DIGITAL MARKETING TRANSFORMATION AND COMPETITIVE ADVANTAGE: THE MEDIATING ROLE OF INNOVATION STRATEGY IN CONSTRUCTION SERVICES

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ABSTRACT

Construction service firms face increasing pressure to adapt to digital transformation and intensifying market competition. However, the mechanisms through which digital marketing transformation and market segmentation contribute to competitive advantage, particularly through innovation strategy, remain insufficiently understood in the construction services context. This study examines the direct and indirect effects of digital marketing transformation and market segmentation on competitive advantage, with innovation strategy as a mediating variable. Data were collected from 200 managerial-level respondents in Indonesia and analysed using partial least squares structural equation modelling (PLS-SEM). The findings reveal that digital marketing transformation significantly affects innovation strategy ($\beta = 0.55$; $p < 0.001$), as does market segmentation ($\beta = 0.40$; $p < 0.001$). Innovation strategy has the strongest effect on competitive advantage ($\beta = 0.60$; $p < 0.001$). Digital marketing transformation and market segmentation also have direct effects on competitive advantage, with coefficients of 0.25 and 0.18, respectively. The mediation analysis indicates positive indirect effects through innovation strategy of 0.33 for digital marketing transformation and 0.24 for market segmentation. The model explains 48% of the variance in innovation strategy and 62% in competitive advantage. This study contributes to the strategic management literature by integrating digital marketing transformation and market segmentation within a mediation framework that identifies innovation strategy as a key mechanism linking these factors to competitive advantage in construction services. The findings highlight the importance of aligning digital marketing capabilities and market segmentation with innovation-oriented strategies to strengthen firms' competitive positions.

Keywords: *Digital Marketing Transformation, Market Segmentation; Innovation Strategy; Competitive Advantage; Construction Services*

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1. INTRODUCTION

Despite its significant economic contribution, the construction industry has long been recognised as one of the slowest sectors to embrace digital transformation, particularly in comparison to industries such as manufacturing and retail (K. Wang et al., 2024). Historically characterised by traditional operations and a conservative mindset, construction companies have been reluctant to adopt digital technologies beyond core engineering functions. However, the COVID-19 pandemic has served as a major turning point, accelerating digitalisation across all sectors including construction at an unprecedented rate. This shift has made it no longer sufficient for firms to merely modernise their operational systems; they must also strategically transform their marketing approaches to remain relevant in an increasingly digital and competitive landscape (Perera et al., 2020).

Digital marketing transformation refers to the integration of digital technologies into marketing strategies to enable more personalised, efficient, and value-driven engagement with customers (Cioppi et al., 2023; Fachrunnisa et al., 2020; Guspul, 2018). In the construction services industry where long project cycles, complex procurement processes, and trust-based client relationships dominate digital marketing holds transformative potential. It can significantly improve communication effectiveness and reshape how firms nurture loyalty and secure high-value contracts (Begić et al., 2022; Guspul, 2025). Yet, successful digital marketing is not simply about technology adoption; it demands a customer-centric mindset underpinned by data. However, digital marketing adoption does not automatically create competitive advantage; its value depends on how effectively firms translate digital capabilities into differentiated customer value.

A crucial component of digital marketing in the digital age is data-driven market segmentation, which allows companies to identify and respond to specific customer needs based on demographic, geographic, behavioural, and digital interaction data (Kotler et al., 2021). In construction services, this enables firms to offer tailored solutions that enhance client satisfaction and loyalty (Awodele et al., 2020; Mahfud et al., 2024). Moreover, in an environment marked by rapid technological change and rising customer expectations, the ability to dynamically adjust marketing strategies in real-time is increasingly becoming a key differentiator of competitive advantage (Tuten & Solomon, 2018). Unlike digital marketing transformation, which concerns technology integration, market segmentation focuses on identifying and targeting distinct customer groups; their complementary contributions to competitive advantage therefore warrant examination.

However, the mere adoption of digital marketing tools and segmentation techniques does not guarantee long-term differentiation. An innovation strategy is needed to act as a strategic bridge translating the use of digital technologies into unique, value-creating, and hard-to-replicate business capabilities (Tidd & Bessant, 2018). In the construction industry, this innovation manifests through smart bidding platforms, customer relationship management (CRM) systems, virtual design walkthroughs, and AI-powered client interaction tools (Ye et al., 2022). When strategically implemented, such innovations not only enhance marketing effectiveness but also elevate perceptions of professionalism, responsiveness, and service quality crucial components of sustainable competitive advantage (C. L. Wang & Ahmed, 2004). Thus, innovation strategy may serve as a mediating mechanism through which digital marketing transformation and market segmentation contribute to competitive advantage.

