

Uncertain Supply Chain Management

homepage: www.GrowingScience.com/uscm

Improving co-creation strategies and competitive strategies to achieve business performance

Edwin Aristiawan^{a*}, Sucherly^a, Sulaeman Rahman Nidar^a and Umi Kaltum^a

^aDepartment of Management and Business, Universitas Padjadjaran, Bandung 40132, Indonesia

ABSTRACT

Article history:

Received October 22, 2023

Received in revised format

December 26, 2023

Accepted February 2 2024

Available online

February 2 2024

Keywords:

Wholesale Service Company

Co-Creation Strategies

Competitive Strategies

Business Performance

Information Communication

Technology

The foundation of this study is the findings from implementing co-creation and competitive strategies to increase the operation efficiency of wholesale service companies of Information Communication Technology (ICT) of network, internet and infrastructure in Indonesia. It is necessary to review journal papers that discuss business performance in wholesale service companies of ICT of network, internet, and infrastructure. The study aims to find out whether a co-creation strategy and competitive strategy can drive business performance. The research method uses a quantitative approach using data collected using 54 random samples from a population and the data were analyzed using SEM-PLS. Results showed that both co-creation and competitive strategy affected business performance, but the competitive strategy was dominant. The insights gathered from this study should help wholesale service companies of ICT continually enhance their co-creation and competitive strategies, which will boost their overall performance.

© 2024 by the authors; licensee Growing Science, Canada.

1. Introduction

Technological advancements compel most telecommunications companies to start directing their business lines regarding integration. Currently, telecommunication operator companies have started to offer voice and data services, application and content services, digital services, and digital solutions. The market potential for wholesale carrier services with network and infrastructure coverage is expected to grow. This is primarily attributed to the significant subscriber base for the increasing prevalence of internet consumers and cellular operators, who will necessitate robust networks and infrastructure to cope with the substantial data usage. Prahalad and Ramaswamy (2004) posit that relationships among organizations and clients transpire through co-creation experiences or distinctive human experiences. Sitaloppi and Nenonen (2013) argue that the very essence of co-creation—the engagement of customers or third parties—is indispensable for its successful execution. Executing co-creation requires the appropriate approach. A shared value creation strategy, according to Romero and Molina (2009), is a description of how an organization's network engages consumers and business partners in the joint value creation process with the intention of gaining a competitive edge. Prahalad and Ramaswamy (2004) assert that value creation is dependent on the interactions between companies and customers. Accordingly, the co-creation process needs to be comprehended in relation to its DART Model of Value Creation, which includes the components that follow Access, dialogue, risk evaluation, and transparency. Conversely, observations indicate that the occurrence is associated with the execution of the co-creation strategy, wherein the nature of the customer dictates distinct demands in the relationship with the organization. It has not, nevertheless, been completely implemented. The customer dialogue has been suboptimal, as it ought to have commenced when the customers were still prospective clients. According to G Li, J Wu, and N Li (2022), technological advancements (like the Internet of Things), it is now increasingly evident how interactive value of services and tangible products are supported, and the impact of each value co-creation subject on the aggregate value is increasing. Value co-creation refers to the process by which supplier and consumer resources are integrated in a collaborative effort to resolve shared challenges. In

* Corresponding author

E-mail address edwin.aristiawan@gmail.com (E. Aristiawan)

ISSN 2291-6830 (Online) - ISSN 2291-6822 (Print)

© 2024 by the authors; licensee Growing Science, Canada.

doi: 10.5267/j.uscm.2024.2.002

order to generate optimal value-in-use, which is the most favorable compromise between the sacrifices necessary to attain the desired value-in-use and the specialized professional skills, methods, and judgment that suppliers employ, consumers contribute resources such as knowledge. (2012) Aarikka and Jaakkola. The competitive strategy is an additional element that is hypothesized to be associated with the challenge faced by the Wholesale Carrier Service company in attaining business performance despite having network and infrastructure coverage. As posited by Pearce and Robinson (2015), two distinguishable elements that contribute to an organization's competitive advantage are its cost structure and its capacity to differentiate itself from rivals. Porter's (2008) generic strategy concept serves as the foundational principle guiding a company's optimal market competition. According to Pearce and Robinson (2015), gaining a competitive advantage requires executing strategies that are based on the following factors: cost, differentiation, velocity, and market concentration. It has been determined, through observation, that the network and infrastructure coverage strategies of wholesale carrier services pertaining to cost leadership and product differentiation have not been executed adequately. This is as a result of the operator's substantial operating expenses. The primary cost factor for establishing a backbone network in Indonesia is the substantial investment value that is necessary for this endeavor. Furthermore, the company's product differentiation strategy is unsuitable for wholesale clients who demand minimal service, as it will be merged with other service providers, resulting in an increase in Service Level Agreements (SLG).

The primary aim of this study is to examine the correlation between network coverage and infrastructure and its impact on business performance within the wholesale carrier service sector in Indonesia. As indicated by the results of initial investigations, the factors contributing to the matter are co-creation and competitive strategies. As perceived through the lens of the customer relationship, the co-creation strategy's flaw has not been entirely resolved. Conversely, consumers exhibit varying preferences and require distinct variations. However, communication with consumers has not been at its peak; it ought to have commenced while they were still prospective clients.

