

## THE ROLE OF BUSINESS INNOVATION IN MEDIATING DIGITAL TRANSFORMATION AND MARKETING STRATEGY ON SME BUSINESS PERFORMANCE

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### Abstract

As a measure of business success, SME performance is now challenged by rapid digitalisation and the demand for more adaptive marketing strategies. This study aims to analyse the influence of digital transformation and marketing strategy on business performance, with business innovation as a mediating variable in tempe chip SMEs in Kampung Sanan, Malang City. The study employs a quantitative causal approach using an ex post facto explanatory design. The research population comprises 500 SMEs, of which 245 were purposively selected based on defined criteria. Data were collected using a 1–5 Likert-scale questionnaire and analysed using PLS-SEM analysis in SmartPLS 4. The results show that digital transformation and marketing strategy have positive and significant effects on business innovation and performance. Business innovation also mediates the relationship between the two and business performance, although the mediation contribution is smaller than the direct effect. These findings confirm that the application of digital technology and adaptive marketing strategies, supported by innovation, can sustainably improve SME performance. The practical implication is that SMEs need to develop technology-based innovations, optimise their social media presence, and formulate adaptive marketing strategies to strengthen their competitiveness.

**Keywords:** Digital Transformation; Marketing Strategy; Business Performance; Business Innovation; Small Medium Enterprises

**JEL Classification:** O33, M15, M31

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## INTRODUCTION

Small and medium-sized enterprises (SMEs) are the backbone of Indonesia's economy, contributing significantly to job creation, economic growth, and equitable distribution of wealth. However, in today's digital age, SMEs face an increasingly competitive market. Changes in consumer behavior, advancements in digital technology, and the demand for adaptive marketing strategies present challenges that must be addressed appropriately (Zhao et al., 2025). For local food SMEs such as tempe chips in Kampung Sanan, Malang City, the ability to adapt to digital transformation while developing effective marketing strategies is key to maintaining business sustainability in the face of regional and national competition.

Digital transformation is not only interpreted as the adoption of information technology, but also as a comprehensive change in the way SMEs operate, serve consumers, and create value. Digital literacy, the use of social media, and the integration of e-commerce platforms are important factors that can increase market access and expand distribution networks (Rumyeni et al., 2025). This development is in line with the Technology Organization Environment (TOE) Framework perspective (Tornatzky et al., 1990), which emphasizes that the success of technology adoption, performance improvement, and the competitiveness of SMEs are greatly influenced by technological readiness, organizational characteristics, and external environmental pressures such as the market and competitors.

However, the use of digital technology and marketing strategies alone does not guarantee optimal business performance improvement without innovation in products, services, and business models. The Schumpeterian perspective on innovation emphasizes that innovation is the main driver of value creation and sustainable competitive advantage, especially for traditional SMEs facing market

transformation in the digital era (Schumpeter, 2021).

Sanan village, as the largest tempeh chip center in Indonesia, has the characteristics of a traditional SME that is currently in the phase of digital adaptation and marketing modernization. However, empirical studies on the simultaneous relationship between digital transformation, marketing strategy, business innovation, and business performance in the context of traditional local food SMEs are still limited. This condition opens up research opportunities to deepen integrative studies on how SMEs can utilize digital-based technology and marketing strategies, as well as the role of business innovation in strengthening business performance and competitiveness in the digital economy era.

Although studies on digital transformation and digital marketing in SMEs have been conducted (Edi et al., (2025); Gao, (2025); Hemachandra & Kusuma, (2024); Lestari et al., (2024) previous research has generally focused on companies, modern SMEs, and digital platform-based SMEs. Research on traditional local food SMEs, particularly the Sanan tempeh chip center, is still limited. In addition, the integration of digital transformation, marketing strategy, business innovation, and business performance variables into a single research model has not been widely studied, especially in traditional SMEs that are adapting to the digital ecosystem.

Based on these gaps, this study offers novelty by analyzing the role of business innovation in mediating the influence of digital transformation and marketing strategy on business performance in Sanan tempe chips SMEs. This study is expected to contribute theoretically to the development of technology-based innovation and marketing management studies, as well as provide practical implications for SME actors in designing adaptive, innovative, and digitally oriented strategies to enhance sustainable competitive advantage.

This article is structured as follows. Section 2 reviews the relevant literature on digital transformation, marketing strategy, business innovation, and SME business performance, and develops the research hypotheses. Section 3 describes the research methodology, including the research design, data collection, measurement of variables, and data analysis technique. Section 4 presents the empirical results and discusses the findings in relation to the proposed hypotheses. Section 5 concludes the study by summarizing the main findings and providing theoretical contributions, managerial implications, limitations, and directions for future research.

## LITERATURE REVIEW

### Business Performance

Business performance represents the level of achievement in meeting business objectives through a combination of financial and non-financial measures. Improved performance is reflected in sales growth, increased profitability, efficiency in operational activities, and the ability to maintain market strength amid competition (Noermijati et al., 2023; Novitasari et al., 2025). Based on the TOE Framework, the success of business performance is largely determined by an organization's ability to adapt to technological developments and market dynamics. This study measures business performance through four main indicators, namely Increased sales, profitability, operational efficiency, and market share (Rahmadoni et al., 2023; Rodríguez et al., 2024).

