The Effect of Technology Absorptive Capacity and Digital Adoption on Business Performance of MSMEs in Bali Province Through Business Innovation as a Mediating Variable

Tangkas Gede Hary Angga Purnama Damai* , Dodie Tricahyono
Universitas Telkom, Indonesia
Email: anggaprnn0@gmail.com*

ABSTRACT

Digital transformation has emerged as a critical determinant for the sustainability of micro, small, and medium enterprises (MSMEs), particularly within tourism-centric economies such as Bali Province. This study aims to empirically analyze the influence of technology absorptive capacity and digital adoption on MSME business performance, incorporating business innovation as a mediating variable. Employing a quantitative approach, primary data were collected from 400 MSMEs in Bali Province selected via simple random sampling. The data were analyzed using structural equation modeling–partial least squares (SEM-PLS). The findings reveal that both technology absorptive capacity and digital adoption exert positive and significant effects on business performance, both directly and indirectly through business innovation. Notably, digital adoption demonstrated the strongest direct impact on performance, while business innovation was confirmed as a partial mediator that enhances the effect of technological capabilities on business outcomes. This study concludes that enhancing MSME performance requires not only the adoption of digital tools but also the organizational capacity to absorb technology for creating adaptive product and business model innovations.

Keywords: technology absorptive capacity; digital adoption; business innovation; business performance; Bali MSMEs; SEM-PLS

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are the backbone of the Indonesian economy, including in the Province of Bali. Digital transformation has become a crucial determinant for the sustainability of MSMEs, especially in the face of economic dynamics in tourism-based regions. In general, the definition of MSMEs is regulated in Law of the Republic of Indonesia Number 20 of 2008 concerning Micro, Small, and Medium Enterprises. In the law, MSMEs are classified based on total net worth (assets) and annual turnover.

As a flexible and widespread economic entity in various sectors, MSMEs in the Province of Bali play a vital role in absorbing local labor, reducing income inequality, and preserving local cultural values through creative economy products. MSMEs in the Province of Bali have distinctive characteristics and are closely related to the socio-cultural structure and regional economic orientation that focuses on tourism, creative economy, and the informal sector (Irjayanti, 2020; Parameswara et al., 2022; Sirad et al., 2025; Tomaney et al., 2019).

In the context of digital transformation, Technology Absorptive Capacity is defined as an organization's ability to recognize the value of new external information, assimilate it, and apply it for commercial purposes (Abuseta et al., 2025; Coronado-Medina et al., 2020; Kastelli et al., 2022; Tallarico et al., 2024). This concept was first proposed by Cohen and Levinthal

(1990) and later expanded by Zahra and George (2002), who divided it into four dimensions: acquisition, assimilation, transformation, and exploitation.

Digital Adoption refers to the extent to which organizations integrate digital technology into their business operations (Blichfeldt & Faullant, 2021; Cirillo et al., 2023; Shahadat et al., 2023; Syed et al., 2020). In the context of MSMEs, digital adoption includes the use of various digital platforms and tools such as e-commerce, social media for marketing, digital payment systems, and business management applications. Studies show that Digital Adoption has a significant influence on MSME business performance through increased operational efficiency, expanded market reach, and greater customer satisfaction (Gao et al., 2023; Hendrawan et al., 2024; Novitasari et al., 2025; Saleh et al., 2025; Sharabati et al., 2024).

Business Innovation is the implementation of new or significantly improved products (goods or services) or processes, new marketing methods, or new organizational methods in business practices, workplace organizations, or external relationships. Business innovation is not only limited to product innovation but also includes process innovation, marketing innovation, and organizational innovation.

Based on the background described above, this research aims to: analyze the influence of Technology Absorptive Capacity on Business Innovation in MSMEs in the Province of Bali; analyze the influence of Digital Adoption on Business Innovation in MSMEs in the Province of Bali; analyze the influence of Business Innovation on Business Performance in MSMEs in the Province of Bali; analyze the influence of Technology Absorptive Capacity on Business Performance in MSMEs in the Province of Bali; analyze the influence of Digital Adoption on Business Performance in MSMEs in the Province of Bali; and analyze the mediating role of Business Innovation in the relationship between Technology Absorptive Capacity and Digital Adoption on Business Performance in MSMEs in the Province of Bali.

METHOD

This study employed a quantitative approach with a survey method. The quantitative approach was chosen because the study aimed to empirically test the causal relationships between research variables and produce generalizations that could be applied to a wider population. The research design was a causal-comparative design that aimed to identify the cause-and-effect relationships between independent and dependent variables.

