International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 4,2025
https://theaspd.com/index.php

The Mediating Influence of IT Capabilities and the Moderating Effect of Strategic Leadership: The Use of Resource-Based Management Strategies to Improve Organizational Innovation

Brian[1],Achmad Sudiro[2],Ananda Sabil Hussein[3],Risna Wijayanti[4]
[1]Management Department, Jakarta Campus, Faculty of Economics and Business, University of Brawijaya, Jakarta 12810, Indonesia, brianbrian@student.ub.ac.id, https://orcid.org/0000-0002-9971-6978.
[2,3,4] Management Department, Faculty of Economics and Business, University of Brawijaya, Malang, 65145, Indonesia, achmad_sudiro@ub.ac.id, sabil@ub.ac.id, risna@ub.ac.id, https://orcid.org/0000-0003-3822-8943, https://orcid.org/0000-0002-4030-1073, https://orcid.org/0000-0002-7482-8172.

Abstract
Within the larger information and communication technology (ICT) business, the telecommunications network technology sector is a niche that plays a crucial role in assisting with infrastructure development, particularly the rollout of 4G networks throughout Indonesia. Due to rapid technological progress and heightened competition pressures over the last fifteen years, many prominent companies have encountered substantial difficulties in maintaining their market relevance and strategic positioning. Organizational innovation (OI) is crucial for companies seeking to maintain and enhance their market position. According to the resource-based view (RBV), human resources are regarded as important internal assets that can promote innovation.
This study aims to design a human resource management approach that improves organizational innovation. Although previous studies have established a notable positive correlation between resource-based management initiatives (RBMI) and organizational innovation (OI) outcomes, empirical discrepancies persist. This study incorporates dynamic capacity theory (DCV) with contingency leadership theory, presenting IT capabilities as a mediator and strategic leadership (SL) as a moderator.
The study employs a quantitative methodology, utilizing descriptive and explanatory surveys. Data were gathered from 311 managers across four cellular telecommunications infrastructure providers in Indonesia utilizing probability and simple random sampling methods. The presented hypotheses were empirically assessed using structural equation modelling using the partial least squares (PLS-SEM) method.
Keywords: *organizational innovation, resource-based management initiatives, strategic leadership, IT capabilities, telecommunications network technology, Indonesia*

INTRODUCTION

One of the top industries in Indonesia is information and communication technology (ICT), which is expanding significantly. According to data from the Ministry of Communication and Information of the Republic of Indonesia, the ICT industry achieved an average growth rate of 9.53% from 2011 to 2021 (KOMINFO, 2021), markedly surpassing the national economic growth rate of 4.51% during the same timeframe (BPS, 2022). The swift expansion in the past decade has presented both possibilities and challenges for ICT professionals. The swift evolution of market demands and information technology (IT) has engendered volatile, unpredictable, complex, and ambiguous (VUCA) conditions that may threaten the viability of enterprises (Oughton et al., 2021). The sustainability of ICT is significantly affected by the availability of supporting infrastructure, such as technology, networks, telecommunication equipment, and software. Unlike telecommunication service providers who directly engage with end customers, telecommunication network technology and maintenance providers function as specialist suppliers (business-to-business/B2B) within the ICT industry. In 2011, eight firms operated in this area; however, presently, only four of the companies providing wireless telecommunications infrastructure in Indonesia survive. The performance of a firm is significantly affected by its capacity to foresee, embrace, and react to innovation. In the rapidly evolving technological sector, the ability to swiftly adjust to environmental changes is crucial for maintaining a firm's competitive advantage. Organizations that fail to effectively predict innovation trajectories are likely to experience declines in essential operational

measures, including revenue, market share, profitability, and brand reputation. Consequently, innovation must be viewed not only as an ancillary endeavour but as a core strategic element that propels corporate sustainability and performance enhancement. Companies that neglect ongoing investment in innovation and technical progress may encounter stagnation and ultimately depart the market, while having previously maintained a leadership role in their industry. Stagnation and subsequent market withdrawal, while having previously maintained a strong position within their respective sectors.