### Digital Transformation

Digital transformation refers to a comprehensive shift in business models, operations, and service systems through the use of digital technology to increase efficiency, create added value, and enhance customer experience. According to the TOE Framework, the success of digital transformation is determined by technological readiness, internal organizational

characteristics, and external pressures such as industry competition and changes in consumer behavior. The use of digital technology also enables businesses to optimize their marketing strategies, distribution systems, and interactions with customers through various digital platforms, thereby supporting increased competitiveness and business performance (Pavan, R, et al., 2025). The Dynamic Capability theory reinforces this view by emphasizing that organizational excellence depends not only on the ownership of digital resources, but also on the ability to identify opportunities and threats, build and reconfigure digital resources, and continuously adapt to technological and market developments (Teece et al., 1997). Thus, digital transformation has become the main driver that enables SMEs to design innovations and respond to changes in the business environment in a sustainable manner. In this study, digital transformation is measured using four indicators, namely digital technology adoption, digital skills, digital infrastructure, and digital culture (Martínez-Caro et al., 2020; Skare et al., 2023).

### Marketing Strategy

Marketing strategy refers to a set of planned decisions to create, communicate, and deliver value to consumers by determining the target market, designing promotional activities, and strengthening brand positioning, which in the digital era is carried out through the use of various digital channels to expand market reach and build stronger customer relationships. Market Orientation Theory reinforces this concept by emphasizing that the effectiveness of marketing strategies is greatly influenced by an organization's ability to understand consumer needs and preferences, competitor dynamics, and market changes (Kohli & Jaworski, 1990). The better a company responds to changes in demand with value differentiation, whether through strengthening brand identity, product innovation, or distribution channel

development, the greater the opportunity to achieve competitive advantage and improve business performance. The Technology Organization Environment (TOE) Framework suggests that the success of a marketing strategy is largely determined by the internal readiness of the organization to manage marketing technology, information structures, and external environmental pressures that drive the company to continuously adapt. In this study, marketing strategy is measured using four main indicators, namely digital marketing, market segmentation, product branding, and distribution channels (Kotler & Keller, 2016; Rendelangi et al., 2023).

### **Business Innovation**

Business innovation reflects the capacity of business actors to deliver valuable improvements in business activities, whether through product development, workflow improvements, or the design of new business models that can provide competitive advantages. Innovation serves as a strategic mechanism to expand markets, improve efficiency, accelerate response to customer needs, and create sustainable added value through product diversification, production process optimization, service quality improvement, and the implementation of new business models that are more adaptive to market changes (Dunska et al., 2024; Li, 2023). The Technology Organization Environment (TOE) perspective emphasizes that innovation is not solely determined by the availability of technology, but also by the internal readiness of the organization and external pressures such as the intensity of competition and consumer dynamics. This view is enriched by Innovation Theory, which states that innovation is the main driver of business growth through the creation of new things that provide higher economic value than previous practices (Schumpeter, 2021). Business innovation is represented by four indicators, namely product innovation, process innovation, business model innovation, and innovation

culture (Chen et al., 2024; Wang et al., 2023)

### **The Impact of Digital Transformation on Business Innovation**

Digital transformation not only supports operational activities, but also plays a strategic role as a catalyst for more creative ideas and business processes. Technology integration provides SMEs with faster access to market information, enables more efficient workflows, and provides room for experimentation to develop and test new product and service concepts before launch (Bhuiyan et al., 2024). Digitalization also encourages organizational cultural change towards a more adaptive, collaborative, and open-minded work pattern, making businesses more sensitive in capturing market opportunities and finding valuable areas for renewal (Munaf, 2023). In line with the research results of Cen & Lin, (2025); Cassaro et al., (2024a); Xu, (2023) The higher the level of digital technology application in business activities, the easier it is to realize innovation, whether through the creation of new product variants, improvement of production processes, or the design of more competitive business models.

H1: Digital Transformation has a positive and significant effect on Business Innovation.

### **The Influence of Marketing Strategy on Business Innovation**

The right marketing strategy can trigger new innovations, because a deep understanding of customer preferences and market dynamics is often the starting point for business renewal (Hadzhi et al., 2024). When businesses are able to accurately determine market segmentation, build a strong brand image, and utilize digital channels flexibly, insights gained from consumers can be translated into innovative ideas, whether in the form of product development, service improvement, or distribution system adjustments. Intensive interaction with the market

generates a continuous flow of feedback, encouraging businesses to update their value propositions to keep up with customer expectations and stay ahead of the competition (Kumar, 2025). Therefore, marketing strategies not only serve as a means of promotion, but also play a strategic role as a driver of innovation within organizations (Rishi et al., 2024; Sulistyaningsih et al., 2024).

H2: Marketing Strategy has a positive and significant effect on Business Innovation.

