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THE ROLE OF CO-CREATION VALUE AND INNOVATION CAPABILITY IN BUILDING SUSTAINABLE COMPETITIVE ADVANTAGE IN TEACHING HOSPITALS

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ABSTRACT

Increasing competition in Indonesia's hospital industry requires teaching hospitals to adopt strategies beyond internal innovation by emphasizing collaborative value creation with stakeholders through Co-Creation Value (CCV). This study examines the direct effect of CCV on Sustainable Competitive Advantage (SCA) and its indirect effect through Innovation Capability (IC) at Universitas Hasanuddin Teaching Hospital. A quantitative explanatory design was applied using survey data from 263 employees selected through proportional stratified random sampling. Data were analyzed using covariance-based Structural Equation Modeling (SEM) with AMOS, and construct validity was assessed through Confirmatory Factor Analysis (CFA). CCV had a significant positive effect on IC (β = 0.869) and SCA (β = 0.880). However, IC did not have a significant effect on SCA (β = 0.020). The mediating effect of IC on the relationship between CCV and SCA was weak (indirect β = 0.018). CCV is a more dominant determinant of SCA than IC. In the context of a teaching hospital, sustainable competitive advantage is shaped more strongly by collaborative value creation involving patients and stakeholders than by innovation capability alone. Therefore, hospital management should prioritize co-creation strategies by strengthening stakeholder collaboration and patient engagement, while aligning innovation initiatives with organizational strategy, patient needs, and long-term institutional objectives.

ABSTRAK

Meningkatnya persaingan dalam industri rumah sakit di Indonesia menuntut rumah sakit pendidikan untuk mengadopsi strategi yang tidak hanya bertumpu pada inovasi internal, tetapi juga menekankan penciptaan nilai kolaboratif bersama pemangku kepentingan melalui *Co-Creation Value* (CCV). Penelitian ini menganalisis pengaruh langsung CCV terhadap *Sustainable Competitive Advantage* (SCA) serta pengaruh tidak langsungnya melalui *Innovation Capability* (IC) pada Rumah Sakit Pendidikan Universitas Hasanuddin. Penelitian ini menggunakan desain eksplanatori kuantitatif dengan data survei dari 263 pegawai yang dipilih melalui proportional stratified random sampling. Data dianalisis menggunakan *Structural Equation Modeling* (SEM) berbasis kovarians dengan AMOS, dan validitas konstruk diuji melalui *Confirmatory Factor Analysis* (CFA). CCV berpengaruh positif signifikan terhadap IC (β = 0,869) dan SCA (β = 0,880). Namun, IC tidak berpengaruh signifikan terhadap SCA (β = 0,020). Efek mediasi IC dalam hubungan antara CCV dan SCA tergolong lemah (β tidak langsung = 0,018). CCV merupakan determinan SCA yang lebih dominan dibandingkan IC. Dalam konteks rumah sakit pendidikan, keunggulan bersaing berkelanjutan lebih kuat dibentuk oleh penciptaan nilai kolaboratif yang melibatkan pasien dan pemangku kepentingan dibandingkan oleh kapabilitas inovasi semata. Oleh karena itu, manajemen rumah sakit perlu memprioritaskan strategi *co-creation* melalui penguatan kolaborasi dengan pemangku kepentingan dan keterlibatan pasien, serta menyelaraskan inisiatif inovasi dengan strategi organisasi, kebutuhan pasien, dan tujuan institusional jangka panjang.

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INTRODUCTION

Over the past decade, Indonesia's relatively stable economic growth has increased per capita income and expanded the middle class. This development has led to heightened public awareness of health issues, shifts in disease burden, and growing demand for hospital services that are not only clinically effective but also oriented toward patient experience. Improvements in the Human Development Index (HDI), particularly in the life expectancy dimension, indicate a close linkage between socioeconomic conditions and the quality of healthcare services in Indonesia (Nasution et al., 2024; Yusuf & Setiawan, 2022). These socioeconomic factors have been shown to play a significant role in shaping healthcare-seeking behavior and public preferences for high-quality hospitals (Rahiem et al., 2021).

