



RESEARCH ARTICLE

Navigating Uncertainty: How Dynamic Capabilities Drive Competitive Advantage in Indonesian Hospitals

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ARTICLE INFO	ABSTRACT
Received: Apr 24, 2024	<p>The uncertainty surrounding the future of hospitals highlights the relevance of the dynamic capabilities framework. After years of facing low competition and easily predictable challenges, hospitals are now encountering more intense competition amidst uncertainty. This study aims to investigate the role of dynamic capabilities (Teece, 2019) in the competitive advantage of hospital businesses in Indonesia. Using a quantitative approach, structured questionnaires were distributed to 112 hospital practitioners across three provinces in Indonesia (Jakarta, Banten, and West Java). The collected data were analyzed using Smart-PLS to evaluate the structural equation model. The results support the proposed model, demonstrating the direct impact of dynamic capabilities on competitive advantage. Dynamic capabilities enable hospitals to achieve and maintain a superior position in the competitive market. Hospitals that can adapt strategies, modify operations, and allocate resources efficiently based on environmental changes will be better equipped to sustain competitiveness and relevance in the market</p>
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INTRODUCTION

The hospital business possesses unique characteristics. Not only must it adhere to specific performance standards to achieve the necessary quality in each service type, but it also has a responsibility to fulfill social expectations beyond conventional business scope. These social expectations are linked to the broader responsibilities and roles expected of hospitals as healthcare institutions. By meeting social expectations beyond conventional business boundaries, hospitals can function as more than mere business entities. Viewing hospitals as business entities implies they can be regarded as organizations or institutions operating to seek financial gain, akin to any other business. In this approach, hospitals operate with a focus on economic aspects and achieving profitability. They can apply business principles by adopting professional and efficient management approaches to attain profit goals and ensure the long-term well-being of the organization.

The structure of hospital service providers in Indonesia is characterized by high barriers to entry, interdependence among hospitals, and the substitutability of services among them. To overcome these high entry barriers, particularly due to service substitution, hospital service providers should strive to enter competitive markets. Such efforts can begin by enhancing organizational capabilities from being ordinary to acquiring new, unique, and dynamic capabilities, known as dynamic capabilities. In the context of the hospital business, dynamic capabilities refer to the ability to develop and transform routine capabilities into unique and competitive capabilities in the healthcare market.

Organizations, including hospitals, need the ability to adapt to changing environments, seek innovation opportunities, and create strong differentiation to remain relevant and competitive in highly competitive industries (Teece et al., 1997). Coordination and resource management by top management, using dynamic capabilities as a process tool, are employed to orchestrate the enhancement of resource capability levels from ordinary to strategic levels that are key to maintaining hospital relevance and competitiveness in a constantly evolving business environment (Katkalo et al., 2010; Qaiyum & Wang, 2018).

The study of the influence of dynamic capabilities and competitive advantage is an intriguing topic. It has been extensively researched by previous scholars such as Fainshmidt and Frazier (2016), who highlighted organizational climate as the foundation of dynamic capabilities and competitive advantage but provided less detailed explanations on how this process leads to competitive advantage, or Koentjoro and Gunawan (2020), who examined the relationship between knowledge management processes, dynamic capabilities, and competitive advantage in Indonesian family businesses to enhance business performance. Additionally, the study conducted by Liu et al. (2018) may further clarify how to create competitive advantage through sequential moderation, although critical aspects remain unexplored (Fainshmidt & Frazier, 2016; Koentjoro & Gunawan, 2020; Li & Liu, 2018; Rashid et al., 2023).

Our study offers fresh insights by focusing on three aspects. First, theoretically, we contribute to developing an understanding of the relationship between dynamic capabilities, ambidexterity, and competitive advantage in the context of hospital business. Second, practically, we provide insights applicable to hospitals to achieve competitive advantage amid dynamic market challenges. Third, from a managerial perspective, we can assist hospital leaders in making better decisions and effectively managing their resources. To support these objectives, this paper is structured as follows: Section 1 discusses the background of the research; Section 2 elaborates on the theory and relevant literature to formulate hypotheses; Section 3 describes the research methodology; Section 4 presents the analysis and results; Section 5 discusses the research findings, and the final section offers conclusions and recommendations for the future.

1. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

1.1. Intellectual Capital

Intellectual capital can be described as the combination of knowledge, skills, and expertise of individuals within an organization, initially regarded as an intangible asset. Over time, this concept has evolved to encompass collective assets such as corporate culture, knowledge systems, customer relationships, brands, and innovation. Figures like Tom Stewart, Larry Prusak, Ted Lumley, and Gordon Petrash have provided definitions highlighting the value of organizational knowledge and intellectual resources, emphasizing their contribution to competitive advantage and added value.

The first commercial definition of intellectual capital was explicitly introduced by Edvinsson & Sullivan (1996). They defined intellectual capital as "knowledge that can be converted into value." In their view, intellectual capital comprises a combination of human resources and structural capital. The distinction between these two types of components is crucial for the ownership of corporate knowledge. Unlike human resources, which cannot be traded and are not owned by shareholders, intellectual assets within structural capital can be traded and owned. Therefore, the benefit of intellectual capital lies in transforming innovations generated by human resources into intellectual assets that companies can assert ownership over, as upgrading human resources to become corporate capital is enabled by the structural capital owned by the company. One of management's

primary tasks is to transform human resources into intellectual assets (Edvinsson, 1997; Edvinsson & Sullivan, 1996; Hejase et al., 2016).

