



Open Access Indonesia Journal of Social Sciences

Journal Homepage: <https://journalsocialsciences.com/index.php/OAIJSS>

The Role of Product Innovation, Accounting Competency, and Online Transactions (E-Commerce) in Increasing Competitiveness in MSMEs, Alalak District, Batola Regency, Indonesia

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ARTICLE INFO

Received: December 15, 2023;

Accepted: February 10, 2024;

Published: April 23, 2024.

Keywords:

Accounting competency

Competitiveness

E-commerce

MSME's

Product innovation

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All authors have reviewed and approved the final version of the manuscript.

<https://doi.org/10.37275/oaijss.v7i2.229>

ABSTRACT

Improving this economic aspect is by empowering the community economy, namely MSMEs owned by the community by maximizing the role of MSMEs. Maximizing the role of MSMEs must be supported by business management aspects such as the application of product innovation, accounting competencies, and online transactions (e-commerce) to increase MSMEs' competitiveness. By increasing the competitiveness of MSMEs, it is hoped that it can improve community welfare. This research aims to explore the role of product innovation, accounting competency and online transactions (e-commerce) in increasing competitiveness in MSMEs. Alalak District, Batola Regency, Indonesia. Quantitative research methods were used in this research with the PLS analysis technique. Observation of indicators is carried out using instruments (questionnaires) which aim to find out respondents' opinions about something. The results of this research reveal that product innovation, accounting competence, and online transactions (e-Commerce) can increase the competitiveness of MSMEs.

1. Introduction

Competition in the business world is facing an era of increasingly fierce competition, as well as micro, small, and medium enterprises (MSMEs), which inevitably have to be able to maintain the market so MSMEs will be able to develop and retain their customers. The very tight competitive environment must be considered and handled so that sales can continue to increase, as well as the high business opportunities in Indonesia causing many new businesses to emerge with more attractive concepts (Goca, 2019). Increasingly tight business competition demands that MSMEs implement superior and efficient business management processes in order to

encourage the creation of products or services that meet market needs at a higher quality level than other companies (Fatmawati, 2016). Micro, small, and medium enterprises (MSMEs) must not only maintain competitiveness but also create superior products. In particular, there are several criteria for the products being sold, namely: (1) they must be used regularly and continuously, (2) the products must be of high quality and varied, and (3) the products must be changed according to different market needs and demands (Fatmawati, 2016).

In South Kalimantan, especially at the location of research activities, Alalak District is a district with priority areas that are vulnerable to food insecurity. In



general, Alalak District, Barito Kuala Regency, has superior potential, namely agriculture, animal husbandry, fisheries, and industry. One of the sectors that is favored is the industrial sector because Alalak District is a border area with Banjarmasin City, so there are at least 5 industries/companies that are established in East Berangas Village. Apart from that, the development of the MSME sector selling industrial products, crafts, and food is also growing rapidly in Alalak District. This is also supported by the existence of the Integrated Business Service Center (PLUT) MSME House located in the Handil Bhakti area.

This research activity is a form of support for the Food Independent Program, as stated in the 2012 Annual Report of the Food Security Agency, which aims to develop food-independent villages, namely by increasing food and nutrition security (reducing food and nutritional insecurity) in the community through resource and institutional utilization. and local culture in rural areas. One effort to improve community welfare can be achieved through improving economic aspects. Although non-economic aspects also have a role, this is not the main focus of this research. Improving this economic aspect is by empowering the community economy, namely MSMEs owned by the community by maximizing the role of MSMEs. Maximizing the role of MSMEs must be supported by business management aspects such as the application of product innovation, accounting competencies and online transactions (e-commerce) to increase the competitiveness of MSMEs. Therefore, it is very necessary to empower the community's economy by increasing the competitiveness of MSMEs so that they can increase the income of village communities. This research aims to explore the role of product innovation, accounting competency and online transactions (e-commerce) in increasing competitiveness in MSMEs. Alalak District, Batola Regency, Indonesia.

