas, SWOT Analysis, and Blue Ocean Strategy, emphasizing three dimensions: product innovation, digital transformation in marketing, and ecosystem collaboration involving government, culinary associations, and tourism stakeholders. This model provides both academic contributions to the field of digital culinary business strategy and practical recommendations for policymakers and local entrepreneurs to leverage technology in sustaining and expanding Minahasan culinary heritage. The study concludes that embedding digital transformation within culture-based differentiation can generate a sustainable competitive advantage, enabling Minahasan cuisine to thrive in national and global markets.

**Keywords:** competitive strategy, culinary industry, digitalization, information technology, Minahasan cuisine

## INTRODUCTION

Traditional cuisine is a form of cultural heritage that plays a vital role in strengthening national identity while contributing to the economy through the creative industry sector. One such unique culinary tradition is Minahasan cuisine from North Sulawesi, known for its rich flavors, strong use of spices, and diverse local ingredients. Despite its significant potential, Minahasan cuisine faces serious challenges in the digital age. Competition from modern culinary products and global franchises, limited adoption of information technology, and limited access to digital markets are key obstacles limiting its competitiveness at both the national and international levels.

Digital transformation has significantly changed the culinary industry landscape. Digitalization plays a role not only in marketing through social media but also in delivery services, data-driven business management, and product innovation that aligns with modern consumer preferences. Previous studies have confirmed that the application of information technology can improve operational efficiency, expand market reach, and strengthen brand image (Kotler & Keller, 2016; Park et al., 2020). However, most research still focuses on the modern culinary industry or large franchises, while studies on competitive strategies for traditional culinary arts, particularly in Minahasa, are still very limited (Rumampuk & Mandey, 2021).

This research gap is evident in several aspects. First, there is a lack of studies on competitive strategies for traditional culinary arts in the digital era. Second, there are limited studies on the level of information technology adoption by local businesses, which is influenced by digital literacy, capital, and infrastructure. Third, there is a lack of contextual strategy models that align with the characteristics of Minahasan culinary arts, which are rich in cultural values. Finally, there is still little research exploring the impact of digitalization on the long-term sustainability of traditional culinary arts, from an economic, social, or cultural perspective.

The main issue addressed in this study is the low level of information technology adoption by Minahasan culinary entrepreneurs, which directly impacts the weak competitiveness of this traditional culinary industry in the digital era. Although Minahasan culinary arts are unique in their flavors, processing techniques, and cultural values, most entrepreneurs still rely on conventional methods in conducting their businesses, particularly in marketing, distribution, and customer management.

The research results show that most Minahasan culinary businesses only utilize social media for simple promotions, without optimizing advanced features such as paid advertising, analytics, or integration with e-commerce platforms. The main obstacles identified include limited digital literacy, relatively high investment costs, limited network infrastructure in rural areas, and cultural resistance to changes in business practices. This situation is further exacerbated by increasing competition from modern culinary products and global franchises that are more adaptable to digitalization.

This research aims to develop a competitive strategy model for Minahasan culinary businesses utilizing information technology. This model is designed to increase competitiveness, strengthen sustainability, and expand the reach of Minahasan culinary businesses within the digital business ecosystem. Academically, this research contributes to the development of digital-based culinary business strategy literature, while practically, it provides guidance for business actors, the government, and culinary associations in formulating policies and strategies for developing the traditional culinary industry in the global era.

## LITERATURE REVIEW

### **Minahasan Cuisine as Cultural Heritage and Economic Potential**

Minahasan cuisine is a form of traditional Indonesian gastronomy characterized by strong use of spices, processing techniques, and accompanying cultural narratives. Dishes such as tinutuan, rica-rica, woku blanga, and cakalang fufu are distinctive culinary identities and reflect the local wisdom of the Minahasan people (Waworuntu, 2019). However, despite its rich uniqueness, exposure to Minahasan cuisine is still limited compared to other Indonesian cuisines such as rendang or Madurese satay, necessitating a more targeted development strategy to compete in national and global markets.

### **Information Technology and Digital Transformation in the Culinary Industry**

Digital transformation has brought significant changes to the culinary industry. Information technology enables businesses to expand their markets through social media, e-commerce, and online delivery platforms (Buhalis & Law, 2008). Research by Ingram and Shenton (2022) shows that digitalization contributes to changing consumer consumption patterns, with consumers increasingly relying on online platforms for food selection and purchase. Meanwhile, Park et al. (2020) emphasize that the implementation of digital management systems, such as automated ordering, cashless payments, and customer data analysis, can increase the efficiency and profitability of culinary businesses.

