



The Influence of Digital Innovation, Human Resource Capability, and Business Orientation on the Co-Creation Strategy of the Digital Industry in Indonesia

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Abstract. Many factors determine the growth of Indonesia's digital economy, one of which is the co-creation strategy implemented in digital companies. Many factors, both internal and external, influence the co-creation strategy. Based on this background, this study aims to examine the influence of internal factors, digital innovation, human resource capability, and business orientation on the co-creation strategy of digital companies in Indonesia. In line with the research objectives, the type of research used in this study is verification, namely, to find out the relationship of each variable in the study using a hypothesis. The unit of analysis in this study is digital companies in Indonesia, and the unit of observation is the management of digital companies in Indonesia. Samples were taken from as many as 150 respondents. The research data was collected in a cross-section/one shoot in 2023. Quantitative analysis used the Partial Least Square (PLS) approach. The study results show that digital innovation, human resource capability, and business orientation significantly affect the co-creation strategy of digital companies in Indonesia. For digital companies in Indonesia today, business orientation has a more significant role in formulating a co-creation strategy. Based on these findings, the managerial implication of this research is to provide advice for management to strengthen further the development of business orientation in formulating and implementing a co-creation strategy supported by the development of digital innovation and human resource capability.

Keywords: *digital innovation, human resource capability, business orientation, co-creation strategy.*

1 Introduction

The digital industry enables better collaboration and connectivity between various elements in the value chain. Companies can connect with their partners, suppliers, and customers through digital technology that enables real-time exchange of information and data. To exploit the advantages of digital technology, a company should have a digital capability. Digital capability is a company's ability to align digital technology with customer needs and wants, thereby enhancing the success of the digital transformation [1].

Digital Capability is substantially connected with digital innovation [2] [3]. Digital innovation requires digital capability that aligns with the new logic [4]. Digital innovation is developing products or services, improving business processes, and developing new business models using innovative digital technologies [1].

Previous studies explained that digital innovation is closely related to creativity. Digital Industries that always create and conduct digital innovation are driven by creativity, which makes business opportunities in this industry very broad [5] [6]. However, creative ideas alone are not enough. They must be transformed into products that suit the needs and desires of customers [7]. Ultimately, the roles of the company and the customer are met by a co-creation experience or a unique personal experience [8].

How organisational networks gain competitive advantage by involving customers and business partners in creating shared value is the definition of a value co-creation strategy [9]. Co-creation is developing as a new paradigm in the management literature, enabling companies and customers to create value through interaction [10]. Co-creation will encourage the personalisation of services and products for customers while optimising digital technologies such as big data, CRM, and digital marketing will increase customer value, hoping that customers will gain experience [8].

Several studies have examined value co-creation in various sectors, such as the oil and gas industry [11], the process of creating value in the context of the brand culture in the online community of football fans [12], manufacturing industry [13], case studies at Bekaert and Unilever Food solutions [14], in companies located in complex industrial markets [15], social enterprises in the UK [16], SMEs in Central Java [17], and the insurance industry in Italy [18].

In the digital industry sector, Saunila [19] studied two small companies that provide digital services and products in the B2B market. Kim [20] examines creating social media user value and driving the success of social media strategies for start-up companies in Asia through case studies. Novani [21] describes value co-creation in providing services to the community in Bandung, Indonesia.

There is still limited research on co-creation strategy in the digital industry in Indonesia. This is the background for the author to research co-creation strategy in the digital industry in Indonesia, even though co-creation has an impact on business performance [22] [23] [24] [25]. Meanwhile, the observations show that there are still limitations in developing memorable customer experiences in creating shared value. In addition, the co-production process involving customers has not been fully implemented.

The right business orientation can encourage and facilitate successful co-creation practices. Business orientation represents how an organisation pursues its mission and sets its goals [26]. Business orientation consists of three dimensions: production orientation, market orientation, and relationship orientation [26]. Market orientation is one of the drivers of performance [27]. Another study by Runyan [28] reveals that entrepreneurial and small business orientations are unique constructs. A test with a two-group model divided into "under 11 years" versus "11 years and over" companies shows that the relationship between entrepreneurial orientation and small business orientation with performance is not the same in these two groups. Entrepreneurial orientation significantly predicts performance in the younger group, whereas only small business orientation predicts performance for the older group. These differences provide an opportunity to examine the relationship between business orientation and co-creation in digital companies in Indonesia.