As the cornerstone of competitive advantage, the Resource-Based Management Initiatives (RBMI) strategy stresses the use of internal resources and capabilities. Organizations that possess and manage resources that are unique, valuable, limited, and hard to copy are more likely to innovate and thrive in the market, according to the Resource-Based View (RBV) theory (Barney, 1991).

Information technology (IT) capabilities are an essential element of a resource strategy in the contemporary technological environment. These capabilities comprise the organization's ability to leverage technology to accommodate environmental changes and facilitate its business operations. The relationship between resource-based strategies and innovation outcomes can be bridged by IT capabilities, as demonstrated by a variety of studies (Mithas et al., 2011; Tippins & Sohi, 2003). In other words, the influence of resource strategies on innovation is exacerbated when organizations effectively employ IT.

Moreover, strategic leadership is essential for directing the execution of strategies and optimizing the use of IT capabilities. Visionary and adaptable leaders can facilitate organizational transformation and foster an environment conducive to innovation. Prior research indicates that strategic leadership can either enhance or diminish the impact of strategy on innovation, contingent upon leaders' ability to manage change and facilitate technology (Boal & Hooijberg, 2001; Ireland & Hitt, 2005).

Despite the extensive application of the Resource-Based View (RBV) theory to elucidate the connection between resource-based strategy and organizational innovation, empirical research investigating the mediating role of IT capabilities and the moderating influence of strategic leadership within a singular, comprehensive model remains scarce, particularly in organizational settings. Consequently, additional research is required to comprehend the interplay among these three elements in fostering organizational innovation, particularly in the context of rapid digital transition and in emerging nations like Indonesia.

First, there is a lack of complete research on the function of IT capabilities as a mediating variable. Numerous prior research has positioned IT capabilities as independent variables or technical facilitators, neglecting to investigate how these capabilities systematically connect resource strategies with innovation outcomes.

Secondly, there has been little focus on the role of strategic leadership as a moderating factor in the relationship between strategy and innovation. Research on how strategic leadership might enhance or diminish the role of IT capabilities in mediating these interactions is scarce. The efficacy of strategy and technology is significantly shaped by the vision, guidance, and endorsement of senior leadership.

Third, there are still few conceptual models in the literature that integrate the three variables—IT capabilities, strategic leadership, and resource-based management initiatives—into a unified moderated mediation framework. The ambiguity of this relational framework permits theoretical inquiry and empirical validation to enhance the scientific comprehension of how organizations might foster innovation through synergies among strategy, technology, and leadership. Consequently, there is an imperative necessity to formulate and evaluate models that amalgamate these three components to tackle the challenges of innovation in the digital transformation era.

In order to address discrepancies in earlier research, this study focuses on organizational capabilities as a fresh approach. The organizational capabilities necessary to enhance organizational innovation in Indonesia's technology provider and communication network maintenance industry encompass IT competencies. This study establishes a paradigm by integrating the Resource-Based View (RBV), Dynamic Capabilities View (DCV), and contingency leadership theories to address this gap. Therefore, this study offers several novelties, such as: (i) adding the IT-C organization's skills as a mediator in the gap between RMBI and OI; and (ii) taking into account the role of SL as a moderator on the influence of RMBI strategy on IT-C and OI.

This research aims to examine the effect of IT-C mediation in affecting the link between RBMI and OI. Secondly, to evaluate and examine the impact of SL moderation on the effect of RBMI on IT-C.

Research Method

Data for this study were collected through an online questionnaire using a survey-based methodology, which takes a quantitative approach. This research employs both descriptive and explanatory survey methodologies to investigate and substantiate the suggested model.

The population of this study comprises 824 managerial personnel, distributed among four wireless network infrastructure firms in Indonesia. This criterion was selected on the premise that individuals in managerial roles had a comprehensive awareness of top management tactics and attitudes necessary for fostering innovation.

The Slovin formula, utilizing a precision level of 5% (0.05), was employed to ascertain the sample size from a total population of 824. The minimum required sample size for this study is 270, derived from a calculation of 269.28, which is rounded up. To achieve improved research outcomes, a target of over 300 samples is established.

The study's sample subject is chosen by a probability sampling method, guaranteeing that every population member has an equal chance of inclusion in the sample. Additionally, basic random sampling is utilized for the sampling procedure.