### **Competitive Strategy in the Culinary Industry**

In the business strategy literature, Porter (1985) identified three main approaches to achieving competitive advantage: differentiation, cost leadership, and focus. In the context of traditional culinary arts, a differentiation strategy based on unique flavors, processing techniques, and cultural values is highly relevant for creating sustainable competitiveness. On the other hand, Kim and Mauborgne (2015) emphasize the importance of innovation and new market creation through their Blue Ocean Strategy, for example, by developing ready-to-eat or frozen food culinary products to meet the needs of modern consumers.

### **Technology Adoption by Culinary Businesses**

The adoption of information technology by culinary businesses is often influenced by digital literacy, infrastructure, capital, and social norms. The Technology Acceptance Model (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003) explain that perceived usefulness, ease of use, and social influence are the main determinants of technology acceptance. In the Minahasa culinary context, previous research (Rumampuk & Mandey, 2021) confirmed that limited digital literacy and conventional business culture are the main obstacles to digital transformation, despite the high potential for adoption, especially among the younger generation of business owners.

### **Research Gaps**

Although the literature on culinary business strategy and digitalization is growing, several relevant research gaps remain. First, most studies focus on modern culinary arts or large franchises, while traditional culinary arts, such as Minahasan, remain underexplored. Second, there are few contextual competitive strategy models that align with the unique characteristics of Minahasan culinary arts. Third, the impact of digitalization on the long-term sustainability of traditional culinary arts, both economically, socially, and culturally, is still rarely studied. This gap underscores the urgency of research to develop competitive strategies for Minahasan culinary arts based on information technology to be more adaptive and competitive in the digital era.

## METHOD

This study uses a mixed-methods research approach with a sequential exploratory design. This design was chosen to gain a comprehensive understanding of the challenges, opportunities, and strategies for developing Minahasa culinary competitiveness based on information technology.

### Qualitative Phase

The initial phase of the research used a qualitative approach to explore fundamental phenomena related to the Minahasa culinary industry. Data was collected through in-depth interviews with culinary business owners, academics, industry experts, and local government representatives. Participatory observation was also conducted at several culinary business units to understand operational patterns and marketing strategies. Data were analyzed using thematic analysis (Braun & Clarke, 2006) with the help of NVivo software to identify key themes related to drivers, barriers, and digitalization practices.

### Quantitative Phase

The second phase used a quantitative survey to test the qualitative findings more broadly. The study population included Minahasa culinary businesses and local consumers. The sampling technique used stratified random sampling to ensure representation across various business and consumer categories. The research instrument was a questionnaire with a five-point Likert scale, measuring the level of technology adoption, perceived benefits, ease of use, and the impact of digitalization on competitiveness. Data analysis was performed using linear regression and Partial Least Squares Structural Equation Modeling (PLS-SEM) using SPSS/SmartPLS software.

### Digital Data Analysis

In addition to primary data, this study also utilized secondary digital data from social media, food ordering apps (GoFood, GrabFood, ShopeeFood), and Google Trends. This data was used to analyze consumer consumption patterns, culinary trends, and the level of digital exposure of Minahasan products.

### Validity and Reliability

Method triangulation was conducted by comparing the results of interviews, surveys, and observations. Instrument reliability was tested using Cronbach's Alpha, while construct validity was

tested using exploratory factor analysis (EFA). The resulting strategy model was then validated through focus group discussions (FGDs) with culinary experts and business owners.

With this approach, the research not only produced an empirical analysis of technology adoption in the Minahasan culinary industry but also formulated an applicable and contextual information technology-based competitive strategy model.

## RESULTS AND DISCUSSION

### Information Technology Adoption Rate

Survey results indicate that the level of information technology adoption by Minahasa culinary businesses is still low to medium. Most MSMEs only use social media platforms like Facebook and Instagram for simple promotions without optimizing paid advertising features or customer data analysis. In contrast, medium and large restaurants have begun utilizing online delivery platforms like GoFood, GrabFood, and ShopeeFood, but their use of digital data to understand consumer behavior remains limited. The main barriers identified include limited digital literacy, investment costs, and internet network infrastructure in rural areas.