Notably, while digital transformation in construction has received growing attention, most existing studies remain focused on its technical dimensions, such as Building Information Modelling (BIM), automation, and the Internet of Things (IoT) (Rashidah et al., 2024; Samuelson & Stehn, 2023; Volk et al., 2014). Although these studies explain technological adoption and operational improvements, they provide less insight into how marketing-related digital capabilities generate competitive advantage through

innovation. In contrast, the strategic marketing perspective particularly the integrated role of digital transformation, market segmentation, and innovation in achieving competitive advantage remains underexplored, especially in the context of developing countries like Indonesia. Specifically, limited empirical attention has been given to the combined effects of digital marketing transformation and market segmentation and the mediating role of innovation strategy in these relationships.

Therefore, this study seeks to fill that gap by proposing and empirically testing a conceptual model that examines the influence of digital marketing transformation and market segmentation on competitive advantage in the construction services sector, with innovation strategy as a mediating variable. Unlike studies focusing primarily on technological adoption, this study integrates two marketing-related factors and examines both their direct effects on competitive advantage and their indirect effects through innovation strategy. Theoretically, this study extends the strategic marketing perspective by explaining innovation strategy as a mechanism linking digital marketing transformation and market segmentation to competitive advantage. Practically, it offers empirical insights for construction firms operating in volatile, uncertain, and digitally evolving markets particularly in developing economies on how to design agile, innovation-driven strategies that foster sustainable competitive advantage.

1.1. Literature Review

1.1.1. Resource-Based View Theory

One of the theoretical frameworks underlying this research is the Resource-Based View (RBV) developed by (Barney, 1991). The RBV perspective views that a company's competitive advantage depends on its ability to manage and utilise internal resources that are Valuable, Rare, Inimitable, and Non-Substitutable (VRIN). In the context of increasingly digitised construction services, digital marketing can be positioned as a strategic resource that, if processed effectively through innovation strategies, can become a source of sustainable competitive advantage.

RBV explains that digital transformation is not just the adoption of technology, but an integrative process that changes the way companies create value through unique resource-based innovation. In the construction industry, this includes the ability to manage customer data, build digital platform-based relationships, and develop value propositions through precision segmentation-based marketing approaches. The innovation strategy in this study acts as a dynamic capability that enables companies to adapt and convert these digital resources into advantages that are difficult for competitors to replicate (Teece; et al., 1997).

1.1.2. Digital Marketing Transformation

Digital marketing transformation is an integrative process that involves the adoption of digital technologies in all marketing activities to improve operational efficiency, customer experience, and company competitiveness (Kannan & Li, 2017; Lamberton & Stephen, 2016). In the context of the construction services industry, this transformation includes a shift from conventional to digital approaches through the utilisation of social media, cloud-based CRM systems, and technologies based on artificial intelligence and data analytics (Brewis et al., 2023). These initiatives not only accelerate customer interactions, but also enable more precise segmentation and marketing strategies through real-time monitoring of consumer behaviour (Chatterjee et al., 2021; Mulyana et al., 2024; Sivarajah et al., 2017). Thus, digital marketing transformation is an essential strategic component in building a competitive advantage in the industrial 4.0 era.

1.1.3. Innovation Strategy

Innovation strategy refers to a systematic approach in creating, developing and implementing new ideas to create competitive advantage and sustainable added value (Crossan & Apaydin, 2010; Tidd & Bessant, 2018). In the context of an increasingly digitised construction services industry, this strategy includes the adoption of cutting-edge technology, digital-based service models, and collaborative processes that are adaptive to market dynamics (Chatterjee et al., 2021). Effective implementation of innovation strategies can increase a company's adaptability to external changes, while driving operational efficiency, service quality, and customer satisfaction (Amankwah-Amoah et

al., 2021; Ji, 2022). Innovation in this case covers both technical and non-technical aspects, including business models, organisational structures, and marketing strategies that are adapted to the demands of digital transformation.

