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The effect of product innovation and production efficiency on the competitiveness of MSMEs with E-marketing as a moderating variable

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Abstract

Currently, the number of MSMEs in North Aceh is 3,660 consisting of various production sectors, culinary, craft and other sectors under the guidance of the North Aceh Cooperatives and SMEs Service. The condition of MSMEs has decreased due to the Covid-19 pandemic. This happened because with the pandemic there was a change in marketing strategy from what was previously face-to-face marketing to digital marketing. In addition, based on the results of the available respondents, very tight business competition requires business people to innovate products with complexity as the highest value indicator and perform production efficiency with product efficiency indicators as the factor with the highest value so that later products that

have competitiveness can be produced. Respondents' results show that the purchase transaction indicator is the factor with the highest score where the easier access to transactions provided will increase the competitiveness of MSMEs buying and selling. The results of the study using Smart PLS 3 to show the effect of the independent variable on the dependent indicate that product innovation and product efficiency have a significant positive effect on the competitiveness of MSMEs in North Aceh. Meanwhile, E-marketing cannot moderate the effect of product innovation and product efficiency on the competitiveness of MSMEs. Directly, product innovation is found to have a significant positive effect on the competitiveness of SMEs.

Keywords: MSME, E-Marketing, Covid-19, Product Innovation, Product Efficiency

Introduction

Based on Tumar Sumihardjo (2008:8) ^[2] Competitiveness means power, own more uses than other product, unique and different from other product which can be in the point of quality, or other exclusivity.

The development of new product and introduction of the new product that was successful in market is the meaning of product innovation. Inovasi produk dapat berupa perubahan desain, komponen dan arsitektur produk. Thomas W. Zimmerer (2008:57) ^[3] stated that product innovation is the idea or imagination by a person that will be transform into a product or service than will attract the market or customer. Dourgerty (1996) stated that product innovation is an important way for companies to stay adaptable to markets, technology, and competition. Innovation is a product or service that is perceived by consumers as a new product or service. In simple terms, innovation can be interpreted as a breakthrough related to new products. Kotler (2004) dan Nelly et al; (2001) ^[5] assume that innovation is not only limited to the development of new products or services. Innovation also includes new business ideas and new processes that will be enjoyed by consumers.

Tidd et al. (2005) states that innovation is not only about creative thinking, it actually needs an actual action. Innovation consists of original concepts, innovations from its members and tangible products or services. Some management experts believe that innovation is the main source of competitive advantage. It has also been proven through research that innovation plays an important role in economic development (Agbor, 2008 ; Chen dan Chen, 2009 ; Gumusluoglu dan Ilsev, 2009 ; Karkalakos, 2013). The attribute of innovation that use in this research based on Rogers in LAN (2007) which include relative advantage, compability, Complexity, trialability, observability.

Based on Eddy Soeryanto Soegoto (2009:8) proses inovasi adalah kemampuan dalam menambahkan nilai guna/manfaat terhadap suatu produk serta menjaga mutu produk dengan memerhatikan "market oriented" atau apa yang sedang laku dipasaran.

The efficiency is the result of differentiation between output and input. If the output results toward input is higher means the more efficient the production (Tutuarima, 2009; (McEachern, 2001) ^[6]. Meanwhile based on (McEachern, 2001) ^[6] efficiency also means the condition where the resources are not able to reallocated in order to improve the goods production without reducing another production of goods.

In order to measure the efficiency it will needed an information about the estimation use of input and output and compare them. The concept of efficiency can be seen by two factor which includes cost minimization and input for cost minimization. The cost minimization should be accompanied by the standard product quality by the company and also makes the efficiency higher in their production process. The production function is very important in the theory of production because the relationship between inputs and outputs can be known directly. Adiningsih (1999) stated that the production function shows the maximum amount of output that can be produced if a certain number of inputs are used in the production process. Economical production efficiency is carried out using the marginal product value ratio indicator (MPV) at the same price for each factor of production. Marginal Production Value (NPM) of each additional unit of output equals the price of each unit of input (Px) (Debertin, 1986 serta Doll dan Orazem, 1984).