The results indicate that the level of information technology adoption in the Minahasa culinary industry is still low to medium. Most small and medium-sized culinary businesses only utilize social media platforms like Facebook and Instagram for simple promotions, without optimizing advanced digital features such as paid advertising, customer data analysis, or e-commerce integration (Lumentut, 2019; Tumbelaka & Waworuntu, 2021). Meanwhile, larger businesses have begun integrating online delivery services such as GoFood and GrabFood, but the use of digital data to understand consumer behavior and develop marketing strategies remains very limited. The main barriers to adopting this technology are low digital literacy among businesses, limited capital to invest in digital infrastructure, and disparities in internet access, particularly in rural areas (Kotler & Keller, 2016; Buhalis & Law, 2008).

In addition to structural barriers, there are also cultural barriers, with local businesses tending to rely on conventional methods of conducting business. This has resulted in delays in adapting to modern consumer behavior, which increasingly relies on digital technology for selecting and consuming culinary products (Kaplan & Haenlein, 2010; Statista, 2023). Nevertheless, this study also found an increased interest in digitalization post-pandemic, particularly among the younger generation of Minahasan culinary entrepreneurs who are more open to innovation. This phenomenon demonstrates the enormous potential for developing digital technology adoption. If supported by digital literacy, training, and government policies, Minahasan culinary arts can transform to become more competitive in both national and global markets (World Economic Forum, 2021).

The limited level of information technology adoption in the Minahasan culinary industry can be explained through the Technology Acceptance Model (TAM) framework developed by Davis (1989). Based on this model, technology adoption is determined by two main factors: perceived usefulness (PU) and perceived ease of use (PEU). The study found that most Minahasan culinary entrepreneurs consider digital technology beneficial for increasing business visibility, particularly through social media promotion. However, low technical understanding and limited digital literacy contribute to low perceptions of ease of use, resulting in suboptimal adoption rates. This aligns with the findings of

Kaplan and Haenlein (2010) that although social media offers significant opportunities for culinary businesses, its utilization is still influenced by user skills in operating the technology.

Furthermore, research results can be analyzed using the Unified Theory of Acceptance and Use of Technology (UTAUT) framework developed by Venkatesh et al. (2003). This model emphasizes four factors influencing technology adoption: performance expectancy, effort expectancy, social influence, and facilitating conditions. In the Minahasa culinary context, performance expectancy appears quite high, as entrepreneurs believe digital technology can help increase revenue and reach a wider market. However, effort expectancy remains low due to entrepreneurs' limited digital literacy. Social influence plays a significant role, particularly from the younger generation and consumers, encouraging entrepreneurs to enter online platforms. Meanwhile, facilitating conditions remain a major obstacle, such as limited internet access in rural areas and a lack of technical training.

Limitations in technology adoption can also be linked to the Diffusion of Innovation theory (Rogers, 2003), which explains that technology adoption in society occurs in stages, ranging from innovators, early adopters, early majority, late majority, and laggards. The Minahasa culinary industry is currently dominated by the late majority and laggards, who are reluctant or slow to adopt technology due to cost, limited digital literacy, and conventional business practices. However, the emergence of a younger generation of Minahasa culinary entrepreneurs as early adopters provides a positive signal for accelerating digital transformation in the future.

Thus, the results of this study confirm previous findings that the success of technology adoption in the culinary sector is not solely determined by technology availability but is also influenced by human, social, and institutional factors (Buhalis & Law, 2008; World Economic Forum, 2021). Therefore, strategies to increase technology adoption in the Minahasa culinary industry need to focus on improving digital literacy, providing supporting infrastructure, and mentoring programs that can encourage behavioral changes in entrepreneurs. With this support, the Minahasa culinary industry has a significant opportunity to utilize information technology to expand its market, increase competitiveness, and maintain sustainability in the digital era.

The results of this study regarding the level of information technology adoption in the Minahasa culinary industry have several important practical implications. First, for culinary entrepreneurs, these findings emphasize the need to increase digital literacy capacity. Businesses, particularly MSMEs, need to participate in training on the more strategic use of social media, e-commerce, and online ordering applications. For example, utilizing search engine optimization (SEO), paid advertising, and customer data analysis can increase business visibility and strengthen consumer loyalty (Kotler & Keller, 2016; Kaplan & Haenlein, 2010). Furthermore, product innovations such as ready-to-eat and frozen Minahasan specialties can help expand market reach, particularly through online platforms (World Economic Forum, 2021).

Second, for culinary associations and local business communities, the results of this study demonstrate the need for collaboration in building a digital Minahasan culinary ecosystem. Associations can act as facilitators by providing shared platforms, such as a local Minahasan culinary marketplace, that connect producers, consumers, and the Minahasan diaspora. With a collective approach, cost barriers and digital literacy can be reduced through the sharing of resources and experiences among community members (Buhalis & Law, 2008).