Along with increasing demand for healthcare services, the number of hospitals in Indonesia has continued to rise, reaching 3,155 facilities in 2023. This growth reflects an intensification of competition within an increasingly saturated hospital industry, requiring hospitals to develop differentiation strategies based on service quality and value creation (Alfarizi & Zalika, 2023; Nursolihah et al., 2023). A highly competitive environment compels hospitals to pursue continuous service innovation in order to enhance patient satisfaction and loyalty (Chitrayuni et al., 2024; Putri et al., 2023). Moreover, hospital participation in the National Health Insurance system (BPJS Kesehatan) adds further complexity to service management and strategic decision-making (SA & Pujiyanto, 2021).

In this context of intensifying competition, Sustainable Competitive Advantage (SCA) can no longer be achieved solely through operational efficiency or internal innovation. Recent literature emphasizes the importance of Co-Creation Value (CCV) as a strategic approach that actively involves patients and other stakeholders in the value creation process, thereby positively influencing service quality, patient satisfaction, and loyalty (Purnami & Nurcaya, 2024; Sandhu et al., 2025). Through collaborative interactions, hospitals are able to capture valuable patient insights that strengthen service differentiation (Kosiol et al., 2023).

At the same time, Innovation Capability (IC) remains a critical capability for coping with the dynamic healthcare environment. However, innovation contributes to competitive advantage only when it is aligned with patient needs and value-oriented organizational strategies (Chin et al., 2022; Kaguu & Mutisya, 2024). Although several studies have linked CCV to organizational performance and patient satisfaction, empirical research that specifically examines the mediating role of IC in the relationship between CCV and SCA within teaching hospitals remains limited evidence(Al-kumaim et al., 2021; Mumi & Leemanonwarachai, 2023). Addressing this gap, the present study aims to analyze the direct and indirect effects of Co-Creation Value on Sustainable Competitive Advantage through Innovation Capability at Universitas Hasanuddin Teaching Hospital, while providing empirical and strategic implications for the management of teaching hospitals in Indonesia.

METHOD

Type of Research

This study employed an explanatory research design with a quantitative approach to examine the causal relationships among Co-Creation Value (CCV), Innovation Capability (IC), and Sustainable Competitive Advantage (SCA). The study was designed to test both direct and indirect effects among latent variables based on employees' perceptions (Pufal & Zawislak, 2022). Ethical approval was obtained from the Research Ethics Committee, Faculty of Public Health, Universitas Hasanuddin, under Reference No. 3136/UN4.14.1/TP.01.02/2024.

Place and Time of Research

The study was conducted at Universitas Hasanuddin Teaching Hospital from July to August 2024.

Population and Sample

The study population consisted of 848 employees of Universitas Hasanuddin Teaching Hospital. The employees were grouped into professional strata (Le Roy & Deloffer, 2023; Rhayha & Alaoui Ismaili, 2024), namely general practitioners, specialists, dentists, dental specialists, nurses, dental technicians, midwives, pharmacists, pharmacy technicians, dietitians, physiotherapists, medical record

officers, medical physicists, radiographers, laboratory staff, electromedical technicians, refractionists/opticians, management staff, environmental health personnel, and other supporting personnel.

The sample size was determined using Slovin's formula with a 5% margin of error, resulting in 263 respondents. Proportional stratified random sampling was used, with profession-based strata as the basis for sample allocation. The final sample consisted of 5 general practitioners, 45 specialists, 1 dentist, 1 dental specialist, 73 nurses, 1 dental technician, 5 midwives, 6 pharmacists, 8 pharmacy technicians, 3 dietitians, 1 physiotherapist, 6 medical record officers, 1 medical physicist, 6 radiographers, 9 laboratory staff, 1 electromedical technician, 1 refractionist/optician, 36 management staff, 1 environmental health officer, and 53 other personnel.

Data Collection

Primary data were collected using a structured questionnaire with a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. The instrument measured three latent constructs: CCV, IC, and SCA. CCV was measured using seven indicators (CCV1–CCV7), IC using ten indicators (IC1–IC10), and SCA using five indicators (SCA1–SCA5). The measurement items were adapted from previously validated studies and adjusted to the hospital context. The measurement instruments were adapted from previously validated scales and adjusted to the hospital context (Abu Jaber & Nashwan, 2022; Samsa & Yüce, 2022; Sandhu et al., 2025; Srivastava, 2021).