Production efficiency indicators:

1. Production Efficiency
2. Man Power Efficiency
3. Loss on Manhour for Defect Repairing
4. Energy Consumption On Demand Side
5. Energy Consumption On Supply Side

Based on Kotler and Armstrong (2008:237) *Electronic marketing* is a strategy of company or business to promote their goods and services and also to develop the engagement with customer through online platform. Based on (Strauss and Trost, 2009:6) in (Aprilianti, Priansa, 2018:1042)

Several advantageous and weaknesses of *E-marketing* (Ali Hasan, 2013:768):

1. The advantageous of *E-Marketing*
 - a. Low cost
 - b. Posisi individu menjadi kuat
 - c. Intensive engagement
 - d. Keep consumer loyalty
 - e. Partners from fellow customer
 - f. Statistical measurement
2. Weaknesses of *E-Marketing*
 - a. Mass collaboration or social network
 - b. Untouchable goods
 - c. Customer privacy security
 - d. Certainty for customer

The factor that encourage consumer behavior toward e marketing:

1. Personal relevance said to have an influence of a person behavior towards buying decision in online platform.
2. Interaktivitas Online on (Tjiptono Chandra, 2012:381) is high consumer involvement on visiting the company site and interested in company's product.
3. Messages based on (Tjiptono, Chandra 2012:381) in (Iik Khoernikmah and Agus Widarko, 2018:135) explain that message can be specially design to meet the needs and spesific consumer desired.
4. Famous Brand in the research of (Bamba and Barnes, 2007) [8] explain this brand will effectively influence the consumer purchase in an online platform. Famous brand has more positive response than a new comer brand.

Methods

This research is using an explanatory type of research. The researcher intention is to review and explain the logical

relationship between the variables in this research. The population includes 3,660 SME's (Small Medium Enterprises) actors in North Aceh Regency consisting of various production sectors, culinary, craft and other sectors under the guidance of the North Aceh Cooperatives and SMEs Service. While the research sample was determined using the Slovin formula as follows:

$$n = N / (1 + N e^2)$$

$$n = 3660 / (1 + 3660 (0.05 \times 0.05))$$

$$n = 235 \text{ SME's}$$

Cluster random sampling is used as the sampling retrieval methodology that based on SME's type. Questioner is use by the author as to collect the primer data from the respondent. Filling out the questionnaire is done by distributing questionnaires directly to respondents who have been targeted and prepared in advance. The interview method was also carried out before giving the questionnaire so that researchers and respondents could similar the points of view in accordance with the research objectives. The primary data collected is data that contains the characteristics of the respondents, knowledge questions about product innovation, production systems, digital-based marketing systems, and business development. Secondary data is obtained from the results of further processing of primary data and presented by collectors and other parties (Umar, 2004). Secondary data was obtained by reviewing the available literature, including studies of policies implemented by MSMEs, as well as previous studies that discussed similar studies, including related references circulating in cyberspace. This secondary data is used as a consideration and comparison of the analysis of research results. The variable consist as below:

1. Independent variable: Product Innovation and Production Efficiency
2. Moderate variable: *e-marketing*
3. Dependent variable: SME's Competitiveness

The relationship between variables in this research has result a conceptual framework as seen in below:

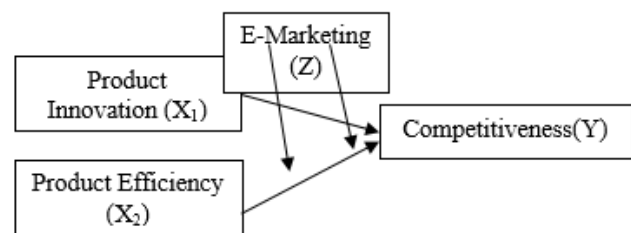


Fig 1: Conceptual Framework

Results and Discussion

Data collection from the field was carried out using a questionnaire to 235 medium-sized enterprises. The selection is aimed at medium-sized enterprises, not micro- and medium-sized enterprises because the medium-sized business group is suspected of using e-marketing in their business operations. The description of the data from the field results is shown in the following section. Respondents description based on gender

Table 1: Respondent based on gender

Gender	Amount	%
Male	156	66
Female	79	34
Total Amount	235	100

In terms of gender, it can be seen that in general (66%) the leaders of medium-sized enterprises are male, and only 34% are female. Description of respondents from last education Respondent description based on Background Study

Table 2: Respondent based on background study

Study	Amount	%
Junior school	45	19
High School	148	63
Undergraduate	42	18
Total	235	100

In terms of respondents' education, it can be seen that the majority of middle-sized business leaders have a final high school education (63%) followed by junior high school education (19%) and bachelor's degree (S1) as much as 18%. Respondent description based on Marital Status

Table 3: Respondent based on Marital Status

Marital Status	Amount	%
Not married	78	33
Widow	8	3
Married	149	63
Total	235	100

Respondent description based on the business duration The duration of business is measured in this research in a scale of year. Below figure shows the graphic of the duration length of a SME's in North Aceh Region.