1.1.4. Competitive Advantage

Competitive advantage reflects a firm's superior position over competitors in terms of creating higher value for customers through differentiation, efficiency, or continuous innovation (Barney, 1991; Porter, 1985). In the context of a digitised construction services industry, this advantage is gained through adaptive capabilities to technology, intelligent management of customer information, and value creation relevant to modern market needs (Heredia et al., 2022). Digital transformation and innovation strategies play an important role in strengthening competitive advantage as they enable companies to respond faster to the market, improve operational efficiency, and expand technology-based service segmentation (Rialti et al., 2019; Teece et al., 2016). Therefore, today's competitive advantage relies heavily on a firm's dynamic capabilities in managing change and creating uniqueness that is difficult to replicate.

1.1.5. Market Segmentation

Market segmentation is a strategic process of dividing a market into homogeneous groups of consumers based on certain characteristics, needs, or behaviours in order to develop more targeted marketing strategies (Dibb & Simkin, 2008; Wedel & Kamakura, 2000). In the construction services industry, the segmentation approach is becoming increasingly important as the complexity of client needs increases and digital technology develops that enables more accurate and real-time analysis of market data (Chatterjee et al., 2021). With the help of digital technology, companies can apply segmentation based on digital behaviour, project preferences, and geographic location based on spatial data, which enables efficiency in service offerings and increased customer value (Camilleri, 2018; Wamba et al., 2017). Therefore, market segmentation serves as the foundation for designing digital marketing strategies that are relevant and adaptive to the dynamics of the competitive construction market.

1.2. Hypothesis Development

1.2.1. Digital Marketing Transformation to Innovation Strategy

Digital marketing transformation not only changes the way companies interact with customers, but also drives fundamental changes in the internal structure and innovation process of organisations (Cioppi et al., 2023; Ellström et al., 2022). Through the integration of technologies such as big data analytics, marketing automation, digital platforms, and AI, companies have the ability to generate sharper insights into consumer behaviour and market trends, which become an important foundation for the development of innovation strategies (Kannan & Li, 2017).

In the dynamic and highly competitive construction services sector, digital transformation enables companies to design innovative technology-based solutions, increase operational flexibility, and accelerate time-to-market of service innovations (Chatterjee et al., 2021). In addition, digitalisation encourages cross-functional collaboration and the adoption of agile approaches in project development, which strengthens a company's ability to respond to external changes more innovatively and efficiently (Matarazzo et al., 2021). In other words, the higher the level of digital transformation adopted, the stronger the impetus for the company's innovation strategy.

H1: Digital marketing transformation has a positive effect on innovation strategies in construction services companies.

1.2.2. Market Segmentation on Innovation Strategy

Market segmentation serves not only as a customer mapping tool (Qomaruddin et al., 2023), but also as a strategic foundation in the development of relevant and high value-added innovations (Dibb & Simkin, 2008). When companies are able to identify the specific characteristics of each market segment such as needs, preferences, and consumption behaviour they have a stronger basis for designing targeted and impactful innovation strategies (Camilleri, 2018). In a digital and competitive context such as the construction services industry, data-driven market

segmentation enables companies to customise service offerings, accelerate the development of client need-based solutions, and drive innovation in both business models and service technologies (Wamba et al., 2017). Thus, market segmentation not only supports marketing effectiveness, but also acts as a trigger for customer-orientated innovation strategies and competitive advantage.

H2: Market segmentation has a positive effect on innovation strategies in construction services companies

1.2.3. Innovation Strategy on Competitive Advantage

One of the crucial strategic approaches in this regard is the implementation of innovation strategy. Innovation strategy reflects an organisation's capability to create, adopt and implement valuable new ideas in business processes and services, which in turn can differentiate the company from its competitors (Azar & Ciabuschi, 2017). The implementation of innovation strategies enables construction service companies to respond more quickly to market changes, create new value for customers, and improve operational efficiency. Innovation in products, processes, and business models has been empirically proven to provide sustainable competitive advantage (Ferreira et al., 2019). In addition, innovation strategy is also an important foundation in effectively leveraging digital transformation, including in the realm of digital marketing, so that organisations can form unique value propositions. Previous research confirms that innovation strategy acts as a link between digital transformation and competitive advantage, as innovation enables organisations to convert digital opportunities into market-relevant advantages (Bresciani et al., 2021).