### **The Impact of Business Innovation on Business Performance**

Innovation is one of the most influential factors in improving business performance, because every form of renewal, whether in the form of product variety development, production process improvement, or new business model design, has the potential to generate competitive advantages that are difficult for competitors to imitate. Innovation that creates added value for customers tends to strengthen loyalty and expand market reach (Dalimunthe, 2025), while innovation that improves internal efficiency contributes to lower operating costs and increased profits (Zalilova & Ziazetdinova, 2024). When innovation is embedded in the organizational culture and implemented consistently, businesses are not only able to maintain their existence amid fierce competition, but also drive sustainable business growth. The implication, in line with the research results of Nguyen, (2024); Vittorio et al., (2024), is that the higher the intensity and quality of innovation applied, the more optimal the business performance achieved.

H3: Business Innovation has a positive and significant effect on Business Performance.

### **The Impact of Digital Transformation on Business Performance**

The application of digital technology in business activities provides opportunities for business actors to improve operational

efficiency, accelerate customer service processes, expand market access, and utilize data more optimally to support strategic decision making (Pavan et al., 2025). The synergy of these benefits is reflected in increased sales, productivity, and business profitability. SMEs that are able to fully integrate technology into their business value chain will have a higher capacity to adapt to market changes and pressures compared to businesses that still rely on conventional methods (Asta et al., 2024). In line with the research results of Bindeeba et al., (2025); Pratamansyah, (2024), the more mature the level of digital transformation implemented, the greater its contribution to improving overall business performance.

H4. Digital Transformation has a positive and significant effect on Business Performance

### **The Effect of Marketing Strategy on Business Performance**

Effective marketing strategies can have a direct impact on improving business performance (Al-Najjar, 2025), because the ability to understand consumer needs, segment the market appropriately, and build a strong brand image will increase product appeal and expand customer reach (Guzun, 2025). The use of digital marketing channels also accelerates the dissemination of information and increases market exposure at a relatively efficient cost, thereby creating a competitive advantage for businesses. When marketing strategies are implemented consistently and based on customer data analysis, the impact will be seen in increased sales, higher profitability, and a stronger market position (Ali et al., 2025; Yekeen et al., 2024). In other words, planned and responsive marketing is a key element in achieving sustainable business performance.

H5: Marketing Strategy has a positive and significant effect on Business Performance.

### The Impact of Digital Transformation on Business Performance through Business Innovation

Digital transformation has a more optimal impact on business performance through innovations that can transform the use of technology into added value for customers and internal processes. Through the adoption of technology, businesses can identify data-driven innovation opportunities, design products and services that are more suited to market needs, and accelerate the process of implementing innovations to the commercialization stage (Marganaha, 2024). Digital technology not only improves performance directly, but also serves as the foundation for continuous renewal of products, processes, and business models, which ultimately strengthens the company's competitive position. This shows that the impact of digitalization on business performance will be much stronger if businesses are able to utilize technology as a source of innovation that truly generates value for customers (Tonder et al., 2024).

H6: Digital Transformation has a positive and significant effect on Business Performance through Business Innovation.

### The Impact of Marketing Strategy on Business Performance through Business Innovation

Marketing strategies will contribute more significantly to business performance

when they are able to generate innovations that are truly in line with market preferences and needs. Information obtained through customer segmentation, brand identity management, and digital interactions can be processed into updates in the form of product development, service quality improvement, or distribution pattern adjustments that offer more value than competitors (Azhar, 2024). Innovations that emerge in response to these marketing strategies strengthen customer relationships, create market differentiation, and ultimately translate into sales growth and business profitability (Ali et al., 2025). Thus, innovation acts as a connecting mechanism that amplifies the impact of marketing strategies on overall business performance.

H7: Marketing Strategy has a positive and significant effect on Business Performance through Business Innovation.

Figure 1 illustrates the conceptual framework of the study, showing the relationships between the variables tested. Digital Transformation (X1) and Marketing Strategy (X2) are positioned as exogenous variables that influence Business Performance (Y) as an endogenous variable, both directly and indirectly through Business Innovation (Z) as a mediating variable.