The definition of intellectual capital continued to evolve with the emergence of topics discussing corporate asset exploration as the foundation of competitive capabilities. Tom Stewart, in a series of articles in *Fortune* magazine, stated that "Intellectual capital is something you can't touch but which makes you rich." Larry Prusak, spokesperson for Ernst & Young, defined it as "intellectual material that has been formalized, captured, and leveraged (to produce a higher-valued asset)". Ted Lumley of Mobil saw it as "knowledge used to increase economic order in the business process," and Gordon Petrash of Dow Chemical defined it as "knowledge with potential for value" (Sanchez-Gutierrez et al., 2016; Wendra et al., 2019).

Although this concept varies in its dimensions, it reflects diverse expert views on intellectual capital, which remain relevant in the context of concept development and this research. Intellectual capital, as acknowledged by Ginesti et al. (2018) and Sveiby (1997), summarizes various non-material aspects that contribute to organizational value and competitiveness (Ginesti et al., 2018; Sveiby, 1997). Some experts, such as Karl Erik Sveiby (1997), Thomas Stewart (1998), and Nick Bontis (2000), divide intellectual capital into three dimensions: human capital, structural capital, and relational capital, known as the "H-S-R Structure" (Bontis et al., 2000; Kanval et al., 2024; Sardo et al., 2018; Stewart, 1998; Sveiby, 1997). In this study, the authors adopt these three dimensions of intellectual capital widely used by many researchers: human capital, structural capital, and relational capital.

1.2.Environment Uncertainty

Environmental uncertainty has been a central topic in discussions of organizational theory and strategic management, particularly in concepts examining the relationship between firms and their external environment (Duncan, 1972; Milliken, 1987). According to Milliken (1987), uncertainty is experienced when individuals feel they lack sufficient information to accurately predict outcomes or distinguish between relevant and irrelevant data. When the term "environment" is used to describe uncertainty, it indicates that the source of uncertainty originates from the external environment of the organization, where there is an unpredictability inherent to the organizational environment itself (Milliken, 1987). Therefore, environmental uncertainty is associated with the limitations of leaders and decision-makers to fully gather, process, and understand information about the organizational environment, often caused by instability and ambiguity in the environment (Duncan, 1972; Milliken, 1987; Vecchiato & Roveda, 2010).

Consequently, the organizational environment can be considered uncertain if business decision-makers responsible for the company's future development cannot accurately predict factors such as competitor behavior, socio-cultural attitudes, or technology. Environmental uncertainty is closely related to the challenges faced by decision-makers in understanding ongoing events or changes within their industry and how these will impact their organization. Leaders often find themselves making decisions under conditions of "bounded rationality," involving decision-making processes where alternatives and their consequences are not fully known. As a result, leaders and companies often struggle to fully gather, comprehend, and process new changes and events. Environmental uncertainty arises when leaders lack accurate information about organizational activities and events in their external environment; that is, when they are unsure if they can anticipate existing or forthcoming major changes. This lack of information creates issues for leaders by introducing ambiguity throughout the decision-making process (Duncan, 1972; Milliken, 1987; Vecchiato & Roveda, 2010).

Milliken identifies three types of uncertainty faced by strategic decision-makers: state uncertainty, effect uncertainty, and response uncertainty. State uncertainty occurs when the environment is perceived as unpredictable, while effect uncertainty relates to the difficulty of predicting how environmental changes will impact the organization. Meanwhile, response uncertainty involves understanding the available response options and the value of each option.

1.3. Dynamic Capabilities

Dynamic capabilities are an organization's ability to intentionally create, extend, or modify its resource base. It is also defined as the organization's ability to achieve new forms of competitive advantage by renewing its competencies - organizational resources - to adapt to changes in the business environment (Matysiak et al., 2018). Dynamic capabilities function to expand, modify, or transform ordinary capabilities into exceptional ones (Winter, 2003).

Teece (2012) describes dynamic capabilities in three dimensions: sensing, seizing, and reconfiguring (Popadiuk et al., 2018). The first dimension, sensing, involves the ability to analyze the environment and understand customer needs better than competitors (Helfat & Peteraf, 2014; Roy & Khokle, 2016). The second dimension, seizing, is the ability to identify opportunities and overcome threats in the business world, then analyze and develop business plans executed by the company according to a prepared roadmap (Day & Schoemaker, 2016; Ozanne et al., 2022). The third dimension, reconfiguring, is the company's ability to reconfigure its assets and orchestrate them more effectively in response to rapid and dynamic changes. Companies need not only the ability to dynamically react to these changes but also how to implement effective integration strategies, including specific adjustments to organizational structure, management processes, policy schemes, operations, and routine company activities (Helfat & Peteraf, 2014).