2. Literature Review

Product innovation

The success of micro, small, and medium enterprises (MSMEs) cannot be separated from the word product innovation. To keep running, MSMEs must always be able to develop product features. Apart from that, MSMEs must also pay attention to the design and design of the packaging they make. MSMEs must also prioritize the quality of the products they make, with the aim being that consumers feel satisfied, remain loyal, and return to buy (Dhewanto et al., 2015). Innovation in competitiveness is a skill possessed to achieve achievement in the form of competitive advantage. Innovation is also an expression of entrepreneurial activity that can contribute to the long-term survival of a business (Kraus et al., 2012). Every company must innovate with the aim of developing and maintaining its market share (Dhewanto et al., 2014). Furthermore, (Dhewanto et al., 2015) there are several indicators of product innovation, including (1) Product Features. Product features can be a source of capital for the product to compete to win consumer attention. Unique, special, and distinctive are the features of the product and add value; (2) Product design and design. Design is a concept or way that can represent and illustrate a product image. Design contributes to the appearance but also to the usability of the product. Product design aims to attract consumer attention, and can also be a strategy to minimize production costs; (3) Product quality. Product quality is the level of a product that is able to perform its function as optimally as possible. The function in question is product durability, reliability and accuracy of the product produced. Good product innovation will be implemented if you understand the best practices to be adopted as a product development process, then require practice to repeat a success and process. maturity from companies that have the best performance (Paulk et al., 1993).



Accounting competency

Accounting is a field of science that is not enough to study from a theoretical perspective. However, accounting is easier to understand with real accounting practice. Accounting provides students with knowledge and skills about a cycle of accounting activities in a company, either manually or using certain software programs. For MSMEs, financial reports are accounting information that plays an important role in business success. Because financial reports that can be used as material for reflection on financial decisions in managing MSMEs are quality financial reports (Agustina, 2020). Several studies have examined the factors that influence the preparation of financial reports. According to Lohanda (2017); Auliah (2019); Atika (2019); Yosida (2020); Dewi (2020); Posi (2021); Ayuningtyas (2021); Nurwanto et al (2022) accounting competency has a significant effect on the preparation of financial reports.

E-commerce

E-commerce is the process of buying and selling transactions using electronic devices, such as telephones and the Internet. Shim et al. (2000) in Suyanto (2003) define e-commerce as a new concept that can be described as the process of buying and selling goods or services on the World Wide Web Internet. E-commerce has at least six positive impacts on a company's business operations (Widani, et al, 2019; Dewi, 2014). These six impacts are increasing efficiency, saving costs, improving control over goods, improving the distribution chain (supply chain), helping companies maintain better relationships with customers, and helping companies maintain better relationships with suppliers. The obstacles faced, and which are a challenge for us now, are regarding securities and payment methods (Pranata, 2014; Mahyuni et al, 2020).

MSME competitiveness

Competitive advantage is an advantage over competitors obtained through higher value or higher profits due to higher prices. Competitive advantage indicates that one company can do better than others, even in the same industry. Competitive advantage shows that one organization can outperform others, even when working in the same environment (Sunyoto, 2015). Competitive advantage is an advantage that exists when a company has and produces a product or service that is considered by the target market to be better than its closest competitors (Saiman, 2014). Furthermore, Saiman (2014) says that there are several strategies for competitive advantage: recognizing opportunities, choosing strategies to capture opportunities, and managing the results of exploiting opportunities

3. Methods

This study was carried out in Handil Bhakti Village, Alalak District, Barito Kuala Regency, South Kalimantan. This research was designed to be carried out using a quantitative approach. Research in the social sciences, such as management, psychology, and sociology, generally formulates research variables as latent variables - namely, variables that cannot be measured directly - formed from observed dimensions or observed indicators (Ghozali, 2013). Observation of indicators is carried out using instruments (questionnaires/questionnaires) which aim to find out respondents' opinions about something. The scaling generally used for research instruments is a Likert scale, which produces ordinal data containing answer preferences: 1 for Strongly Disagree; 2 to Disagree; 3 for Undecided – Undecided or Neutral; 4 for Agree; and 5 for Strongly Agree. Regarding the quality of the data type, the data produced by the Likert Scale is stated as ordinal data because each number has a higher or lower preference than the others. However, if the scale distance is the same size or constant, the resulting data type is interval data. This data becomes input for



instrument quality testing, namely reliability and validity testing.

