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Assessing the Elements That Mediate the Impact of Innovation on Business Performance: Moderate Accreditation Ranking and Competitive Advantage

Indra Muis[1], Faris Shafrullah[2], Solahuddin Ismail[3], Luthvi Rachman Ervianto[4], Leni Indrawati[5]

Abstract

Vocational higher education is higher education that prepares for employment with specific applied skills that are approximately equivalent to a bachelor's degree. Furthermore, vocational training is described as the provision of formal courses in higher education, such as technology colleges and diploma programs. The existence of vocational higher education is expected to reduce unemployment. The goal of the study is to investigate how competitive advantage and the accreditation standing of private Vocational Higher Education Institutions (VHEI) affect the effects of product and marketing innovation on company success. This research methodology uses quantitative methods, using the Structural Equation Model Smart PLS version 14.1 technique. The research population was 118 private VHEIs in West Java Province, Indonesia, and the respondents were 126 leaders and representatives of private VHEIs. According to the research, competitive advantage is significantly boosted by both product and marketing innovation. Product and marketing innovation, which is monitored by private VHEI certification ranking and mediated by competitive advantage, have a major beneficial impact on corporate success.

Keywords: *Product Innovation, Marketing Innovation, Competitive Advantage, Business Performance, Ranking Accreditation.*

Introduction

Vocational education is higher education that prepares students for work with specialized practical skills that are roughly comparable to a bachelor's degree, according to Law Number 20 of 2003 regulating the National Education System. Furthermore, vocational training is described as the provision of formal courses in higher education, such as technology colleges and diploma programs. By definition, vocational training programs are higher education programs organized by universities, research institutions, academic institutions other than undergraduate and professional programs, where they can define special skills and skills and be motivated to work. The aim is to develop human resource competencies that are globally competitive. The VHEI program is structured to prioritize skills and practical courses over theory courses.

[1] Faculty of Business, Bina Insani University, Bekasi, Indonesia.
[2] Department of Economics, University of Padjadjaran, Bandung, Indonesia
[3] Department of Planning and Property Development, School of Government Universiti Utara Malaysia, Malaysia.
[4] Faculty of Business, Bina Insani University, Bekasi, Indonesia.
[5] Institute of Governance of Home Affairs (IPDN), Bandung, Indonesia, Email: lenindra12@gmail.com, (Corresponding Author)

Based on data from the 2023 Central Statistics Agency, (El Khoury, and Nasrallah, 2024), the unemployment rate in West Java Province was recorded at 7.89%. West Java is the province with the second highest unemployment rate in Indonesia. Banten Province is the province with the highest unemployment rate nationally, namely 7.97%. Vocational Colleges are designed to reduce unemployment in Indonesia. Unemployment originating from Vocational Colleges abbreviated as VHEI in West Java Province was recorded at 6.37%. This percentage is lower than unemployment from higher academic education which was recorded at 7.58%.

Apart from that, private Vocational Colleges are also organized to meet the market demand for workers in the industrial sector who are ready to work and have competencies that meet the requirements and criteria. Private vocational universities are of course required to prepare their graduate students to have competencies that can be absorbed or can be transferred to the world of work (Jamil & Khan, 2025). Therefore, many private vocational universities have been established to fill the gaps and anticipate the demands needed by the industrial world.

VHEI is estimated to be able to reduce unemployment rates, but prospective students' interest in studying at vocational colleges is much lower than at academic colleges. In 2020, there were 284,481 new students who chose vocational higher education and 1,617,869 new students who chose academic higher education (2020 Higher Education Statistics).

The study aims to analyze and provide answers to a number of research questions, as well as to characterize and quantify the variables and their effects on business performance at private vocational colleges in the Indonesian provinces of West Java and Banten, as well as their competitive advantage, marketing innovation, and product innovation.

Literature Review

Product innovation is the effort of an economic entity that produces a product to improve, perfect, or develop previously produced products into better products (Christa, and Kristinae, 2021). A new product or service that a business releases into the market in an effort to satisfy the demands of the market or outside clients is another definition of product innovation (Heij, *et.al*, 2020). It is a series of different functional processes that interact to adapt to a dynamic environment. For this reason, companies are required to explore new ideas and creativity. Overall, product innovation is a dynamic process that fosters creativity, exploits market opportunities, and aims to produce innovative and valuable products that meet customer demands and drive business success.