These three dimensions are part of the skills and processes to enhance the level of organizational capability. Dynamic capabilities can generally be categorized into the first level or operational level and the second level or strategic level. Basic activities at the operational level are the company's operational capabilities to carry out day-to-day activities. Conversely, the strategic level is the ability to develop and arrange configurations so that these daily activities can have specific benefits. Like in an orchestra, dynamic capabilities are the ability to control individuals working with various instruments. Individuals working with various instruments are analogized to the first level or operational level (Helfat & Peteraf, 2003; Laamanen & Wallin, 2009). Each capability, whether individually or in a group, will form a portfolio that can evolve.

1.4. Competitive Advantage

Competitive advantage is a fundamental concept in strategic management, still somewhat vague in its definition and operationalization. It serves as the basis for superior performance, with leaders responsible for understanding the anatomy of competitive advantage to ensure long-term success and organizational sustainability. By analyzing the roots of competitive advantage, hospitals can create and sustain profitability. By studying the substance, expression, locality, and effects of competitive advantage, hospitals can leverage their strengths more effectively and fully exploit their potential and sustainability (Girod & Whittington, 2017; Prabowo et al., 2021).

In the literature, competitive advantage is defined as the implementation of strategies not currently used by other companies, facilitating cost reduction, exploiting market opportunities, neutralizing competitive threats, and conceptualizing performance as a result of strategy implementation. A company has a competitive advantage when it can create more economic value than marginal

competitors in its product market (Adam & Lindahl, 2017; Porter, 1998). Additionally, competitive advantage involves above-average market opportunity exploitation and neutralization of competitive threats.

Theoretically, competitive advantage is sustainable when other businesses cannot replicate it. Successful businesses are those that can outperform competitors and maintain their edge. Integration of strategy and various resources is crucial in achieving and maintaining competitive capabilities. Porter outlines three types of business strategies to achieve and sustain competitive advantage: cost leadership strategy, differentiation strategy, and focus strategy (Bel, 2018; Porter, 1998). Decisions regarding competitive strategy are expected to bring competitive advantage to hospitals by considering the increasingly complex and rapid changes in the environment. In this context, dynamic capabilities have become winning strategies for hospitals to gain competitive advantage.

1.5.Hypothesis Development

Intellectual capital is an integral part of a company's operational capabilities. Operational capabilities involve aspects of resources, organizational processes, and managerial decisions, as described by Teece et al. (1997). These capabilities enable a company to create products, scale operations, and enter markets consistently, yet they are insufficient for creating long-term competitive advantages, as Ambrosini and Bowman (2009) explain. Therefore, companies must develop their resource capabilities from basic levels (routine operational capabilities) to strategic levels (dynamic capabilities) to create, transform, or reinforce their resources (Ambrosini & Bowman, 2009; Teece et al., 1997; Winter, 2003; Zahra et al., 2006).

Dynamic capabilities refer to a company's ability to build and reconfigure internal and external competencies in response to rapid environmental changes. Dynamic capabilities involve effective practices in achieving desired changes, particularly related to strategic decision-making, alliances, and knowledge transfer. Teece (2007) argues that organizations are no longer competing to have the best processes, but rather to have the ability to improve processes continuously. This philosophy underscores the importance of process improvement in maintaining competitiveness in today's fast-moving business environment.

Campos et al. (2020) state that intellectual capital is a driver of good business performance (Campos et al., 2020). The relationship between intellectual capital and dynamic capabilities is also highlighted by Nhon et al. (2020), who tested a conceptual model explaining how three types of dynamic capabilities (sensing, seizing, reconfiguring) mediate the impact of intellectual capital dimensions on firm performance, showing that intellectual capital significantly influences dynamic capabilities (Nhon et al., 2020). Heydari and Soltani (2022) also document a similar finding that intellectual capital has a strong and significant influence on dynamic capabilities (Heydari & Soltani, 2022). Thus, companies with strong intellectual capital have the potential to enhance dynamic capabilities, and vice versa. Here are the hypotheses proposed in this context:

Hypothesis 1: Intellectual capital has a direct effect on dynamic capabilities.

Organizations possess various resources that influence their performance, including visible and invisible assets that play a role in shaping competitive advantage. Intellectual capital is one form of intangible resource, with knowledge being an integral part of the organizational structure (Beltramino et al., 2020; Bontis et al., 2000). This knowledge can be static, like existing knowledge stock, or dynamic where knowledge continues to evolve through interactions within the

organization. Knowledge is acknowledged as the most crucial resource in companies and is considered foundational in creating competitive strategies, growth, and profitability (Chirumalla et al., 2023; Watkins et al., 2024).

Literature indicates that intellectual capital influences competitive advantage. Sanchez-Gutierrez et al. (2016) documented the impact of intellectual capital on competitiveness through an analysis of SMEs in Mexico (Sanchez-Gutierrez et al., 2016). Yaseen et al. (2016) investigated the impact of intellectual capital components on competitive advantage in the telecommunications sector in Jordan, noting that relational capital and structural capital, as dimensions of intellectual capital, exert a positive influence on competitive advantage, while human capital has a significant indirect effect through relational capital. Similar findings were also documented by Y. Q. Li & Liu (2018), who noted the indirect impact of intellectual capital on competitive advantage through mediating processes (Li & Liu, 2018; Yaseen et al., 2016). Based on the background regarding the influence of intellectual capital on competitive advantage, the following hypothesis can be formulated:

Hypothesis 2: Intellectual capital has a direct effect on competitive advantage.