Data Analysis and Processing

Data were analyzed using covariance-based Structural Equation Modeling (SEM) with AMOS. The analysis was conducted in two stages. First, the measurement model was evaluated using Confirmatory Factor Analysis (CFA) to assess the validity of the indicators representing each latent construct. Indicators with standardized factor loadings of 0.50 or higher were considered acceptable. Second, the structural model was tested to examine the direct effect of CCV on IC and SCA, as well as the indirect effect of CCV on SCA through IC.

Model fit was assessed using several goodness-of-fit indices, including Chi-square, probability value, GFI, AGFI, RMSEA, CFI, RMR, TLI, NFI, and IFI. Hypothesis testing was based on standardized path coefficients, critical ratios, and probability values to determine the significance of direct and indirect relationships among variables (FATOKI, 2021; Kolbe et al., 2022; Setyanto & Arafah, 2025).

RESULT

Respondent Characteristics

The characteristics of respondents are presented in Table 1 and include age, sex, educational level, and years of service. These characteristics are important to describe the sample profile and support the representativeness of the study population.

Table 1. Characteristics of Study Respondents

Characteristics Respondents		Number (n)	Percentage (%)
Age	21-30 years	83	31.6
	31-40 years	138	52.5
	41-50 years	36	13.7
	> 50 years	6	2.3
Type Sex	Male	72	27.4
	Female	191	72.6
Education	Senior High School	9	3.4
	DIII/IV	35	13.3
	S1/ Profession	154	58.6
	S2	44	16.7

Characteristics Respondents		Number (n)	Percentage (%)
	S3	21	8.0
Years of service	< 3 Years	65	24.7
	4 - 10 Years	75	28.5
	> 10 Years	123	46.8

Source: Primary Data, 2024

Based on Table 1, most respondents were aged 31–40 years (138 respondents; 52.5%), followed by those aged 21–30 years (83 respondents; 31.6%), 41–50 years (36 respondents; 13.7%), and over 50 years (6 respondents; 2.3%). This indicates that most employees of Universitas Hasanuddin Teaching Hospital were in the productive working-age group.

Based on sex, respondents were predominantly female (191 respondents; 72.6%), while male respondents accounted for 72 respondents (27.4%). In terms of educational level, most respondents held a bachelor's or professional degree (154 respondents; 58.6%), followed by a master's degree (44 respondents; 16.7%), diploma-level education (35 respondents; 13.3%), doctoral degree (21 respondents; 8.0%), and senior high school education (9 respondents; 3.4%).

Based on years of service, respondents with more than 10 years of experience formed the largest group (123 respondents; 46.8%), followed by those with 4–10 years of service (75 respondents; 28.5%) and less than 3 years of service (65 respondents; 24.7%).

Descriptive Analysis of Research Variables

1. Co-Creation Value (CCV)

Co-Creation Value (CCV) refers to a collaborative process among stakeholders to jointly create higher value. In this study, CCV was measured using seven indicators (CCV1-CCV7). The frequency distribution of respondents' answers is presented in Table 3.

Table 3. Frequency Distribution of Respondents' Answers for Co-Creation Value (CCV)

Statement	Score 1		Score 2		Score 3		Score 4		Score 5	
	n	%	n	%	n	%	n	%	n	%
CCV1	1	0.4	2	0.8	13	4.9	168	63.9	79	30.0
CCV2	2	0.8	2	0.8	9	3.4	154	58.6	96	36.5
CCV3	4	1.5	10	3.8	51	19.4	155	58.9	43	13.0
CCV4	2	0.8	4	1.5	23	8.7	174	66.2	60	22.8
CCV5	1	0.4	2	0.8	31	11.8	171	65.0	58	22.1
CCV6	0	0.0	3	1.1	32	12.2	167	63.5	61	23.2
CCV7	0	0.0	2	0.8	16	6.1	156	59.3	89	33.8

Source : Primary Data 2024

Based on Table 3, most respondents gave scores of 4 and 5 across the CCV indicators. This finding indicates that collaborative value creation practices were positively perceived by employees and were considered important within the hospital context.

