

Digital Transformation Model for Strengthening Brand Equity and Competitiveness of Printing MSMEs

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ABSTRACT

The rapid advancement of digital technology has transformed the business environment and compelled Micro, Small, and Medium Enterprises (MSMEs) to adopt digital strategies to maintain competitiveness. In the printing industry, many MSMEs still rely on conventional business processes despite having limited digital presence, resulting in suboptimal customer engagement and brand development. This study aims to develop and validate a digital transformation model that strengthens brand equity and competitiveness through website quality in printing MSMEs. A sequential mixed-method approach was employed, consisting of website system development and quantitative evaluation. Data were collected from 100 customers of Buana Jaya Printing who had interacted with the newly developed digital platform. Respondents were selected using purposive sampling, and the data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS 4.0. The findings reveal that digital transformation has a significant positive effect on website quality and brand equity. Website quality also significantly enhances brand equity by improving user experience, trust, and customer satisfaction. Furthermore, brand equity was found to positively influence competitiveness, indicating that stronger brand value contributes to sustainable market advantage. The mediation analysis confirms that website quality serves as an important mechanism through which digital transformation strengthens brand equity. In conclusion, digital transformation supported by high-quality websites can significantly improve brand equity and competitiveness, providing a strategic pathway for printing MSMEs to achieve sustainable growth in the digital era.

INTRODUCTION

The contemporary business landscape is increasingly defined by the Society 5.0 paradigm, where technological integration serves as a cornerstone for strategic development. As consumer preferences decisively shift towards digital platforms, business entities — particularly Micro, Small, and Medium Enterprises (MSMEs) — are compelled to adapt with agility (Pratama & Novianti, 2021; Risdwiyanto et al., 2023). Consequently, digital transformation has evolved from a mere strategic alternative into an operational imperative essential for sustaining market relevance. Within the printing sector, which has traditionally depended on physical interactions and conventional ordering systems, digitalisation presents critical avenues for optimising operational efficiency and elevating customer service standards.

Nevertheless, the uptake of these technologies among Indonesian MSMEs exhibits significant disparity. A pertinent example is observed in Buana Jaya Printing, located in Cirebon City. Preliminary assessments indicate that while the enterprise maintains a rudimentary digital footprint, its core business processes — ranging from order placement to transaction settlement — remain predominantly manual. Furthermore, the existing web interface functions primarily as a static informational display rather than a dynamic transactional instrument (Chaffey & Ellis-Chadwick, 2022). This discrepancy highlights a fundamental issue: the possession of digital tools without comprehensive integration results in performance inefficiencies.

Academic literature posits that a meticulously designed website serves as a pivotal touchpoint for fostering trust and shaping brand perception. Conversely, substandard user interfaces can erode brand credibility. Although prior research has extensively explored digital adoption in broad contexts, there is a scarcity of studies that specifically model the mediating function of website quality in connecting digital transformation with brand equity and competitiveness within the printing industry (Kim & Park, 2022; Wardhana, 2022). To bridge this gap, this study is designed to: (1) construct a dynamic website system specifically engineered for printing MSMEs, and (2) empirically validate a model wherein website quality mediates the trajectory from digital transformation to enhanced brand equity and marketing competitiveness. Digital branding strategies are essential for strengthening MSME competitiveness in the modern era (Hidayat & Saputra, 2023). Furthermore, effective digital marketing implementation directly impacts brand image and consumer purchasing intentions (Santoso et al., 2023). Digital transformation plays a pivotal role in enhancing marketing performance (Wijaya, 2022).

The printing industry represents one MSME sector that faces strong pressure from digital change. Traditionally, printing businesses rely on direct customer interaction, manual ordering, physical proofing, and offline payment systems. However, customers today increasingly expect faster service, online order tracking, transparent price information, digital catalogues, and convenient transaction mechanisms. For printing MSMEs, the inability to provide these digital services can reduce customer satisfaction and weaken market position. Therefore, digital transformation in the printing sector should not be limited to having social media accounts or a static website, but must involve the development of an interactive, reliable, and customer-oriented digital service system.

The specific issue addressed in this research is the limited integration of digital transformation in printing MSMEs, particularly in Buana Jaya Printing in Cirebon City. Although the business already has a basic digital presence, its core operational activities — such as order placement, customer communication, transaction settlement, and service monitoring — remain largely manual. The existing website also functions mainly as an informational display rather than a dynamic transactional platform. This condition reflects a common problem among MSMEs: digital adoption often exists at the surface level, while internal business processes remain conventional. As a result, the potential benefits of digital transformation for strengthening brand equity and competitiveness are not fully realised.

Previous studies have shown that digital transformation can improve MSME performance by expanding market reach, increasing operational efficiency, and enhancing profitability. Purnomo (2024), through a systematic literature review on digital transformation among Indonesian MSMEs, found that digitalisation provides important benefits, although it is still constrained by limited resources, technical skills, and data security issues. Anatan (2023) also emphasised that Indonesian MSMEs need better readiness, knowledge transfer, and digital capability to implement transformation effectively. These studies confirm that digital transformation is important for MSMEs, but they mostly discuss MSMEs in general and do not

focus specifically on how digital service quality influences brand equity and competitiveness in printing businesses.