Dynamic capabilities are often viewed as an extension of the resource-based view perspective. The resource-based view focuses on specific resources of the firm, both tangible and intangible assets, as well as operational capabilities (Helfat & Peteraf, 2014; Winter, 2003). Dynamic capabilities also emphasize the organization's ability to intentionally change or modify its resources to adapt to environmental changes (Schilke, 2014). In facing increasing uncertainty in the business environment, dynamic capabilities are seen as paving the way for developing competitive advantages in ever-changing situations. They enable firms to manage and adapt their internal and external resources. Understanding and harnessing dynamic capabilities help firms quickly identify market opportunities and threats through strong decision-making and appropriate early warning systems.

Literature indicates a significant relationship between environmental uncertainty and dynamic capabilities. Wilhelm et al. (2015) noted that dynamic capabilities strengthen the effectiveness of routine operations under varying levels of environmental uncertainty. Girod & Whittington (2017) compared the performance outcomes of two forms of organizational reorganization, restructuring and reconfiguration, stating that reconfiguring organizations yield more positive outcomes in dynamic environments. Amar et al. (2021) studied processes undertaken by the hospitality industry in Indonesia to address challenges, particularly related to dynamic capabilities, and found reinforcing effects of environmental uncertainty on dynamic capabilities (Amar et al., 2021; Girod & Whittington, 2017; Wilhelm et al., 2015). Similar analyses are supported by Harun et al. (2023), who examined the impact of dynamic capabilities on economic, social, and environmental performance across different levels of environmental dynamism. Haarhaus & Liening (2020) also investigated the impact of strategic foresight and found an influence of environmental uncertainty on dynamic capabilities (Haarhaus & Liening, 2020; Harun et al., 2023).

Environmental uncertainty and dynamic capabilities are important aspects to consider in the context of strategic management and competitiveness. A complex and constantly evolving business environment presents challenges and opportunities for firms. To achieve long-term success, companies need to understand and manage the interaction between changing business environments and the development of relevant and effective dynamic capabilities. The hypothesis proposed in this context is:

Hypothesis 3: Environmental uncertainty has a direct effect on dynamic capabilities.

Environmental dynamics are closely related to the level of instability and speed of environmental change (Dess & Beard, 1984). Variations in environmental characteristics can lead to significant differences in a company's potential to achieve competitive advantage. In rapidly changing and unstable environments, the selection of appropriate products and services can be overlooked. Such environmental conditions can pose difficulties for companies relying solely on a single behavioral model or capability without being able to sustain above-average profits. Therefore, building sustainable competitive advantage becomes challenging, and companies need to continuously develop new products and processes to differentiate their brands in competitive markets (Nadkarni & Chen, 2014).

Literature indicates a relationship between environmental uncertainty and competitive advantage. Singh et al. (2019), in a study using the resource-based view and dynamic capabilities perspective to test hypotheses showing the relationship between environmental uncertainty and competitive advantage, documented the influence of environmental uncertainty on competitive advantage and vice versa (Singh et al., 2020). Additionally, Skordoulis et al. (2020) noted that environmental innovation processes influence a company's competitive advantage. This conclusion was reached when investigating the contribution of environmental innovation to competitive advantage through cases of medium and large-scale companies operating in Greece (Skordoulis et al., 2020). This aligns with Heriyanto et al. (2021), stating that the core of the resource-based view is a company's awareness of the environment as an effort to gain sustainable competitive advantage (Heriyanto et al., 2021). Based on these findings, this study proposes the following hypothesis:

Hypothesis 4: Environmental uncertainty has a direct effect on competitive advantage.

Uncertainty about the future of hospitals is why the dynamic capabilities framework is highly relevant. After years of facing low competition and easily predictable challenges, hospitals are now encountering intensified competition amid uncertainty. The role of hospital leaders has shifted from merely managing risks to managing uncertainty (Förster et al., 2023; Javanmardi et al., 2024; Watkins et al., 2024), or what David Teece refers to as "unknown uncertainty." Teece notes that managing uncertainty is a common characteristic of economies experiencing innovative change (Foss et al., 2023).

Several studies have examined the influence of dynamic capabilities on competitive advantage. Fainshmidt & Frazier (2016) conducted empirical research and stated that organizational climate forms the social foundation of dynamic capabilities and competitive advantage (Fainshmidt & Frazier, 2016). Furthermore, the positive influence of dynamic capabilities on competitive advantage is elucidated by Kuo et al. (2017) in their study testing the effects of dynamic capabilities, service capabilities, competitive advantage, and organizational performance in container shipping companies in Taiwan (Kuo et al., 2017). Rashidirad et al. (2017) conducted a study that encourages rethinking the impact of dynamic capabilities and competitive strategy on value creation in companies from a multidimensional perspective (Rashidirad & Salimian, 2020). Pereira-Moliner et al. (2021) further explored the influence of three dimensions of dynamic capabilities through testing human resource management, quality management, and sustainability, indicating the impact of sustainability on competitive advantage (Pereira-Moliner et al., 2021). Based on previous research findings, dynamic capabilities are expected to have a positive influence on competitive advantage. Therefore, this study establishes the following hypothesis to test the effect of these variables:

Hypothesis 5: Dynamic capabilities have a direct positive effect on Competitive Advantage.