According to Medrano, *et.al.*, (2020), the use of creative marketing strategies that dramatically alter product positioning, price tactics, promotion, and design or packaging is the contemporary definition of marketing innovation. Marketing innovation is characterized by Nadda, and Arnott, (2020) as a fresh approach to product marketing for businesses. Managers may utilize marketing innovation as a strategy to assist them make effective use of corporate resources in order to get a competitive advantage (Khairusy, *et.al.*, 2022). Using new marketing technology, tactics, and approaches, marketing innovation is a dynamic, forward-thinking strategy that seeks to improve customer experience, gain a competitive edge, and spur corporate growth. The marketing mix's components product, promotion, place, price, and service serve as the indicators for gauging marketing innovation factors (Medrano, *et.al.*, 2020).

According to Udriyah, *et.al.*, (2019), Tzanidis, *et.al.*, (2024), competitive advantage is the result of a variety of variables that set small and medium-sized enterprises apart from their rivals, give them benefits over them in the market, and make them stand out. Competitive advantages are

some of the characteristics that provide a company with significant advantages for its customers, resulting in increased revenues and profits, and sustaining long-term success. It is a series of steps to differentiate one company from its competitors through proactive strategies. Companies can increase their market share with the use of an organized competitive advantage. This implies that boosting turnover and profitability acts as a catalyst and motor to help businesses expand their skills and resources for research and development. Sustaining this edge offers outstanding profitability in addition to a competitive advantage (Al-khawaldah, *et.al*., 2022).

Before diving into the subject, it is imperative to comprehend that the definition of competitive advantage is "excellence attained through strategies to increase the use value or utility of a good or service for consumers". It may also mean possessing something that rivals lack, outperforming rival businesses, or being able to perform a task that rival businesses are unable to perform (Walsh, *et.al*., 2017). Strategic Management, or the process by which the business creates and preserves its advantages, and Competitive Advantage are closely related concepts. A competitive advantage is an edge over rivals that may be gained by differentiating a business from its rivals and providing customers with a higher level of value than rivals can (Fred, 2015).

A company's fundamental competitiveness is the source of its long-term competitive advantage. According to Mahdi, *et.al*., (2019), Tzanidis, *et.al.*, (2024), a company's persistent competitive advantage is influenced by two different kinds of factors: irreplaceable resources, capabilities, and knowledge, and distinctiveness and imitation of talents and knowledge. There are two essential characteristics that define sustainable competitive advantage. One is "dynamic," which denotes that sustained competitive advantages are not unalterable or static and that no advantage can be gradually replaced if it is preserved. The existence of any kind of market organizational structure notwithstanding, competitive advantage is just transitory and dependent. "Continuity" represents the second idea. The development of absolute competitive advantage can come from the long-term accumulation of relative competitive advantage. The study of absorbing capacity theory looks at how businesses might use learning capabilities to create and preserve a sustainable competitive advantage. This school of management theory concentrates on the firm's external resources while maintaining consistency with resource-based theory (Kong, *et.al.*, 2021).

The dimensions of competitive advantage are superior efficiency, superior quality, customer responsiveness (Distanont, and Khongmalai, 2020), minimal product quality, minimal innovation, and distinctiveness. competitive pricing (Udriyah, *et.al.*, 2019). Competitive advantage is obtained by focusing on production quality, cost minimization and better customer and supplier involvement, so that an organization can convince customers about the products offered, capacity will increase, and the market will strengthen its market share, differentiating the company from competitors. and increase sales, win rates, and return on investment (Al Khawaldah, *et.al*., 2022).

In order to accomplish organizational goals, people or groups within an organization may perform in a way that is consistent with their moral and legal responsibilities and authority (Adnani, *et.al.*, 2023). A set of characteristics that center on the satisfaction of stakeholders in construction SMEs, as exhibited by a culture that encourages owner-managers of construction SMEs to coordinate resources and operations (Wentzel, *et.al*., 2022). An organization's quantifiable outcomes in relation to its objectives are referred to as its organizational performance. The measuring and assessment of a company's ability to meet its goals and objectives is known as business performance. It is about assessing how well a company is

performing on various key performance indicators and financial indicators. Business performance includes both quantitative and qualitative aspects, providing insight into the overall health and effectiveness of an organization. The indicators used to measure company performance are that all employees are satisfied with their work, all graduates have high work qualifications, and all employees agree regarding the efficient use of resources to complete work.