H3: Innovation strategy has a positive effect on competitive advantage in construction services companies.

1.2.4. Digital Marketing Transformation to Competitive Advantage

Digital marketing transformation reflects a strategic shift in the use of digital technologies to create customer value, strengthen market relationships and improve operational efficiency. In the traditionally competitive construction services industry, the adoption of digital technologies in marketing such as marketing automation, big data utilisation, and interactive digital platforms can improve competitiveness by presenting value propositions that are more relevant and responsive to customer needs (Sivarajah et al., 2017). Digital marketing transformation not only expands market reach and improves service personalisation, but also creates efficiency in the customer acquisition and retention process. This strengthens the company's strategic position in the market, while creating differentiation that is difficult for competitors to replicate (Heredia et al., 2022). Recent studies have shown that companies that successfully integrate digital marketing into their business models are more likely to gain competitive advantage through increased service innovation, speed of response, and superior customer experience (Verhoef et al., 2021).

H4: Digital marketing transformation has a positive effect on competitive advantage in construction services companies.

1.2.5. Market Segmentation on Competitive Advantage

Market segmentation is a strategic foundation in designing sustainable competitive advantage, as it allows companies to understand the different needs, behaviours, and preferences of customers in greater depth. In the context of construction services, proper segmentation can improve resource allocation efficiency, strengthen service focus, and create a more relevant value proposition that is difficult for competitors to replicate (Dibb & Simkin, 2008). By recognising high-value customer segments, companies can develop more targeted and effective marketing strategies and service innovations. Research shows that companies that apply data-driven segmentation approaches and digital technologies are able to identify more precise market opportunities, strengthen service differentiation, and proactively respond to customer needs, all of which are major factors in the formation of competitive advantage (Regmi et al., 2022; Wedel & Kamakura, 2000). This is even more relevant in the digital era, where speed and accuracy in customising offerings to the right segments are key to competitive advantage.

H5: Market segmentation has a positive effect on competitive advantage in construction services companies

1.2.6. Mediating Innovation Strategy on the Effect of Digital Marketing Transformation on Competitive Advantage

The transformation of digital marketing provides the technological and data foundation that enables companies to reach the market in a more dynamic and personalised manner. However, competitive advantage depends not only on the adoption of technology itself, but on how companies internalise digital technology into strategic innovation processes. In other words, the success of digital transformation in creating competitive advantage is largely determined by the company's ability to develop an adaptive and customer value-oriented innovation strategy (Sagala & Őri, 2024). Innovation strategy acts as a conversion mechanism, transforming the potential of digital technologies into tangible advantages through the creation of new products, services or processes that differentiate firms from competitors (Khin & Ho, 2019). In the construction services sector, where service differentiation and responsiveness to client needs are crucial, innovation fuelled by digital transformation can accelerate time-to-market, improve efficiency, and strengthen value propositions. Recent research shows that digitalisation drives innovation, and it is this innovation that is key to improving an organisation's competitive performance (Zhao et al., 2023).

H6: Innovation strategy mediates the effect of digital marketing transformation on competitive advantage in construction services companies.

1.2.7. Mediating Innovation Strategy on the Effect of Market Segmentation on Competitive Advantage

Proper market segmentation allows companies to deeply understand the characteristics, preferences and specific needs of each customer group. However, for the segmentation to truly generate competitive advantage, companies need to follow up with relevant and focused innovation strategies for each target segment. In this context, innovation strategy acts as a bridge that transforms insights from market segmentation into real differentiation through the development of unique products, services or processes (Ngo & O'Cass, 2013). Without an innovation strategy, market segmentation is just passive information that does not necessarily generate strategic value. In contrast, when market insights are used to drive targeted innovation, companies can create more appropriate solutions, strengthen competitiveness, and build a superior value proposition (Cui & Wu, 2016). This is particularly relevant in the construction services industry, which often faces highly diverse and dynamic customer needs. Innovation fuelled by understanding customer segments allows companies to be more adaptive and responsive to market demands. Empirical research confirms that market segmentation integrated with the innovation process will increase the effectiveness of competitive strategies and increase the chances of achieving competitive advantage (Im & Workman, 2004).

H7: Innovation strategy mediates the effect of market segmentation on competitive advantage in construction services companies.