Human resources play an important role in conditioning the success of processes within the organisation. The capacity of human resources to create, disseminate and use

knowledge is a dominant factor in service processes within organisations [29]. Previous research shows that the most critical capability for driving performance is marketing capability [27]. Digital innovation is important in the digital industry. They argue that digital innovation has tremendous potential to change the world of business and society. Digital innovation can change the customer experience in significant ways. Digital technologies enable better personalisation, smoother interactions, and more timely and relevant service delivery. This creates additional customer value and differentiates the company from its competitors [30].

Based on the description above, this study wants to examine the influence of Digital Innovation, Human Resource Capability, and Business Orientation on Co-Creation Strategy in the digital industry in Indonesia to find out which variables have the highest influence so that it is expected to be input for management in the digital industry to place the right priority in carrying out these three aspects.

2 Literature Review

The co-creation concept discusses the importance of customer collaboration in creating shared value and building competitive advantage [8]. Co-creation experiences are the basis of unique values for each individual built by four building blocks: dialogue, access, risk assessment, and transparency [8]. Co-creation is developing as a new paradigm in the management literature, enabling companies and customers to create value through interaction. From a co-creation perspective, suppliers and customers are no longer opposite each other but interact with each other to develop new business opportunities [10]. How value is created, distributed, paid for, and exploited differs significantly from the traditional demand vs. supply model. Value co-creation has a role in bridging the gap between relational capabilities and marketing performance [17].

There is a need for the presence of more than one business orientation to be able to respond effectively to rapid and profound changes in the business environment. Organisations with one dominant business orientation may find it more difficult to adapt effectively to changing market conditions. Business orientation characterises the culture or style of the organisation that permeates the concept of Business Orientation and can be defined as the vehicle to "influence and spice up" all decisions made at a commercial organisation's strategic and tactical levels. Business orientation is divided into three dimensions: production orientation, market orientation, and relationship orientation [26].

Meanwhile, business orientation is a conceptual idea that represents the company's style, which can be very significant for the company's success or failure and impact business performance [31]. The service business orientation is divided into two types: services in support of the product (SSP) and services in support of the client's actions (SSC). The results of his research show an important difference between services to support client actions and services to support products. Services supporting client actions increase relative product sales, while services supporting products generate the volume of service [32]. Service business orientation includes three dimensions namely (1) the number of services offered, (2) the number of customers offered by these services, and (3) the company's proactive emphasis on these services [33].

In the evolution of the digital innovation ecosystem, companies have to bear relatively more significant coordination costs regarding shared value creation to promote the development of a stable system [34]. Co-creation can solve several digital innovation problems related to customers, prototype development, and innovation prototype development [35]. However, human resources will be more involved in the company's strategic management process when management considers HR a critical factor in determining competitive advantage. HR capability is a vital and essential resource in the company [36].

It can be argued that digital innovation enables the development of technologies and platforms that support co-creation, HR capability ensures the availability of competent and collaborative human resources, and the right business orientation directs focus and understanding of customers and markets. These three aspects create an environment that supports and facilitates the successful implementation of co-creation strategies in the digital industry. The digital innovation variables in this study include customer experience, value proposition, digital evolution scanning, skills, and improvisation [37], with adjusted indicators. The dimensions of the HR capability variable refer to [36], which consists of a skilled workforce, innovative human resources, effective human resources, training competent employees, and HR commitment, with indicators adjusted. The variable of business orientation is measured by dimensions that refer to [26], which consists of product orientation, market orientation, and relationship orientation, with adjusted indicators. The variable of the co-creation strategy is measured by dimensions that refer to [8], which include dialogue, access, risk assessment, and transparency, with adjusted indicators.