The accreditation of vocational schools has a big impact on how long the institution may be in operation. Vocational schools that earn accreditation and rankings also witness a considerable increase in financial inflows, even though the immediate impact of accreditation on product and marketing financial innovation may not be apparent (Aldhaen, 2023). According to Jaqmin, (2021), different national and international ranking accreditations for vocational schools can influence student preferences, which are expressed through the decision to register. This indicates that these accreditations have a tendency to work well together and are robust in a number of areas related to evaluating the possibility of autonomous admissions selection. The organizational effectiveness of vocational school institutions that have accreditation and national rankings has a significant influence on student citizenship motivation, student leadership motivation and student career development (Al Shraah, 2022). The accreditation of vocational schools, according to the respondents, has a good impact on instruction by promoting case method training and active learning. The process of accreditation tends to restrict assessment activities by prioritizing conformity above the genuine assessment of learning. This contradiction shows that in order to preserve instructional depth and assessment integrity, standards compliance and flexibility must be balanced (Ito, 2024). Ranking data is used to examine academic accomplishments, gauging the global reach of universities. The direction and strength of this link are determined by utilizing data from the Global Innovation Index of nations and their specific data; the results show a significant linear association between a nation's innovation environment and its universities' accomplishments (Yuregir, 2022).

Most people believe that higher education is "experience good" since the quality of the education cannot be guaranteed in advance of getting the services, resulting in knowledge asymmetry. Higher education can respond to lowering asymmetry by utilizing external assessment instruments like international accreditation. Vocational schools actively participate in the battle for accreditation since quality is a crucial component of legitimacy and reputation. Vocational schools place a high value on intellectual output in order to maintain their validity in the higher education market. Possessing an extremely credible international accreditation is crucial in order for it to influence vocational schools and improve business success.

Referring to the theories previously mentioned, several hypotheses and conceptual models can be formulated as follows:

H1 : Product innovation influences business performance.

H2 : Product innovation influences competitive advantage.

H3 : Marketing innovation influences competitive advantage.

H4 : Marketing Innovation influences business performance.

H5 : A company's success is impacted by its competitive edge.

H6 : Competitive advantage acts as a mediator between product innovation and company performance.

H7 : Competitive advantage acts as a mediating factor in the relationship between marketing innovation and business performance.

H8 : Accreditation rating moderates the impact of competitive advantage, product innovation, and marketing innovation on firm success.

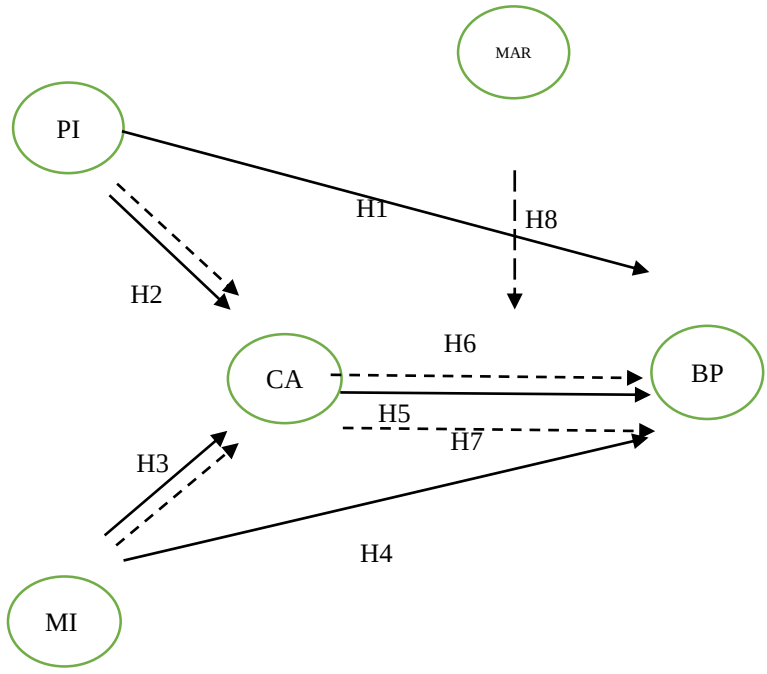

Figure 1. Conceptual Model

There are now a number of study findings that measure the four observation variables; however, few of these findings have been seen in private VHEIs, and none of the findings include the accreditation ranking variable as a moderator. It has not been sufficiently articulated how competitive advantage and moderating accreditation rankings are achieved by product and marketing innovation and how this affects private VHEI company success. The present research endeavors to examine the correlation between characteristics associated with marketing and product innovation and those linked to competitive advantage and company success. It also looks at competitive advantage's role as a mediator of the relationship between competitive advantage and commercial performance, as well as the role of the accreditation ranking variable as a moderator.