Dynamic capabilities are believed to act as a mediator in the influence of intellectual capital on competitive advantage. The perspective of dynamic capabilities asserts that for intellectual capital to achieve competitive advantage, hospitals must continually renew and reconfigure their resources and capabilities. In this way, intellectual capital becomes dynamic and possesses valuable competencies that cannot be imitated by other competitors (Hsu & Wang, 2012).

Having resources alone is not sufficient to generate good performance; there is also a need for the capability to leverage these resources. Dynamic capabilities can serve as a transformation process where intellectual capital is utilized to enhance organizational performance (Farzaneh et al., 2022). We argue that the utilization and deployment of intellectual capital together with dynamic capabilities can further differentiate a hospital from its competitors. Therefore, we hypothesize that dynamic capabilities mediate the influence of intellectual capital on competitive advantage:

Hypothesis 6: Dynamic Capabilities mediate the influence of Intellectual Capital on Competitive Advantage.

To maintain competitive advantage, organizations must be capable of adapting to changes in the external environment and managing their resources efficiently (Mushangai, 2023; Randhawa et al., 2021; Wang et al., 2019). Dynamic capabilities play a crucial role in linking the concept of hospital environment and competitive advantage. Hospitals with strong dynamic capabilities can quickly adjust to changes in the external environment, including political, economic, technological, and legal changes. These organizations can also respond by altering their organizational, managerial, and technological processes to remain competitive. Therefore, dynamic capabilities act as a mediator between environmental conditions and the achievement of competitive advantage (Teece, 2018; Teece et al., 1997). Based on these insights, we develop the following hypothesis:

Hypothesis 7: Dynamic Capabilities mediate the influence of Environmental Uncertainty on Competitive Advantage.

1.6. Conceptual Model

Dynamic capabilities refer to a hospital's ability to intentionally enhance its resources. It is also defined as the capacity of a hospital to achieve new forms of competitive advantage by renewing its resource capabilities, thereby enabling the hospital to adapt to changes in the business environment. Competitive advantage refers to the superior position of the hospital in the market compared to its competitors.

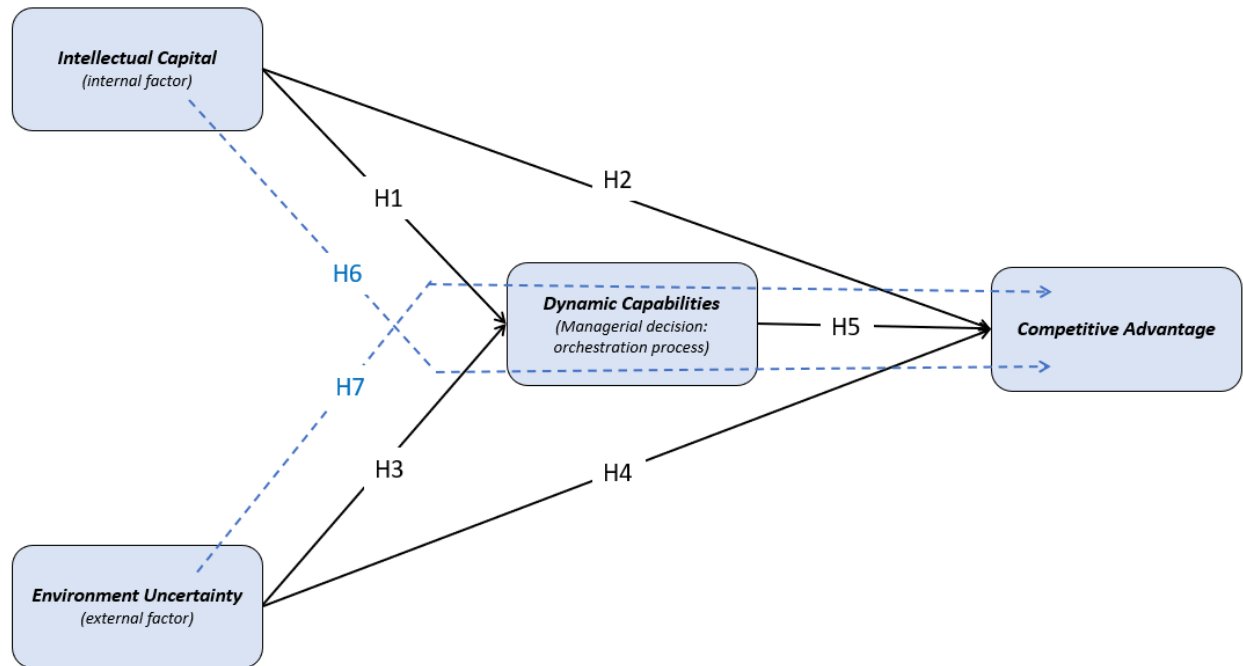


Figure 1. Conceptual model

The strategy proposed in this study to achieve competitive advantage is to develop dynamic capabilities as a governance process to enhance internal capabilities in an uncertain business environment. Improving these capabilities can assist companies in creating and sustaining competitive advantages, ensuring their long-term relevance and success.