The conceptual framework is compiled in Figure 1 based on the description above. Based on the conceptual framework, the following hypotheses are compiled:

H1: Digital innovation influences co-creation strategy

H2: HR capability influences co-creation strategy

H3: Business orientation influences co-creation strategy

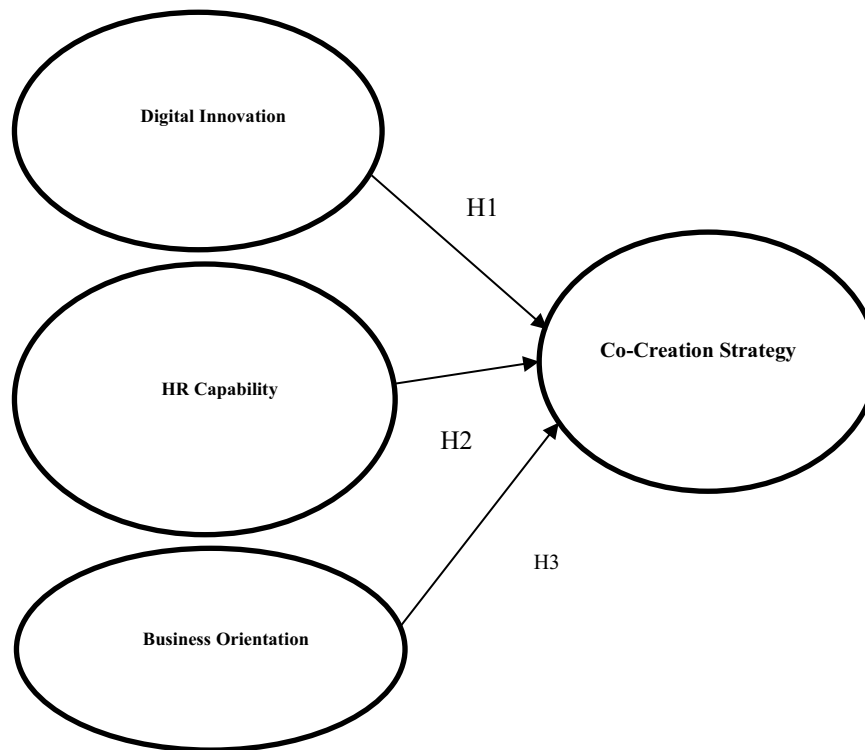


Fig. 1. Conceptual Framework

3 Research Methods

The type of research used in this study is verification, namely, to find out the relationship of each variable in the study using a hypothesis. The unit of analysis in this study is digital companies in Indonesia, and the unit of observation is the management of digital companies in Indonesia. The research data was collected in a cross-section/one shoot in 2023. Quantitative analysis used the Partial Least Square (PLS) approach.

This research used a web-based survey for data collection, and the questionnaire was answered based on a five-point Likert scale. The questionnaire was distributed in May 2023. A total of 162 questionnaires were distributed to 27 digital companies in Indonesia, and all questionnaires were answered, but 12 were deemed invalid due to incomplete or abnormal answers. So, there are a total of 150 valid questionnaires were included in the analysis. The overall effective recovery rate was 92%. The questionnaire was compiled based on previous literature on digital innovation, HR capabilities, business orientation and co-creation strategy.

4 Analysis and Discussion

4.1 Outer Model

The validation of the measurement model was carried out on 150 respondents. This validation process looks at the indicators of a construct with a convergent validity test, namely the indicators that compose a data construct with a high loading factor with construct internal reliability and composite reliability, which are commonly used to evaluate construct reliability. Convergent validity is tested using Average Variance Extracted (AVE), Composite Reliability and Factor Loadings.

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

Construct	Composite Reliability	AVE
Access	0.777	0.636
Business Orientation	0.866	0.582
Co-creation strategy	0.914	0.543
Customer experience	0.713	0.554
Dialogue	0.873	0.774
Digital Innovation	0.871	0.315
Digital evolution scanning	0.740	0.588
Effective human resources	1.000	1.000
HR Capability	0.905	0.549
HR commitment	0.776	0.540
Innovative human resource	0.750	0.505
Market	0.772	0.531
Product	0.812	0.683
Relationship	0.773	0.630
Risk Assessment	0.822	0.609
Skilled workforce	0.810	0.588
Training competent employees	0.846	0.734
Transparency	0.875	0.777
Value proposition	0.711	0.551
improvisation	0.849	0.652
skill	0.716	0.560

As shown in Table 1, each construct discussed the reliability and validity of the model. AVE is an adequate measure of convergent validity; it measures the proportion of variance captured by the construct's indicators relative to the measurement error. It helps determine how much the indicators capture the same underlying concept. The average

variance Extracted (AVE) is expected to exceed 0.50 [38]. Table 1 shows that all constructs have an AVE value > 0.5.