Methodology

Structural Equation Modeling (SEM) using Smart PLS version 4.1 is the analytical technique employed. This study examines the expected effects of marketing and product innovation, which are mediated by competitive advantage and moderated by accreditation rating, on the success of private VHEI businesses. Business performance is the dependent variable, and product and marketing innovation are the independent factors. Accreditation ranking is a moderating variable while competitive advantage is a mediating variable.

The population of this study included 138 VHEIs from West Java, Indonesia. Respondents who were leaders and deputy leaders of private VHEIs totaled 126 people. Questionnaires were distributed randomly to the leaders and deputy leaders of private VHEIs. Primary data was collected through questionnaires in July-December 2023. Secondary data was obtained from information such as report documents and news links.

Results

The results and analysis of the respondents' responses are covered in depth in this section. Table 1 below displays the information that follows.

CHARACTERISTIC	FREQUENCY	PERCENTAGE
SEX		
Male	105	83.33
Female	21	16.67
EDUCATION		
Bachelor Degree	9	7.14
Postgraduate Degree	117	92.86
EXPERIENCE WORK		
1 - 5 Year	4	3.18
5 - 10 Year	47	37.30
> 10 Year	75	59.52

Table 1. Respondent

In Table 1 above, the number of respondents who answered the questionnaire given to them was 126 people who returned the questionnaire with complete answers. Consisting of 105 or 83.33 percent men and 21 or 16.67 percent women. The respondents' education was 9 or 7.14 percent Bachelor Degree, and 117 or 92.86 percent Postgraduate Degree. Respondents' work experience as lecturers was less than 5 years or 3.18 percent, and 122 people had work experience of more than 5 years or 96.82 percent.

Below is presented Table 2 which contains the variable indicators and validity test results as follows:

CODE	**VARIABLES and INDICATORS**	**LOADINGS FACTOR**	**AVE**	**P-VALUE**	**CRITERIA**
	Product Innovation Indicators		0.804		Valid
PI1	We always provide the best quality educational services for students	0.911		0.000	Reliable

PI2	We always create added value and uniqueness in educational services for students	0.914		0.000	Reliable
PI3	We always update the educational service process to make it better	0.864		0.000	Reliable
	Marketing Innovation Indicators		0.821		Valid
MI 1	We implement excellence in educational services on campus	0.918		0.000	Reliable
MI 2	We do marketing in new ways and according to trends	0.923		0.000	Reliable
MI 3	We update tuition fees with different approach strategies	0.877		0.000	Reliable
	Competitive Advantage Indicators		0.824		Valid
CA 1	We manage the campus very efficiently and effectively and uniquely	0.929		0.000	Reliable
CA 2	Lecturers and education staff are very responsive to student needs and tuition fees are very affordable	0.886		0.000	Reliable
	Business Performance Indicators		0.867		Valid
BP 1	Lecturers and education staff always feel satisfied at work	0.930		0.000	Reliable
BP 2	All work targets can be achieved efficiently and effectively	0.936		0.000	Reliable
BP 3	All graduates have high qualities for work	0.927		0.000	Reliable
	Accreditation Rating Indicators		0.904		Valid
MAR 1	Accreditation is a consideration for students choosing a campus	0.969		0.000	Reliable
MAR 2	National rankings are a consideration for students choosing a campus	0.932		0.000	Reliable

Table 2. Indicators of the Variables

Examining the association between the score indicator and the construct is the convergent validity test in the Loadings Factor column of Table 2 above. Any correlation value between a

manifest or indicator and a construct that is more than 0.70 indicates outside loading; an indicator is deemed credible if its correlation value is greater than 0.70, (Usman, and Sun, 2023). If the AVE value for every construct is more than 0.50, the Average Variance Extracted (AVE) column value indicates whether the model is good or not. Since every construct's AVE value in this instance is more than 0.50, every construct is considered good. Next, test the convergent validity of the construct. Meanwhile, the P-Value column shows that the individual manifest or indicator of the construct is below 0.05. A good and significant correlation value between indicators and constructs is below 0.05, meaning that the influence between all indicators and constructs is significant.

