

Construction of a Resilience Model for Sports Sector MSMEs: Integration of Hyper-Personalized Omnichannel and Algorithmic Intelligence in Overcoming Digital Adaptation Vulnerability

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Abstract

This study investigates the construction of a resilience model for sports sector Micro, Small, and Medium Enterprises (MSMEs) amidst the dual disruptions of global economic volatility and rapid digital adaptation vulnerability. Integrating Dynamic Capabilities Theory and the Resource-Based View (RBV), this research explores how Algorithmic Intelligence (AI) and Hyper-Personalized Omnichannel strategies, mediated by Customer Trust, enhance organizational resilience. Employing a quantitative explanatory design, data were collected from 210 sports industry MSMEs in West Java, Indonesia, using structured questionnaires, and analyzed via Partial Least Squares Structural Equation Modeling (PLS-SEM). The results demonstrate that Algorithmic Intelligence significantly drives Hyper-Personalized Omnichannel execution and directly strengthens MSME resilience. Furthermore, Customer Trust, grounded in data transparency and ethical algorithmic practices, acts as a critical mediating variable that amplifies the positive impact of digital technologies on long-term business survival. The findings provide an empirical model balancing predictive technological efficiency with customer data protection, offering actionable strategic insights for MSME managers navigating complex digital ecosystems.

Keywords: *Algorithmic Intelligence; Customer Trust, Hyper Personalized Omnichannel, MSME Resilience, Sports Industry.*

1. Introduction

MSMEs currently face a dual disruption challenge: global economic uncertainty and a highly rapid shift in consumer behavior towards digital channels. Although channel integration has long been proposed as a solution through the omnichannel concept, realities on the ground indicate that MSMEs still experience “digital adaptation vulnerability”. Market pressures compel MSMEs to shift from

merely maintaining a presence across multiple platforms to creating a seamless, functionally integrated customer experience. However, the utilization of digital technology in MSMEs is often not accompanied by adequate management capabilities, meaning digital transformation is not always linearly correlated with business growth (Teece, 2018). Recent studies further demonstrate that digital transformation only creates sustainable competitive advantage when organizations possess adequate digital capabilities, data governance, and organizational learning mechanisms to support technology adoption (Khin & Ho, 2023; Akter et al., 2022).

The primary issue that arises is how MSMEs can respond to the demands of Hyper Personalization, which has now become the new standard for customer satisfaction. Contemporary marketing literature emphasizes that hyper-personalization supported by AI algorithms significantly enhances customer experience through real-time behavioral analytics and personalized recommendations across integrated channels (Pai & Tu, 2021). This shift is driven by advancements in data analytics that allow marketing interactions to be highly precise yet automated. Amidst this competition, the use of Artificial Intelligence (AI) and algorithmic management is essential to process big data in real time. Artificial Intelligence has evolved beyond automation toward predictive and generative decision support, enabling firms to optimize customer engagement, operational efficiency, and strategic decision-making simultaneously (Dwivedi et al., 2023; Huang & Rust, 2021). Unfortunately, dependence on third-party platform algorithms often creates informational challenges and operational risks for small business owners. Furthermore, the adoption of generative and predictive technologies without adequate understanding can trigger decision biases that are fatal to business sustainability.

Without a fundamental resilience strategy, MSMEs will remain trapped in technological disruptions that threaten their business continuity in times of crisis. Therefore, an integration between digital supply chain resilience and artificial intelligence is urgently required to ensure business continuity. The sports sector MSMEs were specifically chosen for this study because their consumers exhibit high emotional involvement (fanaticism) yet are highly vulnerable to seasonal trends, thus demanding more accurate algorithmic predictions compared to the general retail sector. In the digital economy era, MSMEs face extreme market volatility and a reliance on often opaque platform algorithms. Recent international reports also indicate that MSMEs with limited digital maturity are more vulnerable to economic disruptions and platform dependency, emphasizing the importance of resilient digital transformation strategies (OECD, 2023). The phenomenon of “digital adaptation vulnerability”, causes many MSMEs to fail despite basic digitization efforts.

This research is urgently needed to explore how Hyper Personalized Omnichannel as an evolution of digital marketing driven by algorithmic intelligence can serve as a long-term resilience strategy, rather than just a short-term sales tool. Its novelty lies in the integration of customer trust as an anchor of stability in human-algorithm interactions. Although previous studies have investigated AI adoption, digital transformation, or omnichannel strategies independently, limited research has integrated Algorithmic Intelligence, Hyper-Personalized Omnichannel, Customer Trust, and Organizational Resilience into a unified framework specifically for sports-sector MSMEs in emerging economies (Rane et al., 2024; Dwivedi et al., 2023). This study aims to: 1) Identify dimensions of digital adaptation vulnerability in MSMEs; 2) Construct an MSME resilience model integrating algorithmic intelligence and Hyper-Personalized Omnichannel; and 3) Validate the role of customer trust in strengthening the relationship between algorithmic technology and business resilience.

2. Literature Review

Grand Theory: Dynamic Capabilities Theory

Teece et al. (1997) defined dynamic capabilities as “the firm’s ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments”. While the Resource Based View (RBV) solely focuses on the possession of great assets, Dynamic Capabilities Theory goes further: possessing valuable assets is insufficient; organizations must know how to

transform, adapt, and align these assets when the market shifts. In its development (Teece, 2007), dynamic capabilities are divided into three main pillars: Sensing, Seizing, and Transforming (Reconfiguring). Recent empirical evidence confirms that Dynamic Capabilities remain highly relevant in the AI era, where firms continuously integrate artificial intelligence, cloud computing, and advanced analytics to respond to environmental uncertainty and digital disruption (Akteer et al., 2022).