Prior studies have investigated the significance of collaborative strategy and co-creation within the Wholesale Carrier Service industry, with a particular focus on its implications for network and infrastructure coverage. Hamidi and Gharnah (2017), García Haro et al. (2014), and Kim et al. (2020) have all reached the conclusion that co-creation is crucial for transforming symbiotic relationships between companies and their largest customers into cooperative partnerships. In line with this, studies conducted by Panayides (2003), Kaliappen and Hilman (2014), and Teeratansirikool et al. (2013) have demonstrated that organizations that adopt competitive strategies have a greater probability of achieving high performance. According to Mihardjo et al. (2021), co-creation has been a significant factor in enabling established businesses to enhance the customer experience by combining internal and external capabilities obtained from customers and third parties. This is achieved by integrating a multitude of internal capabilities. Moreover, in this age of interconnectivity, it is impractical to possess each fundamental competency along the value chain; therefore, collaboration is indispensable. To expedite the development of the digital market and facilitate the initial phases of the digital revolution in Indonesia, this calls for the formation of cooperative partnerships that will mature into indispensable assets. Furthermore, this collaboration is described as a co-creation strategy. Additionally crucial for facilitating digital transformation is the evaluation of performance via measurement. (Mihardjo et al., 2019). Performance is also impacted by competitive strategy, according to prior research. According to the research of Wuen and Ringim (2021), SME owners and managers devise competitive strategies that enable the implementation of suitable human resource management approaches, with the ultimate objective of enhancing SME performance. Enhancing business performance within the Wholesale Carrier Service sector in Indonesia, specifically in the domains of network and infrastructure coverage, is of utmost significance. This objective is pursued through competitive and co-creation strategies to be implemented.

2. Literature Review

Performance of a company is the consequence of carrying out all business-related operations. Commercial effectiveness and business performance are intrinsically linked; the former is ascertained through the organization's capacity to most efficiently execute its objectives by providing consumers and customers with goods and services that fulfill their expectations. Shared value is generated in the field of marketing studies through interactions between the corporation and its customers, in which all participants participate. As demonstrated by the co-creation process, interactions between providers and consumers necessitate profound engagement, as well as the capacity and willingness to act and gain knowledge from one another. Competitive strategy is a type of business strategy that seeks to surpass the performance of other firms in the same industry through improved customer service, market position consolidation, preparedness to counter competitor maneuvers, and responsiveness to market dynamics.

2.1 Performance of a Company and Co-Creation Strategy

Hamidi and Gharnah (2017) identified the effect that co-creation has on industry performance. In addition, businesses and consumers were impacted both directly and indirectly by co-creation activities, as Garcia-Haro et al. (2014) explicitly assert. As per the results reported by Kim et al. (2020), co-creation increased the strategic advantage of an organization, which had a substantial and positive effect on its performance. Small and medium-sized manufacturers (SMMs) benefit even more from co-creation with their major customers than do large organizations. This is because co-creation transforms their relationship with their major buyers from one of competition to one of cooperation. The co-creation strategy influences business

performance, as evidenced by these results. The subsequent hypotheses may be developed in consideration of the results obtained from the studies:

H₁: *Co-creation strategies have a substantial impact on the performance of the company.*

2.2 The Performance of the Company and Competitive Strategy

As stated by Kaliappen and Hilman (2014), the influence of service innovation and differentiation strategy on organizational performance was found to be substantial. It was determined that differentiation, an element of a competitive strategy, belonged to the latter. Performance measurement indicated that the adoption of a competitive strategy significantly and positively influenced business performance, according to a study by Teeratsirikool et al. (2013). Performance was enhanced by fortifying the differentiation strategy, as stated by Chung et al. (2012). A positive correlation has been observed between the efficacy of shipping management firms and their competitive strategy, as stated by Panayides (2003). There was a higher percentage of high-performing organizations that adopted competitive strategies. The most notable impacts on performance appeared to be the attainment of economies of scale, the establishment of differentiation (especially by offering a broader selection of services), the concentration on the market, and the execution of competitor analysis. The following hypotheses can be formulated considering the aforementioned studies' findings:

H₂: *A company's performance is profoundly influenced by its competitive strategies.*

Fig. 1. illustrates the research paradigm in accordance with the framework:

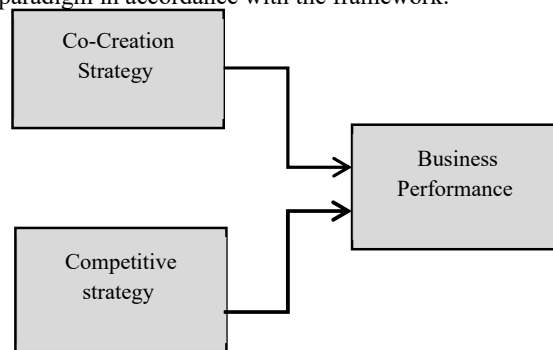


Fig. 1. Research Paradigm

3. Methods

3.1 Data collection

Quantitative research employing a descriptive and causal design, this study gathered and conducted a data analysis, integrating the findings, and drew conclusions. Online and offline methods were utilized to gather the data. Offline surveys involve respondents who are geographically accessible, whereas the online survey data was acquired through the utilization of Google Forms and distributed via a share link to known contact numbers. Further, the executives and senior executives of ICT wholesaler companies with operations in Indonesia were surveyed, where their organizations possessed network, internet and infrastructure. The research employed cross-sectional data methods and a one-time horizon for this investigation. A wholesale carrier service provider of infrastructure and network coverage is the focus of this study. The unit of observation for this research is the company's management. Distributor service providers with infrastructure and network coverage in Indonesia comprise the study population. There were sixty companies, as reported in the documentation study, and 54 random samples were used for this investigation.