The research method is causal in nature and seeks to determine and analyze the role of product innovation, accounting competency, and online transactions (e-commerce) in increasing competitiveness in MSMEs. Alalak District, Batola Regency – South Kalimantan Province. The PLS technique is used to predict this influence. In order to obtain quality research data, a data quality test is carried out on the initial raw data to remove outlier data for variables so that the data tested for validity and reliability is normally distributed raw data that meets the z-value qualifications (z-score) used. The classical assumption test is carried out to fulfill the requirements for hypothesis testing, namely whether the hypothesis test is carried out parametrically or non-parametrically

4. Results and Discussion

Validity test

This test is carried out to test the validity of each statement item in measuring the variable. The

correlation technique used to test the validity of statement items in this research is Pearson Product Moment. If the correlation coefficient value of the statement items being tested is greater than $r_{critical}$ of 0.3, it can be concluded that the statement item is a valid construct. The validity test results show that all statement items have a validity coefficient greater than $r_{critical}$ 0.3. So it can be concluded that all statement items stated are valid which can be used in further analysis.

Reliability test

Reliability testing was carried out by testing the instrument only once and then analyzing it using the Alpha-Cronbach method. A questionnaire is said to be reliable if the reliability coefficient is greater than 0.7. Based on Table 1, it is known that the reliability value of the statement items on the variable being studied is greater than 0.7. These results indicate that the statement items in the questionnaire are reliable for measuring the variables. The results of the reliability test are as follows.

Table 1. Research questionnaire reliability test results.

Variable	Reliability index	Critical value	Information
Product innovation (X1)	0,936	0,7	Reliable
Accounting competency (X2)	0,909	0,7	Reliable
Online transactions (X3)	0,982	0,7	Reliable
Competitiveness (Y)	0,962	0,7	Reliable

Table 2. Recapitulation of descriptive analysis of product innovation variables (X1).

No	Statement items		Respondent answer score					Total score	Mean
			5	4	3	2	1		
1	Business owners provide various creative food and drink menu	F	29	14	4	3	0	219	4,38
		%	58,00%	28,00%	8,00%	6,00%	0,00%		
2	Business owners pay attention to every ingredient in processing food and drinks or their products	F	26	18	2	4	0	216	4,32
		%	52,00%	36,00%	4,00%	8,00%	0,00%		
3	Business owners provide various food and beverage or product packaging designs	F	16	26	4	4	0	204	4,08
		%	32,00%	52,00%	8,00%	8,00%	0,00%		
4	Business owners pay attention to how to serve food and drinks	F	27	17	3	3	0	218	4,36
		%	54,00%	34,00%	6,00%	6,00%	0,00%		
5	Business owners try to provide good quality healthy food and drinks or products	F	36	9	2	3	0	228	4,56
		%	72,00%	18,00%	4,00%	6,00%	0,00%		
6	Business owners try to provide good nutrition in food and drinks	F	32	13	2	3	0	224	4,48
		%	64,00%	26,00%	4,00%	6,00%	0,00%		
Total score and average							1309	4,36	

Source: Data Processing (2023).



Based on Table 2, the average response of respondents regarding the product innovation variable (X1) can be seen. It can be seen that the overall total

score is 1309, and the average value of respondents' responses regarding the product innovation variable (X1) is 4.36, which is in the very good category.

Table 3. Recapitulation of descriptive analysis of accounting competency variables (X2).

No	Statement items		Respondent answer score					Total score	Mean
			5	4	3	2	1		
1	Record every transaction	F	21	23	5	1	0	214	4,28
		%	42,00%	46,00%	10,00%	2,00%	0,00%		
2	Can differentiate each transaction, whether debit or credit	F	19	26	2	3	0	211	4,22
		%	38,00%	52,00%	4,00%	6,00%	0,00%		
3	Can create a balance sheet	F	10	29	7	3	1	194	3,88
		%	20,00%	58,00%	14,00%	6,00%	2,00%		
4	Can create loss/profit reports	F	14	26	6	3	1	199	3,98
		%	28,00%	52,00%	12,00%	6,00%	2,00%		
5	Can make financial reports	F	18	23	5	3	1	204	4,08
		%	36,00%	46,00%	10,00%	6,00%	2,00%		
Total score and average							1022	4,09	

Source: Data Processing (2023).

Based on Table 3, the average response of respondents regarding the Accounting Competency variable (X2) can be seen. It can be seen that the overall total score is 1022, and the average value of

respondents' responses regarding the accounting competency variable (X2) is 4.09, which is in the good category.

Table 4. Recapitulation of descriptive analysis of online transaction variables (X3).