2. Innovation Capability (IC)

Innovation Capability (IC) refers to the organization's ability to develop and implement innovation in order to improve performance and strengthen competitiveness. IC was measured using ten indicators (IC1-IC10), covering the ability to generate ideas, implement innovation, adapt to technological changes, and improve organizational performance.

Table 4. Frequency Distribution of Respondents' Answers for Innovation Capability (IC)

Statement	Score 1		Score 2		Score 3		Score 4		Score 5	
	n	%	n	%	n	n	%	n	%	n
IC1	0	0.0	7	2.7	33	12.5	172	65.4	51	19.4
IC2	1	0.4	3	1.1	28	10.6	181	68.8	50	19.0
IC3	1	0.4	7	2.7	73	27.8	134	51.0	48	18.3
IC4	0	0.0	4	1.5	41	15.6	161	61.2	57	21.7
IC5	0	0.0	4	1.5	39	14.8	161	61.2	59	22.4
IC6	0	0.0	2	0.8	28	10.6	193	73.4	40	15.2
IC7	1	0.4	3	1.1	29	11.0	182	69.2	48	18.3
IC8	10	3.8	25	9.5	85	32.3	112	42.6	31	11.8
IC9	4	1.5	8	3.0	28	10.6	166	63.1	57	21.7
IC10	3	1.1	5	1.9	36	13.7	177	67.3	42	16.0

Source : Primary Data 2024

Based on Table 4, the majority of respondents selected scores of 4 and 5 across most IC indicators. This result indicates that the hospital's innovation capability was perceived positively, particularly in relation to efficiency improvement and adaptation to change.

3. Sustainable Competitive Advantage (SCA)

Sustainable Competitive Advantage (SCA) refers to the organization's ability to maintain long-term competitive superiority through the effective use of resources, innovation, and adaptation to environmental changes. In this study, SCA was measured using five indicators (SCA1-SCA5)..

Table 5. Frequency Distribution of Respondents' Answers for Sustainable Competitive Advantage (SCA)

Statement	Score 1		Score 2		Score 3		Score 4		Score 5	
	n	%	n	%	n	n	%	n	%	n
SCA1	0	0.0	3	1.1	16	6.1	175	66.5	69	26.2
SCA2	0	0.0	1	0.4	17	6.5	167	63.5	78	29.7
SCA3	0	0.0	1	0.4	31	11.8	159	60.5	72	27.4
SCA4	0	0.0	1	0.4	22	8.4	181	68.8	59	22.4
SCA5	0	0.0	2	0.8	17	6.5	160	60.8	84	31.9

Source : Primary Data 2024

Based on Table 5, most respondents gave scores of 4 and 5 on the SCA indicators. This finding indicates that the hospital's competitive advantage was perceived as relatively strong and sustainable by the respondents.

Measurement Model Evaluation

The measurement model was evaluated using Confirmatory Factor Analysis (CFA) to assess the relationship between latent variables and their indicators. The CFA results showed that all indicators of CCV, IC, and SCA had standardized factor loadings above the acceptable threshold of 0.50, indicating that all indicators were valid measures of their respective latent constructs.