3.2 Statistical analysis

In this investigation, PLS (Partial Least Square) was used to test the hypotheses. As the norm for analyzing intricate relationships between latent and observed variables, partial least squares structural equation modeling (PLS-SEM) has been adopted. PLS, which illustrates the relationship between latent variables and their indicators, is an analytical model derived from Structural Equation Modeling (SEM). It demonstrates how latent variables and measurement components are related. SmartPLS version 3, developed by SmartPLS GmbH in Bonningstedt, Germany, was employed to perform the statistical analyses (Ringle et al., 2015). The analysis required a comparatively limited quantity of samples. When time is of the essence and the model being developed is intricate, PLS is highly recommended.

3.3 Measurement development

Several items comprising the second-order measurement of the model's construction are thoroughly validated. Each construct consists of a selection of inquiries that have been predicated on theoretical investigations. Dialogue (CoCS1-CoCS4), Access

(CoCS5 and CoCS6), Risk Assessment (CoCS7 and CoCS8), and Transparency (COCS9 and CoCS10) comprised the four dimensions by which Co-Creation was evaluated. Five dimensions comprise competitive strategy metrics: differentiation strategy (CS3-CS6), cost leadership strategy (CS1 and CS2), speed (CS7-CS10), focus (CS11-CS13), and flexibility (CS1 and CS15). In conclusion, the evaluation of company performance is conducted along the following five dimensions: learning & growth (CP16-CP18), sales (CP1-CP3), profitability (CP4-CP9), market share (CP10 and CP11), and internal processes (CP12-CP15).

Table 1
Composite Reliability (CR) and Average Variance Extracted (AVE)

Construct	Average Variance Extracted (AVE)	Composite Reliability (CR)
Co-Creation Strategy	0.974	0.969
Dialogue	0.856	0.960
Access	0.826	0.905
Risk Assessment	0.925	0.961
Transparency	0.917	0.957
Competitive Strategy	0.961	0.956
Cost leadership strategy	0.814	0.897
Differentiation strategy	0.654	0.883
Speed	0.730	0.915
Focus	0.790	0.918
Flexibility	0.857	0.923
Company Performance	0.969	0.965
Sales	0.817	0.931
Profitability	0.865	0.975
MarketShare	0.968	0.984
Internal Proses	0.636	0.874
Learning & Growth	0.671	0.910

Source: Primary Data (2023)

As shown in Table 1, Further analysis is provided regarding the reliability and validity of the model with regard to every construct. AVE is a statistical metric that quantifies the proportion of variance explained by a construct relative to the variance caused by measurement error. As stated by Hair et al. (2022), a minimum AVE of 0.50 signifies that the construct explains fifty percent of the variance that is accounted for by the indicators comprising the construct. In contrast to the permissible threshold of 0.5, values exceeding 0.7 are regarded as exceptionally favorable. Table 1 presents each of the constructs' AVE values, which exceeds 0.5. Additionally, each model demonstrates adequate When the value of each latent variable exceeds 0.7, composite reliability (CR) is attained.

Table 2
t-value and Loading Factor

Variables	Dimension	Indicator	Loading Factor (λ)	t stat
Co-Creation Strategy	Dialogue		0.968	115.497
		CoCS1	0.936	78.319
		CoCS2	0.932	58.898
		CoCS3	0.911	57.853
		CoCS4	0.922	46.013
	Access		0.930	62.662
		CoCS5	0.920	77.029
		CoCS6	0.897	35.117
	Risk Assessment		0.932	62.005
		CoCS7	0.961	114.639
CoCS8		0.962	115.109	
Transparency		0.948	90.320	
	CoCS9	0.957	97.212	
	CoCS10	0.958	95.501	
Competitive Strategy	Cost leadership strategy		0.895	42.841
		CS1	0.896	37.305
		CS2	0.908	51.598
	Differentiation strategy		0.914	61.387
		CS3	0.844	19.135
		CS4	0.810	23.124
		CS5	0.814	16.485
		CS6	0.764	17.994
	Speed		0.930	67.963
		CS7	0.903	50.754
		CS8	0.855	26.586
		CS9	0.857	18.796
		CS10	0.798	20.563
	Focus		0.930	62.390
		CS11	0.909	44.060
CS12		0.857	26.244	
CS13		0.898	40.262	
Flexibility		0.874	43.943	
	CS14	0.928	53.159	

Variables	Dimension	Indicator	Loading Factor (λ)	t stat
Company Performance	Sales	CS15	0.923	55.551
			0.939	108.755
		CP1	0.910	62.182
		CP2	0.869	41.005
	Profitability		0.932	85.843
			0.935	63.226
		CP4	0.900	43.248
		CP5	0.880	39.410
		CP6	0.902	34.642
		CP7	0.962	107.298
		CP8	0.971	184.265
	Market Share		0.962	120.707
			0.928	61.196
		CP10	0.984	250.999
	Internal Proses	CP11	0.984	260.479
			0.897	48.565
		CP12	0.831	24.149
		CP13	0.888	42.794
		CP14	0.731	12.790
	Learning & Growth	CP15	0.728	11.011
		0.763	12.545	
CP16		0.852	34.355	
CP17		0.734	10.302	
CP18		0.887	32.595	
CP19		0.803	17.279	
	0.811	24.476		

Source: Primary Data (2023)

In an outer model or measurement model, the relationship between latent variables and their respective indicators is delineated. To assess the convergent validity of the reflective model, the outer model test was performed by examining the loading factor. When the indicator is utilized as an observed variable, any loading factor value exceeding 0.5 is considered valid. The correlation between indicators and variables or dimensions is specified in the outer model. Consequently, the correlation between each indicator and the latent variable can be discerned. Based on the evaluation results, a correlation was inferred between the indicator and the latent variable. As shown in Table 2, each loading factor value is greater than 0.5. Consequently, each variable indicator is considered valid and integrated into the analysis.