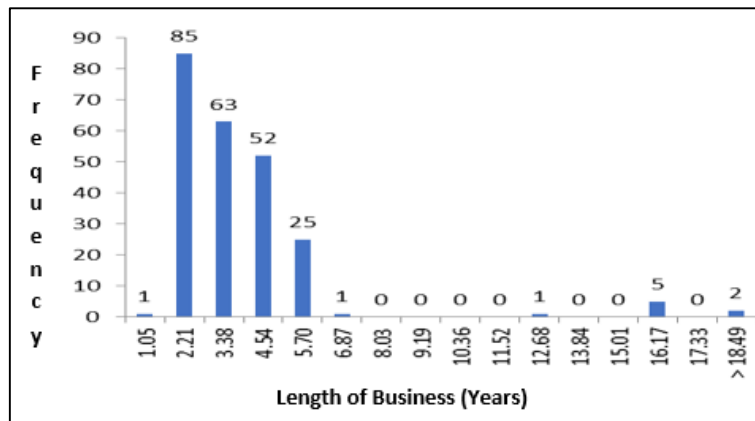


Fig 1: Respondent Based on Business Duration (year)

It can be seen that the average length of business duration of the respondents is 3.28 years with a standard deviation of 0.17 years and a median of 2.74 years. A total of 7 business

entities that have enter the business for more than 16 years. Respondent description based on Age

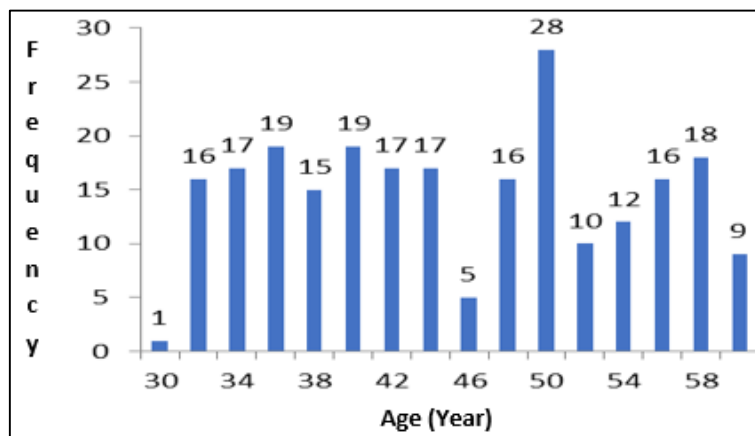


Fig 2: Respondent Based on Age

In terms of age, it can be seen as the above figure that the result of average age based on the respondents questionnaire was 44.8 years with a standard deviation of 0.56 years and a

median of 44 years. The description of respondent answer on research variables

Table 4: The description of respondent answer on research variables

Variable	Indicator	Choices					Average	Category
		1	2	3	4	5		
Product Innovation	P1 (Relative Advantage)	0	31	18	152	34	3.80	High
	P2 (Compability)	0	36	38	138	23	3.63	High
	P3 (Complexity)	0	25	21	158	31	3.83	High
	P4 (Trialability)	0	33	32	139	31	3.71	High
	P5 (Observability)	0	31	29	145	30	3.74	High
Production Efficiency	P6 (Production Efficiency)	0	31	40	137	27	3.68	High
	P7 (Manpower Efficiency)	0	35	38	134	28	3.66	High
	P8 (Loss or Manhour for Defect Repairing)	0	31	43	139	22	3.65	High
	P9 (Energy Consumption on Deman Side)	0	28	40	135	32	3.73	High
	P10 (Energy Consumption on Supply Side)	0	33	55	126	21	3.57	High
e-Marketing	P11 (Information)	4	47	51	104	29	3.46	High
	P12 (Service Existency)	2	33	46	117	37	3.66	High
	P13 (Service Reliability)	1	24	63	119	28	3.63	High
	P14 (Purchase Transaction Process)	0	17	22	154	42	3.94	High
	P15 (Usage)	0	23	18	151	43	3.91	High
SME's Competitiveness	P16 (Market Competitive Price)	0	20	22	157	36	3.89	High
	P17 (Product Quality)	0	20	24	156	35	3.88	High
	P18 (Flexibility)	0	23	19	162	31	3.86	High