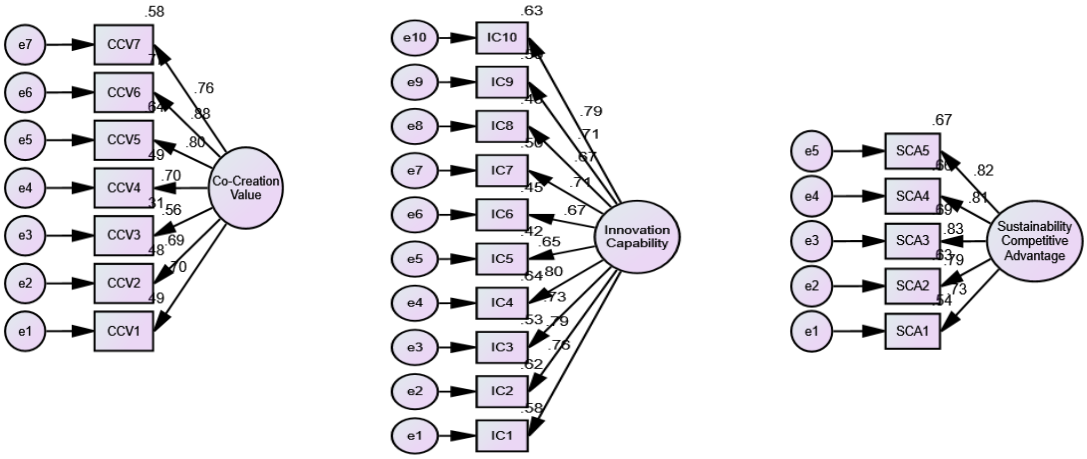

Figure 1. Confirmatory Factor Analysis (CFA) of Research Variables

According to Hair et al. (2010), indicators are considered valid if their standardized factor loadings are ≥ 0.50. These results indicate that each indicator contributed adequately to its construct and could be retained for subsequent structural analysis.

Structural Model Fit Evaluation

The structural model was analyzed using covariance-based Structural Equation Modeling (SEM) with AMOS. Model fit was assessed using several goodness-of-fit indices, including Chi-square, probability value, GFI, AGFI, RMSEA, CFI, RMR, TLI, NFI, and IFI.

The SEM output showed the following values: Chi-square = 708.061; probability = 0.000; df = 206; GFI = 0.789; AGFI = 0.741; RMSEA = 0.096; CFI = 0.874; RMR = 0.026; TLI = 0.858; NFI = 0.832; and IFI = 0.875. The Chi-square/df ratio was 3.44. Overall, these results indicate that the model achieved an acceptable fit for hypothesis testing, although several indices remained in the marginal fit category..

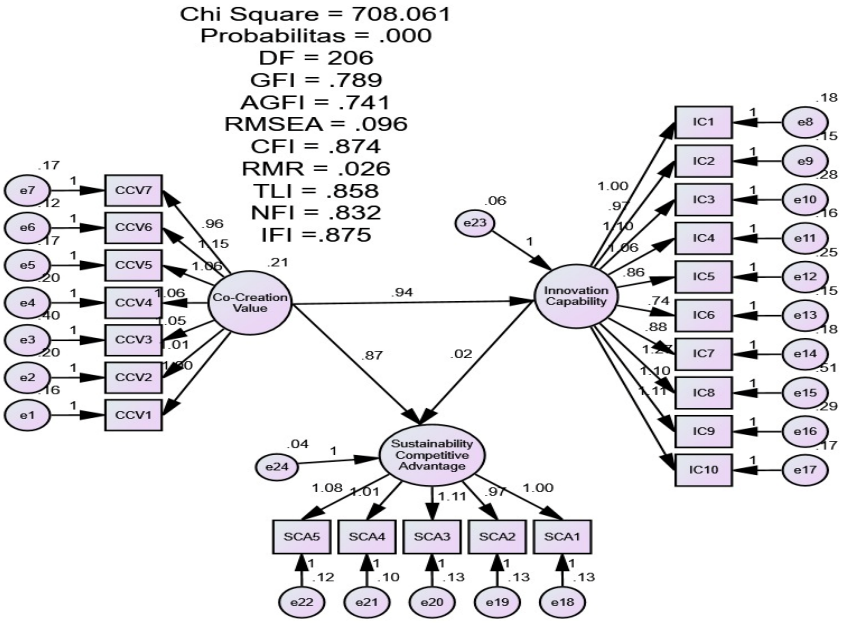

Figure 2. Structural Equation Model (SEM) with Goodness-of-Fit Indices

Hypothesis Testing

Hypothesis testing was conducted to examine the direct effect of Co-Creation Value on Innovation Capability and Sustainable Competitive Advantage, as well as the indirect effect of Co-Creation Value on Sustainable Competitive Advantage through Innovation Capability.