4. Results

4.1 Descriptive Analysis

Wholesale carrier service providers with network and infrastructure coverage that are members of associations including MASTEL, APJII, ASKITEL, ASPIMTEL and ATSI were among the organizations surveyed. An Internet Service Provider (ISP) that primarily operates under a Business-to-Business (B2B) sales model and offers wholesale leased lines and capacity connections for domestic and international purposes is one of its businesses. They are dispersed within several Indonesian locations and have a backbone with an extensive capacity range. The Palapa Ring, JIBA, and Java Submarine networks extend to East, Central, and West Indonesia, respectively. The survey was specifically targeted at the directors and senior executives of ICT wholesaler organizations, who were deemed indispensable participants.

Ascertaining whether the organization has taken into account every factor inquired in the questionnaire is critical using the sample results. Furthermore, in order to surpass industry rivals, it is critical to ascertain the degree of implementation that each company has achieved when implementing business strategies. The following categories are applied to the responses to the variables (questions) in Appendix A, using a five-point scale: Five (excellent), one (extremely poor or terrible), two (not good), three (average), and four (good). A co-creation strategy, which is a competitive approach aimed at attaining a benefit-generating competitive advantage, is deemed implemented when the value of four to five indicates that the organization has executed it, as perceived by management. Values one and two indicate that administration has not adopted such a strategy.

A Likert scale value of approximately 56% was assigned by the management sample to each factor, which is all above 4.00. According to management, this indicates that the majority of organizations are simultaneously implementing business strategies to maintain a competitive advantage and outperform industry rivals through the process of co-creation with clients and business associates. The fourteen dimension averages of the three variables and the queries are presented in Appendix A. Model of Structure.

4.2 Goodness of fit

The inner model, functioning as a structural model, illustrates the interconnections (trajectories) that exist among the constructs. The assessment of structural models was performed by applying predictive relevance (Q-square value), R-square, and the GoF, or Goodness of Fit. According to Chin (2000), R-Square values of 0.67 are considered substantial, 0.33 are considered moderate, and 0.19 are deemed so. For measurement and structural model validation, GoF values of 0.25 to 0.25

(small), 0.25 to 0.36 (moderate), and 0.36 and above (large) are required. The accuracy of predictions is evaluated by the Prediction Relevance (Q-Square) test, which employs blindfolded procedures. The constraints of Q-Square are delineated by the values 0.35 (large), 0.15 (medium), and 0.02 (small).

Table 3
R-Square Value and GOF Evaluation

Variable	R-Square	Commuality	Q-square	The goodness of Fit (GoF) Index
CoCreation Strategy	-	0.974	0.777	0.721
Competitive Strategy	-	0.961	0.608	
Company Performance	0.537	0.969	0.613	

Source: Primary Data (2023)

The methodology for assessing the performance of a company in relation to endogenous constructs is elaborated upon in Table 3. The model is suitable because R-square is of moderate to high magnitude, GoF is in the large category, and Q-square is also substantial.

4.3 Hypothesis Testing

The comprehensive outcomes of hypothesis testing in Table 4, support the acceptance of H1 and H2. Co-creation and competitive strategy were discovered to have a statistically significant and positive impact on company performance, with a 95% level of significance and a probability of less than 0.05 applied to the analysis. Critical strategy exerts the most pronounced influence on organizational performance in comparison to the remaining determinants, as indicated by the path coefficient of 0.500. Moreover, with a path coefficient of 0.277, co-creation strategy has the lowest R2 value (18.2%) compared to competitive strategy's 35.5% R2 value.

Table 4
Testing Hypotheses

No	Hypothesis	Path Coeff.	Std. Error	t-stat	Prob.	R2	Conclusion
1	CoCreation Strategy → Company Performance	0.277	0.091	3.035	0.004	0.182	Significant
2	Competitive Strategy → Company Performance	0.500	0.080	6.284	0.000	0.355	Significant

Source : Primary Data (2023)