Based on the explanation that has been developed in the hypothesis, this research can be established as a research model as shown in the following figure 1 (Porter, 1985);

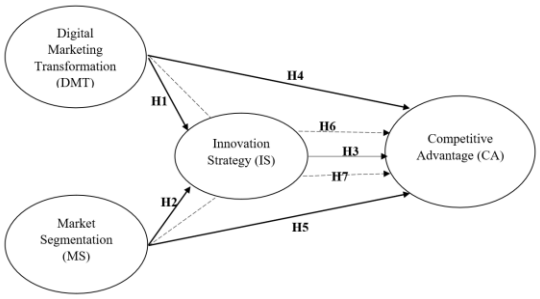


Fig. 1. Research model

1.2.8. Research Significance

This study seeks to fill that gap (Faqih et al., 2025) by proposing and empirically testing a conceptual model that examines the influence of digital marketing transformation and market segmentation on competitive advantage in the construction services sector, with innovation strategy as a mediating variable. Theoretically, this study contributes to the emerging intersection between construction management, digital marketing, and innovation strategy (Faqih et al., 2024). Practically, it offers empirical insights for

construction firms operating in volatile, uncertain, and digitally evolving markets particularly in developing economies on how to design agile, innovation-driven strategies that foster sustainable competitive advantage.

2. METHODS

This study uses a quantitative approach with Structural Equation Modeling Partial Least Squares (SEM-PLS) analysis technique to examine the relationship between the main variables, namely digital marketing transformation, market segmentation, innovation strategy, and competitive advantage. The target population comprised managerial-level personnel in Indonesian construction service companies, including marketing managers, project managers, and strategy unit leaders. Purposive sampling was applied based on respondents' managerial positions, company adoption of digital marketing technologies, and knowledge of organisational marketing and innovation practices. Data were collected through online questionnaires, yielding 200 valid responses. The sample size was considered in relation to the complexity of the structural model and PLS-SEM requirements, following the guidelines of Hair et al. (2021). The 200 respondents served as the units of analysis.

The research instrument consisted of indicators adapted from previous literature. All indicators were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Digital marketing transformation was measured through social media utilisation, data analytics and AI utilisation, digital marketing automation, and real-time strategy adaptability (Kannan & Li, 2017; Perez-Vega et al., 2021). Market segmentation is measured through indicators of demographic, geographic, psychographic/behavioural segmentation, customer digital data utilisation (Kotler et al., 2021). Innovation strategy is measured based on indicators of new technology implementation, digital service development, business model innovation, and cross-functional collaboration (Chatterjee et al., 2021; Tidd & Bessant, 2018). Meanwhile, competitive advantage is measured through service differentiation, customer satisfaction and loyalty, corporate reputation, and adaptability to the market (Ji, 2022; Porter, 1985).

Measurement model assessment covered convergent validity through indicator loadings and Average Variance Extracted (AVE), internal consistency through Cronbach's alpha and Composite Reliability (CR), and discriminant validity through the Heterotrait-Monotrait (HTMT) ratio. Recommended thresholds were 0.70 for indicator loadings and reliability, 0.50 for AVE, and below 0.90 for HTMT (Hair et al., 2021). All analyses were performed using SmartPLS 4.

3. RESULTS

3.1. Respondent demographic characteristics

The number of respondents in this study totalled 200 respondents. The characteristics of respondents were categorised based on gender, age, education level, position, length of service in the industry, type of company. The following is a summary description of the characteristics of respondents based on gender, age, education level, position, length of service in the industry, and type of company presented in table 1;

Table 1. Respondent Profile

Category	Classification	Frequency	Percentage (%)
Gender	Male	142	71.0%
	Female	58	29.0%
Age	< 30 years	32	16.0%
	30-39 years	96	48.0%
	40-49 years	54	27.0%
	≥ 50 years	18	9.0%
Education level	D3	18	9.0%
	S1	132	66.0%
	S2/S3	50	25.0%
Position	Marketing Manager	78	39.0%
	Project Manager	64	32.0%
	Head of Strategy Division	30	15.0%
	Others (Director)	28	14.0%
Length of Service in the Industry	< 5 years	40	20.0%

Category	Classification	Frequency	Percentage (%)
	5-10 years	76	38.0%
	11-15 years	56	28.0%
	> 15 years	28	14.0%
Type of Company	General Construction	122	61.0%
	Specialist Construction	48	24.0%
	Consultant/Project Management	30	15.0%

Based on the table above, this study involved 200 respondents from construction service companies in Indonesia. Based on gender, the majority of respondents are male at 71% (n=142), while female at 29% (n=58). In terms of age, the respondents are divided into four groups, with the 30-39 years age group dominating as much as 48% (n=96), followed by 40-49 years age as much as 27% (n=54), age less than 30 years 16% (n=32), and age 50 years and over as much as 9% (n=18).