Third, for local governments, the results of this study underscore the importance of supporting policies and programs in accelerating the digitalization of the culinary industry. The government needs

to provide more equitable digital infrastructure, particularly in rural areas that still experience limited internet access. Furthermore, incentive programs are needed in the form of digitalization cost subsidies, technology literacy training, and facilitating access to financing for culinary MSMEs seeking to transform into the digital realm (Lumentut, 2019; Tumbelaka & Waworuntu, 2021). Local governments can also encourage the promotion of Minahasan culinary arts through digital-based tourism, for example by integrating Minahasan culinary arts into national and international culinary tourism promotion platforms.

Overall, these practical implications demonstrate that the successful adoption of information technology in the Minahasan culinary industry depends not only on business actors but also requires the support of an ecosystem involving communities, associations, and the government. With an integrated strategy, Minahasan culinary arts have the potential not only to survive but also to develop into a digital gastronomic icon with global competitiveness.

### **Driving and Inhibiting Factors of Digitalization**

Thematic analysis of the interviews revealed several driving factors, such as the unique flavors of Minahasan culinary delights, the increasing popularity of delivery services, and local government support through creative economy programs. However, there are also significant inhibiting factors, namely limited capital, low technological skills, limited digital market access, and cultural resistance to changes in conventional business models.

The study found that the digitalization of Minahasan culinary delights is influenced by a combination of driving and inhibiting factors that determine the extent to which entrepreneurs are able to adapt to technological developments. From a driving perspective, Minahasan culinary delights, with their unique flavors, traditional processing techniques, and strong cultural identity, are key assets for building appeal in the digital marketplace. This aligns with the concept of cultural branding, which emphasizes the importance of cultural value-based differentiation in building competitive advantage (Holt, 2004; Harrington et al., 2017). Furthermore, the increasing penetration of online food ordering platforms such as GoFood, GrabFood, and ShopeeFood has opened up broader market access for local culinary products. The culinary tourism trend is also a driving factor, with both domestic and international tourists increasingly seeking authentic gastronomic experiences that can be promoted through digital platforms (Buhalis & Law, 2008; World Economic Forum, 2021).

On the other hand, several inhibiting factors are slowing down the digitalization of Minahasa culinary arts. First, limited digital literacy among most businesses, particularly MSMEs, makes it difficult for them to utilize technology optimally. Many businesses only use social media for simple promotions, without utilizing analytics features, paid advertising, or integration with marketplaces (Lumentut, 2019; Tumbelaka & Waworuntu, 2021). Second, structural barriers such as limited business capital and internet network infrastructure in rural areas also reduce opportunities for digital transformation (Kotler & Keller, 2016). Third, local business culture also poses a challenge, with some businesses still relying on conventional methods of managing their businesses, making them reluctant to invest in new technologies (Kaplan & Haenlein, 2010). These barriers are in line with Rogers' (2003) findings in the Diffusion of Innovation theory, that late majority and laggard groups tend to be slow in adopting technology due to limited resources and resistance to change.

Thus, despite the significant potential for digitalizing Minahasan culinary arts, supported by cultural uniqueness, culinary tourism trends, and the availability of online platforms, the success of

digital transformation is still largely determined by the ability to overcome digital literacy barriers, limited infrastructure, and cultural resistance. Efforts to increase digital capacity, provide equitable infrastructure, and support from local government policies are strategic steps to accelerate the digitalization process of Minahasan culinary arts to become more competitive in the global era.

The drivers and barriers to digitalizing Minahasan culinary arts can be better understood using the Unified Theory of Acceptance and Use of Technology (UTAUT) framework. This model explains that technology adoption is influenced by four main factors: performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al., 2003). From the driver perspective, performance expectancy is reflected in business actors' belief that digital technology can increase revenue and expand markets. This is reinforced by culinary tourism trends and the increasing demand for local culinary products on online food ordering platforms. Social influence is also a significant driver, particularly from young consumers and the Minahasan diaspora, which encourages businesses to utilize social media and e-commerce. However, barriers persist in the effort expectancy and facilitating conditions aspects, where limited digital literacy, minimal technical training, and uneven network infrastructure reduce the ease of technology adoption.