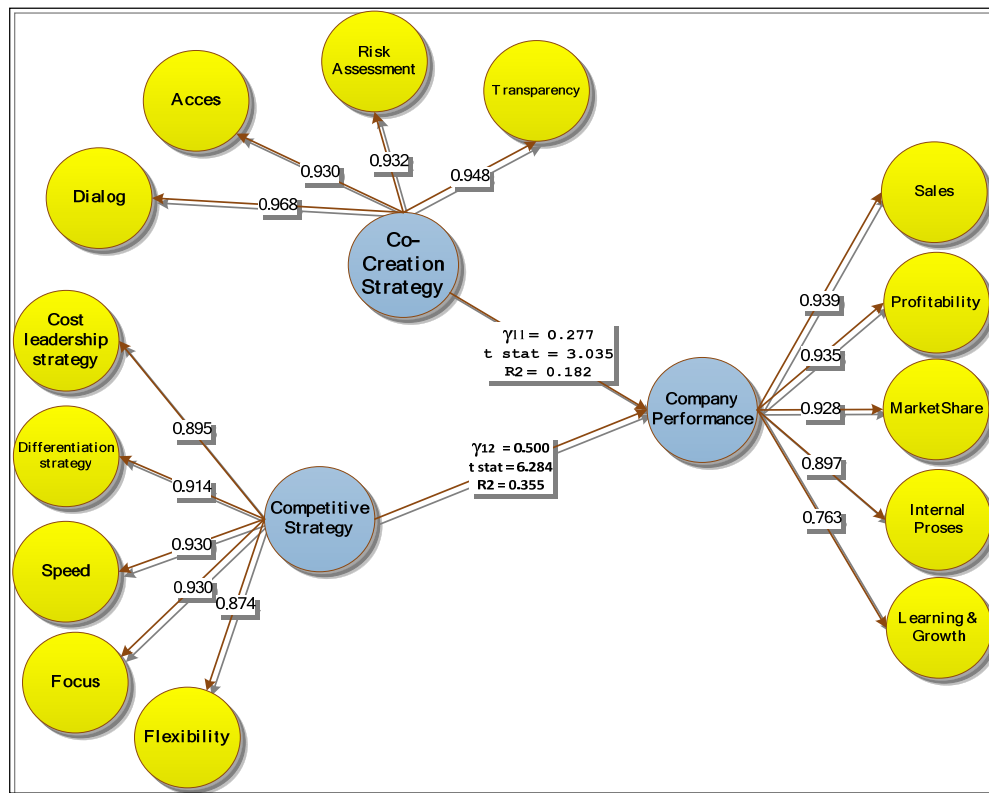


Fig. 2. Research Model Based on Findings

Hamidi and Gharneh (2017) posit that company performance is impacted by co-creation; Teeratansirikool et al. (2013) contend that competitive strategy significantly and positively enhances company performance; and differentiation strategy, a constituent of a competitive strategy, exerts a considerable influence on organizational performance; consistent with these

findings is the correlation between co-creation and firm performance. Consistent with the results obtained from Kim et al. (2020), An investigation was conducted to assess the impact of co-creation on the operational efficacy of small and medium-sized manufacturers that supply components or spare parts to large corporate purchasers, the present study yields similar findings. The results mentioned earlier are consistent with the research conducted by Riyadi and Munizu (2022), which demonstrated that competitive advantage significantly and directly impacts the performance of manufacturing firms in Surabaya and Makassar, Indonesia.

In order to attain value co-creation, organizations fortify and establish their business networks. This is demonstrated, for example, by the collaborative development of solutions that enhance the quality and effectiveness of their business partnerships (Kumar et al., 2019). Value co-creation is primarily attributed to the fact that no single actor possesses an exhaustive array of skills and resources required to effectively implement competitive strategies (Leone et al., 2021). Romero and Molina (2009) The implementation of a value co-creation strategy delineates the steps taken to establish a value creation system comprising organizations, technology, and individuals functioning in a mutually beneficial business ecosystem. Within this system, organizations and customers participate in dynamic and reciprocal exchanges of information with the mutual objective of creating value offerings (such as products, services, and experiences) in a producer-customer relationship that is advantageous to both parties. Indonesian businesses operating in the wholesale telecommunications and information communication technology sectors have capitalized on these technological developments to streamline and expedite customer services. Implementers of the strategy benefit from cost advantages, differentiation, and concentration. Furthermore, their capacity to accurately forecast market needs and seamlessly incorporate state-of-the-art technology will lead to amplified revenue, clientele, market dominance, and market presence. A sustainable competitive advantage, according to Porter (2008), is difficult for a business to replicate, allowing it to acquire and maintain its market leadership position.

5. Discussion and Conclusion

Market potential for the wholesale carrier service industry with a focus on infrastructure and networks in Indonesia is anticipated to persist, owing to the substantial subscriber base of cellular operators and the rising user base of the internet. These factors will necessitate enhanced infrastructure and networks to accommodate the augmented data usage. The wholesale segment facilitates business operations in the consumer and enterprise sectors, in addition to offering telecommunication operators access to satellites, backbones, BTS (base transceiver station) antennas, connections, and submarine cables. It is anticipated that the findings of this research will enable businesses to compete across industries and optimize co-creation. The findings of the research provide immediate operational and conceptual implications that may be implemented to enhance the business performance of an organization. Coverage of the Indonesian infrastructure and network for wholesale carrier services: an analysis of business performance is influenced, either partially or simultaneously, by co-creation strategy and competitive strategy. It is believed that competitive strategy exerts a more substantial impact on performance. Organizations that possess a competitive edge are capable of comprehending shifting market structures and selecting marketing strategies that are effective. Pearce and Robinson (2015) delineate that competitive advantage is derived from the implementation of speed-based strategies, low-cost approaches, differentiation, and market concentration. According to the observations, Wholesale Carrier Service has not effectively implemented its cost leadership strategy and product differentiation in the Network and Infrastructure domains. This is primarily attributed to the substantial operational expenses incurred by operators, with the highest cost component stemming from the substantial investment required. The execution of this approach serves as the foundation for the company's strategic planning. The research findings mentioned above align with those of Riyadi and Munizu's (2022) investigation of medium and large-scale manufacturing sectors in Surabaya and Makassar, Indonesia. Their study revealed that the performance of a company is primarily influenced by profit competition, rather than the dynamics of the external environment. Based on the results of this research, enhancing competitive advantage components—namely, flexibility, cost, quality, product delivery speed, and innovation—is crucial for generating superior business performance. Co-creation strategy involves a democratic approach that places human experience at the core of corporate design and planning and invites individuals to collaborate with management to shape the future of the organization. By actively engaging with companies and customers, facilitating access to information regarding product risks and benefits, and promoting transparency regarding the products and technologies employed, it is possible to formulate a co-creation strategy. Furthermore, resource sharing among providers, operators, and participants is feasible, especially with regard to infrastructure development. When the participants/operators/suppliers have a productive, cooperative, and collaborative relationship, this can result in a more efficient value chain. At times, they engage in competition with one another; at other times, they cooperate and pool their resources in an effort to acquire consumers and generate revenue.