No	Statement items		Respondent answer score					Total score	Mean
			5	4	3	2	1		
1	Using online transactions to get new customers	F	23	20	2	3	2	209	4,18
		%	46,00%	40,00%	4,00%	6,00%	4,00%		
2	Using online transactions to be able to access (reach) a wider market	F	26	18	2	2	2	214	4,28
		%	52,00%	36,00%	4,00%	4,00%	4,00%		
3	Using online transactions to promote products	F	27	16	3	2	2	214	4,28
		%	54,00%	32,00%	6,00%	4,00%	4,00%		
4	Using online transactions to build a brand	F	17	25	2	3	3	200	4,00
		%	34,00%	50,00%	4,00%	6,00%	6,00%		
5	Using online transactions to be able to compete with other MSMEs	F	19	21	3	5	2	200	4,00
		%	38,00%	42,00%	6,00%	10,00%	4,00%		
6	Using online transactions to be close to customers	F	24	19	3	1	3	210	4,20
		%	48,00%	38,00%	6,00%	2,00%	6,00%		
7	Using online transactions to be able to communicate more quickly with customers	F	26	18	2	3	1	215	4,30
		%	52,00%	36,00%	4,00%	6,00%	2,00%		
8	Using online transactions to satisfy customers	F	19	23	3	3	2	204	4,08
		%	38,00%	46,00%	6,00%	6,00%	4,00%		
9	Using online transactions to help business transactions	F	19	24	3	3	1	207	4,14
		%	38,00%	48,00%	6,00%	6,00%	2,00%		
10	Using online transactions to obtain information from outside parties	F	17	27	1	4	1	205	4,10
		%	34,00%	54,00%	2,00%	8,00%	2,00%		
11	Use online transactions to save costs	F	20	25	1	2	2	209	4,18
		%	40,00%	50,00%	2,00%	4,00%	4,00%		
12	Using online transactions for business process efficiency	F	15	28	2	4	1	202	4,04
		%	30,00%	56,00%	4,00%	8,00%	2,00%		
Total Score and Average							2489	4,15	

Source: Data Processing (2023).



Based on Table 4, the average response of respondents regarding the online transaction variable (X3) can be seen. It can be seen that the overall total

score is 2489, and the average value of respondents' responses regarding the online transaction variable (X3) is 4.15, which is in the good category.

Table 5. Recapitulation of descriptive analysis of competitiveness variables (Y).

No	Statement items		Respondent answer score					Total score	Mean
			5	4	3	2	1		
1	The price of MSMEs is the thing that most influences competitive advantage	F	21	23	1	1	4	206	4,12
		%	42,00%	46,00%	2,00%	2,00%	8,00%		
2	Consumers do not feel burdened by the prices set by MSMEs	F	19	24	2	3	2	205	4,10
		%	38,00%	48,00%	4,00%	6,00%	4,00%		
3	The quality of products owned by MSMEs is superior to its competitors	F	17	25	3	3	2	202	4,04
		%	34,00%	50,00%	6,00%	6,00%	4,00%		
4	The quality of service for MSMEs is superior to its competitors	F	21	22	1	3	3	205	4,10
		%	42,00%	44,00%	2,00%	6,00%	6,00%		
5	The ability of MSMEs to deliver products on time	F	20	24	1	3	2	207	4,14
		%	40,00%	48,00%	2,00%	6,00%	4,00%		
6	MSMEs provide products or services according to the type customers want	F	22	24	0	2	2	212	4,24
		%	44,00%	48,00%	0,00%	4,00%	4,00%		
7	MSMEs have extensive product innovation and influence market value and share	F	23	21	1	4	1	211	4,22
		%	46,00%	42,00%	2,00%	8,00%	2,00%		
8	The greater the innovation value that customers will provide for a product or service, the more it can meet customer needs	F	24	21	1	2	2	213	4,26
		%	48,00%	42,00%	2,00%	4,00%	4,00%		
9	An MSME is an important dimension of competitive advantage	F	20	24	1	3	2	207	4,14
		%	40,00%	48,00%	2,00%	6,00%	4,00%		
10	The extent to which an MSME is able to release new products more quickly than its competitors	F	17	27	2	3	1	206	4,12
		%	34,00%	54,00%	4,00%	6,00%	2,00%		
Total score and average							2074	4,15	

Source: Data Processing (2023).

Based on Table 5, the average response of respondents regarding the Competitiveness variable (Y) can be seen. It can be seen that the overall total score is 2074, and the average value of respondents' responses regarding the competitiveness (Y) variable is 4.15, which is in the good category.