The subsequent table displays the findings of the discriminant validity test, (El Khoury, and Nasrallah, 2024), which examined the cross loading values for every variable.

	VARIABLE LATENT				
INDICATORS	BP	CA	MAR	MI	PI
BP1	.930	.825	.125	.915	.854
BP2	.936	.821	.223	.828	.908
BP3	.927	.906	.150	.846	.853
CA1	.937	.929	.196	.854	.861
CA2	.699	.886	.184	.712	.739
MAR1	.195	.228	.969	.165	.199
MAR2	.133	.159	.932	.109	.134
MI1	.913	.803	.095	.918	.829
MI2	.855	.845	.187	.923	.904
MI3	.741	.705	.121	.877	.760
PI1	.906	.776	.207	.782	.911
PI2	.845	.830	.188	.908	.914
PI3	.761	.779	.087	.781	.864

Table 3. Cross Loadings

In Table 3 above, the indicator correlation with a good construct is a value above 0.70. The correlation of indicators BP1, BP2 and BP3 with the BP construct is 0.930; 0.936; and 0.927 above 0.70. The correlation of indicators CA1 and CA2 with the CA construct is 0.929; and 0.886 above 0.70. The correlation between indicators MAR1 and MAR2 with the MAR construct is 0.969; and 0.932 above 0.70. The correlation of indicators MI1, MI2 and MI3 with the MI construct is 0.918; 0.923; and 0.877 above 0.70. The correlation of indicators PI1, PI2 and PI3 with the PI construct is 0.911; 0.914; and 0.864 above 0.70. This means that the correlation value of the cross loadings of all indicators with their constructs is a good model.

Below is presented in Table 4, one of the other discriminant validity tests (Viet, and Tran, 2024), namely looking at the Fornell-Larcker criterion value.

VARIABLE LATENT	BP	CA	MAR	MI	PI
BP	0.931				
CA	0.914	0.908			
MAR	0.178	0.209	0.951		
MI	0.927	0.869	0.149	0.906	
PI	0.936	0.887	0.181	0.919	0.896

Tabel 4. Fornell-Larcker Criterion

When the square root of AVE (Setyawati, *et.al.,* 2024) for each construct in Table. 4 exceeds the correlation between the model's component parts, it denotes good discriminant validity according to the Fornell-Larcker criterion (Fornell and Larcker, 1981). This indicates that a successful model is one that has an AVE square root correlation value for each component and a correlation between the constructs.

Below is presented in Table 5 the results of construct reliability and validity testing.

Construct	**Cronbach's**	**CR (rho_a)**	**CR (rho_c)**	**AVE**
PI	.878	.881	.925	.804
MI	.891	.899	.932	.821
CA	.790	.819	.904	.824
BP	.923	.923	.951	.867
MAR	.898	.997	.950	.904

Table 5. Reliability dan Validity Construct Variable

The two metrics (Cronbach Alpha and Composite dependability) in Table 5 above are used to assess the construct dependability. It is regarded as good if the Cronbach Alpha and Composite Reliability values are more than 0.70. Based on the output findings in the Cronbach's Alpha and Composite Reliability (CR) columns, which are all above 0.70, all construct variables are good and valid.

The data normalcy test results are displayed as follows in Table 6.

	Number of observations used	St.D	Kurtosis	Skewness	Cramér-von Mises test statistic	Cramér-von Mises p value
BP	126.000	1.000	-.765	.192	.526	.000
CA	126.000	1.000	-.687	.405	.716	.000
MAR	126.000	1.000	-.353	.305	1.042	.000
MI	126.000	1.000	-.791	.217	.223	.003
PI	126.000	1.000	-.555	.348	.313	.000

Table 6. Data Normality Test

Absolute skewness and/or kurtosis values more than 1 in Table 6 above indicate severely non-normal data, according to Hair, (2014). The data is considered normal if the value in the table's skewness and/or kurtosis column is less than 1.

The following is presented in Table 7 of the multicollinearity.