The majority of respondents' education is undergraduate (S1) at 66% (n=132), followed by postgraduate (S2/S3) at 25% (n=50), and diploma (D3) at 9% (n=18). Respondents' positions varied, with Marketing Managers making up the majority at 39% (n=78), followed by Project Managers at 32% (n=64), Heads of Strategy at 15% (n=30), and other positions such as COO or Director at 14% (n=28).

In terms of work experience, most respondents have a working period of between 5 to 10 years as much as 38% (n=76), then less than 5 years 20% (n=40), between 11 to 15 years 28% (n=56), and more than 15 years 14% (n=28). As for the type of company, the majority of respondents work in general construction companies at 61% (n=122), specialist construction at 24% (n=48), and the rest in consulting or project management companies at 15% (n=30).

3.2. Outer Model Testing (Measurement Model)

Outer model evaluation is carried out to test construct validity and reliability. The tests carried out include: Convergent Validity seen from the Average Variance Extracted (AVE) value, with a minimum limit of ≥ 0.50 (Larcker, 1981). Construct reliability is measured through Composite Reliability (CR) and Cronbach's Alpha, with an ideal value above 0.70 (Hair et al., 2019). The results of the measurement model evaluation (outer model) can be seen in table 2;

Table 2. Measurement Model (Outer Model)

Variable	Indicators	Outer Loading	Composite Reliability	AVE
Digital Marketing Transformation	DMT_Ind1	0.78	0.89	0.55
	DMT_Ind2	0.81		
	DMT_Ind3	0.83		
	DMT_Ind4	0.80		
Market Segmentation	MS_Ind1	0.77	0.87	0.52
	MS_Ind2	0.79		
	MS_Ind3	0.76		
	MS_Ind4	0.74		
Innovation Strategy	IS_Ind1	0.82	0.90	0.58
	IS_Ind2	0.84		
	IS_Ind3	0.85		
	IS_Ind4	0.81		
Competitive Advantage	CA_Ind1	0.80	0.88	0.57
	CA_Ind2	0.83		
	CA_Ind3	0.78		
	CA_Ind4	0.76		

From the test results, all indicators used successfully measure their variables well. The outer loading value of each indicator ranges from 0.74 to 0.85, already exceeding the minimum limit of 0.7 which is commonly used as a validity standard. This means that each item truly reflects the variable being measured. In addition, the composite reliability (CR) value for all variables is above 0.85, indicating that the measurement is consistent and reliable. The Average Variance Extracted (AVE) value is also above 0.5, which indicates that the indicators are able to capture more than 50% of the variance of their respective variables.

So, overall, this measurement tool is valid and reliable.

3.3. Discriminant Validity Testing

Discriminant validity test is conducted to ensure that each construct in the model is truly different from each other. This validity indicates that the indicators of a construct represent the construct more than other constructs. The test is carried out using the approach Fornell-Larcker according to the PLS-SEM method**.** The results of the discriminant validity test can be seen in table 3 below;

Table.3. Discriminant Validity Testing

Variable	DMT	MS	IS	CA
Digital Marketing Transformation (DMT)	0.74			
Market Segmentation (MS)	.42	.72		
Innovation Strategy (IS)	.55	.48	.76	
Competitive Advantage (CA)	.50	.43	.60	**.75**

The results of testing discriminant validity with the Fornell-Larcker approach show that all constructs in the model meet the criteria for discriminant validity. This can be seen from the root AVE (Average Variance Extracted) value of each variable which is higher than its correlation with other constructs in the model.

The Digital Marketing Transformation (DMT) construct has an AVE value of 0.74, which is higher than its correlation with Innovation Strategy (IS) of 0.55, Competitive Advantage (CA) of 0.50, and Market Segmentation (MS) of 0.42. Likewise, the Market Segmentation (MS) construct has a √AVE of 0.72, higher than its highest correlation with other constructs of 0.48 (with IS). The Innovation Strategy (IS) construct also showed good discriminant validity with a √AVE of 0.76, higher than its highest correlation of 0.60 (with CA). Finally, Competitive Advantage (CA) has a √AVE of 0.75, which is also higher than all its correlations with other constructs, including 0.60 (with IS).