Product Innovation (X₁)

Complexity has the highest result as product innovation indicator. This means that the complexity in product innovation perceived by entrepreneurs in the medium business category is high. Next position is relative advantage of a product which also play role as a succes factor in company's product innovation. Relative Advantages in yahya (2016). The advantage of an innovation that is seen through whether or not an innovation is better than a product that has been previously available or from things that are usually done. Observability in third position, is an evaluation of the extent to which the results of using an innovation can be easily perceived users. The more-easier it is for someone to feel the use of an innovation, the more likely it is that the innovation is adopted by a person or group of people called customers. Trialability is a characteristics that indicate if an innovation can be tried first or whether it should be bound to use it. If an innovation can be tested and adopted easily in real conditions, innovations are generally accepted by the market more quickly. Lastly was the compability where if the innovation is contrary to or not in accordance with the values and norms adopted by the consumer, the new innovation cannot be easily accepted by the adopter. It was stated on beritasatu.com that according to Inventure Consulting's marketing expert, Yuswohady, he believes that the COVID-19 pandemic has caused a shift in consumer behavior. Therefore, according to the condition of pandemic, every company needs to innovate.

Production Efficiency (X₂)

Sullivan (2007) efficiency in the economic concept refers to a number of concepts related to the use, maximization and utilization of all resources in the process of producing goods and services. After product efficiency, energy consumption on demand side where the measurement is by calculating the percentage of electricity efficiency at this time, 1 week and 1 month. At this point, MSMEs in North Aceh are considered to be able to apply this evaluation considering that the electricity consumption used can be calculated and analyzed whether it is in accordance with the income obtained by MSME's in North Aceh. In general, production that uses electricity such as manufacturers of garment, scarf and other craft, cafe or coffee shop businesses that provide wifi as a

service can use this indicator. Third, Manpower efficiency is an indicator that called essentially because as a measurement that could explain whether workers in a company or business have worked efficiently. This can be measured by dividing the general standard of time for workers divided by the duration of working time multiplied by 100. The closer to 100, the worker is said to have been efficient at work. Loss or Manhour for Defect Repairing with a value of 3.65. The loss manhour percentage is measured by the number of hours spent currently, 1 week and 1 month. This factor is in accordance with the type of manufacturing business because the application of this evaluation is essentially used to analyze repair manhours with standard hours so as to produce the desired percentage to compare each division in the manufacturing or factory. Lastlty, energy efficiency on supply side was to measure the current percentage of energy efficiency, and so on. This energy efficiency calculation can be done if the product produced uses electricity, water or gas as the main energy in its manufacture.

E-marketing

Based on the respondent results, the purchase transaction process has play the main role on customer decision as a buyer beside the way of the business had shown their engagement through the online and digital marketing through email, whatsapp, or messenger and other platform of online marketing. The more easily the transaction the more loyalty customer to the business for example easy transaction by providing virtual chat, customer service care and transparant receipt. The usage indicator shows that SME's could learn from a well-known brands that have implemented e-marketing since the beginning of the existence of digital marketing in Indonesia. In order to provide a better online marketing to target customers in order to increase existing competitiveness. This means that buyers or customers will be very enthusiast if the benefits of e-marketing provided can be easily accessed in the shopping cart for the products being sold. This makes business actors superior if they have access to shopping with a website so that it can make it easier for customers to shop. Followed by service existence and reliable which both has crucial role in operating a business especially while facing this pandemic. In fact, a fast response from the seller can increase customer trust. If service availability is not

found, it will have an impact on customer convenience in purchasing so that they cannot ask clearly related to the product they want to buy. Service reliability goes hand in hand and in line with the existence of services, where the existence of services must be accompanied by the responsiveness of the seller in serving customers. However, the duration of service generally follows office operating hours, so buyers have to wait the next day if social media or virtual chat services are not operating. Lastly, information indicator where the application of e-marketing by companies or business entities for MSMEs in North Aceh must provide complete information on promos or product descriptions to be sold. In general, well-known brands usually do e-marketing directly via e-mail, sms and whats app and also indirectly through social media. For example, the well-known brand traveloka, tiket.com in the field of ticketing services, they build closeness with customers through promotions that

they always offer via email when users or buyers become customers through their website.