2. METHODOLOGY

2.1. Sample and data collection

This study employs a quantitative approach using survey methods to examine the impact of dynamic capabilities and ambidexterity on competitive advantage. The study population includes Class C hospitals in Jakarta and surrounding provinces, namely Banten and West Java. Purposive sampling techniques were employed to ensure that the selected sample represents the desired characteristics of the population under study.

In this survey, 112 practitioners from 85 hospitals in the three provinces participated. The research was conducted between October and December 2023. The data indicate that the majority of respondents were hospital managers (42%), followed by specialist doctors in service units (38.4%), directors (12.5%), and hospital committee members (7.1%). The majority of respondents were from West Java province (42.9%), while Banten and Jakarta contributed 28.6% each. Most respondents were affiliated with private hospitals.

2.2. Instrument development

The instruments utilized in this study were adapted from various literature sources, and data were gathered through a questionnaire. Intellectual Capital comprises seven items encompassing

indicators of human capital, structural capital, and relational capital (Ali et al., 2021; Farzaneh et al., 2022). Environmental Uncertainty comprises eight items with indicators relating to state, effect, and response (Milliken, 1987). Dynamic Capabilities consist of eight items including indicators of sensing, seizing, and reconfiguring (Ali et al., 2021; Mikalef & Pateli, 2017). Competitive Advantage comprises eight items based on Porter's concept (1998), encompassing indicators of cost leadership, differentiation, and focus (Azeem et al., 2021; Gabrielsson et al., 2015). Data were collected through a questionnaire using a five-point Likert scale analysis, ranging from 1 (strongly disagree) to 5 (strongly agree) to capture respondents' perspectives.

2.3. Measurement and structural model

This study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4.0 software. PLS-SEM was chosen due to its capability to handle situations where existing theories lack strong validation. The study aimed not only to test hypotheses but also to explain variations in the dependent constructs and validate the proposed model using data. Evaluation encompassed both the outer and inner models of this research.

3. Data analysis and result

3.1. Evaluation of measurement model

PLS-SEM requires two stages of model evaluation: measurement model evaluation and structural model evaluation. Measurement model evaluation includes testing for convergent validity, discriminant validity, and composite reliability. In convergent validity testing, the factor loading values of each dimension are crucial. Hair et al. (2019) explain that correlation procedures are used to ensure convergent validity, with factor loading values above 0.5 considered adequate. Indicators are deemed reliable if they have factor loading values above 0.7, while values between 0.5 and 0.6 are still acceptable (Chin, 1998; Hair et al., 2020)

According to Hair et al. (2019), discriminant validity is measured by comparing the average variance extracted (AVE) values for each variable, all of which should exceed the threshold of 0.5 (Hair et al., 2019). In this study, the reliability of the four variables, as shown in Table 1, demonstrates Cronbach's alpha values and composite reliabilities exceeding 0.7, indicating strong reliability for these variables.

Table 1. Outer model

<i>Constructs</i>	<i>Item</i>	<i>Loadings</i>	<i>Cronbach's Alpha</i>	<i>CR</i>	<i>AVE</i>
Intellectual Capital	HUC1	0,761	0.894	0.934	0.824
	HUC2	0,712			
	HUC3	0,732			
	SUC1	0,639			
	SUC2	0,852			

	RLC1	0,835							
	RLC2	0,720							
Environment Uncertainty	SEU1	0,825	0.845	0.905	0.761				
	SEU2	0,837							
	SEU3	0,636							
	EEU1	0,840							
	EEU3	0,888							
	REU1	0,678							
	REU2	0,766							
	REU3	0,814							
	Dynamic Capabilities	SEN1				0,893	0,853	0,911	0,773
		SEN2				0,857			
SEN3		0,705							
SEZ1		0,755							
SEZ2		0,859							
SEZ3		0,825							
REC1		0,777							
REC2		0,877							
REC3		0,807							
Competitive Advantage		COS1	0,812	0,797	0,881	0,713			
	COS2	0,789							
	COS2	0,775							
	DIF1	0,771							
	DIF2	0,806							
	DIF3	0,732							

	FOC2	0,871			
	FOC3	0,832			

Furthermore, Hair (2019) recommends the use of the Heterotrait-Monotrait (HTMT) ratio because it is considered more sensitive in detecting discriminant validity. Discriminant validity refers to the uniqueness of constructs, indicating how distinct constructs are within the model. Indicators associated with a specific construct should specifically represent that construct and not others. The recommended threshold is below 0.90 (Hair et al., 2019). The test results (Table 2) show that the HTMT values for variable pairs are below 0.90, confirming discriminant validity.

Table 2. Discriminant validity with HTMT values

<i>Construct</i>	Competitive Advantage	Dynamic Capability	Environment Uncertainty	Intellectual Capital
Competitive Advantage				
Dynamic Capability	0,830			
Environment Uncertainty	0,752	0,608		
Intellectual Capital	0,623	0,628	0,739	

3.2. Evaluation of structural model

The structural model evaluation pertains to testing the direct effects among the research variables. Structural model evaluation is conducted in several stages. The first stage examines the absence of multicollinearity among variables using the Inner Variance Inflated Factor (VIF). Inner VIF values below 5 indicate no multicollinearity issues among variables (Hair et al., 2020). The estimation results show inner VIF values < 5, indicating no collinearity problems (See Table 3).