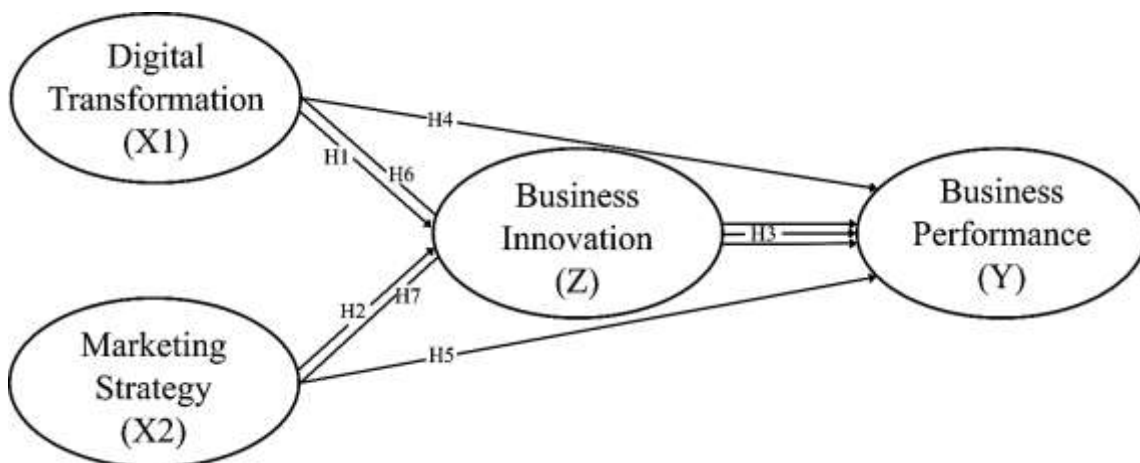


Figure 1. Framework

## RESEARCH METHODS

### Research Approach

This study uses a quantitative causality approach to examine the relationship between variables and the mediating role of business innovation in the influence of digital transformation and marketing strategy on business performance. The method used is ex post facto explanatory, as it analyzes data obtained from respondents factually. The dependent variable in this study is business performance. The independent variables that influence it are digital transformation and marketing strategy. In addition, there is a business innovation variable that acts as a mediating variable. The following is the framework of this study:

### Population and Sample

The research population includes all tempe chip SMEs in Kampung Sanan, Malang City, totaling approximately 500 business units. The research sample was determined using purposive sampling based on criteria aligned with the study objectives, namely SMEs that have been operating for at least two years, have implemented at least one form of digital technology in their business operations such as the use of social media, e-

commerce platforms, or digital payment systems and employ between 5 and 50 workers. Based on these criteria, a total of 245 SMEs were selected as the research sample.

### Measurement

Table 1 presents the measurement of variables used in this study, including Business Performance, Digital Transformation, Marketing Strategy, and Business Innovation. Each variable is operationalized through several indicators and item numbers representing statements in the questionnaire. All of these indicators are used as the basis for assessing each construct in the research model.

### Data Collection Techniques

Data was collected through a questionnaire using a 1–5 Likert scale (strongly disagree to strongly agree). The research instrument was developed based on theoretical indicators for each variable, including digital transformation, marketing strategy, business innovation, and business performance. Before use, the questionnaire was tested for validity and reliability on a limited number of respondents to ensure the clarity of the questions.

**Table 1.** Measurement

Variable	Indicator	No Item	Source
Business performance	1. Increased sales	1,2	(Rahmadoni et al., 2023; Rodríguez et al., 2024; Widyaningsih et al., 2024)
	2. Profit	3,4	
	3. Operational efficiency	5,6	
	4. Market share	7,8	
Digital transformation	1. Adoption of digital technology	9,10,11 12,13	(Martínez-Caro et al., 2020; Skare et al., 2023; Wang et al., 2023)
	2. Digital skills	14,15	
	3. Digital infrastructure	16,17	
	4. Digital culture		
Marketing strategy	1. Digital marketing	18,19,20	(Kotler & Keller, 2016; Rendelangi et al., 2023)
	2. Market segmentation	21,22	
	3. Product branding	23,24,25	
	4. Distribution channels	26,27	
Business Innovation	1. Product innovation	28,29,30	(Chen et al., 2024; Wang et al., 2023)
	2. Process innovation	31,32,33	
	3. Business model innovation	34,35	
	4. Innovation culture	36,37	

### Data Analysis Techniques

Data analysis was performed using Partial Least Squares (PLS)-based Structural Equation Modeling (SEM) with the help of SmartPLS 4 software. The analysis stages included: (1) outer model, consisting of convergent validity, discriminant validity, and reliability testing, and (2) inner model, which included testing the coefficient of determination ( $R^2$ ),  $F^2$ , predictive relevance value ( $Q^2$ ), and testing direct and indirect hypotheses through the bootstrapping method.

## RESULT AND DISCUSSION

### Respondent Demographic

Table 2 show that the majority of respondents have been running their businesses for more than five years (72%) with the largest number of employees being five people (55%). In terms of monthly turnover, most are in the range of

IDR 5-10 million (42%), followed by turnover of more than IDR 10 million (28%) and less than IDR 5 million (30%). This shows that the respondents are dominated by small businesses with considerable experience and medium turnover.

### Variable Descriptive

To provide a clearer overview of the empirical characteristics of the research variables, descriptive statistical analysis was conducted on each indicator of digital transformation, marketing strategy, business innovation, and business performance. This analysis presents the mean and standard deviation values to illustrate the average respondents' perceptions and the level of response variability for each indicator. The results of the descriptive analysis are shown in the Table 3.

**Table 2 . Respondent Profile**

Length of Business Establishment	< 5 Years	68	28
	> 5 Years	171	72
Number of Employees	5	134	55
	> 5 – 10 people	93	38
	>10 people	18	7
Average Monthly Revenue	< Rp 5 million	30	30
	IDR 5–10 million	42	42
	> IDR 10 million	28	28