Composite Reliability (CR) is an adequate measure of the reliability of the construct. It measures the extent to which the indicators in a construct consistently measure the same underlying construct. CR evaluates the interrelatedness of the items within the construct. As shown in Table 1, the composite reliability (CR) is sufficient because each latent variable has a value above 0.7, so all models have high reliability.

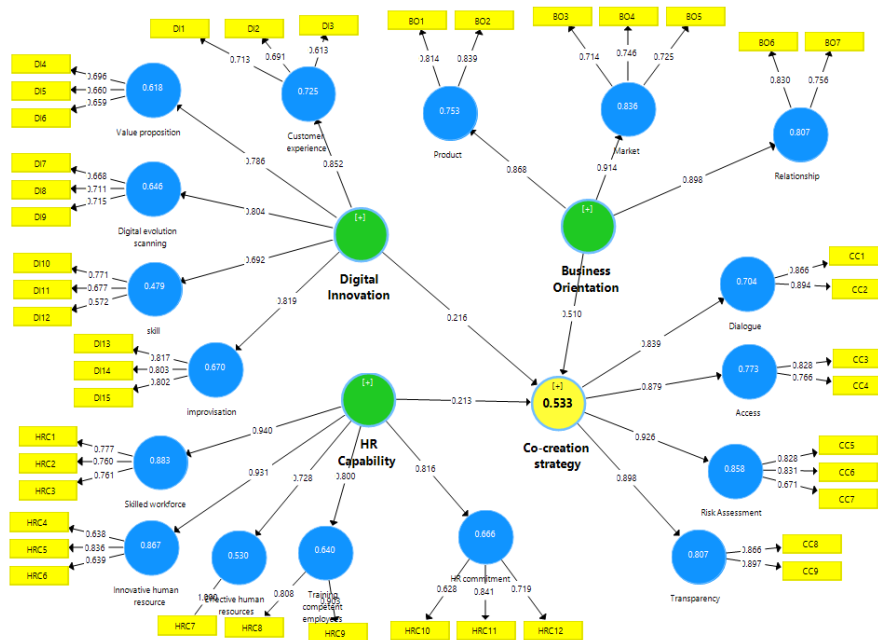


Fig. 2 Diagram of Estimate Model

Description:

Digital Innovation

- Customer experience**
- DI1: Useful products/services
- DI2: products/services that have aesthetic value
- DI3: Customer Engagement
- Value proposition**
- DI4: Customer segmentation
- DI5: Promotional bundling
- DI6: Commission
- Digital evolution scanning**
- DI7: Equipment
- DI8: Effective marketing channels
- DI9: Innovation behaviour

HR Capability

- Skilled workforce**
- HRC1: Competent workforce
- HRC2: Adaptable workforce
- HRC3: A workforce that has a high interest in learning
- Innovative human resource**
- HRC4: Employee participation
- HRC5: Health and wellness
- HRC6: Fun activities

Business Orientation

- Product Orientation**
- BO1: Product standardisation
- BO2: Rationalization of product
- Market orientation**
- BO3: Product sales orientation
- BO4: Orientation to competition
- BO5: Orientation on new product development
- Relationship orientation**
- BO6: Orientation on Long term trust

Co-Creation Strategy

- Dialogue**
- CC1: System for sharing learning
- CC2: Effective communication
- Access**
- CC3: Easy access for customers to the production process
- CC4: The system is software-oriented
- Risk assessment**
- CC5: Customer participation

Skill	Effective human re-sources	BO7: Orientation towards customer loyalty	CC6: Information about the risks of products and services
DI10: Learning	HRC7: KPI		
DI11: Role	Training competent employees		CC7:Data to assess personal risk and social risk related to products and services
DI12: Team building	HRC8: Training		
Improvisation	HRC9:Training evaluation		Transparency
DI13: Space development	HR commitment		CC8:Information about business systems
DI14: Timing	HRC10: Commitment to duty		CC9:Transparency in business processes
DI15: Coordination	HRC11: Commitment to the company		
	HRC12: Commitment to customers		

Table 2 shows that all loading factors > 0.50 and t value > 1.98 at a significance of 5%. It shows that dimensions and indicators are valid in measuring latent variables.