Table 3. Table Inner VIF

	Competitive Advantage	Dynamic Capabilities	Environment Uncertainty	Intellectual Capital
Competitive Advantage				
Dynamic Capabilities	1,573			

Environment Uncertainty	1,789	1,629		
Intellectual Capital	1,822	1,629		

Hypothesis testing between variables was conducted by examining the t-statistic or p-value. If the calculated t-statistic is greater than 1.96 (from the t-table) or the p-value of the test is less than 0.05, then there is a significant influence between those variables.

All hypotheses were validated through structural model testing and resulted in linear equations. Acceptance or rejection of hypotheses depends on the t-statistic or p-value. Path coefficients indicate the direction of simultaneous relationships between exogenous and endogenous variables. The results show that Dynamic capabilities have a positive and significant effect on competitive advantage ($\beta = 0.476$, t-statistic = 7.140, p-value = 0.000). Furthermore, Environmental uncertainty has a positive and significant effect on competitive advantage ($\beta = 0.324$, t-statistic = 3.981, p-value = 0.000). Then, Environmental uncertainty has a positive and significant effect on dynamic capabilities ($\beta = 0.319$, t-statistic = 3.537, p-value = 0.000). However, Intellectual capital was not found to have a significant effect on competitive advantage ($\beta = 0.071$, t-statistic = 0.714, p-value = 0.475). Meanwhile, Intellectual capital has a positive and significant effect on dynamic capabilities ($\beta = 0.351$, t-statistic = 3.136, p-value = 0.001). Furthermore, the specific indirect effects show a positive and significant mediating role of dynamic capabilities on the influence of environmental uncertainty and competitive advantage ($\beta = 0.153$, t-statistic = 5.983, p-value = 0.002). Additionally, the specific indirect effects show a positive and significant mediating role of dynamic capabilities on the influence of intellectual capital ($\beta = 0.168$, t-statistic = 2.701, p-value = 0.007) (See Figure 2 and Table 4).

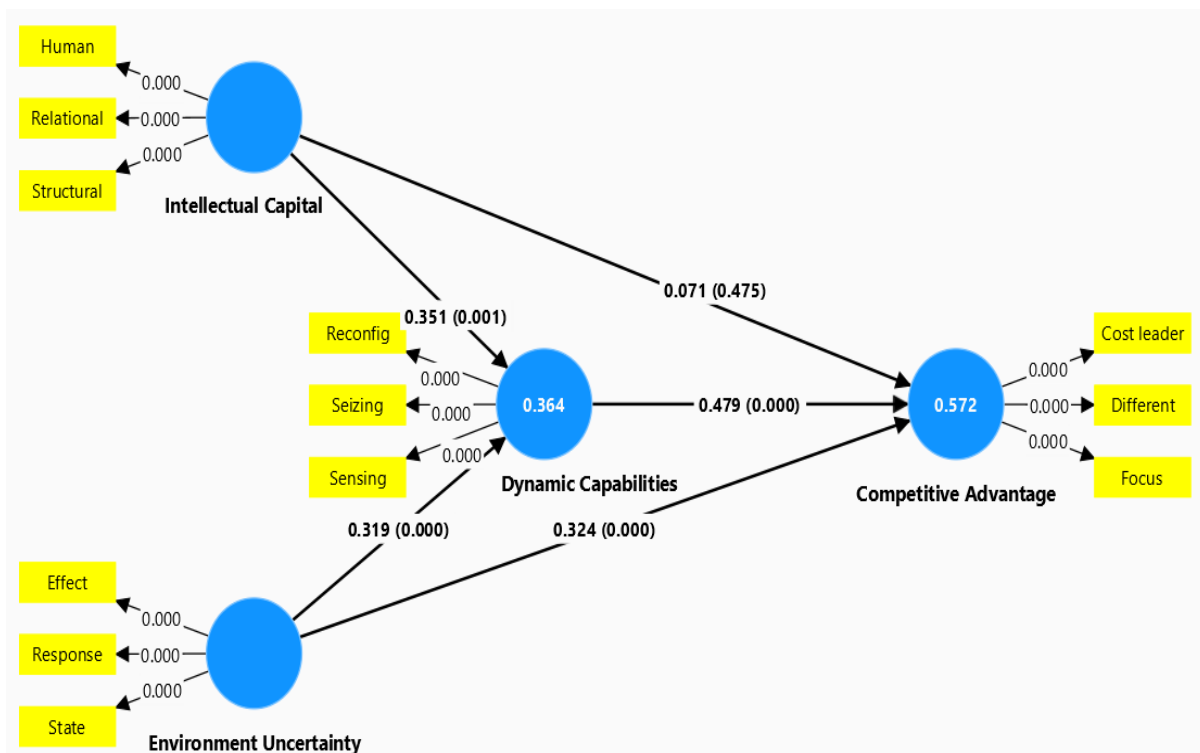


Figure 2. The analysis result

Table 4. Coefficient test and hypothesis testing

Hypothesis	β	t-statistic	p-value	Decision
Dynamic Capabilities -> Competitive Advantage	0,479	7,14	0,000	H1. Accepted
Environment Uncertainty -> Competitive Advantage	0,324	3,981	0,000	H2. Accepted
Environment Uncertainty -> Dynamic Capabilities	0,319	3,537	0,000	H3. Accepted
Intellectual Capital -> Competitive Advantage	0,071	0,714	0,475	H4. Not Accepted
Intellectual Capital -> Dynamic Capabilities	0,351	3,317	0,001	H5. Accepted
Environment Uncertainty -> Dynamic Capabilities -> Competitive Advantage	0,153	3,136	0,002	H6. Accepted
Intellectual Capital -> Dynamic Capabilities -> Competitive Advantage	0,168	2,701	0,007	H7. Accepted