SME's Competitiveness

Market competitive price has the highest indicator value followed by product quality and flexibility. Where all this indicator need to be hand n hand as to increase the competitive in business environment. The competitive in marke could be accomplished by abusness if a product always aware to quality assurance of their product as to sustain in market.

The Analysis of The Influence between variables

These are the initial model of influence between the variables and followed by the result of the construct which named loading factor.

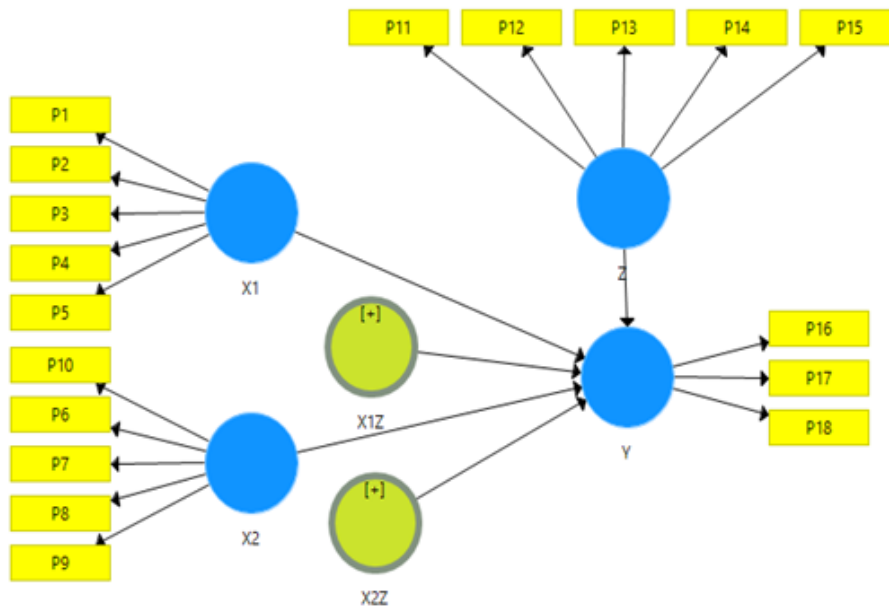


Fig 3: Initial Model of Influence Between Variables factor

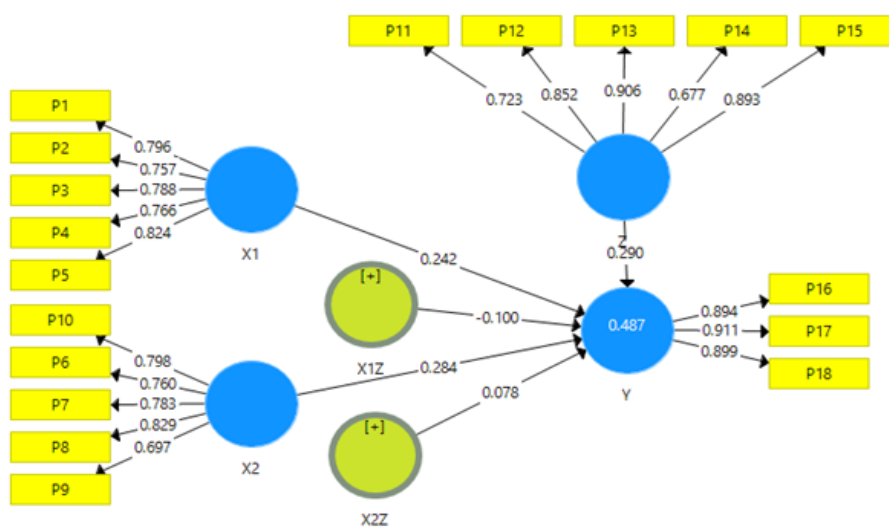


Fig 4: The value of Loading factor

By using the SmartPLS software, the loading factor value for each indicator on the variable is obtained as shown in Figure 4. From Figure 4, it is obtained that several indicators do not meet the requirements because the loading factor value is

below 0.7. The indicators are: P9 and P14. Therefore, these two indicators were removed from the model. Furthermore, a revised model is formed as shown in Figure 4.9. The calculation results with SmartPls are shown in Figure 4.10.

From Figure 4.10 it can be seen that all loading factors have a value of 0.7 and above, so all indicators are too qualified to

describe their respective variables. Furthermore, from the validation test and variable reliability as shown in Table 5.