Table 2. Measurement Model-loading factor

Variables	Dimension- Indicators	Loading factor (□)	t value	Prob.
Co-creation strategy	CC1 <- Dialogue	0.866	35.931	0.000
	CC2 <- Dialogue	0.894	64.183	0.000
	CC3 <- Access	0.828	37.294	0.000
	CC4 <- Access	0.766	20.946	0.000
	CC5 <- Risk Assessment	0.828	33.507	0.000
	CC6 <- Risk Assessment	0.831	40.931	0.000
	CC7 <- Risk Assessment	0.671	10.887	0.000
	CC8 <- Transparency	0.866	39.257	0.000
	CC9 <- Transparency	0.897	79.572	0.000
Business Orientation	BO1 <- Product	0.814	27.152	0.000
	BO2 <- Product	0.839	36.944	0.000
	BO3 <- Market	0.714	17.541	0.000
	BO4 <- Market	0.746	18.185	0.000
	BO5 <- Market	0.725	15.643	0.000
	BO6 <- Relationship	0.830	39.001	0.000
	BO7 <- Relationship	0.756	15.882	0.000
Digital Innovation	DI1 <- Customer experience	0.713	11.677	0.000
	DI2 <- Customer experience	0.691	11.557	0.000
	DI3 <- Customer experience	0.613	10.284	0.000
	DI4 <- Value proposition	0.696	11.968	0.000
	DI5 <- Value proposition	0.660	9.528	0.000
	DI6 <- Value proposition	0.659	9.999	0.000
	DI7 <- Digital evolution scanning	0.668	10.514	0.000
	DI8 <- Digital evolution scanning	0.711	12.341	0.000
	DI9 <- Digital evolution scanning	0.715	11.940	0.000
	DI10 <- skill	0.771	14.877	0.000
	DI11 <- skill	0.677	7.781	0.000
	DI12 <- skill	0.572	5.600	0.000
	DI13 <- improvisation	0.817	23.749	0.000

Variables	Dimension- Indicators	Loading factor (λ)	t value	Prob.
HR Capability	DI14 <- improvisation	0.803	27.605	0.000
	DI15 <- improvisation	0.802	24.533	0.000
	HRC1 <- Skilled workforce	0.777	22.755	0.000
	HRC2 <- Skilled workforce	0.760	23.642	0.000
	HRC3 <- Skilled workforce	0.761	17.922	0.000
	HRC4 <- Innovative human resource	0.638	12.814	0.000
	HRC5 <- Innovative human resource	0.836	29.176	0.000
	HRC6 <- Innovative human resource	0.639	10.709	0.000
	HRC7 <-Effective human resources	1.000	-	-
	HRC8 <- Training competent employees	0.808	24.095	0.000
	HRC9 <- Training competent employees	0.903	63.323	0.000
	HRC10 <- HR commitment	0.628	9.989	0.000
HRC11 <- HR commitment	0.841	37.197	0.000	
HRC12 <- HR commitment	0.719	18.224	0.000	

4.2 Inner Model

Evaluation for assessing if a theory-based model fits empirical data or the resulting model describes actual conditions is shown in Fig.1, R^2 is 0.533 and $GOF = 0.417$. R-Square values of 0.67 are strong, 0.33 are moderate, and 0.19 are weak. GoF is used to validate measurement and structural models with values of 0-0.25 is small, 0.25-0.36 is moderate, and >0.36 is large. The values of Q-Square are 0.35 (large), 0.15 (medium) and 0.02 (small) [39]. Then, it is concluded that the research model fits an empirical condition.

Table 3 Inner Model Testing

Construct	R Square	f Square	Q Square	Gof
Business Orientation	-	0.396	0.309	0.417
HR Capability	-	0.094	0.216	
Digital Innovation	-	0.068	0.346	
Co-creation strategy	0.533		0.431	

The structural model framework in this study is formulated as follows:

$$\text{Co-Creation SStrategy} = .216 * \text{DigitalInnovation} + 0.213 * \text{HRCapability} + 0.510 * \text{BusinessOrientation}$$

$$R^2 = 0.533$$

4.3 Hypothesis Testing

Table 4. Hypothesis Testing

No	Structural Model	Path Co-eff.	Std. Error	t-value	p-value	R ²	Conclusion
1	Digital Innovation Co-creation -> strategy	0.216*	0.069	3.145	0.002	0.079	significant
2	HR Capability ->Co-creation strategy	0.213*	0.078	2.729	0.007	0.114	significant
3	Business Orientation Co-creation -> strategy	0.510*	0.072	7.130	0.000	0.339	significant

*significant at $\alpha=0.0-5$

The results of hypothesis testing revealed a significance level of 95% ($\alpha = 0.05$) in Table 4. conclude that:

- Digital Innovation, HR Capability, and Business Orientation have a positive and significant direct effect on the Co-creation strategy, with a t-value > 1.98 (Prob < 0.05). R² simultaneously is $0.533 \approx 53.3\%$
- Business Orientation has the dominant influence on the Co-creation strategy with R² = 0.339.