**Table 3. Variable Descriptive**

Variable	Indicator	Mean	Std. Deviation
Business performance	1. Increased sales	4.62	0.598
	2. Profit	4.70	0.506
	3. Operational efficiency	4.68	0.518
	4. Market share	4.65	0.610
	<b>Grand Mean</b>	4.66	0.558
Digital transformation	1. Adoption of digital technology	4.77	0.477
	2. Digital skills	4.64	0.562
	3. Digital infrastructure	4.66	0.530
	4. Digital culture	4.56	0.633
	<b>Grand Mean</b>	4.67	0.542
Marketing strategy	1. Digital marketing	4.62	0.572
	2. Market segmentation	4.52	0.544
	3. Product branding	4.45	0.684
	4. Distribution channels	4.46	0.647
	<b>Grand Mean</b>	4.52	0.615
Business Innovation	1. Product innovation	4.52	0.638
	2. Process innovation	4.52	0.597
	3. Business model innovation	4.40	0.580
	4. Innovation culture	4.39	0.657
	<b>Grand Mean</b>	4.47	0.618

### Convergent Validity

Convergent validity is used to assess the suitability of indicators with latent constructs. Indicators are considered valid if they have an outer loading value > 0.70. Details of the outer loading test results are shown in the [Figure 2](#) and [Table 4](#). Based on Figure 2 and Table 4, the outer loading results in this study obtained a value of > 0.70, so it can be concluded that all indicators in this study are valid as measures of their respective variables.

In addition to outer loading, convergent validity is also assessed based on Average Variance Extracted (AVE). An instrument is considered valid if the AVE value is > 0.50, while an AVE value of < 0.50 indicates that the instrument is invalid. The AVE test results of this study are presented in the [Table 5](#). Based on Table 5, all variables show an AVE value greater than 0.50. It can be concluded that all research instruments can be declared valid, so that the construct is able to adequately represent the variance of the indicators.

### Discriminant Validity

The Fornell-Larcker criteria require that the values on the thick diagonal or cross loading must be higher than the cut-off value of 0.70. Alternatively, the thick diagonal values must be higher than the values below them. Based on [Table 6](#), all diagonal values in each construct exceed 0.70, so it can be concluded that the Fornell-Larcker criteria have been met.

### Reliability Test

Reliability can be assessed based on two values, namely Cronbach's Alpha and Composite Reliability. An instrument is considered reliable if Cronbach's Alpha is greater than 0.6 and Composite Reliability is greater than 0.7. The results in [Table 7](#) show that all variables meet both criteria, with Cronbach's Alpha values above 0.6 and Composite Reliability above 0.7. These findings confirm that the research instrument has good internal consistency, so that the items used can be trusted to represent the constructs being measured.

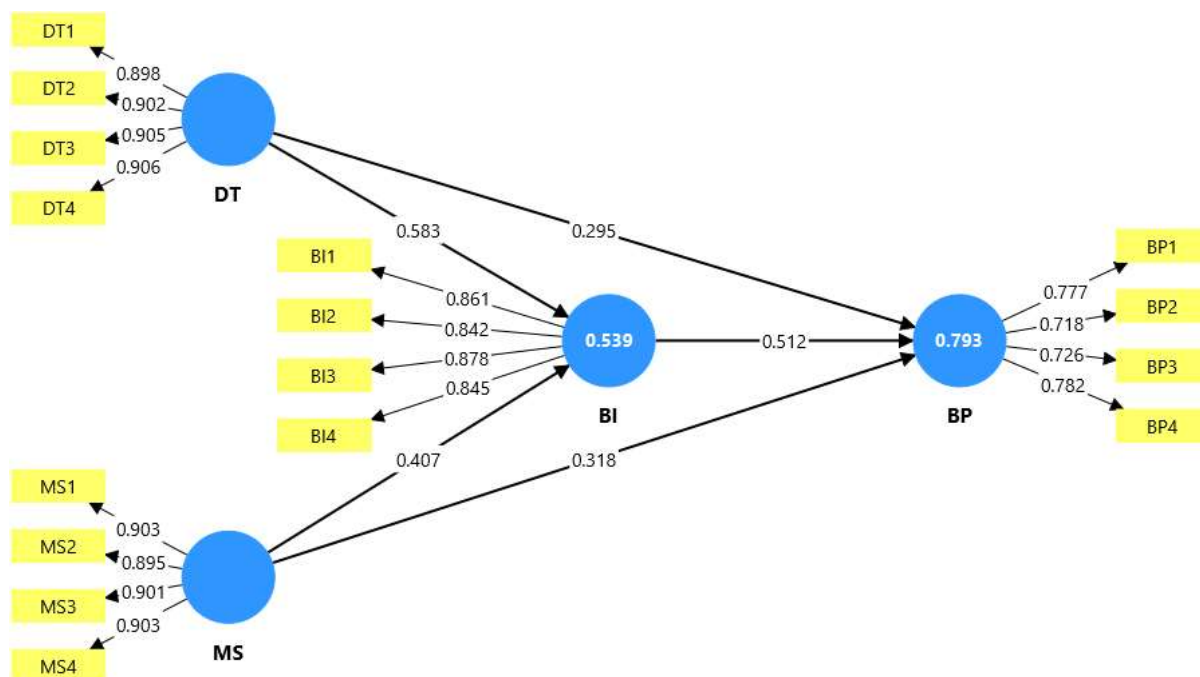


Figure 1. SEM PLS Output

**Table 4 . Convergent validity**

No	Variable	Indicator	Outer Loading	Note
1	Digital Transformation (DT)	DT1	0.898	Valid
		DT2	0.902	Valid
		DT3	0.905	Valid
		DT4	0.906	Valid
2	Marketing Strategy (MS)	MS1	0.903	Valid
		MS2	0.895	Valid
		MS3	0.901	Valid
		MS4	0.903	Valid
3	Business Innovation (BI)	BI1	0.861	Valid
		BI2	0.842	Valid
		BI3	0.878	Valid
		BI4	0.845	Valid
4	Business Performance (BP)	BP1	0.777	Valid
		BP2	0.718	Valid
		BP3	0.726	Valid
		BP4	0.782	Valid