Table 5: Validation test and Variable reliability

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracte (AVE)
SME'S Competitiveness	0.884	0.884	0.928	0.812
E-Marketing	0.876	0.887	0.916	0.732
Production Efficiency and E-Marketing	1.000	1.000	1.000	1.000
Production Efficiency	0.820	0.839	0.879	0.646
Product Innovation	0.846	0.845	0.890	0.619
Product Innovation and E-Marketing	1.000	1.000	1.000	1.000

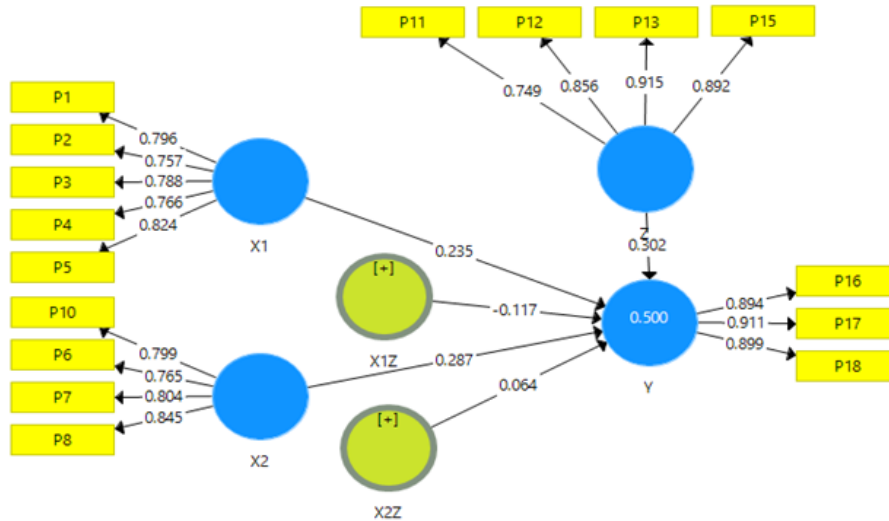


Fig 5: Revision loading factor

It can be seen that the validity and reliability in Figure 5 of the indicators on the variables have met the requirements as

the P9 and P 14 already eliminated.

Table 6

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ((O/STDEV))	P Values
E-Marketing → SME's Competitiveness	0.302	0.320	0.079	3.818	0.000
Production Efficiency & E-Marketing → SME'S Competitiveness	0.064	0.014	0.103	0.622	0.534
Production Efficiency → SME's Competitiveness	0.287	0.273	0.088	3.268	0.001
Product Innovation → SME'S Competitiveness	0.235	0.235	0.066	3.560	0.000
Product Innovation & E-Marketing → SME's Competitiveness	-0.117	-0.071	0.095	1.228	0.220

From Table 5 it can be concluded as follows

1. E-Marketing has a significant positive effect on the competitiveness of SMEs
2. E-Marketing does not significantly moderate the effect of Production Efficient on MSME Competitiveness
3. Production efficiency has a significant positive effect on the competitiveness of SMEs
4. Product innovation has a significant positive effect on the competitiveness of SMEs
5. E-marketing does not significantly moderate the effect of Product Innovation on MSME Competitiveness.

Conclusion

From the results of the study it can be concluded that:

1. E-Marketing has a significant positive effect on the competitiveness of SMEs in North Aceh. Based on the available data and by studying the experiences of well-known brands in Indonesia, it is true that the implementation of e-marketing has a very positive impact on increasing consumer purchasing power so that

2. they are able to create privileges for business actors who have the availability of e-marketing supported by other digital platforms.
2. E-Marketing does not significantly moderate the effect of Production Efficiency on MSME Competitiveness
3. Production efficiency has a significant positive effect on the competitiveness of SMEs. Through production efficiency by implementing efficient procurement so that the raw materials used to produce business entity products can be cheaper and still have superior quality so that they can have the same price as the market but with more profits for the business entity.
4. Product innovation has a significant positive effect on the competitiveness of SMEs. MSMEs in North Aceh based on research have made product innovation as something that can increase the competitiveness of local MSMEs. The innovations carried out cannot be separated from the function produced by the product which remains a determinant of the competitiveness of the product itself.

5. E-marketing does not significantly moderate the effect of Product Innovation on MSME Competitiveness. This is in accordance with the results where the direct influence of product innovation on business entities in North Aceh has been able to significantly increase the competitiveness of MSMEs in North Aceh.

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