According to a study by Mihardjo et al. (2021), established businesses have significantly improved the customer experience through co-creation, which develops new business models by integrating internal and external capabilities obtained from customers and third parties. Similarly, Rayna and Striukova (2014) demonstrate that the implementation of co-creation is advantageous and conducive to the establishment of enduring relationships between companies and their customers through the formation of innovative communities in which companies serve as conduits and contribute additional functions (e.g., vetoing ideas, enhancing coordination, and enforcing regulations). This fosters a stable community of innovators, as well as social relations and dynamics between businesses and their clientele.

In order to improve their business performance, wholesale carrier service providers may benefit from implementing measures that guarantee comprehensive infrastructure and network coverage, according to the findings of this study, they should develop and implement an appropriate competitive strategy and co-creation strategy to their fullest potential. The processes encompassed in this include the implementation of a differentiation strategy, the anticipation of market demands, and the integration of cutting-edge technologies and information media. Furthermore, the implementation of competitive advantage strategies that engage customers, business partners, competitors, or other providers in the collaborative creation process will have a beneficial effect on expanding market share. Consequently, this will result in enhanced sales performance that is both effective and efficient, achieved within a reduced timeframe. Conversely, enhanced digital infrastructure and infrastructure development within the telecommunications industry will facilitate the expansion of internet access across Indonesia, thereby stimulating investment that will stimulate the economy and promote greater digital literacy. In support of this, the government has allocated funds to sustain a variety of infrastructure development programs for information and communication technologies. Furthermore, it guarantees fair and impartial access to promote digital transformation in both the public and private sectors, establish a nationwide data center, and execute an electronic-centric government infrastructure.

For the digital economy to reach its full development potential, all digital participants must converge into a single entity, primarily via 5G towers, data centers, and fiber optics, which collectively form the most sustainable ecosystem possible. This aligns with the conclusions drawn by Amiri and Reif (2013), which suggest that the Internet and the implementation of ICTs are significant drivers of GDP expansion in the Nordic nations (Finland, Denmark, Norway, and Sweden). The correlation between GDP growth and broadband penetration in a number of Asian countries from 2001 to 2015 is substantial. Therefore, internet access is expedited, facilitating enhanced information transmission. In the interim, economic expansion is a significant factor in the advancement of technology, as a rise in broadband penetration can stimulate investment in telecommunications, thereby stimulating greater activity in this industry. Enhanced technological adoption and greater utilization of broadband services in developing nations with higher GDPs generate favorable economic growth prospects for those nations. This implies that developing nations are actively seeking technological advancements that can be realized through expanded broadband access (Alam et al., 2019). A correlation analysis between mobile broadband and GDP growth in 135 countries was the subject of a study conducted by Edquist, Goodridge, Jonathan, Xuan Li, and Lindquist (2018). Gross Domestic Product (GDP) increased in tandem with a 0.8 percent surge in broadband adoption, according to the findings. Consequently, this effect may be influenced by substantial initial investments as mobile broadband becomes the first to be deployed, which impacts GDP. One limitation of the study is that the sample consists solely of wholesalers in Indonesia operating in the network, internet and infrastructure coverage industry. As a result, extrapolating the findings to other samples is not feasible, with the exception of industries that share similar attributes. Moreover, the data that has been gathered is of a cross-sectional design, which permits the examination of phenomena at a specific moment in time. However, this approach does not adequately consider the impact of dynamic variables on the observed population, as well as the evolving conditions and relationships that transpire across different time periods.

Acknowledgement

For encouragement, support, and assistance throughout this research endeavor, we extend our gratitude to our entire family and professional network.

References

- Alam, T. F., Sultana, N., & Rayhan, M. I. (2019). Structural equation modeling: an application of broadband penetration and GDP growth in Asia. *Journal of Economic Structures*, 8, 1-11.
- Amiri, S., & Reif, B. (2013). Internet penetration and its correlation to gross domestic product: An analysis of the nordic countries. *International Journal of Business, Humanities and Technology*, 3(2), 50-60.
- Chin, W. (2000). Partial Least Squares for IS Researchers: An Overview and Presentation of Recent Advances Using the PLS Approach. *ICIS 2000 Proceedings*. <https://aisel.aisnet.org/icis2000/88>
- Chung, Y. C., Hsu, Y. W., Tsai, S. C., Huang, H. L., & Tsai, C. H. (2012). The correlation between business strategy, information technology, organizational culture, implementation of CRM, and business performance in a high-tech industry. *The South African Journal of Industrial Engineering*, 23(2), 1–15. <https://doi.org/10.7166/23-2-326>
- Edquist, H., Goodridge, P., Haskel, J., Li, X., & Lindquist, E. (2018). How important are mobile broadband networks for the global economic development?. *Information Economics and Policy*, 45, 16-29.
- García Haro, M. Á., Martínez Ruiz, M. P., & Martínez Cañas, R. (2014). The Effects of the Value Co-Creation Process on the Consumer and the Company. *Expert Journal of Marketing*, 2(2), 68–81.
- Hair, JF.Jr. Hult, G. Tomas M. , Ringle . Christian M. , Sarstedt . Marko, Danks. Nicholas P., Ray Soumya (2022). Partial Least Square Structural Equation Modeling (PLS-SEM) Using R. Workbook. Springer.
- Hamidi, F., & Gharneh, N. S. (2017). Impact of co-creation on innovation capability and firm performance: a structural equation modeling. *AD-Minister*, 30, 73–90. <https://doi.org/10.17230/AD-MINISTER.30.4>
- Kaliappen, N., & Hilman, H. (2014). Does Service Innovation Act as a Mediator in Differentiation Strategy and Organizational Performance Nexus? An Empirical Study. *Asian Social Science*, 10(11), 123.