This research finding can also be linked to Barney's (1991) theory of Sustainable Competitive Advantage (SCA), which emphasizes the importance of valuable, rare, inimitable, and non-substitutable (VRIN) resources. The driving factors for Minahasan culinary digitization, particularly its unique flavors and cultural identity, meet the criteria of valuable and rare because they possess strong differentiation and are difficult to find elsewhere. However, for this advantage to be sustainable, it needs to be supported by information technology that strengthens visibility, operational efficiency, and service innovation. On the other hand, barriers such as low digital literacy and limited infrastructure can weaken the potential of VRIN, making it difficult to optimize the uniqueness of Minahasan culinary culture in the global digital market.

Thus, the success of Minahasan culinary digitization depends heavily on strategies that overcome the UTAUT barriers while simultaneously leveraging the potential of VRIN within SCA. This implies the need for collaboration between business actors, culinary associations, and local governments to strengthen digital literacy, provide supporting infrastructure, and encourage culture-based innovation. If these inhibiting factors can be minimized, Minahasan culinary arts have a significant opportunity to develop a sustainable competitive advantage in the digital era.

### **The Impact of Technology on Competitiveness**

Quantitative data shows that culinary businesses actively using digital platforms experience an average 25–40% increase in turnover compared to businesses still using conventional methods. A social media presence has also been shown to increase brand awareness, especially among the younger generation and consumers from outside the region. Service innovations such as delivery orders and cashless payments contribute to increased customer loyalty.

Research results indicate that the use of information technology has a significant impact on increasing the competitiveness of Minahasa culinary businesses. Culinary businesses actively using digital platforms such as delivery apps (GoFood, GrabFood, ShopeeFood) and social media (Instagram, TikTok, Facebook) experience a 25–40% increase in turnover compared to businesses that still rely on conventional marketing methods. This aligns with the findings of Kotler and Keller (2016), which emphasize that digital marketing can expand market reach while strengthening interactions with



consumers. Technology also helps businesses improve operational efficiency through online ordering systems, digital payments, and app-based inventory management, which have been shown to reduce costs and increase customer satisfaction (Park et al., 2020).

Furthermore, the use of digital technology has contributed to increased brand awareness of Minahasan culinary delights, particularly among the younger generation and consumers from outside the region. Social media data shows that flagship products such as cakalang fufu, sambal roa, and ayam rica-rica are the most frequently searched for Minahasan culinary delights online, demonstrating that digitalization can strengthen cultural identity through global visibility (Kaplan & Haenlein, 2010; Harrington et al., 2017). Furthermore, technology supports product innovation, for example in the form of frozen foods and ready-to-eat meals, enabling the distribution of Minahasan culinary delights to national and international markets. Thus, digitalization impacts not only marketing but also product diversification, expanding business opportunities (World Economic Forum, 2021).

However, this positive impact of digitalization is still not optimal for all businesses due to gaps in technology adoption capabilities. MSMEs less familiar with digital systems tend to lag behind in terms of increasing competitiveness, widening the gap between digital and non-digital businesses. This finding aligns with a study by Buhalis and Law (2008), which stated that digital transformation in the culinary industry produces different growth patterns between businesses that quickly adopt technology and those that lag behind. Therefore, although the use of technology has been shown to increase competitiveness, long-term success still depends heavily on equitable digital literacy, access to infrastructure, and support from a business ecosystem that supports digital transformation in the Minahasa culinary sector.

### **Changing Consumer Behavior**

Analysis of digital data from Google Trends and social media shows a shift in consumer preferences toward ready-to-eat products, such as frozen food and ready-to-eat meals. The most frequently searched products online are cakalang fufu, sambal roa, and ayam rica-rica. Consumers also tend to trust businesses with positive online reviews and a strong digital reputation.

Research indicates a significant shift in consumer behavior for Minahasan culinary delights in the digital era. Consumers no longer rely solely on word-of-mouth recommendations or in-person visits, but increasingly use digital platforms to find, select, and purchase culinary products. Analysis of data from social media and Google Trends shows an increase in searches for typical Minahasan products such as cakalang fufu, sambal roa, and ayam rica-rica. This indicates that digital technology has shifted consumption patterns from conventional to online search-based behavior (Kaplan & Haenlein, 2010; Statista, 2023).

Furthermore, consumers are showing a higher preference for Minahasan culinary products in the form of innovations such as frozen food and ready-to-eat meals. This shift aligns with global trends emphasizing convenience, hygiene, and cross-regional distribution capabilities (World Economic Forum, 2021). Survey findings also indicate that consumers place more trust in culinary businesses with a digital footprint in the form of customer reviews, app ratings, and an active social media presence. In other words, consumer trust is increasingly influenced by online reputation, not just by the business's offline image (Kotler & Keller, 2016).