Results and Discussion

RESULTS

The questionnaire was distributed randomly to a selection of managers from four wireless cellular infrastructure providers in Indonesia. Out of 400 questionnaires distributed, 312 individuals (78%) replied, and one response was discarded due to ineligibility of the responder. The total number of qualifying samples is 311, constituting 77.75% of the whole total. Comprehensive demographic data are displayed in Table 1.

Remarks	**N**	**Percentage**
Number of Samples	312	100
Sample removed (*purposive*)	1	0,3
Final Sample	311	99,7
Age:		
≤ 24 years	10	3,2
25 - 40 years	147	47,3
≥ 40 years	154	49,5
Gender:		
Male	238	76,5
Female	73	23,5
Education:		
Diploma or equivalent	20	6,4
Bachelor	235	75,6
Master	51	16,4
Doctoral	5	1,6
Company:		
PT. A	119	38,3
PT. B	64	20,6
PT. C	70	22,5
PT. D	58	18,6
Work Experience:		
< 1 year	3	1,0
1-5 years	29	9,3
6-10 years	79	25,4
11-15 years	118	37,9
> 15 years	82	26,4
Position or title:		
Supervisor/ or equivalent	4	1,3

Remarks	N	Percentage
Sr. Supervisor/ or equivalent	59	19,0
Area Manager/ Asst Manager/ or equivalent	126	40,5
Dept Head/ Sr. Manager/ GM/ or equivalent	122	39,4

Table 1. Respondents Profile

The data analysis from the questionnaire reveals that all indicators exhibit outer loading values between 0.668 (OI13) and 0.944 (IT-C5), demonstrating a robust correlation with their respective latent variables (condition > 0.6), thus satisfying the criterion for convergent validity.

The findings from the discriminant validity assessment, based on cross-loading values, indicated that all indicators are valid (demonstrating strong correlations within the latent variable relative to other latent constructs). The composite reliability coefficients range from 0.962 to 0.979, with the minimum AVE value being 0.674, thus confirming reliability.

Both the IT-C and the OI have R-squared values of 0.755 and 0.900, respectively. A total determination coefficient (R^2) of 0.998984975 was achieved. According to Purnomo (2019), the model in this study has strong predictive relevance, as demonstrated by the results of the structural model test (inner model).

An analysis was performed to investigate the link between the variables outlined in the model framework of this study, which examines the impact of RBMI on OI, as illustrated in Figure 1.

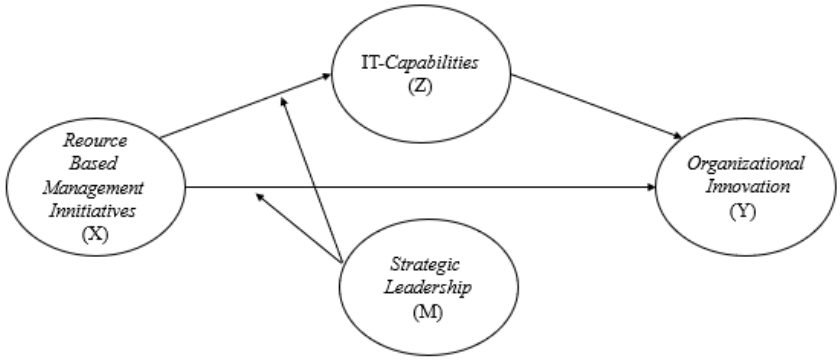

Figure 1. Model Framework

As indicated in Table 2 below, the results of the hypothesis test include both direct and indirect effects, which are quantified using a variety of indicators. These indicators include the estimation of path coefficients, t-statistics, and significance levels, all of which are used to evaluate the proposed relationships within the structural model.