- <https://doi.org/10.5539/ASS.V10N11P123>
- Kim, D. W., Trimi, S., Hong, S. G., & Lim, S. (2020). Effects of co-creation on organizational performance of small and medium manufacturers. *Journal of Business Research*, *109*, 574–584. <https://doi.org/10.1016/J.JBUSRES.2019.03.055>
- Kumar, P., Sharma, A., & Salo, J. (2019). A bibliometric analysis of extended key account management literature. *Industrial Marketing Management*, *82*, 276–292.
- Leone, D., Schiavone, F., & Simoni, M. (2021). Key account management and value co-creation in multi-stakeholder ecosystems. A “market access” mix. *Journal of Business & Industrial Marketing*, *36*(13), 199–209. DOI 10.1108/JBIM-05-2019-0256]
- Li, G., Wu, J., & Li, N. (2022). Identifying the Value Co-Creation Model and Upgrading Path of Manufacturing Enterprises from the Value Network Perspective. *Sustainability*, *14*(23), 16008. <https://doi.org/10.3390/su142316008>
- Mihardjo, L. W. W., Sasmoko, Alamsjah, F., & Elidjen. (2019). Digital transformation: a transformational performance-based conceptual model through co-creation strategy and business model innovation in the Industry 4.0 in Indonesia. *International Journal of Economics and Business Research*, *18*(3), 369–386. DOI:10.1504/IJEER.2019.10023697
- Mihardjo, L. W. W., Sasmoko, Alamsjah, F., & Elidjen. (2021). Role of customer experience in developing co-creation strategy and business model innovation: study on Indonesia telecommunication firms in facing Industry 4.0. *International Journal of Business and Globalisation*, *28*(1-2), 48–63.
- Panayides, P. M. (2003). Competitive strategies and organizational performance in ship management. *The Flagship Journal of International Shipping and Port Research*, *30*(2), 123–140. <https://doi.org/10.1080/0308883032000084850>
- Pearce, J. A., & Robinson, R. B. (2015). *Strategic Management: Planning for Domestic & Global Competition*, International Edition. McGraw-Hill Education.
- Porter, M. E. (2008). *Strategi Bersaing (Competitive Strategy)*. Karisma Publishing Group.
- Prahalad, C. K., & Rawaswamy, V. (2004). *The Future Competition: Co-Creating Unique Value With Customer*. Harvard Business School Press.
- Rayna, T., & Striukova, L. (2015). Open innovation 2.0: is co-creation the ultimate challenge?. *International Journal of Technology Management*, *69*(1), 38–53. <https://doi.org/10.1504/IJTM.2015.071030>
- Ringle, C. M., Wende, S., & Becker, J.-M. (2015). *SmartPLS version 3 [Computer software]*. SmartPLS GmbH. <http://www.smartpls.com>
- Riyadi, S., & Munizu, M. (2022). The external environment dynamics analysis towards competitive advantage and company performance: the case of manufacture industry in Indonesia. *International Journal of Productivity and Quality Management*, *35*(2), 143–156.
- Romero, D., & Molina, A. (2009). Value co-creation and co-innovation: Linking networked organizations and customer communities. In L. M. Camarinha-Matos, I. Paraskakis, & H. Afsarmanesh (Eds.), *Leveraging Knowledge for Innovation in Collaborative Networks. PRO-VE 2009. IFIP Advances in Information and Communication Technology*, vol. 307 (Vol. 307, pp. 401–412). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-04568-4_42/COVER
- Sitaloppi, J., & Nenonen, S. (2013). Role configurations in the service provision process: Empirical insights into co-creation of value. *International Journal of Quality and Service Sciences*, *5*(2), 155–170. <https://doi.org/10.1108/IJQSS-11-2012-0019/FULL/XML>
- Aarikka-Stenroos, L., & Jaakkola, E. (2012). Value co-creation in knowledge intensive business services: A dyadic perspective on the joint problem solving process. *Industrial marketing management*, *41*(1), 15–26.
- Teeratansirikool, L., Siengthai, S., Badir, Y., & Charoenngam, C. (2013). Competitive strategies and firm performance: The mediating role of performance measurement. *International Journal of Productivity and Performance Management*, *62*(2), 168–184. <https://doi.org/10.1108/17410401311295722/FULL/XML>
- Wuen, C. H., Ibrahim, F., & Ringim, K. J. (2021). Mediating effect of competitive strategy in the relationship between strategic human resource management and performance of small and medium enterprises in Brunei Darussalam. *Middle East Journal of Management*, *8*(2-3), 254–277. DOI: 10.1504/MEJM.2021.114010