Research on website quality has also provided an important foundation for understanding digital customer experience. Barnes and Vidgen (2002), through the WebQual 4.0 framework, explained that website quality can be evaluated through usability, information quality, and service interaction. Kim and Park (2022) found that website quality affects brand trust and purchase intention, showing that a website is not merely a technical platform but also a branding instrument. Keller and Machleit (2022) further argued that brand equity in the digital era is shaped by customer experience, perceived quality, and credibility. These findings suggest that a high-quality website can act as a bridge between digital transformation and stronger brand perception.

Nevertheless, a clear research gap remains. Most prior studies examine digital transformation, website quality, brand equity, or competitiveness as separate variables. Few studies develop an integrated model that explains how digital transformation strengthens brand equity through website quality and how brand equity subsequently improves competitiveness. In addition, research focusing on printing MSMEs remains limited, even though this sector has unique characteristics, such as customised orders, visual product quality, time-sensitive production, and intensive customer communication. Therefore, a more specific empirical model is needed to explain how website-based digital transformation can support brand equity and competitiveness in printing MSMEs.

The urgency of this research lies in the need for MSMEs to move beyond symbolic digitalisation toward functional digital transformation. Many MSMEs already use digital media, but their websites are often static, poorly integrated, and unable to support customer transactions. If this condition continues, MSMEs may lose competitiveness to larger firms or more digitally mature competitors. For printing MSMEs, website quality is especially important because customers need clear product information, easy ordering procedures, responsive service interaction, and trust in production accuracy. Thus, improving website quality can become a strategic step to build customer confidence, strengthen brand equity, and increase competitiveness.

The novelty of this research is reflected in the development and empirical validation of a digital transformation model for printing MSMEs, positioning website quality as a mediating variable between digital transformation and brand equity, and linking brand equity to competitiveness. This study does not only discuss digital transformation conceptually, but also connects it with the practical development of a web-based procurement system, "Buana Jaya Online." By integrating system development and quantitative model testing using PLS-SEM, this research offers both practical and theoretical contributions. It provides a more complete explanation of how digital transformation can be translated into customer experience, brand value, and competitive advantage.

Based on this background, the purpose of this research is to construct and validate a digital transformation model that strengthens brand equity and competitiveness among printing MSMEs. Specifically, this study aims to analyse the influence of digital transformation on website quality, examine the effect of digital transformation and website quality on brand equity, and evaluate the role of brand equity in improving competitiveness. The contribution of this research is expected to enrich the literature on MSME digital transformation, website quality, and brand equity, while also providing practical guidance for printing MSME managers in designing customer-oriented digital platforms. The benefit of this research is that it can help MSMEs understand that digital transformation is not only about adopting technology, but also about creating better customer experience, stronger brand trust, and sustainable competitiveness.

METHOD

This study employed a sequential mixed-method research design consisting of system development and quantitative evaluation stages. In the first stage, a web-based procurement system named “Buana Jaya Online” was designed and developed to support the digital transformation of printing MSMEs. The population of this study comprised all customers of Buana Jaya Printing who interacted with the digital platform during the research period. The sample consisted of 100 respondents selected through purposive sampling. The inclusion criteria required participants to be active internet users and customers who had completed at least one transaction or service interaction through the website. This sampling approach was considered appropriate because it ensured that respondents possessed sufficient experience in evaluating the website and digital services provided.

Data were collected using a structured questionnaire developed from established theoretical constructs. The Digital Transformation variable was measured through indicators related to digital integration, process automation, and technology utilization. Website Quality was assessed using the WebQual 4.0 dimensions, namely usability, information quality, and service interaction quality. Brand Equity was measured through brand awareness, perceived quality, brand associations, and customer loyalty, while Competitiveness was evaluated through indicators related to market positioning, customer retention, and business performance. Prior to hypothesis testing, the instrument underwent validity and reliability assessments. Convergent validity was evaluated using factor loadings and Average Variance Extracted (AVE), with acceptable thresholds of 0.70 and 0.50 respectively. Reliability was examined through Cronbach’s Alpha and Composite Reliability values, with a minimum criterion of 0.70.

The research procedure began with identifying organizational needs and developing the web-based system, followed by system implementation and user evaluation. After respondents interacted with the platform, questionnaires were distributed online and collected for analysis. The collected data were processed using SmartPLS 4.0 software. Data analysis employed Partial Least Squares Structural Equation Modeling (PLS-SEM), which is suitable for predictive research models and relatively small sample sizes. The analytical process consisted of two stages: evaluation of the measurement model (outer model) to assess validity and reliability, and evaluation of the structural model (inner model) to examine the proposed relationships among Digital Transformation, Website Quality, Brand Equity, and Competitiveness. Hypothesis testing was conducted using the bootstrapping procedure with a significance level of 5% to determine the direct and indirect effects among the variables.