Hypothesis	Code	Coefficient	T Statistics	P Values	Result
RBMI has a positive effect on OI	H1	0,561	4,923	0,000	Significant
IT-C has a positive effect on OI	H2	0,234	2,656	0,008	Significant
RBMI has a positive effect on IT-C	H3	0,362	2,039	0,042	Significant
IT-C mediates the relationship between RBMI and OI	H4	0,085	1,603	0,110	Not Significant
SL moderates the influence of RBMI on OI	H5	-0,007	0,160	0,873	Not Significant
SL moderates the influence of RBMI on IT-C	H6	0,000	0,004	0,997	Not Significant

Table 2: Hypothesis test results between research variables

The relationship between the variables influencing acquisition performance is demonstrated by the hypothesis test findings in Table 2 above. The initial hypothesis (H1) posits that RBMI exerts a positive influence on OI, evidenced by a coefficient of 0.561, a t-statistic of 4.923, and a p-value of 0.000. The second hypothesis (H2) about the impact of IT capabilities on OI was affirmed, with a coefficient of 0.234, a t-statistic of 2.656, and a p-value of 0.008. The third hypothesis (H3) demonstrates a positive impact on IT capabilities, evidenced by a coefficient of 0.362, a t-statistic of 2.039, and a p-value of 0.042.

Nonetheless, IT-Capabilities did not exhibit a significant mediating influence on the link between RBMI and OI (p-value > 0.05). Consequently, the fourth hypothesis (H4) is dismissed. The fifth and sixth hypotheses (H5 and H6), pertaining to SL moderation, yielded negligible results and were consequently dismissed. The influence of SL moderation on the association between RBMI and OI on H5 was not significant, evidenced by a t-statistic of 0.160 and a p-value of 0.873. The SL moderation in the connection between RBMI and IT capabilities on H6 was minor, evidenced by a T-statistic of 0.004 and a p-value of 0.997. The predominant theories are widely accepted, suggesting that RBMI and IT capabilities significantly affect corporate creativity. Nonetheless, this study did not find strong evidence for the mediating function of IT capabilities in the RBMI-OI relationship, nor for the moderating effect of strategic leadership on the associations between RBMI-OI and RBMI-IT capabilities. The detailed explanation of the hypothesis test results is presented in the following points:
RBMI has a positive influence on OI.
IT-C has a positive effect on OI.
RBMI has a positive effect on IT-C.
IT-C does not mediate the influence of RBMI on OI.
SL does not moderate the influence of RBMI on OI.
SL does not moderate the influence of RBMI on IT-C.

DISCUSSION

IT Capabilities (IT-C) were not identified as major mediators in the link between RBMI and OI within the telecommunications network technology provider and maintenance sector. This may be attributable to many reasons associated with industry dynamics and the organization's characteristics. One of the key reasons could be that IT-C isn't powerful or important enough to be a middleman between RBMI and OI in this field. RBMI can help change by giving resources or starting projects, but IT-C could not be a big part of pushing OI if the organization is more focused on other parts of innovation that aren't directly tied to IT. The RBMI coefficient ($\beta = 0.561$) has a stronger direct effect on OI than the IT-C coefficient ($\beta = 0.234$).
The lack of IT-C's Functions as an intermediary variable in the relationship between resource-based management initiatives (RBMI) and organizational innovation (OI) within the technology provider and telecommunication network maintenance sector may result from a misalignment between existing technology and innovation requirements, the influence of other more significant factors on innovation, or suboptimal implementation of IT-C. This underscores that organizational innovation in this industry is more significantly shaped by overarching managerial and strategic factors than only by information technology competencies.

Suggestion

The research's recommendations for future investigations include broadening the scope of the study to other industries with distinct environmental conditions and using a hybrid method to offer a more thorough insight. Furthermore, the researcher may evaluate the role of IT-Capabilities not only as a mediator but also as a moderator that enhances the association between factors, while also regarding Strategic Leadership as a mediator. Furthermore, corporations and organizations must meticulously strategize the development of their IT infrastructure and competencies, aligning them with long-term innovation objectives.

CONCLUSION

Though RBMI has a good effect on IT-C and IT-C has a favourable effect on OI, this study does not demonstrate the role of IT-C mediation in the relationship between RBMI and OI. IT-C indications represent more objective evaluations or perceptions (Perceived Organizational IT Capabilities) rather than subjective ones, providing a more accurate explanation of the employee environment than that of the corporation as a whole. Additionally, because SL is thought to be an external force (moderation) rather than an internal force (mediation), this study does not demonstrate that SL moderates the link between RBMI-OI and RBMI-IT-C.