Outer model	VIF
BP1	3.442
BP2	3.716
BP3	3.298
CA1	1.740
CA2	1.740
MAR1	2.975
MAR2	2.975
MI1	2.821
MI2	2.989
MI3	2.309
PI1	2.728
PI2	2.791
PI3	2.042
Inner Model	VIF
CA -> BP	5.234
MAR -> BP	1.099
MI -> BP	7.150
MI -> CA	6.469
PI -> BP	8.165
PI -> CA	6.469
MAR x CA -> BP	1.058

Table 7. Multicollinearity Test

The Variance Inflation Factor (VIF) indicator and construct in Table 7 above are less than 10. This indicates that multicollinearity issues with the data are absent.

The following is presented in Table 8 of the endogeneity.

Construct	Origin (O)	Mean (M)	St. Dev	T statistics	P values
GC (PI) -> BP	.308	.276	.317	.972	.331
GC (PI) -> CA	-.460	-.349	.314	1.464	.143
GC (MI) -> BP	.108	.123	.215	.502	.615

GC (MI) -> CA	-.121	.003	.266	.455	.649
GC (CA) -> BP	.366	.274	.273	1.342	.180

Table 8. Endogeneity Gaussian Copula

In Table 8 in the P-Values column above, the influence between constructs and other constructs is not significant or the value is above 0.05. This means that the regression model does not have endogeneity problems (Becker, *et.al*., 2022).

Measurement error, unobserved heterogeneity, shared technique variation, and simultaneous causality are a few of the elements that lead to endogeneity. However, missing variables associated with one or more independent factors and the dependent variable (s) are the most common cause of endogeneity issues in regression models (Ebbes, *et.al.*, 2016; Hult, *et.al.*, 2018). Finding a group of control factors that can only partially account for the fluctuations in the dependent variable can help manage endogeneity, or at least minimize it (Ebbes, *et.al.*, 2016). Two general statistical techniques, the instrumental variable method and the instrumental variable-free approach, have been developed to test for endogeneity (Papies, *et.al.*, 2017).

The instrumental variable-free strategy provides several benefits over the instrumental variable approach, despite the instrumental variable technique having a number of limitations (Hult, *et.al.*, 2018). The Gaussian copula technique (Furlan, and Mariano, 2023) is a frequently used instrumental method that does not require variables (Park and Gupta, 2012; Becker, *et.al.*, 2022; Cheah, *et.al.*, 2023).

The following is presented in Table 9, evaluating the structural model or inner model.

Construct	R^2	R^2 Adjusted
BP	.926	.923
CA	.805	.802

Tabel 9. R2

The structural model's predictive ability is indicated by the R^2 test results for each endogenous latent variable in Table 9 above. The endogenous variables Business Performance (BP) and Competitive Advantage (CA) have values over 0.75 in the R-Square column, with 0.926 and 0.805, respectively, for the former. This indicates that the structural model predicts that the endogenous latent variable would have a very significant impact (Chin, 1998; Hair, *et.al.*, 2011, 2012, 2014).

The following is presented in Table 10, evaluating the structural model or inner model regarding effect size.

Construct	f-square
CA -> BP	.266
MI -> BP	.188
MI -> CA	.095
PI -> BP	.229
PI -> CA	.256
MAR x CA -> BP	.039

Table 10. Effect Size Values

The impact magnitude of each construct variable's influence is displayed in Table 10. The effect sizes are 0.02 (little), 0.15 (mid), and 0.35 (large). With respect to marketing innovation and company performance, the competitive advantage variable which is impacted by the accreditation ranking variable has an effect size of 0.095 (small) and 0.039 (small), respectively. Meanwhile, the impact sizes of other factors exceed 0.15 (medium).

The following is presented in Table 11 of the influence between variables below.

Construct	Origin (O)	Mean (M)	St.Dev	T stat	P values
PI -> BP	.371	.378	.081	4.598	.000
PI -> CA	.569	.578	.105	5.436	.000
MI -> CA	.346	.337	.107	3.232	.001
MI -> BP	.315	.312	.066	4.794	.000
CA -> BP	.320	.315	.051	6.289	.000
PI -> CA -> BP	.182	.182	.044	4.157	.000
MI -> CA -> BP	.111	.106	.038	2.891	.004
MAR x CA -> BP	.050	.049	.025	2.033	.042

Table 11. Significant Variables

The findings of the significance tests that were run between the variables in the inner model are (Ringle, *et.al.*, 2010) displayed in Table 11. Product Innovation has a positive correlation with business performance, according to the test results, which have a value of .371 and a significant value of .000 below.05. Competitive Advantage and Product Innovation are positively correlated, according to the test findings for the Product Innovation variable, which have a value of .569 and a significant value of .000 below .05. The test's findings show that the Marketing Innovation variable positively affects Advantage, with a value of .346 and a significant value of .001 below .05.