**Table 5. Average Variance Extracted**

No	Variable	Average Variance Extracted (AVE)	Standard	Note
1	BI	0.734	0.5	Valid
2	BP	0.565	0.5	Valid
3	DT	0.815	0.5	Valid
4	MS	0.811	0.5	Valid

**Table 6. Discriminant Validity (Firnell-Larcker Criterion)**

Variable	BI	BP	DT	MS
<b>BI</b>	<b>0.857</b>			
<b>BP</b>	0.834	<b>0.751</b>		
<b>DT</b>	0.612	0.630	<b>0.903</b>	
<b>MS</b>	0.448	0.568	0.071	<b>0.900</b>

**Table 7. Internal Consistency Reliability**

Variable	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Note
<b>BI</b>	0.879	0.879	0.917	Reliable
<b>BP</b>	0.742	0.744	0.838	Reliable
<b>DT</b>	0.925	0.926	0.946	Reliable
<b>MS</b>	0.922	0.923	0.945	Reliable

**Inner Model  
R-Square (R<sup>2</sup>)**

The R-Square test aims to assess the extent to which independent variables can explain dependent variables. An R-Square value > 0.25 is considered weak, > 0.50 moderate, and > 0.70 strong (Hair et al., 2019). The results of the R-Square test in this study are presented in the [Table 8](#).

The R-Square test results show that BI has a value of 0.539, which is classified as moderate, while BP has a value of 0.793, which is classified as strong. These findings indicate that the independent variables contribute significantly to explaining the variation in BI and contribute very strongly to explaining BP.

**Model Fit**

The model fit evaluation shows that the structural model used in this study has an acceptable level of goodness of fit. The Standardized Root Mean Square Residual (SRMR) value in [Table 9](#) for both the saturated and estimated models is 0.051, which is below the recommended threshold of 0.08. This indicates that the difference between the observed and predicted correlations is small, suggesting that the model fits the empirical data well.

In addition, the Normed Fit Index (NFI) value is 0.885, which is close to the recommended cut-off value of 0.90. This indicates that the proposed model has a good explanatory power compared to a null model, and it sufficiently captures the relationships among digital transformation, marketing strategy, business innovation, and SME business performance.

These results confirm that the proposed structural model is adequate and suitable for hypothesis testing, supporting the validity of the mediating role of business innovation in linking digital transformation and marketing strategy to SME business performance.

**F-Square (f<sup>2</sup>)**

F-Square analysis is used to assess the contribution of each independent variable

to the dependent variable. According to Cohen (1988), an f<sup>2</sup> value of > 0.02 indicates a small effect, > 0.15 a medium effect, and > 0.35 a large effect.

The results of the f-square in [Table 10](#) analysis show that BI has a significant effect on BP (0.582), while DT has a significant effect on BI (0.735) and a moderate effect on BP (0.240). In addition, Marketing Strategy (MS) also has a significant effect on both BI (0.357) and BP (0.358). These findings indicate that the contribution of independent variables to dependent variables in the research model is relatively strong and significant.

**Predictive Relevance (Q<sup>2</sup>)**

The results of the predictive relevance test (Q<sup>2</sup>) in [Table 11](#) show that BI has a value of 0.387 and BP has a value of 0.437. Both are classified as strong, so this research model is declared to have good predictive relevance in explaining the dependent variable.

**Table 8. R-Square**

Variable	R-square	Adjusted R-Square
BI	0.539	0.535
BP	0.793	0.790

**Table 9. Model Fit**

	Saturated model	Estimated model
SRMR	0.051	0.051
NFI	0.885	0.885

**Table 10. f-Square**

Variable	f-square
BI - BP	0.582
DT - BI	0.735
DT - BP	0.240
MS - BI	0.357
MS - BP	0.358

**Table 11. Q-Square**

Variable	Q <sup>2</sup>	Note
BI (Z)	0.387	Strong
BP (Y)	0.437	Strong

**Table 12.** Hypothesis Test Results

Variable	Original sample (O)	P values	Note
DT - BI	0.583	0.000	H1 accepted
MS - BI	0.407	0.000	H2 accepted
BI - BP	0.512	0.000	H3 accepted
DT - BP	0.295	0.000	H4 accepted
MS - BP	0.318	0.000	H5 accepted
DT - BI - BP	0.298	0.000	H6 accepted
MS - BI - BP	0.208	0.000	H7 accepted

### Hypothesis testing

Based on [Figure 2](#) and [Table 12](#), the hypothesis testing results indicate that all paths in the research model are significant with a p-value of 0.000 ( $<0.05$ ). DT has a significant positive effect on BI ( $\beta=0.583$ ) and BP ( $\beta=0.295$ ). MS also has a significant positive effect on BI ( $\beta=0.407$ ) and BP ( $\beta=0.318$ ). BI is also proven to have a significant positive effect on BP ( $\beta=0.512$ ). The mediating role shows that BI is able to mediate the effect of DT on BP ( $\beta=0.298$ ) and the effect of MS on BP ( $\beta=0.208$ ), with both mediating relationships being significant. It can be concluded that all hypotheses H1 to H7 are accepted.