The population comprised all MSME actors operating in the Province of Bali who had adopted digital technology in their business operations. Based on data from the Bali Provincial Cooperatives and SMEs Office in 2024, there were around 685,000 MSME units operating in the Bali region. The sampling technique was simple random sampling, with a sample of 400 respondents. This sample size was determined based on the Slovin formula with a 5% error rate and met the minimum requirements for SEM-PLS analysis, which requires at least 10 times the maximum number of indicators in latent constructs.

The instrument was a structured questionnaire developed based on theory and previous research. The questionnaire consisted of several sections that measured Technology Absorptive Capacity (16 items), Digital Adoption (12 items), Business Innovation (15 items), and Business Performance (12 items). All items used a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). The validity of the instrument was tested using Confirmatory Factor Analysis (CFA), and reliability was tested using Cronbach's Alpha and Composite Reliability.

Tangkas Gede Hary Angga Purnama Damai* , Dodie Tricahyono

The data analysis technique was Structural Equation Modeling-Partial Least Squares (SEM-PLS) with SmartPLS 4.0 software. SEM-PLS was chosen for its ability to analyze complex relationships between multiple latent constructs, test mediating effects, and handle non-normally distributed data. The analysis stages included: (1) external model evaluation to assess validity and reliability, (2) internal model evaluation to test the research hypotheses, and (3) mediation effect analysis using a bootstrapping procedure with 5,000 subsamples.

RESULTS AND DISCUSSION

Respondent Characteristics

The characteristics of respondents in this study show that the majority of MSME actors in Bali Province are in the age range of 26-35 years (45%), followed by the age group of 36-45 years (32%). In terms of gender, 58% of respondents were male and 42% were female. Most respondents had a bachelor's (52%) and diploma (28%) educational background. Based on the scale of the business, 48% belong to the micro business category, 35% small businesses, and 17% medium businesses. The most dominant business sectors are culinary (35%), handicrafts (28%), fashion (20%), and others (17%).

Descriptive Statistics

Descriptive analysis showed that respondents' perception of all research variables was in the high category. Technology Absorptive Capacity has an average score of 4.12 (high category), with the assimilation dimension obtaining the highest score (4.28) and the acquisition dimension having the lowest score (3.95). Digital Adoption received an average score of 4.25 (very high category), with digital payment receiving the highest score (4.45) and e-procurement the lowest score (3.88). Business Innovation has an average of 4.08 (high category), and Business Performance reaches an average of 4.32 (very high category), especially in the aspect of customer satisfaction (4.48).

Table 1. Descriptive Statistics of Research Variables

Variable/Dimension	Mean	SD	Category
Technology Absorptive Capacity	4.12	0.68	High
Digital Adoption	4.25	0.62	Very High
Business Innovation	4.08	0.71	High
Business Performance	4.32	0.59	Very High

Measurement Model Evaluation (Outer Model)

The evaluation of the outer model was carried out to test the validity and reliability of the construct. The results of the convergent validity test showed that all indicators had an outer loading value of > 0.70 and an Average Variance Extracted (AVE) > 0.50, indicating good convergent validity. The discriminant validity test using the Fornell-Larcker and Cross Loading criteria showed that the square root of AVE of each construct was greater than the correlation of that construct with the other constructs. The reliability test showed Cronbach's Alpha and Composite Reliability values > 0.70 for all constructs, indicating good reliability.

Tangkas Gede Hary Angga Purnama Damai*, Dodie Tricahyono

Table 2. Outer Model Evaluation Results

Construct	AVE	CR	Cronbach's α
Technology Absorptive Capacity	0.652	0.937	0.928
Digital Adoption	0.698	0.945	0.938
Business Innovation	0.671	0.952	0.946
Business Performance	0.715	0.948	0.941

Structural Model Evaluation (Inner Model)

The internal evaluation of the model was carried out to test the structural relationships between constructs and test the research hypothesis. The R-square value for Business Innovation is 0.682, indicating that 68.2% of Business Innovation variances can be explained by Technology Absorptive Capacity and Digital Adoption. For Business Performance, the R-square value is 0.745, indicating that 74.5% of the variance in Business Performance can be explained by Technology Absorptive Capacity, Digital Adoption, and Business Innovation. The Q-square values for both endogenous constructs are positive (BI = 0.485, BP = 0.532), indicating that the model has good predictive relevance.

Hypothesis Testing

Hypothesis testing was carried out using a bootstrapping procedure with 5000 subsamples. The test results showed that all direct effect hypotheses were accepted with a p-value of < 0.05. Technology Absorptive Capacity had a positive and significant effect on Business Innovation ($\beta = 0.385$, t = 8.247, $p < 0.001$). Digital Adoption also had a positive and significant effect on Business Innovation ($\beta = 0.452$, t = 9.863, $p < 0.001$). Business Innovation had a positive and significant effect on Business Performance ($\beta = 0.328$, t = 7.156, $p < 0.001$).