Table 6. Hypothesis Testing Results

			Estimate	S.E.	C.R.	P	Label
IC	<---	CCV	0.869	0.084	11.273	0.000	Direct
SCA	<---	CCV	0.880	0.123	7.126	0.000	Direct
SCA	<---	IC	0.020	0.096	0.192	0.847	Direct
SCA <--- IC <--- CCV			0.018				Indirect

Source: PLS Data Processing

The results showed that two direct paths were statistically significant, while one direct path was not significant. The indirect effect was also weak and not statistically meaningful. The interpretation of the structural relationships is as follows:

a. Co-Creation Value had a significant positive effect on Innovation Capability ($\beta = 0.869$; $p < 0.001$). This standardized coefficient indicates a strong positive relationship, meaning that higher CCV was associated with higher IC.
b. Co-Creation Value had a significant positive effect on Sustainable Competitive Advantage ($\beta = 0.880$; $p < 0.001$). This finding indicates that CCV had a strong direct relationship with SCA.
c. Innovation Capability did not have a significant effect on Sustainable Competitive Advantage ($\beta = 0.020$; $p = 0.847$). This result indicates that IC was not significantly associated with SCA in this model.
d. The indirect effect of CCV on SCA through IC was 0.018, which was substantially smaller than the direct effect of CCV on SCA ($\beta = 0.880$). This finding suggests that IC did not play a meaningful mediating role in the relationship between CCV and SCA. Therefore, the mediation hypothesis was not supported.

DISCUSSION

The results of this study demonstrate that Co-Creation Value (CCV) has a strong and significant effect on Innovation Capability (IC) at Universitas Hasanuddin Teaching Hospital. This finding indicates that collaborative interactions among hospitals, patients, healthcare professionals, and other stakeholders enhance the organization's ability to generate and implement innovation. This result is in line with previous studies showing that co-creation facilitates knowledge exchange, organizational learning, and adaptive capability, all of which are important foundations for innovation development (Amboyi et al., 2024; Liang et al., 2025; Rahman et al., 2021). In this regard, the stronger the collaborative value creation process within the hospital, the greater the organization's capability to develop innovative responses to changing healthcare demands.

The study also found that CCV has a significant direct effect on Sustainable Competitive Advantage (SCA). This suggests that collaborative value creation is not only important for fostering innovation, but also directly contributes to the hospital's long-term competitiveness. This finding supports prior studies emphasizing that hospitals that actively engage patients and stakeholders in value creation are better able to strengthen service differentiation, improve patient satisfaction, and sustain competitive positioning over time (Ngeche & Okello, 2023; Satar et al., 2025). In the healthcare sector, where patient trust, service quality, and responsiveness are critical, co-creation may serve as a strategic mechanism for creating value that is difficult for competitors to imitate (John Ngeche & Gabriel Okello, 2022; Zhang et al., 2025).

In contrast, Innovation Capability was not found to have a significant effect on SCA. This result indicates that the existence of innovation capability alone does not automatically produce sustainable

competitive advantage in the hospital context. One possible explanation is that innovation may still be concentrated at the operational level and has not yet been fully integrated into strategic decision-making, service differentiation, or long-term positioning. This finding is consistent with the view that innovation contributes to competitive outcomes only when it is aligned with market needs, organizational priorities, and implementation effectiveness (Lei et al., 2021). Although prior studies have reported that innovation capability can enhance organizational performance and competitiveness (Al Azzani et al., 2024; Kareem et al., 2024), the present study suggests that such a relationship may not always emerge directly, particularly in complex healthcare organizations.

The mediating effect of IC on the relationship between CCV and SCA was also weak. This indicates that the pathway from co-creation to sustainable competitive advantage in this study is more direct than indirect through innovation capability. In other words, collaborative value creation appears to generate strategic benefits even before innovation capability is transformed into a strong organizational driver of competitiveness. This finding may reflect the fact that co-creation strengthens stakeholder relationships, improves responsiveness, and enhances service value in ways that immediately contribute to competitive advantage, while innovation capability may still require institutional strengthening before it can function as an effective mediator. Therefore, the mediating role of IC in this study remains limited.