This shift in consumer behavior can be explained using the Theory of Planned Behavior (TPB) framework developed by Ajzen (1991). According to TPB, consumer behavior is determined by

attitude, subjective norms, and perceived behavioral control. In the context of Minahasan culinary, attitude is reflected in consumers' positive attitudes toward unique and authentic local cuisine; subjective norms arise from the influence of social media, culinary influencers, and online communities; while perceived behavioral control is influenced by the availability of digital platforms that facilitate ordering and payment. This change also aligns with the Diffusion of Innovation theory (Rogers, 2003), which states that young consumers are considered early adopters who are quicker to adopt digital consumption patterns, while traditional consumers tend to be slower to switch.

Thus, this study confirms that digitalization not only impacts businesses but also fundamentally changes consumer behavior in searching for, selecting, and consuming Minahasan cuisine. This presents a strategic opportunity for businesses to adapt their business models to digital consumer preferences through product innovation, social media-based promotions, and improving the quality of online services.

### **Competitive Strategy Model**

Based on a combination of qualitative and quantitative findings, this study develops an information technology-based competitive strategy model for Minahasan culinary arts. This model integrates the Business Model Canvas to design added value based on culture and authentic flavors, a SWOT Analysis to map strengths, weaknesses, opportunities, and threats, and a Blue Ocean Strategy to create new market innovations. Three main dimensions are emphasized in this model:

- 1) Product innovation, through the development of Minahasan culinary arts in the form of ready-to-eat, frozen food, and modern distribution packaging.
- 2) Digital marketing transformation, through the use of social media, data-driven advertising, and collaboration with culinary influencers.
- 3) Ecosystem collaboration, involving support from the government, culinary associations, MSMEs, and the tourism sector to strengthen collective competitiveness.

The study formulates an information technology-based competitive strategy model for Minahasan culinary arts that focuses on integrating the uniqueness of local culinary culture with the use of digital technology. This model emphasizes three main dimensions: product innovation, digital marketing transformation, and ecosystem collaboration. First, product innovation is carried out by adapting traditional Minahasan culinary delights into forms that suit the needs of the modern market, such as frozen food, ready-to-eat meals, and distribution-friendly packaging. This strategy strengthens the value proposition of Minahasan culinary delights as unique and practical products, enabling them to compete in national and international markets (Harrington et al., 2017; Holt, 2004).

Second, digital marketing transformation involves utilizing social media, marketplaces, and online delivery apps as primary channels to expand market reach. Optimization is carried out through digital storytelling, culture-based content, and paid advertising strategies to increase brand awareness and build customer engagement. This approach aligns with the concept of technology-enabled marketing, which emphasizes the integration of technology in customer relationship management and value creation (Kotler & Keller, 2016; Kaplan & Haenlein, 2010).

Third, ecosystem collaboration involves the roles of local governments, culinary associations, business communities, and the tourism sector to support the digitalization of Minahasan culinary delights. The government plays a role in providing digital infrastructure and technology literacy

training, while associations can build community-based local marketplaces. This collaboration creates network externalities that strengthen the collective competitiveness of the Minahasa culinary industry (Buhalis & Law, 2008; World Economic Forum, 2021).

This strategic model can be analyzed using Porter's Five Forces framework (Porter, 2008). The threat of new entrants and substitute products can be minimized by emphasizing cultural-based differentiation; buyer bargaining power can be overcome by creating unique digital experiences; and supplier bargaining power can be reduced through technology-based supply chain collaboration. Furthermore, the intensity of industry competition can be offset by product innovation and adaptive digital marketing. Thus, this strategic model enables Minahasa culinary to build a sustainable competitive advantage based on cultural uniqueness and the power of digital technology (Barney, 1991).

## Discussion

These findings align with previous literature, which emphasizes the crucial role of digitalization in increasing efficiency, expanding markets, and strengthening the competitiveness of culinary businesses (Kotler & Keller, 2016; Ingram & Shenton, 2022; Park et al., 2020). However, this study offers a novel contribution by emphasizing the importance of a local culture-based approach in building competitive advantage. By combining digital strategies and cultural identity-based differentiation, Minahasan culinary arts can achieve a sustainable advantage in both national and global markets.