With a value of. 315 and a significant value of .000 below .05, the test findings show that the Marketing Innovation variable positively affects Business Performance. The Competitive Advantage variable's test findings on Business Performance show a positive correlation, with a value of .320 and a significant value of .000 below .05.

The test findings show that, through the Competitive Advantage variable, the Product Innovation variable positively influences the Business Performance variable. The test has a value of .182, and a significant value of .000 is below the .05. The test results show that the Competitive Advantage variable acts as a mediator between the Marketing Innovation variable and the Business Performance variable, hence exerting a favorable influence on the latter. The test result is .111, and the significant value is .004 below the significance level of .05.

The Accreditation Ranking variable controls the Business Performance variable, for which the Competitive Advantage variable has a positive test result of .050 and a significant influence at .042 below .05.

Below is presented in Figure 2 the influence between exogenous, endogenous and mediating latent variables and moderating variables.

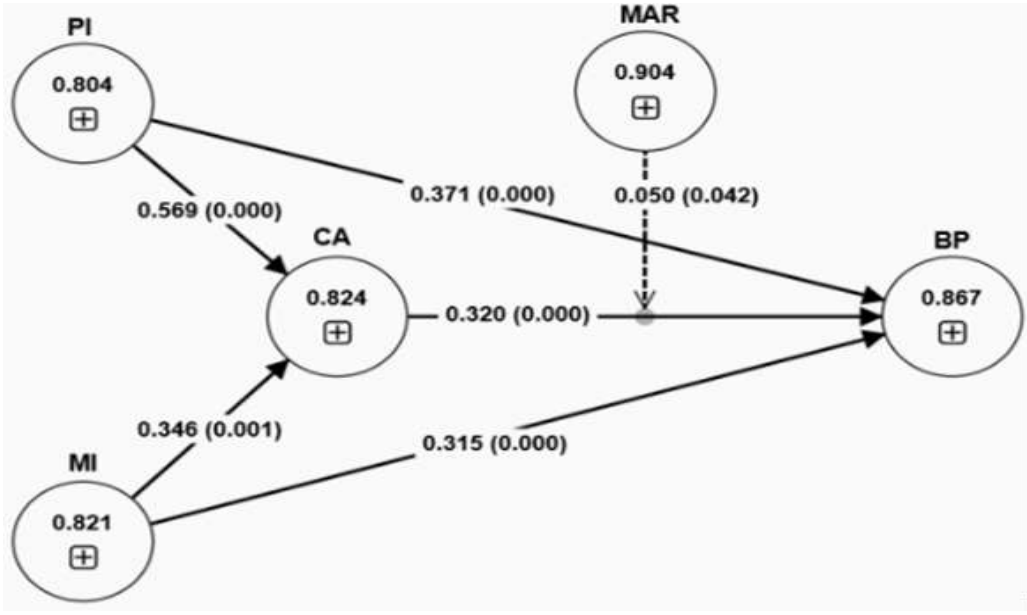

Figure 2. Latent, Mediation, and Moderation Variables.

The following is presented in Table 12, a description of the model suitability below.

Summary	Estimated model	Saturated model	Criteria	Conclusion
SRMR	.068	.067	< .08	Good Fit
d_ULS	.422	.414	> .05	Good Fit
d_G	4.562	4.562	> .05	Good Fit
Chi-square	1370.014	1367.938		Good Fit
NFI	.521	.522	> .90	Marginal Fit

Table 12. Model Fit

Table 12 above illustrates how the sample covariance matrix with the predicted covariance matrix is transformed into a correlation matrix, which yields the SRMR result of the model fit test. An indicator of the average absolute value of the data residual is the SRMR value. A goodness of fit value of less than 0.08 in the more conservative form is considered adequate for preventing errors in model selection, according to Henseler, *et.al.*, (2014), Hu and Bentler, (1998), and Papa, *et.al.*, (2020). A very excellent fit of the model is shown by the SRMR score of $0.068 < 0.08$.