These findings should also be understood within the specific context of a teaching hospital. Unlike general hospitals, teaching hospitals operate with multiple institutional functions, including patient care, education, and research. They involve more complex interactions among physicians, nurses, academic staff, students, trainees, researchers, and external partners. This complexity creates wider opportunities for collaboration and knowledge exchange, which may explain why CCV plays a particularly strong role in shaping both IC and SCA. At the same time, the multilayered structure of a teaching hospital may also slow the translation of innovation capability into competitive advantage because innovation must align not only with service needs, but also with educational missions, professional standards, and institutional procedures. Thus, the teaching hospital setting may explain why CCV emerges as a more immediate strategic driver than IC in this study.

From a theoretical perspective, this study contributes to Resource-Based Theory by showing that strategic advantage in healthcare organizations is not derived solely from internal assets or traditional organizational capabilities. Instead, co-created value with stakeholders can also function as an important intangible resource that is valuable, difficult to imitate, and capable of supporting sustainable competitive advantage (Kosiol et al., 2023). In this sense, the study extends the resource-based view by emphasizing relational and collaborative value as a strategic resource in service-intensive healthcare settings.

This study also contributes to Dynamic Capability Theory. The theory highlights the importance of an organization's ability to integrate and reconfigure resources in response to environmental change. The present findings refine this perspective by suggesting that, in teaching hospitals, co-creation capability may be more consequential than innovation capability alone in generating sustainable advantage. Although innovation capability is generally viewed as a key dynamic capability, the current results indicate that its effectiveness may depend on how well it is connected to stakeholder engagement and strategic value creation. Therefore, this study adds to the literature by showing that the relevance and impact of dynamic capabilities may vary depending on organizational context, especially in complex institutions such as teaching hospitals (Lee et al., 2021; Pu et al., 2023).

From a managerial perspective, the findings imply that hospital leaders should prioritize co-creation strategies as a main lever for strengthening sustainable competitive advantage. In practice, this means enhancing patient engagement, encouraging collaboration across professional groups, strengthening partnerships with external stakeholders, and building an organizational culture oriented toward shared value creation. At the same time, hospital management should ensure that innovation initiatives are not only generated, but also strategically integrated into service delivery, institutional goals, and patient-centered care. Strengthening training systems, technological support, organizational learning, and leadership commitment may help innovation capability play a more meaningful role in long-term competitiveness (Abdallah et al., 2025; Alshahrani et al., 2024; Badawi et al., 2024; Rini & Kusumawardhani, 2024; Sanusi, 2025)

Overall, this study confirms that Co-Creation Value is a more decisive determinant of Sustainable Competitive Advantage than Innovation Capability in the context of a teaching hospital. The findings provide both theoretical and practical insights by demonstrating that collaborative value creation, rather than innovation capability alone, may be the more powerful mechanism for building sustainable competitive advantage in complex healthcare organizations.

CONCLUSION AND SUGGESTION

This study concludes that Co-Creation Value (CCV) has a significant and strategic role in enhancing Innovation Capability (IC) and directly strengthening Sustainable Competitive Advantage (SCA) at Universitas Hasanuddin Teaching Hospital, while IC does not have a significant direct effect on SCA and shows only a weak mediating role in the relationship between CCV and SCA. These findings indicate that, in the context of a teaching hospital, sustainable competitive advantage is shaped more strongly by collaborative value creation involving patients and stakeholders than by innovation capability alone, particularly because the institution simultaneously carries service, education, and research functions that make collaboration more immediately valuable as a strategic resource. Therefore, hospital management should prioritize co-creation strategies by strengthening patient engagement, cross-professional collaboration, and stakeholder partnerships, while also reinforcing innovation systems through competency development, technological and infrastructure support, organizational learning, and stronger alignment of innovation initiatives with organizational strategy, patient needs, and institutional priorities. Future studies are recommended to test this model in other types of hospitals or healthcare organizations and to include additional variables, such as organizational culture, leadership, digital capability, or service quality, in order to provide a more comprehensive explanation of sustainable competitive advantage in the healthcare sector.

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