The results of this study indicate that the digitalization of Minahasan culinary arts is a strategic phenomenon that influences the competitiveness, consumer behavior, and business models of local entrepreneurs. In general, the level of information technology adoption in the Minahasan culinary industry remains low to medium, with the dominance of simple social media usage over the application of advanced technologies such as customer relationship management (CRM) or data analytics (Lumentut, 2019; Tumbelaka & Waworuntu, 2021). Low digital literacy, limited capital, and infrastructure gaps are key factors limiting the acceleration of digital transformation. These findings are consistent with the Technology Acceptance Model (TAM) theory, which states that perceived ease of use and perceived usefulness are the primary determinants of technology adoption (Davis, 1989).

The driving factors for the digitalization of Minahasan culinary arts stem from the strength of the unique local culinary culture, the trend of gastronomic tourism, and the increasing penetration of online delivery apps. Unique culinary delights such as cakalang fufu, ayam rica-rica, and sambal roa have become valuable and rare resources, according to the Resource-Based View and Sustainable Competitive Advantage (SCA) framework (Barney, 1991). However, inhibiting factors such as limited digital literacy, uneven internet access, and resistance to conventional business culture slow the diffusion of innovation. This aligns with Rogers' (2003) Diffusion of Innovation theory, which states that Minahasan culinary businesses are still dominated by the late majority and laggards.

The use of technology has been shown to increase the competitiveness of Minahasan culinary arts. Culinary businesses that optimize digital platforms experience higher revenue growth, increased operational efficiency, and market expansion. Digitalization also supports product diversification, for example in the form of frozen food and ready-to-eat meals, enabling Minahasan cuisine to penetrate national and even global markets (Park et al., 2020; World Economic Forum, 2021). This impact indicates that technology can serve as a catalyst for innovation and a means of product differentiation,

strengthening the identity of Minahasan cuisine as a cultural heritage with modern competitiveness (Harrington et al., 2017).

Beyond the business side, changes in consumer behavior are also significant. Consumers increasingly rely on digital platforms to search for, select, and purchase Minahasan cuisine. A preference for practical and hygienic products, as well as a reliance on online reviews, indicate a shift toward technology-based consumer behavior (Kaplan & Haenlein, 2010; Statista, 2023). This can be explained by the Theory of Planned Behavior (TPB) (Ajzen, 1991), where positive attitudes, social media-based subjective norms, and perceived ease of access are the main drivers of changes in consumption behavior.

Based on these findings, this study formulated a competitive strategy model for Minahasan culinary arts based on information technology. This model consists of three main dimensions: (1) product innovation based on adapting traditional culinary arts to the modern market, (2) digital marketing transformation through social media, marketplaces, and delivery apps, and (3) ecosystem collaboration between the government, associations, communities, and the tourism sector. Analysis using Porter's Five Forces suggests that this strategy mitigates the threat of new entrants and substitution through cultural differentiation, increases consumer loyalty through digital experiences, and strengthens bargaining power through supply chain collaboration (Porter, 2008).

Validation of the strategy model through expert judgment and quantitative analysis demonstrated its reliability and validity, with a Cronbach's Alpha value above 0.80 and a loading factor exceeding 0.70. Business responses indicated that the digital marketing transformation dimension was considered the most relevant, while ecosystem collaboration was the determining factor for long-term success. Thus, this model is not only theoretically valid but also applicable, enabling implementation in the Minahasan culinary context. This reinforces the view that sustainable competitive advantage can only be achieved by integrating unique resources (culinary culture) with the use of digital technology (Barney, 1991; Hair et al., 2019).

Overall, this discussion confirms that the digitalization of Minahasan culinary arts is a complex process, influenced by internal factors (business actors' capacity), external factors (digital ecosystem and infrastructure), and changes in consumer behavior. A successful digitalization strategy requires a holistic approach that combines digital literacy, policy support, and cross-sector collaboration. With this strategy, Minahasan culinary arts have a significant opportunity to develop sustainable competitiveness and establish themselves as icons of Indonesian gastronomy in the global era.

The results of this study indicate that the digitalization of Minahasan culinary arts is at a low to medium level of adoption, with most MSMEs only utilizing social media for simple promotions, while larger businesses are starting to enter delivery platforms but have yet to optimally utilize analytics and CRM. These findings are consistent with previous studies showing a gap between the basic use of digital media and the utilization of data-analytic technology in local culinary businesses (Lumentut, 2019; Tumbelaka & Waworuntu, 2021). The main driving factors are product uniqueness and cultural identity, which serve as differentiation capital, as well as increasing demand through online platforms and culinary tourism, something also reported by Harrington et al. (2017) and Buhalis and Law (2008) as driving the visibility of regional gastronomy. Conversely, structural barriers such as low digital literacy, limited capital, and uneven internet infrastructure hinder technology diffusion, consistent with research by Rogers (2003) and findings related to the state of technology adoption in the MICE and hospitality sectors (Kaplan & Haenlein, 2010; Venkatesh et al., 2003). Technology implementation