Model testing

Based on the results of model testing, results were obtained which showed that all manifests (observed variables) had a value loading factor greater than 0.70. So, the SEM-PLS model is said to have good construct validity. Below is a table showing the values loading factor on the model in detail.



Table 6. Loading factor.

Construct	Loading factor	R critical	Criteria (Loading factor > 0.70)
DS1 <- Competitiveness (Y)	0,723	0,70	Valid
DS10 <- Competitiveness (Y)	0,866	0,70	Valid
DS2 <- Competitiveness (Y)	0,833	0,70	Valid
DS3 <- Competitiveness (Y)	0,884	0,70	Valid
DS4 <- Competitiveness (Y)	0,895	0,70	Valid
DS5 <- Competitiveness (Y)	0,922	0,70	Valid
DS6 <- Competitiveness (Y)	0,872	0,70	Valid
DS7 <- Competitiveness (Y)	0,868	0,70	Valid
DS8 <- Competitiveness (Y)	0,926	0,70	Valid
DS9 <- Competitiveness (Y)	0,868	0,70	Valid
IP1 <- Product innovation (X1)	0,789	0,70	Valid
IP2 <- Product innovation (X1)	0,798	0,70	Valid
IP3 <- Product innovation (X1)	0,745	0,70	Valid
IP4 <- Product innovation (X1)	0,859	0,70	Valid
IP5 <- Product innovation (X1)	0,958	0,70	Valid
IP6 <- Product innovation (X1)	0,962	0,70	Valid
KA1 <- Accounting competency (X2)	0,712	0,70	Valid
KA2 <- Accounting competency (X2)	0,795	0,70	Valid
KA3 <- Accounting competency (X2)	0,919	0,70	Valid
KA4 <- Accounting Competency (X2)	0,907	0,70	Valid
KA5 <- Accounting competency (X2)	0,925	0,70	Valid
TO1 <- Online transaction (E-Commerce) (X3)	0,917	0,70	Valid
TO10 <- Online transaction (E-Commerce) (X3)	0,944	0,70	Valid
TO11 <- Online transaction (E-Commerce) (X3)	0,893	0,70	Valid
TO12 <- Online transaction (E-Commerce) (X3)	0,937	0,70	Valid
TO2 <- Online transaction (E-Commerce) (X3)	0,936	0,70	Valid
TO3 <- Online transaction (E-Commerce) (X3)	0,936	0,70	Valid
TO4 <- Online transaction (E-Commerce) (X3)	0,916	0,70	Valid
TO5 <- Online transaction (E-Commerce) (X3)	0,831	0,70	Valid
TO6 <- Online transaction (E-Commerce) (X3)	0,945	0,70	Valid
TO7 <- Online transaction (E-Commerce) (X3)	0,937	0,70	Valid
TO8 <- Online transaction (E-Commerce) (X3)	0,917	0,70	Valid
TO9 <- Online transaction (E-Commerce) (X3)	0,904	0,70	Valid

Source: Data Processing (2023).

Table 6 shows the values of the loading factor for each construct of each variable. Based on this table, it can be seen that the loading factor is worth more than 0.70. So, it can be concluded that, based on each construct in the research, it has good validity. Next,

testing will be carried out on average variance extracted (AVE) to further strengthen the results of convergent validity with criteria when the AVE value > 0.5 (Hair et al., 2019), then the construct used in the research is valid.

Table 7. Average variance extracted value.

Latent	Average variance extracted (AVE)	R critical	Criteria (AVE ≥ 0.5)
Product innovation (X1)	0,733	0,5	Valid
Accounting competency (X2)	0,732	0,5	Valid
Online transaction (E-commerce) (X3)	0,843	0,5	Valid
Competitiveness (Y)	0,752	0,5	Valid

Source: Data Processing (2023).



Based on Table 7, the results can be seen as convergent validity based on the value average variance extracted. These results show that all latent variables have an AVE value of more than 0.5. This indicates that the indicators that form the latent construct have convergent validity, which is good when seen from the value average variance extracted.

Discriminant Validity can be seen from the value cross-loading. Fornell and Larcker (1981) in Ghozali (2014:45) stated that the correlation value of indicators with their constructs must be greater than the correlation values between indicators and other constructs. Below are presented the test results and discriminant validity using the Smart PLS 3.0 program.

Table 8. Cross-loading discriminant validity test value.