This study provides a theoretical addition by enhancing the existing literature in strategic management, specifically regarding the theoretical integration of Resource-Based View (RBV), Dynamic Capabilities View (DCV), and contingency leadership within the Indonesian Wireless Telecommunication Infrastructure Industry. Enhancing comprehension of the RBMI approach (as a resource-based managerial initiative) in leveraging OI's competitive advantage. Presenting a novel perspective on the significance of cultivating internal competencies, particularly IT talents, in enhancing the efficacy of the RBMI strategy. Enhancing the literature with an integrated model that amalgamates two critical elements: RBMI, organizational IT capability (IT-C), and strategic leadership. Offers insight into the function of SL moderation across various contexts and scenarios.

One notable limitation of this research lies in its exclusive reliance on a quantitative approach, which focuses on the breadth of the relationship between variables rather than its depth. This research additionally examines sub-sectors of the telecommunications industry that include unique characteristics, which may not be relevant to other industrial sectors.

REFERENCES

[1] S. Adomako, R. A. Opoku, and K. Frimpong, "Entrepreneurs' improvisational behavior and new venture performance: Firm-level and institutional contingencies," *Journal of Business Research*, vol. 83, pp. 10–18, 2018. doi: 10.1016/j.jbusres.2017.10.006.

[2] A. Agyapong and R. B. Boamah, "Business strategies and competitive advantage of family hotel businesses in Ghana: The role of strategic leadership," *Journal of Applied Business Research (JABR)*, vol. 29, no. 2, pp. 531–544, 2013.

[3] M. S. Akram, M. A. S. Goraya, A. Malik, and A. M. Aljarallah, "Organizational performance and sustainability: exploring the roles of IT capabilities and knowledge management capabilities," *Sustainability*, vol. 10, no. 10, p. 3816, 2018.

[4] M. H. Al-Faidi Al-Juhani, "Strategic Information Systems Planning (SISP) in the banking sector: An Investigation of Strategic Information Systems Planning (SISP) in the Saudi Banking Sector," Ph.D. dissertation, University of Bradford, 2019.

[5] I. B. A. Alharbi, R. Jamil, N. H. N. Mahmood, and A. M. Shaharoun, "Organizational innovation: A review paper," *Open Journal of Business and Management*, vol. 7, no. 3, pp. 1196–1206, 2019.

[6] H. E. S. Ali, "Phase transfer synthesis of novel surfactants: Role of biocorrosion inhibition," *Global Journal of Social Sciences Studies*, vol. 3, no. 1, pp. 43–55, 2017.

[7] V. Ambrosini and C. Bowman, "What are dynamic capabilities and are they a useful construct in strategic management?" *International Journal of Management Reviews*, vol. 11, no. 1, pp. 29–49, 2009. doi: 10.1111/j.1468-2370.2008.00251.x.

[8] V. Ambrosini, C. Bowman, and N. Collier, "Dynamic Capabilities: An Exploration of How Firms Renew their Resource Base," *British Journal of Management*, vol. 20, no. s1, pp. S9–S24, 2009. doi: 10.1111/j.1467-8551.2008.00610.x.

[9] R. J. Arend and M. Lévesque, "Is the Resource-Based View a Practical Organizational Theory?" *Organization Science*, vol. 21, no. 4, pp. 913–930, 2009. doi: 10.1287/orsc.1090.0484.

[10] R. Ayman, M. M. Chemers, and F. Fiedler, "The contingency model of leadership effectiveness: Its levels of analysis," *The Leadership Quarterly*, vol. 6, no. 2, pp. 147–167, 1995. doi: 10.1016/1048-9843(95)90032-2.

[11] M. E. Azbari, M. Akbari, and M. H. Chaijani, "The effect of strategic leadership and empowerment on job satisfaction of the employees of University of Guilan," *International Journal of Organizational Leadership*, vol. 4, no. 4, 2015.

[12] M. Azeem, M. Ahmed, S. Haider, and M. Sajjad, "Expanding competitive advantage through organizational culture, knowledge sharing and organizational innovation," *Technology in Society*, vol. 66, p. 101635, 2021. doi: 10.1016/j.techsoc.2021.101635.

[13] H. Barham, M. Dabic, T. Daim, and D. Shifrer, "The role of management support for the implementation of open innovation practices in firms," *Technology in Society*, vol. 63, p. 101282, 2020. doi: 10.1016/j.techsoc.2020.101282.