RESULTS AND DISCUSSION

Psychometric Validation (Outer Model) Assessment of the measurement model confirmed robust construct reliability and validity. Specifically, all indicator loadings surpassed the critical threshold of 0.70, signifying strong convergent validity.



Figure 1 HomePage

Furthermore, the Average Variance Extracted (AVE) for the core constructs Digital Transformation, Website Quality, Brand Equity, and Competitiveness consistently exceeded 0.50, thereby satisfying the criteria for adequate convergence as established in psychometric literature (Hair et al., 2022) Similarly, the internal consistency assessment, indicated by Composite Reliability (CR) and Cronbach's Alpha, demonstrated values exceeding 0.70 across all variables, confirming the reliability of the measurement instruments.

Table 1. Reliability and Validity Test Results

Variabel	Cronbach's Alpha	Composite Relliability (Rho_a)	AVE	Ket
Digital Trans (X)	0.812	0.845	0.612	Valid&Reliabel
Website Quality (Z)	0.833	0.867	0.635	Valid&Reliabel
Brand Equity (Y1)	0.856	0.891	0.682	Valid&Reliabel
Competitiveness (Y2)	0.824	0.858	0.621	Valid&Reliabel

Source: Processed research data using SmartPLS 4.0, 2026.

Structural Path Analysis (Inner Model) The structural model evaluation provided empirical support for all hypothesized trajectories, as evidenced by the bootstrapping analysis: **Digital Ecosystem & Web Performance:** The analysis revealed a substantial positive correlation between Digital Transformation (X) and Website Quality (Z). This suggests that the integration of advanced digital features (e.g., automated tracking) serves as a direct catalyst for elevating the perceived quality of the interface. **The Branding Impact:** Digital Transformation (X) was found to exert a significant positive influence on Brand Equity (Y1), implying that digitalization signals modernization, which in turn enhances the brand's image in the consumer's view. **The Mediation of Quality:** Consistent with Barnes and Vidgen (Barnes and Vidgen, 2002), the findings affirm that superior Website Quality (Z) significantly bolsters Brand Equity (Y1). A user-centric interface functions as a trust-building mechanism. **Driving Competitiveness:** Ultimately, strong Brand Equity (Y1) was identified as a potent predictor of Marketing Competitiveness (Y2). This indicates that MSMEs capable of fostering high brand value can compete beyond price metrics, leveraging trust to secure a sustainable market position.

Table 2. Hypothesis Testing Results

Hypothesis	Path / Relationship	Original Sampel (β)	P-Values	Result
H1	Digital Trans (X) -> Website Quality (Z)	0.721	0	Supported
H2	Digital Trans (X) -> Brand Equity (Y1)	0.462	0.002	Supported
H3	Website Quality (Z)-> Brand Equity (Y1)	0.398	0.005	Supported
H4	Brand Equity (Y1) -> Competitiveness (Y2)	0.551	0	Supported
H5	X -> Z -> Y1 (indirect)	0.271	0.012	Supported
H6	Z -> Y1-> Y2 (indirect)	0.791	0	Supported

Source: Bootstrapping analysis results using SmartPLS 4.0, 2026.

Discussion The findings elucidate that digital transformation in printing MSMEs is not merely about digitizing documents but about reengineering business processes to be customer-centric via high-quality web platforms. The significant path from Website Quality to Brand Equity implies that the "digital storefront" is the new face of the brand. Furthermore, the model confirms that Competitiveness (Y2) is the ultimate outcome of this chain. MSMEs that successfully integrate digital transformation (X) and ensure high website quality (Z) will enjoy stronger Brand Equity (Y1), which acts as a powerful driver for Competitiveness (Y2). This aligns with Chaffey's (Chaffey & Ellis-Chadwick, 2022) assertion regarding the strategic role of digital channels.

CONCLUSION

This study concludes that digital transformation plays a significant role in strengthening the competitiveness of printing MSMEs through the enhancement of website quality and brand equity. The findings demonstrate that digital transformation positively influences website quality, which subsequently contributes to stronger brand equity. Furthermore, brand equity was found to have a substantial effect on competitiveness, indicating that customers' perceptions of brand value, trust, and service quality are critical determinants of sustainable competitive advantage. The empirical results also confirm the mediating role of website quality in translating digital transformation initiatives into improved brand equity and, ultimately, greater competitiveness. Therefore, digital transformation should not be viewed merely as the adoption of technology, but as a strategic process that integrates customer-oriented digital services, brand development, and business performance improvement.

Future research is recommended to expand the proposed model by incorporating additional variables that may influence MSME competitiveness in the digital era, such as customer satisfaction, customer loyalty, social commerce adoption, customer relationship management (CRM) integration, digital marketing capability, and innovation performance. Further studies may also employ larger sample sizes and involve MSMEs from various industrial sectors and geographical regions to improve the generalizability of the findings. In addition, longitudinal research designs are encouraged to examine the long-term effects of digital transformation on organizational performance and competitive sustainability. Comparative studies between digitally mature and digitally emerging MSMEs may also provide deeper insights into the factors that accelerate successful digital transformation and strengthen business competitiveness in the Industry 5.0 environment.

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