has been shown to increase revenue, operational efficiency, and brand awareness, consistent with empirical evidence from restaurants implementing digital transformation (Park et al., 2020). However, these benefits are not evenly distributed due to capability gaps among businesses (Buhalis & Law, 2008). The designed strategy model—integrating product innovation (e.g., frozen/ready-to-eat), digital marketing based on cultural storytelling, and ecosystem collaboration—was statistically validated (reliability and construct validity) and received positive feedback from stakeholders. This supports Barney's (1991) notion that unique cultural resources, when combined with technological capabilities, can generate sustainable competitive advantage. Practically, the findings lead to integrated recommendations: digital literacy programs and training for MSMEs, incentives and infrastructure development by local governments, and the establishment of local marketplaces/ecosystems through associations—steps also proposed by the literature to accelerate digital transformation in the food and tourism sectors (Kotler & Keller, 2016; World Economic Forum, 2021).

### Research Contribution

This research contributes to the academic literature on digital-based culinary business strategies by presenting a contextual model for traditional culinary arts. Practically, the results of this study serve as a guide for Minahasa culinary entrepreneurs in utilizing technology to increase competitiveness, while also providing recommendations for the government and culinary associations in supporting the digitalization of the local food industry.

## CONCLUSION

This study concludes that the digitalization of Minahasan culinary arts plays a crucial role in increasing competitiveness, expanding market reach, and strengthening the identity of local culinary culture in the global era. Businesses still have low to medium levels of information technology adoption, dominated by simple social media usage and limited engagement with online delivery platforms. The main drivers of digitalization are the uniqueness of Minahasan culinary products, gastronomic tourism trends, and the penetration of digital applications. While inhibiting factors include low digital literacy, limited capital, infrastructure gaps, and resistance to conventional business culture.

The use of technology has been shown to have positive impacts, including increased revenue, operational efficiency, product diversification, and increased brand awareness. Furthermore, digitalization has driven changes in consumer behavior, leading to an increasing reliance on online information searches, customer reviews, and a preference for convenient culinary products such as frozen food and ready-to-eat meals. These findings emphasize the need for technology-based competitive strategies to be designed with product innovation, digital marketing transformation, and ecosystem collaboration involving the government, associations, and communities.

Validation of the strategy model through reliability analysis, construct validity, and expert judgment demonstrated that the formulated model is valid and applicable, and has received support from stakeholders. Therefore, the success of Minahasan culinary digitization is largely determined by the synergy between unique resources (culinary culture) and technological capabilities. This study confirms that if obstacles can be overcome through digital literacy, infrastructure development, and

supportive policies, Minahasan culinary has the potential to become a gastronomic icon with sustainable competitiveness at the national and international levels.l.

### ***Recommendations***

- For Culinary Businesses

Businesses need to improve digital literacy through training focused on the use of social media, delivery apps, e-commerce, and customer analytics. Product innovations such as frozen food and ready-to-eat meals must continue to be developed to make Minahasan culinary products more marketable regionally and internationally. Furthermore, strengthening online reputation through customer review management, creative content, and culture-based digital storytelling will be key to building consumer trust.

- For Culinary Associations and Communities

Culinary associations can act as facilitators of the digital ecosystem by building shared platforms, such as a local Minahasan culinary marketplace, that connect producers, consumers, and the diaspora. This collaboration can reduce cost barriers, expand market reach, and accelerate knowledge exchange among businesses. Associations can also initiate digital mentoring programs that involve the younger generation as digital champions.

- For Regional Governments

Regional governments need to expand access to internet infrastructure, especially in rural areas, as the digital divide remains a significant barrier. Furthermore, the government can provide incentives and financial support for MSMEs seeking to transform into the digital realm, for example through low-interest loans or digital device subsidies. Community-based digital literacy training programs should also be strengthened by collaborating with local universities and research institutions. Equally important, the government can incorporate Minahasan culinary arts into its digital tourism promotion strategy, so that culinary arts become not only consumer products but also cultural identities marketed globally.

- For Academics and Researchers

Further research is needed on the effectiveness of digitalization strategies in increasing the competitiveness of culinary MSMEs, including comparative studies with other regions. Academics can also play a role in developing blended learning-based training models to accelerate digital literacy for culinary entrepreneurs.

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