3.4. Testing the Structural Model (Inner Model)

The structural model is tested to see the relationship between latent constructs, by looking at the path coefficient value and t-statistic value using the bootstrapping method with 5000 subsamples to test the significance of the relationship. The results of the evaluation of the structure model (inner model) can be seen in table 4;

Table 4. Structural Model (Inner Model)

Path Relationship	Path Coefficient	t-Statistic	p-Value
Digital Marketing Transformation → Innovation Strategy	0.55	7.12	<0.001
Market Segmentation → Innovation Strategy	0.40	5.85	<0.001
Innovation Strategy → Competitive Advantage	0.60	8.45	<0.001
Digital Marketing Transformation → Competitive Advantage	0.25	3.10	0.002
Market Segmentation → Competitive Advantage	0.18	2.05	0.041

The path coefficient results show that digital marketing transformation has a significant positive effect on innovation strategy with a value of 0.55 ($p < 0.01$). Likewise, market segmentation has a significant positive effect on innovation strategy with a value of 0.40 ($p < 0.05$). Furthermore, innovation strategy has the strongest influence on competitive advantage at 0.60 ($p < 0.01$). Digital marketing transformation also has a positive direct effect on competitive advantage with a value of 0.25 ($p < 0.05$), while market segmentation has a smaller direct effect, namely 0.18 ($p < 0.1$).

3.5. Mediation Analysis

To test whether Innovation Strategy mediates the effect of Digital Marketing Transformation and Market Segmentation on Competitive Advantage, direct and indirect path testing was conducted. The following table 5 shows the effect of mediation.

Table 5. Mediation Analysis

Influences	Direct Effect	Indirect Effect (via Innovation Strategy)	Total Effect	Significance
Digital Marketing Transformation → Innovation Strategy → Competitive Advantage	0.25	0.33 (0.55 x 0.60)	0.58	Sig. ($p<0.01$)
Market Segmentation → Innovation Strategy → Competitive Advantage	0.18	0.24 (0.40 x 0.60)	0.42	Sig. ($p<0.05$)

In the mediation analysis, the indirect effect of digital marketing transformation on competitive advantage through innovation strategy is 0.33, which is greater than the direct effect of 0.25. This indicates that innovation strategy partially mediates this relationship and strengthens the effect of digital transformation on competitive advantage. Meanwhile, the indirect effect of market segmentation through innovation strategy is 0.24, also greater than its direct effect of 0.18, reinforcing the mediating role of innovation strategy here. Thus, innovation becomes the key link that strengthens the contribution of both variables to competitive advantage.

3.6. R-Square dan Predictive Relevance (Q^2)

R-Square (R^2) and predictive relevance (Q^2) analyses were used to evaluate the predictive ability of the structural model. The R^2 value shows how much the independent variable is able to explain the dependent variable, while Q^2 measures the predictive relevance of the model to the observed data. The following analysis results can be seen in table 6 below;

Table 6. R-Square dan Predictive Relevance (Q^2)

Construct	R-Square	Q^2 (Stone-Geisser)
Innovation Strategy	0.48	0.31
Competitive Advantage	0.62	0.38

The R-square value for innovation strategy of 0.48 indicates that 48% of the variation in innovation strategy can be explained by digital marketing transformation and market segmentation. The R-square value of 0.62 for competitive advantage shows the model's strong ability to explain competitive advantage. In addition, the positive Q^2 values for both constructs indicate that the model also has good predictive relevance, so the results are not only applicable to existing data but can also be used to predict future conditions.