The coefficient of determination (R-squared) (Table 5) illustrates the extent to which variations in the endogenous variables can be explained by exogenous or other endogenous variables in the model. Based on the above processing results, it can be concluded that the amount of variation in competitive advantage explained by intellectual capital, environmental uncertainty, and dynamic capabilities is 0.572 or 57.2% (moderate), whereas the influence of dynamic capabilities explained by environmental uncertainty and intellectual capital is 0.364 or 36.4% (weak to moderate) (Chin, 1998).

Table 5. R-square measure

Construct	R-square	R-square adjusted
Competitive Advantage	0,572	0,558
Dynamic Capabilities	0,364	0,351

The f-square values explain the influence of variables at the structural level. The interpretation of these values is understood as predictors of small, medium, and large effects. Based on the processing results (Table 6), it can be explained that the influence of dynamic capabilities (0.340) on competitive advantage is moderate, the influence of environmental uncertainty (0.137) on competitive advantage is small, the influence of environmental uncertainty (0.099) on dynamic capabilities is small, and the influence of intellectual capital (0.006) on competitive advantage is small. Meanwhile, intellectual capital (0.119) on dynamic capabilities is small (Chin, 1998; Hair et al., 2020).

Table 6. The Variable effect

Path	f-square	Size
Dynamic Capabilities -> Competitive Advantage	0,340	medium
Environment Uncertainty -> Competitive Advantage	0,137	small
Environment Uncertainty -> Dynamic Capabilities	0,099	small
Intellectual Capital -> Competitive Advantage	0,006	small
Intellectual Capital -> Dynamic Capabilities	0,119	small

4. DISCUSSION

The primary objective of this study is to examine the role of dynamic capabilities on competitive advantage in hospitals across three provinces in Indonesia. We consider this research unique as it is conducted in Indonesian hospitals, which currently face many challenges in determining specific competencies as a basis for competitive advantage. Our findings indicate that dynamic capabilities positively influence competitive advantage. This aligns with previous research by Koentjoro and Gunawan (2020) and Rotjanakorn et al. (2020), which emphasize that the process of dynamic capabilities is the initial step toward competitive advantage (Koentjoro & Gunawan, 2020; Rotjanakorn et al., 2020). We also found a positive and significant influence of environmental uncertainty on both dynamic capabilities and competitive advantage. This suggests that dynamic capabilities enhance the effectiveness of routine operations at all levels of the environment (Haarhaus & Liening, 2020; Harun et al., 2023; Wilhelm et al., 2015). However, our study discovered an insignificant influence of intellectual capital on competitive advantage. This finding is consistent with Li and Liu (2018), who state that intellectual capital can indirectly influence competitive advantage through mediation processes (Li & Liu, 2018), and it also aligns with Ambrosini and Bowman (2009), who argue that an organization's intellectual assets at the operational level (zero-level capabilities) can consistently create the same products, scale, and markets, but this will not provide long-term competitive advantage (Ambrosini & Bowman, 2009).

5. CONCLUSION

Hospitals must continuously develop and strengthen their dynamic capabilities, including adapting to environmental changes, modifying operations, and allocating resources efficiently. The research findings indicate that dynamic capabilities significantly impact the competitive advantage of hospitals. Therefore, through dynamic capabilities, hospitals can achieve and sustain a competitive edge in a competitive market. Hospitals that can adjust their strategies, adapt their operations, and allocate resources efficiently based on environmental changes will be better at maintaining competitiveness and market relevance. Dynamic capabilities help hospitals innovate, develop new products or services, and create customer value, all of which contribute to competitive advantage. The effective and synergistic use of these strategies will help hospitals remain relevant and successful in the long term.

The findings of this study are crucial for stakeholders to develop appropriate and synergistic strategies by leveraging dynamic capabilities to ensure the hospital's mission and objectives remain relevant and successful. Like many other studies, this research faces limitations in framing variables such as intellectual capital, environmental uncertainty, dynamic capabilities, and competitive advantage. Therefore, future research can explore the dominant effects of dynamic capabilities comprehensively to explain the main predictors of competitive advantage. Future studies should examine many predictor variables related to competitive advantage and involve a broader respondent base to provide a more comprehensive understanding of the dominant predictors of competitive advantage, especially in the healthcare industry context.

Ultimately, further research in this area is crucial in the context of Indonesia for the growth of this vital sector. This study assumes that hospitals capable of adjusting strategies, modifying operations, and allocating resources efficiently based on environmental changes will be better at maintaining competitiveness and market relevance.

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