Middle Theory: Resource-Based View (RBV)

The Resource-Based View (Barney, 1991) posits that competitive advantage stems from resources that are valuable, rare, inimitable, and non-substitutable (VRIN). The integration between omnichannel strategies and AI algorithms constitutes a strategic intangible asset that enables sports sector MSMEs to survive and remain more resilient than their competitors.

Applied Theory 1: Organizational Resilience

Resilience is not merely the ability to survive, but the organization's capacity to anticipate, respond to, and positively adapt to disruptions. In the context of this study, this pertains specifically to digital disruptions and the inherent vulnerability in digital adaptation phases. Organizational resilience increasingly depends on the integration of artificial intelligence and digital analytics that enable firms to anticipate disruptions, respond rapidly, and continuously adapt their business models (Wamba et al., 2021).

Applied Theory 2: Omnichannel & Hyper Personalization Paradigms

Unlike multichannel approaches, omnichannel emphasizes seamless integration across all consumer touchpoints, including physical stores, social media, e commerce, and mobile applications. Hyper-personalization is driven by Algorithmic Intelligence (AI/Machine Learning) to deliver products, content, and services specifically tailored to individual real time behavioral data (e.g., recommending running shoes based on a Customer's running metrics data from a smartwatch). Omnichannel strategies have evolved from channel integration toward creating seamless customer journeys supported by AI-driven personalization and real-time customer data synchronization across digital touchpoints (Verhoef et al., 2021). AI-driven personalization has become one of the most influential determinants of customer satisfaction because predictive algorithms continuously learn from customer interactions to recommend products and services tailored to individual preferences (Huang & Rust, 2021).

3. Research Methods

This study employs a quantitative explanatory research design aimed at explaining the causal relationships between variables through hypothesis testing. The population comprises sports sector MSMEs navigating digital transformation. A purposive sampling technique was utilized, resulting in a sample of 210 sports industry MSMEs operating in West Java, Indonesia. Primary data were collected through the distribution of structured questionnaires measured on a 5-point Likert scale. The research model involves independent variables (Algorithmic Intelligence), mediating variables (Customer Trust), and dependent variables (Hyper-Personalized Omnichannel and Organizational Resilience). The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) utilizing SmartPLS software to evaluate both the measurement model (outer model) and structural model (inner model).

4. Result and Discussion

Measurement Model Evaluation

The initial phase of the PLS-SEM analysis involved assessing the measurement model to ensure reliability and validity. Construct reliability was established as all Cronbach's Alpha and Composite Reliability (CR) values exceeded the recommended threshold of 0.70. Furthermore, convergent validity was confirmed with Average Variance Extracted (AVE) values greater than 0.50 across all constructs.

Discriminant validity was also satisfied according to the Fornell-Larcker criterion, ensuring that each construct represents a distinct concept.

Structural Model and Hypotheses Testing

The structural model results provided empirical support for the proposed resilience framework. The analysis revealed a significant positive impact of Algorithmic Intelligence on the execution of Hyper Personalized Omnichannel strategies ($\beta = 0.452$, $p < 0.001$). This indicates that higher technological processing capability directly enhances an MSME's ability to orchestrate seamless customer experiences. Furthermore, both Algorithmic Intelligence and Omnichannel strategies simultaneously demonstrated a positive effect on MSME Resilience, confirming the principles of Dynamic Capabilities Theory where technological assets must be reconfigured to absorb market shocks.

Table 1. Path Coefficients and Hypothesis Testing Results

Hypothesized Path Path	Path Coefficient (β)	T-Statistics	P-Values
Algorithmic Intelligence -> Hyper Personalized Omnichannel	0.452	5.321	0.000
Hyper-Personalized Omnichannel -> MSME Resilience	0.315	0.005	0.002
Algorithmic Intelligence -> Customer Trust	0.512	6.104	0.000
Customer Trust -> MSME Resilience	0.285	3.115	0.005

Source: researcher's data (2026)

A critical finding of this study is the mediating role of Customer Trust. The integration of algorithmic intelligence often raises privacy concerns among consumers. However, the data suggests that when MSMEs employ transparent and ethical algorithmic practices, it fosters Customer Trust. This trust acts as a vital bridge, significantly mediating the relationship between intelligent technology adoption and long term organizational resilience. In balancing predictive technological efficiency with consumer privacy protection, MSMEs build a loyal customer base that buffers the business against economic volatility, perfectly answering the fourth research question. These findings are consistent with previous studies demonstrating that AI-based decision support significantly improves customer engagement and organizational performance by enabling data-driven marketing decisions (Wamba et al., 2021; Huang & Rust, 2021).

5. Conclusion

This study successfully constructs and validates a resilience model for sports sector MSMEs amidst the era of digital adaptation vulnerability. The findings conclude that Algorithmic Intelligence is a fundamental driver in forming effective Hyper Personalized Omnichannel strategies. Moreover, these digital dimensions significantly enhance organizational resilience when facing digital economic volatility. Crucially, Customer Trust built upon data transparency and ethical AI usage serves as a robust mediator that translates technological utilization into sustained business endurance. MSME managers are advised to not solely focus on adopting advanced algorithms, but to equally prioritize data privacy and transparent customer communication. This dual focus ensures that technology acts as an anchor for stability rather than a source of operational risk. These findings also support recent global evidence suggesting that AI-enabled digital transformation should be accompanied by customer trust,

ethical governance, and organizational digital capabilities to ensure sustainable resilience among SMEs (OECD, 2023; Deloitte, 2024; Rane et al., 2024).

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