### Discussion

#### The Effect of Digital Transformation on Business Innovation

The results of the study show that digital transformation has a positive and significant effect on business innovation in Tempe Chip SMEs in Kampung Sanan. These findings confirm that the use of digital technology not only serves as an operational support, but also as a trigger for innovation in business processes. When SME players are able to adopt e-commerce platforms, social media, and digital-based management systems, they gain broader access to market information, customer feedback, and consumption trends, which then encourages innovation in the form of product variant development, process efficiency improvements, and packaging design adjustments to be more relevant to market preferences. These findings are in line with Cassaro et al., (2024); Yan,

(2024), who emphasize that digital transformation drives innovation by creating new opportunities for product differentiation and strengthening business models.

This condition is understandable considering that the majority of Sanan SMEs have been operating for more than five years (72%), thus having sufficient business experience and a better level of organizational readiness in integrating technology into the innovation process. This operational stability allows business actors to use technology not only as a marketing tool but also as part of an innovation strategy to maintain competitiveness in an increasingly competitive market. The higher the level of digital technology adoption, the greater the opportunity for SMEs to experiment and create valuable innovations (Cen & Lin, 2025). Thus, digital transformation not only acts as an enabler but also as a catalyst for innovation that helps Tempe Chip SMEs in Kampung Sanan adapt to changes in the business environment and consumer preferences in a sustainable manner.

#### The Influence of Marketing Strategy on Business Innovation

The results of the study show that marketing strategies have a positive and significant effect on business innovation in tempe chip SMEs in Kampung Sanan. These findings reinforce that a marketing approach is not merely oriented towards increasing sales, but also directs business actors to continue innovating in line with market needs and preferences. The use of social media and marketplace platforms by

Sanan SME entrepreneurs has proven to not only expand market access but also generate new insights into flavor trends, packaging design, and opportunities for derivative products that can be developed. These findings are in line with Joudeh et al., (2022); Sulistyaningsih et al., (2024), who state that digital marketing strategies encourage two-way interaction between business actors and consumers, thereby generating more targeted innovation ideas.

Additionally, the characteristics of Sanan SMEs, the majority of which have  $\leq 5$  employees (55%), indicate limited internal resources for formal research and development. In these circumstances, market response through marketing activities becomes the main source of information in the innovation creation process (Ivanovich, 2023). In other words, adaptive, interactive, and consumer-oriented marketing strategies serve as the main driving force in producing relevant and valuable innovations for tempe chip SMEs in Kampung Sanan to maintain their business competitiveness.

### **The Impact of Business Innovation on Business Performance**

The results of the study prove that business innovation has a positive and significant effect on the business performance of tempe chip SMEs in Kampung Sanan. These findings show that innovations made by SMEs in their products, production processes, and business models can increase competitiveness and have a direct impact on improving business results. This study is in line with Kurniawan & Taufik, (2024); Thi, (2024), who emphasize that innovation in products, processes, and business models is a major driver of business performance improvement because it allows businesses to offer higher value than their competitors. SMEs in Kampung Sanan have proven successful in increasing sales and operational efficiency through the development of innovative products such as rainbow tempeh, tempeh nuggets, and

the utilization of tempeh waste into value-added products. Research data shows that 42% of respondents have a turnover of IDR 5-10 million per month and 28% have a turnover of more than IDR 10 million, reflecting that innovation truly contributes significantly to the business performance of business actors. Thus, innovation is not only a complementary element in business, but also a strategic element that determines the sustainability and growth of SME business performance (Min et al., 2023).

### **The Impact of Digital Transformation on Business Performance**

The results of the study indicate that digital transformation has a positive and significant effect on the business performance of tempe chip SMEs in Kampung Sanan. These findings confirm that the use of digital technology not only increases product accessibility for consumers but also strengthens the operational effectiveness and profitability of SMEs. This is in line with Baroma, (2025); Bindeeba et al., (2025), who state that the adoption of digital technology can drive sales growth, business process efficiency, and increased profits. The use of e-commerce, social media, and digital payment systems by Sanan SMEs has proven to make it easier for consumers to obtain tempe chips, increase sales volume, and strengthen brand awareness. This condition is even more important considering that 30% of respondents still have a turnover of less than IDR 5 million per month, making digital transformation a strategic instrument to expand market reach while improving business performance. Therefore, digitization is not just a technological option, but a basic necessity for SMEs to be able to grow and compete sustainably (Lisovskaya et al., 2024).