Appendix A

Variable, questions and average values

Variables	Dimension	Code	Question	Average
Co-Creation Strategy	Dialogue	CoCS1	What is the level of interaction between the company and customers and stakeholders in the co-creation process to achieve mutually beneficial performance?	4,17
		CoCS2	How is the level of involvement of customers and stakeholders / stakeholders in improving the company's competitive strategy?	4,00
		CoCS3	What is the level of readiness of the company in carrying out the co-creation process?	4,02
		CoCS4	What is the level of availability of means or communication media for dialogue between stakeholders/stakeholders in co-creation?	4,00
	Access	CoCS5	What is the level of convenience for customers to be able to access the company in the co-creation process?	3,98
		CoCS6	What is the level of software-oriented implementation that supports co-creation?	3,87
	Risk Assessment	CoCS7	What is the level of customer and partner participation in the co-creation process (the process of designing a product or service getting input from consumers in providing ideas	3,86
		CoCS8	What is the level of ease of obtaining information about the risks of the products and services provided by the company? (make it easier for companies to share information so that customers or partners actively contribute and or choose content from new product offerings)	4,06
	Transparency	CoCS9	What is the level of transparency about the product (removing/reducing barriers to accessible product information)?	3,98

Variables	Dimension	Code	Question	Average	
Competitive Strategy		CoCS10	What is the level of transparency regarding technology (removing/reducing barriers to accessing the information technology used)?	4,08	
	Cost leadership strategy	CS1	What is the level of operational cost efficiency determination (being able to set low costs for operations so that it has an impact on competitive prices)?	4,21	
		CS2	What about the level of competitive pricing/tariffs (able to provide products/services that meet broad customer needs at the lowest possible price)?		
	Differentiation strategy	CS3	What is the level of uniqueness and variety of products offered (the ability to provide products and services to meet customer needs by highlighting product variations and specifications compared to competitors)?	4,08	
		CS4	What is the level of service convenience of the company to customers (ability to provide easily accessible services to meet customer needs)?	4,26	
		CS5	What is the level of accuracy in the use of technology (providing products and services that feature more advanced technology than competitors)?	4,15	
		CS6	What is the productivity level of your company in producing new product and service innovations to win the competition and maintain business continuity (providing new products and services that are more innovative and creative than competitors)?	4,06	
	Speed	CS7	What is the speed of the company's response in anticipating dynamic market demands?	4,00	
		CS8	What is the speed of the company's response in meeting customer requests?	4,11	
		CS9	What is the speed of the company's response in adapting the latest technology to increase competitiveness?	4,08	
		CS10	What is the level of speed in the network/infrastructure/facility development process needed to increase the company's competitive advantage?	3,96	
	Focus	CS11	What is the level of company focus on business to increase competitiveness?	4,21	
		CS12	How is the focus of the company in terms of cost advantage over competitors?	4,15	
		CS13	How does the company focus on the uniqueness of its product or service compared to competitors?	4,21	
	Flexibility	CS14	What is the level of accuracy of the strategy implemented so that it is always able to adapt to the latest technology and support the digital transformation process?	4,04	
		CS15	What is the level of accuracy of the strategy implemented in adapting to changes in the business environment and the company's external environment (changes in customer behavior)	4,01	
	Company Performance	Sales	CP1	What is the growth rate of product sales volume in the last year when compared to the target set internally by the company and compared to industry volume?	3,75
			CP2	What is the level of the company's ability to retain old customers (customer retention) in the last year?	4,00
			CP3	What is the growth rate of product sales in the last year?	3,51
		Profitability	CP4	What is the company's revenue growth rate in the last year?	3,49
CP5			How is the company's COE (Cost of Expense) growth rate in the last year?	3,45	
CP6			How has the company's EBITDA growth been in recent years?	3,28	
CP7			What is the growth rate of the company's NET INCOME in the last year?	3,28	
CP8			What is the company's ROA growth rate in the last year?	3,15	
CP9			What is the company's ROE growth rate in recent years?	3,15	
MarketShare		CP10	How has the market share been achieved in the last year?	3,25	
		CP11	How has the market share growth rate been in recent years?	4,21	
Internal Proses		CP12	What is the level of the company's innovation performance in the process of identifying customer desires and designing products in recent years?	3,64	
		CP13	How is the company's performance level in the last year in terms of the process of product delivery (delivery) to customers efficiently and on time?	3,81	
		CP14	What is the rate of growth in the number of defective products (defects rework) or the number of interrupted services in the last year?	3,66	
		CP15	How is the performance of the after-sales service provided by the company as measured by the level of customer satisfaction and loyalty in the last year?	4,02	
Learning & Growth		CP16	How is the level of employee capability as measured by the satisfaction of the company's workers in the last year?	3,89	
		CP17	What is the level of employee loyalty as measured by the level of employee turnover (the percentage of workers who resigned divided by the total number of employees) in the company in the last year?	3,74	
		CP18	What is the level of understanding and behavior of workers towards the implementation of work culture and company culture in the last year?	3,92	
		CP19	What is the rate of growth in the number of training for workers in supporting employee performance in the last year?	3,42	
		CP20	What is the level of the company's ability to retain the best workers in the company (employee retention) in the last year?	4,02	

Notes: Likert scale: based on a five-point scale (1 = very bad/bad, 2 = not good, 3 = fair, 4 = good, and 5 = very good).



© 2024 by the authors; licensee Growing Science, Canada. This is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC-BY) license (<http://creativecommons.org/licenses/by/4.0/>).