For the direct effect on Business Performance, Technology Absorptive Capacity had a positive and significant effect ($\beta = 0.256$, t = 5.742, $p < 0.001$), as well as Digital Adoption ($\beta = 0.418$, t = 9.254, $p < 0.001$). Digital Adoption has the strongest direct influence on Business Performance, indicating that the use of digital technology directly has a significant impact on the performance of MSMEs.

Table 3. Hypothesis Testing Results (Direct Effects)

Hypothesis	b	t-value	p-value	Result
TAC → BI	0.385	8.247	0.000	Supported
TO → BI	0.452	9.863	0.000	Supported
BI → BP	0.328	7.156	0.000	Supported
TAC → BP	0.256	5.742	0.000	Supported
FROM → BP	0.418	9.254	0.000	Supported

Tangkas Gede Hary Angga Purnama Damai*, Dodie Tricahyono

Mediation Effect Analysis

The mediation effect analysis was conducted to test the role of Business Innovation as a mediator in the relationship between Technology Absorptive Capacity and Digital Adoption on Business Performance. The results of the analysis show that Business Innovation plays a role as a partial mediator in both paths. For the Technology Absorptive Capacity → Business Innovation → Business Performance pathway, the mediation effect was positive and significant ($\beta = 0.126$, $t = 5.328$, $p < 0.001$). For the Digital Adoption → Business Innovation → Business Performance pathway, the mediation effect was also positive and significant ($\beta = 0.148$, $t = 6.127$, $p < 0.001$).

Because the direct effect and indirect effect are both significant, it can be concluded that Business Innovation plays a role as a partial mediator. This indicates that Technology Absorptive Capacity and Digital Adoption can improve Business Performance both directly and indirectly through Business Innovation. These findings strengthen the argument that business innovation is an important mechanism that amplifies the impact of technological capabilities on business performance.

Table 4. Mediation Effect Analysis Results

Path	b	t-value	p-value	Mediation
TAC → BI → BP	0.126	5.328	0.000	Partial
TO → → BP	0.148	6.127	0.000	Partial

The findings of this study confirm the importance of Technology Absorptive Capacity in encouraging MSME business innovation. This result is in line with the study Changalima et al. (2025) which found that technological absorptive capacity is a strong predictor of e-business innovation in SMEs. The ability of MSMEs to acquire new technological knowledge, assimilate it into business contexts, transform it into practical solutions, and exploit it for competitive advantage is an important foundation for the birth of innovation.

The influence of Digital Adoption on Business Innovation is also proven to be significant and has a magnitude greater than Technology Absorptive Capacity. These findings are consistent with research by Bouwman et al. (2019) which shows that digitalization encourages business model innovation practices in SMEs. The use of digital platforms such as e-commerce, social media, and digital payment systems not only increases operational efficiency, but also opens up opportunities for MSMEs to create new products, develop new marketing channels, and design more adaptive business models.

The role of partial mediation of Business Innovation shows that although Technology Absorptive Capacity and Digital Adoption can directly improve performance, the impact will be stronger when MSMEs also carry out business innovations. This is in line with the findings of Chen et al. (2024) who identified that market-driven business model innovation mediates the relationship between digital transformation and sustainable business performance. MSMEs that not only adopt technology but also use it to innovate will have a more sustainable competitive advantage.

The context of MSMEs in Bali, which is based on tourism and the creative economy, gives a special nuance to this finding. The ability of MSMEs to absorb technology and integrate it with local cultural values creates a unique product that is difficult for competitors to replicate.

Tangkas Gede Hary Angga Purnama Damai* , Dodie Tricahyono

The innovations produced are not only technological, but also contain the value of local wisdom that is an attraction for consumers, especially tourists.

CONCLUSION

This study concludes that Technology Absorptive Capacity and Digital Adoption significantly influence the business performance of MSMEs in the Province of Bali, both directly—with Digital Adoption exerting the strongest direct effect on operational efficiency and market expansion—and indirectly through Business Innovation as a partial mediator. Practically, these findings underscore the need for training programs enhancing MSME actors' cognitive capacity to absorb and innovatively apply technology, alongside government-supported digital ecosystems offering infrastructure, financing, and knowledge-transfer platforms. A key limitation is the cross-sectional design, which cannot capture temporal dynamics in technology adoption and innovation. For future research, a longitudinal design is recommended to more comprehensively track the evolutionary processes of digital transformation and innovation in MSMEs.

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