### **The Influence of Marketing Strategy on Business Performance**

The results of the study indicate that marketing strategies have a positive and significant effect on business performance.

This finding confirms that well-designed marketing can expand the market, strengthen brand presence, and drive sales growth for SMEs. This is in line with Dushyenthan, (2024); Lanre & Lawal, (2024), who emphasize that effective marketing strategies can strengthen customer relationships and build loyalty, thereby directly impacting business performance. The implementation of digital promotion through social media, online-based market segmentation, and distribution through various marketplace platforms has proven to increase customer closeness and demand stability for Sanan SMEs. In addition, the data shows that 38% of respondents have 5–10 employees, indicating sufficient production capacity to meet increased market demand, so that the right marketing strategy can directly imply an increase in business performance. Thus, marketing that is carried out in a planned, consistent, and consumer-based manner is one of the determining factors for the success of SME business performance (Victorien et al., 2023).

### **The Impact of Digital Transformation on Business Performance through Business Innovation**

The results of the study show that business innovation mediates the effect of digital transformation on business performance. These findings confirm that the benefits of digitization do not automatically result in improved performance if they stop at the application of technology, but only have an optimal impact when they are used to bring about innovation in the form of product development, process improvement, or business model renewal. This finding is consistent with the results of research by Liu et al., (2024); Tonder et al., (2024), which emphasize that innovation is a key mechanism that links digitalization with improved business performance. At Sanan tempe chips SMEs, the use of digital platforms not only serves to accelerate distribution and facilitate customer access,

but also encourages the emergence of new product ideas that are in demand in the market. In addition, the fact that most SMEs have been operating for more than five years (72%) indicates that they have sufficient managerial experience, making it easier to convert digital transformation into targeted innovation to improve business performance. Thus, the ability of business actors to translate digitalization into valuable innovation is a determining factor in how much impact digital transformation has on business performance (Bouarar et al., 2022).

### **The Influence of Marketing Strategy on Business Performance through Business Innovation**

The results of the study indicate that business innovation mediates the influence of marketing strategy on business performance. This finding confirms that the effectiveness of marketing strategy is not only measured by its success in attracting consumer attention, but also by its ability to encourage innovation, which ultimately improves business performance. This finding is in line with Julyanthry et al., (2022); Sulistyarningsih et al., (2024), who revealed that effective marketing strategies can stimulate innovative ideas that then contribute directly to increased sales and business profits. Sanan tempe chips SMEs implemented digital marketing strategies that proved to encourage various business innovations, ranging from developing new flavor variants, improving packaging designs, to implementing more creative distribution methods that are relevant to digital consumer behavior. Data showing that 42% of respondents have an income of IDR 5-10 million per month confirms that innovations triggered by digital marketing activities have had a real impact on improving financial performance. Thus, innovation becomes an important connecting mechanism that strengthens the influence of marketing strategies on improving SME business performance (Ardianto et al., 2025).

## **CONCLUSION AND RECOMMENDATION**

This study concludes that digital transformation and marketing strategies have a positive and significant effect on business innovation and business performance in Tempe Chip SMEs in Kampung Sanan. Business innovation has also been proven to mediate the relationship between digital transformation and marketing strategies on business performance, although the direct influence of these two variables on business performance remains stronger than their indirect effects. These findings indicate that improving business performance does not only depend on the adoption of digital technology or adaptive marketing strategies, but will be more optimal if both can be processed into valuable innovations in products, processes, and business models. Strengthening innovation capacity is a determining factor for SMEs to maintain competitive advantage and achieve sustainable performance growth.

### **Theoretical Implication**

This study contributes to the development of theory by strengthening the understanding of the TOE Framework and Dynamic Capability Theory through the finding that digital transformation does not necessarily improve business performance, unless the use of technology is processed into innovations that provide real value for customers and internal processes. Furthermore, this study also confirms the relevance of Market Orientation Theory by showing that new marketing strategies can have a maximum impact on business performance if they are aligned with consumer needs and capable of generating innovative ideas. Furthermore, this study enriches the study of business performance by presenting empirical evidence on the mediating role of business innovation in the relationship between digital transformation and marketing strategy on business performance, an aspect that is still rarely

studied in the context of traditional food SMEs.

### **Managerial Implication**

The findings of this study have produced a number of practical recommendations for MSME players, particularly that the implementation of digital transformation needs to be accompanied by consistent innovation in order to create long-term benefits for businesses. SMEs players are encouraged to continue to improve their digital competencies, utilize customer data from social media and marketplaces as a basis for product variant development, packaging design refinement, and the development of more creative distribution patterns that are relevant to market behavior. On the other hand, local governments, SME associations, and supporting institutions can strengthen the effectiveness of training programs by focusing on data-driven digital marketing and innovation management. Collaborative efforts among SME players, such as sharing market information, joint branding, and collaborating in cross-marketplace marketing, also have the potential to accelerate overall business performance improvement.

### **Limitation and Future Research**

This study is limited to traditional food SMEs in a single business cluster, which may reduce generalizability to other industries or regions. Future studies should expand the sample to different SME sectors and consider additional mediating or moderating factors, such as digital capability, competitive pressure, or leadership orientation, to further enrich the model.

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