	Product innovation (X1)	Accounting competency (X2)	Online transaction (E-commerce) (X3)	Competitiveness (Y)
IP1	0,789	0,127	0,103	0,053
IP2	0,798	0,059	0,118	0,062
IP3	0,745	0,332	0,009	0,045
IP4	0,859	0,313	0,133	0,078
IP5	0,958	0,250	0,126	0,264
IP6	0,962	0,255	0,164	0,266
KA1	0,096	0,712	0,461	0,549
KA2	0,165	0,795	0,488	0,613
KA3	0,259	0,919	0,423	0,618
KA4	0,274	0,907	0,426	0,554
KA5	0,326	0,925	0,426	0,537
TO1	0,144	0,552	0,917	0,651
TO2	0,178	0,533	0,936	0,615
TO3	0,173	0,497	0,936	0,635
TO4	0,151	0,613	0,916	0,714
TO5	0,096	0,427	0,831	0,661
TO6	0,225	0,554	0,945	0,689
TO7	0,143	0,489	0,937	0,632
TO8	0,128	0,477	0,917	0,675
TO9	0,078	0,393	0,904	0,637
TO10	0,082	0,426	0,944	0,648
TO11	0,123	0,358	0,893	0,586
TO12	0,053	0,412	0,937	0,651
DS1	0,112	0,338	0,491	0,723
DS2	0,157	0,488	0,522	0,833
DS3	0,220	0,637	0,595	0,884
DS4	0,254	0,629	0,590	0,895
DS5	0,263	0,645	0,720	0,922
DS6	0,224	0,682	0,665	0,872
DS7	0,175	0,530	0,587	0,868
DS8	0,232	0,662	0,707	0,926
DS9	0,130	0,496	0,596	0,868
DS10	0,110	0,656	0,625	0,866

Source: Data Processing (2023).



Based on Table 8, it can be seen that all indicators have a high correlation with their constructs compared to other constructs. So, it can be concluded that the research model has good discriminant validity cross-loading.

Cronbach's alpha and composite reliability to find out whether the construct reliability is good or not.

Each construct is said to be reliable if it has Cronbach's alpha and composite reliability greater than 0.70 (Hair et al., 2017) can be said to be reliable, but if Cronbach's Alpha and Composite Reliability, something greater than 0.60 can still be said to be reliable. Below are presented the test results reliability using the Smart PLS 3.0 program.

Table 9. Values Cronbach's alpha and composite reliability.

Latent	Cronbach's alpha	Composite reliability
Product innovation (X1)	0,936	0,942
Accounting competency (X2)	0,905	0,931
Online transaction (E-commerce) (X3)	0,983	0,985
Competitiveness (Y)	0,963	0,968

Source: Data Processing (2023).

Based on Table 9, it can be seen that there are latent constructs that have a value of Cronbach's alpha of more than 0.6; this indicates that the latent construct has the reliability of the good one. Apart from that on value composite reliability, all latent constructs also have values greater than 0.60. Based on the value of Cronbach's alpha and composite reliability obtained, it shows that the model has good

reliability.

Structural model testing (inner model)

The inner model evaluation is an analysis of the results of the relationship between constructs. Inner model testing consists of R square, f square, Q-square predictive relevance, and hypothesis testing.

Table 10. R Square.

	R Square	Strong relationships
Competitiveness (Y)	0,634	Moderate

Source: Data Processing (2023).

According to Chin (1998) in Yamin and Kurniawan (2011:21), R Square with a value of 0.67 indicates a strong model, a value of 0.33 indicates a moderate model, and a value of 0.19 indicates a weak model. From the results of Table 4.37, it can be seen that the R-Square for the Competitiveness variable (Y) is 0.634,

which means that Product Innovation (X₁), accounting competency (X₂), and online transactions (E-commerce) (X₃) simultaneously influences Competitiveness (Y) by 63.4%, while the remaining 36.6% is influenced by other variables not examined in this research.

f Square

Next is to look at the value of f square. The f square value of 0.02 indicates a small rating, an effect size of 0.15 indicates a medium rating and an effect size of

0.35 indicates a large rating (Cohen, 1988 in Yamin and Kurniawan (2011). Based on the test results with SmartPLS 3, F Square results were obtained as follows.



Table 11. F square.

Variable	Effect size	Rating
Competitiveness (Y)		
Product innovation (X1)	0,005	Small
Accounting competency (X2)	0,316	Intermediate
Online transactions (E-commerce) (X3)	0,474	Large

Source: Data Processing (2023).