3.7. Recapitulation of Analysis Results

This section presents a recapitulation of the overall model analysis results, including the relationship between variables, significance values, and model quality indicators. The following recapitulation results are in table 7;

Table 7. Recapitulation of Analysis Results

No	Hypothesis	Path Coefficient (β)	t-Statistic	p-Value	Hypothesis Decision
H1	DMT → IS	0.55	7.12	<0.001	Accepted
H2	MS → IS	0.40	5.85	<0.001	Accepted
H3	IS → CA	0.60	8.45	<0.001	Accepted
H4	DMT → CA	0.25	3.10	0.002	Accepted
H5	MS → CA	0.18	2.05	0.041	Accepted
H6	Madiation IS on DMT → CA	0.33* (indirect)	5.20*	<0.001*	Accepted
H7	Madiation IS on DMT → CA	0.24* (indirect)	3.60*	<0.001*	Accepted

3.8. Discussion

The findings of this study clearly show that digital marketing transformation contributes significantly to the competitive advantage of construction companies, both directly and indirectly through innovation strategies. This suggests that companies that begin to abandon traditional marketing approaches and move to a more scalable, responsive and data-driven digital system, will be in a stronger position to face competition. The use of technologies such as cloud-based CRM, customer analytics, and marketing content automation are important differentiators that not only improve efficiency but also create more valuable customer experiences (Chatterjee et al., 2021; Sivarajah et al., 2017). This finding extends previous research by demonstrating the contribution of digital marketing transformation to competitive advantage in construction services, where project complexity, customer trust, and service differentiation are critical.

However, technology alone is not enough without the ability to translate the potential of the technology into concrete added value for customers. This is where innovation strategy plays an important role. This research

shows that innovation acts as a link between digitalisation and competitive advantage not only in the form of new products or services, but also in how companies structure their business processes in a more agile, collaborative and adaptive manner to change. This is in line with (Tidd & Bessant, 2018) idea that innovation should be interpreted as a systematic effort to create new value through a unique combination of resources, technology, and market strategy. In construction services, innovation strategy translates digital capabilities into customised proposals, responsive communication, and differentiated services, explaining how digital marketing transformation creates competitive advantage beyond technology adoption.

On the other hand, data-driven market segmentation also contributes positively to competitive advantage, especially when companies are able to better understand who their customers are, what their unique needs are, and how their preferences change over time. Through smart utilisation of digital data, companies can tailor their messages, channels and communication approaches to be more relevant and impactful. This reinforces the view of (Kotler et al., 2021) that modern marketing strategies demand emotional and rational closeness that can only be achieved through precise and sustainable segmentation. Market segmentation creates competitive value when customer insights are translated into innovative services and targeted marketing practices, making innovation strategy a link between market understanding and competitive advantage.

The results of this study confirm that competitive advantage in the digital era cannot be built from one aspect alone, but must be through a synergy between technological transformation, a deep understanding of the market, and the courage to continue to innovate. This is an important note for construction companies in emerging markets such as Indonesia, where digital transformation is often met with resistance or half-heartedly executed. This finding reinforces the argument of (Amankwah-Amoah et al., 2021) that in the post-pandemic context, only organisations that are able to innovate digitally will be able to survive and grow. These findings highlight innovation strategy as a connecting mechanism between digital marketing transformation, market segmentation, and competitive advantage, underscoring the need for construction firms to integrate these capabilities.

4. CONCLUSIONS

This study concludes that digital marketing transformation and market segmentation have a significant influence on innovation strategy, which in turn has a positive impact on the competitive advantage of construction service companies. SEM-PLS results show that digital marketing transformation has a direct effect on competitive advantage, but the indirect effect through innovation strategy proves stronger, confirming the partial mediating role of innovation strategy in the relationship. Similarly, market segmentation, in addition to having a direct effect on competitive advantage, also has a significant mediating effect through innovation strategy.

These findings reinforce the argument that competitive advantage in the construction industry in the digital era does not simply rely on technology adoption and market understanding, but must also be followed by the development of relevant and adaptive innovations. Thus, construction companies in emerging markets such as Indonesia are advised to place innovation strategies at the core of their digital transformation and marketing strategies.

This study has several limitations. The cross-sectional design used is unable to capture the dynamics of strategy change in real time. The geographical focus is limited to Indonesia, so the results cannot be generalised to a global context. In addition, the respondents only came from managerial circles, without involving the perspectives of operational staff or customers. This study has also not accommodated other variables that could potentially affect the relationship between variables, such as organisational culture or digital leadership. For this reason, future research is recommended to use a longitudinal design and expand the geographical coverage to regions with different levels of digital adoption. Involving respondents from different levels of the

organisation as well as customers will enrich the perspective. Model development with additional variables such as digital capability, innovation culture, or leadership style can also strengthen the theoretical and practical contributions in the context of the construction services industry.

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