The squared Euclidean distance, or d_ULS, has a value of 0.422, while the geodesic distance, or d_G, has a value of 4.562, according to calculations based on eigenvalues. As a result, $p > 0.05$ ought to signal that there is no statistically significant difference between the correlation matrix that the model predicts and the actual correlation matrix (Dijkstra and Henseler, 2015).

The primary disadvantage is that it makes the model less difficult since the Normed Fit Index (NFI) value adds another measure of fit. A model's fit is shown by how near its NFI value is to 1, which ranges from 0 to 1 (Lohmöller, 1989). Since the NFI value is 0.521, marginal fit is the meaning of the model fit value.

The examination of the test results discussed above demonstrates the effects of private vocational institutions with accreditation ratings, which include improved managerial effectiveness, higher reputation, and a research-focused emphasis. The implementation environment of certification affects this impact (Elliott, 2013). Apart from that, another impact is that students will tend to choose private vocational universities that have experience, reputation and networks in the world of work, and have national and even international accreditation ratings (Fleseriu, *et.al*., 2020), so that students are expected to at private vocational universities they can be accepted to work according to their competencies.

Conclusion

The purpose of the test findings is to provide evidence (Tsekouras, *et.al.*, 2019) in support of the concept that product innovation significantly and favorably affects business performance. This condition demonstrates that product innovation in terms of high-quality educational services, specificity, added value, and the educational service process has a favorable and noteworthy impact on instructors' and staff members' satisfaction, their ability to meet goals quickly and effectively, and their ability to find high-quality employment after graduation in vocational colleges. personal.

Product innovation has a major and beneficial impact on competitive advantage. This shows how product innovation in terms of added value, specialization, and high-quality educational services, along with the educational service process, has a positive and notable effect on campus administration in a very effective, efficient, and unique way. Additionally, lecturers and educational staff are highly sensitive to the needs of students and the costs associated with their education. This, for students attending a private vocational institution, is quite reasonably priced.

Marketing innovation has a positive and significant impact on competitive advantage. The fact that innovative and trend-driven marketing strategies are employed, tuition costs are updated through a variety of strategic techniques, and top-notch educational services are rendered all of these factors positively and significantly influence the demands of students. Additionally, students attending private vocational colleges can afford the very reasonable costs of education.

Marketing innovation has a big and positive impact on firms' performance. This illustrates how the provision of top-notch educational services, creative and trend-setting marketing tactics, and the regular updating of tuition costs through a range of tactical methods all contribute to the contentment of instructors and instructors, the successful achievement of goals, and the caliber of employment opportunities available to graduates of private vocational colleges.

Business performance is positively and significantly impacted by competitive advantage. This circumstance demonstrates how student needs and extremely low educational costs for students attending private vocational colleges have a major positive impact on instructors' and staff members' job satisfaction, their ability to meet goals quickly and effectively, and the quality of their graduates' output.

Product innovation has a positive and significant impact on firm success, which is mediated by competitive advantage. This means that quality educational services, added value and specificity

as well as educational service processes have an influence on the satisfaction of lecturers and educational staff, fulfilling targets efficiently and effectively, as well as graduates who have quality work that is mediated by student needs and educational costs that are very affordable for students. positively and significantly in private vocational colleges.

The mediating role of competitive advantage has a favorable and considerable impact on the relationship between marketing innovation and firm success. This means that implementing excellence in educational services, marketing in new ways and according to trends, and updating tuition fees with different strategic approaches have an influence on the satisfaction of lecturers and educational staff, fulfilling targets efficiently and effectively, as well as graduates who have mediated work quality. by student needs and very affordable educational costs for students in a positive and significant way at private vocational colleges.

Ranking and accreditation have a moderating influence on the positive and substantial effects of product innovation, marketing innovation, and competitive advantage on firm success. This indicates that the accreditation and national ranking of the campus, which are factors that students take into consideration when selecting a private vocational college, positively and significantly moderate the influence that product innovation, marketing innovation, and competitive advantage have on business performance.

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Contribution

Indra Muis: Conceptualization, Methodology, Investigation, Writing- original draft;

Faris Shafrullah: Conceptualization, Methodology, Formal Analysis, Investigation, Writing-review & editing;

Solahuddin Ismail: Conceptualization, Validation, Formal Analysis;

Luthvi Rachman Ervianto: Project Administration, Validation, Visualization;

Leni Indrawati: Conceptualization, Data Curation, Software, Methodology, Formal Analysis.

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