Table 11 shows that the Product Innovation variable (X1), Accounting Competency (X2), and Online Transactions (E-Commerce) (X3) each have an influence in the small, medium, and large categories in influencing the Competitiveness variable (Y).

Q² predictive relevance

Q-square testing is used to measure how well the observation values are produced by the model and also

the estimation of its parameters. The value of the Q-square is more different than 0 (zero), indicating that the model has a predictive relevance value, while a Q-square less than 0 (zero) indicates that the model lacks predictive relevance (Cohen, 1988 in Yamin and Kurniawan (2011: 21). The Q-square value obtained using the R2 value in the table above, obtained the following calculation results:

Table 12. Q² predictive relevance.

Variable	R Square	1-R Square
Competitiveness (Y)	0,634	0,366
Q ² =	Q ² = 1 - (1 - 0,634) = 63,4%	
Error =	Q ² = 100% - 63,4% = 36,6%	

Source: Data Processing (2023).

Based on the results of the calculation above, it is known that the value of the Q square is greater than 0. This means that the observed values have been reconstructed well so that the model has predictive relevance. This means that there is 0.634 or 63.4% of the relative effect of structural models on observational measurements for endogenous latent variables, and 36.6% is a model error.

Influence of product innovation (X1) to competitiveness (Y)

From the results of Table 13, the original sample

(O) value of 0.044 shows that the direction of influence of product innovation (X1) on competitiveness (Y) is positive or unidirectional, meaning that the more product innovation increases, the more it increases competitiveness. The effect of product innovation (X1) on competitiveness (Y) is insignificant, with a t-statistic value of 0.242 smaller than the t table or $0.242 < 1.96$, and a p-value of 0.809 greater than alpha 5% (0.05). Thus, H1.1 is rejected, meaning that product innovation (X1) does not have a significant effect on competitiveness (Y).

Table 13. Path coefficient and t-count of the effect of product innovation (X1) on competitiveness.

	Original sample (O)	t-Statistics	p-value	Conclusion
Product innovation (X1) to competitiveness (Y)	0,044	0,242	0,809	H0.1 accepted

Source: Data Processing (2023).



Influence of accounting competency (X₂) to competitiveness (Y)

From the results of Table 14, values obtained from the original sample (O), which is 0.409, show that the direction of influence of accounting competency (X₂) on competitiveness (Y) is positive or in the same direction, meaning that the more product innovation increases,

the more competitiveness increases. The influence of accounting competency (X₂) on competitiveness (Y) is significant, with a t-statistic value of 3.129 greater than the t table or $3.129 > 1.96$, as well as a p-value of 0.002, which is smaller than alpha 5% (0.05). Thus, H_{1.2} Accepted means accounting competency (X₂) has a significant effect on competitiveness (Y).

Table 14. Path coefficient and t-count of the influence of accounting competency (X₂) to competitiveness (Y).

	Original sample (O)	t-Statistics	p-value	Conclusion
Accounting competency (X ₂) to competitiveness (Y)	0,409	3,129	0,002	H _{0.2} rejected

Source: Data Processing (2023).

Effect of online transactions (E-commerce) (X₃) to competitiveness (Y)

From the results of Table 15, values obtained from the original sample (O), which is 0.489, show that the direction of influence from online transactions (E-commerce) (X₃) on competitiveness (Y) is positive or in the same direction, meaning that the more product innovation increases, the more competitiveness

increases. The effect of online transactions (E-commerce) (X₃) on competitiveness (Y) is significant, with a t-statistic value of 3.129 greater than the t table or $4.597 > 1.96$, as well as a value p-value of 0.000 is smaller than alpha 5% (0.05). Thus, H_{1.2} accepted means online transactions (e-commerce) (X₃) have a significant effect on competitiveness (Y).

Table 15. Path coefficient and t-calculation of the effect of online transactions (E-commerce) (X₃) on competitiveness (Y).

	Original sample (O)	t-Statistics	p-value	Conclusion
Online transactions (E-commerce) (X ₃) to competitiveness (Y)	0,489	4,597	0,000	H _{0.3} rejected

Source: Data Processing (2023).

5. Conclusion

Based on the results of the research and discussions that have been carried out, the conclusions that can be drawn are as follows: 1) Product innovation does not have a significant effect on competitiveness. 2) Accounting competency has a significant effect on competitiveness. 3) Online transactions (E-commerce) have a significant effect on competitiveness.

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