Based on the result of hypothesis testing, it is obtained a research finding model as follows:

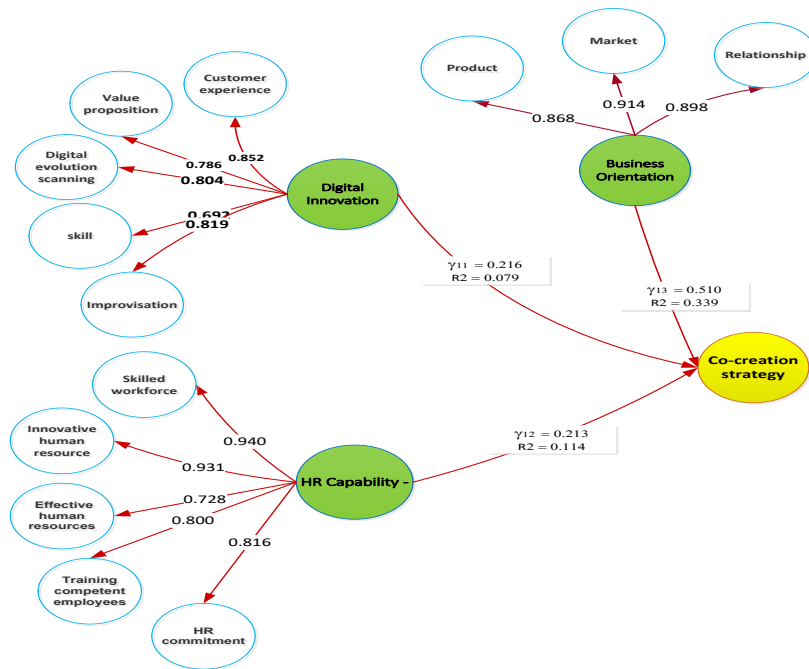


Fig. 3 Finding Model

The results of this study show that all exogenous variables have a significant influence on the co-creation strategy. Among the three variables, business orientation has the highest influence. The correct business orientation is vital in encouraging the implementation of a co-creation strategy in the digital industry. The correct business orientation will direct the company's focus on its customers to gain an in-depth understanding of customer needs, preferences, and expectations and create the right product for its market segment. By understanding the customer as a whole, including their desire to participate in the value creation process, the company can direct the right co-creation strategy by creating product standardisation and workforce rationalisation.

The aspect of business orientation that has the highest contribution is product orientation in terms of product rationalisation (loading factor 0.839), relationship orientation in terms of building long-term trust with partners (loading factor 0.830), and product orientation in terms of product standardisation (0.814). This illustrates that business orientation implemented through product rationalisation is the highest driver for co-creation strategy, followed by efforts to build trust and product standardisation. Product orientation in digital business places primary attention on product development and improvement. In the context of co-creation, this focus allows companies to explore innovative ideas from customers and involve them in developing new products or improving existing ones. By giving customers direct access to platforms and tools that enable them to contribute to product creation, product orientation enables companies to gain valuable insights and input from customers, leading to better innovation.

5 CONCLUSIONS AND RECOMMENDATIONS

Business orientation has the highest influence compared to HR capability and digital innovation. The correct business orientation is vital in encouraging the implementation of a co-creation strategy in the digital industry.

This finding has managerial implications, namely providing suggestions for management to strengthen further the development of business orientation in formulating and implementing co-creation strategies supported by the development of digital innovation and human resource capabilities.

The company needs first to evaluate its business orientation. Product orientation is an aspect of business orientation that has the most role in developing a co-creation strategy, so it is the first aspect that needs improvement. Rationalisation of the product helps the company simplify its product offering to encourage effectiveness and efficiency in implementing the co-creation strategy.

In addition, because this study was limited to 150 respondents, further research is suggested to examine a larger sample.

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