[14] J. B. Barney, "Firm Resources and Sustained Competitive Advantage," *Journal of Management*, vol. 17, no. 1, pp. 99–120, 1991. doi: 10.1177/014920639101700108.
[15] J. B. Barney, "Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view," *Journal of Management*, vol. 27, no. 6, pp. 643–650, 2001. doi: 10.1177/014920630102700602.
[16] I. Barreto, "Dynamic Capabilities: A Review of Past Research and an Agenda for the Future," *Journal of Management*, vol. 36, no. 1, pp. 256–280, 2009. doi: 10.1177/0149206309350776.
[17] A. Benlian and I. Haffke, "Does mutuality matter? Examining the bilateral nature and effects of CEO–CIO mutual understanding," *The Journal of Strategic Information Systems*, vol. 25, no. 2, pp. 104–126, 2016.
[18] S. Benmira and M. Agboola, "Evolution of leadership theory," *BMJ Leader*, vol. 5, no. 1, pp. 3–5, 2021. doi: 10.1136/leader-2020-000296.
[19] N. Bennett and G. J. Lemoine, "What a difference a word makes: Understanding threats to performance in a VUCA world," *Business Horizons*, vol. 57, no. 3, pp. 311–317, 2014. doi: 10.1016/j.bushor.2014.01.001.
[20] R. A. Bettis, A. Gambardella, C. Helfat, and W. Mitchell, "Theory in Strategic Management," *Strategic Management Journal*, vol. 35, no. 10, pp. 1411–1413, 2014. doi: 10.2307/24037312.
[21] A. S. Bharadwaj, "A Resource-Based Perspective on Information Technology Capability and Firm Performance: An Empirical Investigation," *MIS Quarterly*, vol. 24, no. 1, pp. 169–196, 2000. doi: 10.2307/3250983.
[22] S. Bharadwaj, A. Bharadwaj, and E. Bendoly, "The performance effects of complementarities between information systems, marketing, manufacturing, and supply chain processes," *Information Systems Research*, vol. 18, no. 4, pp. 437–453, 2007.
[23] M. Birasnav, "Knowledge management and organizational performance in the service industry: The role of transformational leadership beyond the effects of transactional leadership," *Journal of Business Research*, vol. 67, no. 8, pp. 1622–1629, 2013. doi: 10.1016/j.jbusres.2013.09.006.
[24] M. Birasnav, R. Chaudhary, and J. Scillitoe, "Integration of Social Capital and Organizational Learning Theories to Improve Operational Performance," *Global Journal of Flexible Systems Management*, vol. 20, no. 2, pp. 141–155, 2019. doi: 10.1007/s40171-019-00206-9.
[25] J. Birkinshaw, R. Nobel, and J. Ridderstråle, "Knowledge as a Contingency Variable: Do the Characteristics of Knowledge Predict Organization Structure?" *Organization Science*, vol. 13, no. 3, pp. 274–289, 2002. doi: 10.1287/orsc.13.3.274.2778.
[26] K. Blanchard, "Situational Leadership-Adjust your style to suit the development level," *Executive Excellence*, vol. 25, no. 5, pp. 19, 2008.
[27] K. B. Boal and R. Hooijberg, "Strategic leadership research: Moving on," *The Leadership Quarterly*, vol. 11, no. 4, pp. 515–549, 2000. doi: 10.1016/S1048-9843(00)00057-6.
[28] L. G. Bolman and T. E. Deal, "Think—or sink: Leading in a VUCA world," *Leader to Leader*, no. 76, pp. 35–40, 2015.
[29] J. S. Bowman and J. P. West, *Public service ethics: Individual and institutional responsibilities*, Routledge, 2021.
[30] P. Boxall, "The Strategic Hrm Debate and the Resource-Based View of the Firm," *Human Resource Management Journal*, vol. 6, no. 3, pp. 59–75, 1996. doi: 10.1111/j.1748-8583.1996.tb00412.x.
[31] L. Breznik, "Can information technology be a source of competitive advantage?" *Economic and Business Review*, vol. 14, no. 3, pp. 4, 2012.