Improving SMEs Production Performance through Local Brand and Augmented Reality: Evidence from Sumatera of Indonesia

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Abstract: This research aims to discuss the performance relationships of small-medium enterprise production mediated by local brand empowerment as well as investigates the role of technology adaptation of livelihood activities, fast-moving enterprise, and government policy support. This study involved 115 micro small business activists and medium respondents in the Sumatran region. A compound path test of SEM-PLS is used in this study to obtain data from the analysis of the path mediated by local brand empowerment, augmented reality preference, and acceptance of adaptive technology moderation for production performance enhancement. The findings indicate that fast-moving enterprise and government policy have a positive impact, while livelihood activities negatively impact local brand empowerment, and local brand empowerment negatively correlates to production performance. The direct stimulus of livelihood activities is meaningless, but government policy support is meaningful to the increased production of SMEs. The contribution of this study is found in the conceptual model of the acceptance of technological adaptation and optimization capabilities of the use of augmented local brand applications empowerment to increase the production of small and medium enterprises.

Keywords: Augmented Reality, Government Support Local Brand Empowerment, Product Performance

INTRODUCTION

Indonesia's economy is entering an era of dynamic and coherent diffusion in optimizing production performance. Small and medium-sized micro-enterprises (SMEs) have individual resources that create new opportunities and resource empowerment (Alvarez & Busenitz, 2007) by growing the potential for entrepreneurial value creation (Amit & Zott, 2001; Hitt et al., 2001). The growth of SMEs became the driving force behind the growth of commercial and social entrepreneurship (Austin et al., 2006; Mair et al., 2006) in the particular relationship between technological adaptation, innovation, and entrepreneurship (Fowosire et al., 2017). Efforts to empower local communities with technology bases play a key role in entrepreneurial talent and skills (Selladurai, 2016). Therefore, the empowerment of local communities with inventions can stimulate the upgrading of the production performance of SMEs.

Figure 1 informs that from the projected data, the problems that still arise in addition to the literacy of technology adaptation are also related to the empowerment of local brands from the activity of accessing household resources, the desire of businesses to grow fast, and the support of government policies in improving business production performance. From previous research by Uchehara (2017); Zada et al. (2019) remarked that the utilization of resources as livelihoods opens up rural areas of developing economies on improving the production

performance of SMEs, but different that is mentioned (Samah & Shaffril, 2018). Each volunteer organization has its power towards different climatic adaptation measures by intensifying its livelihood assets. Another thing discussed in this study is that the relationship between companies' desire to move quickly to grow can be found in one's entrepreneurial spirit.
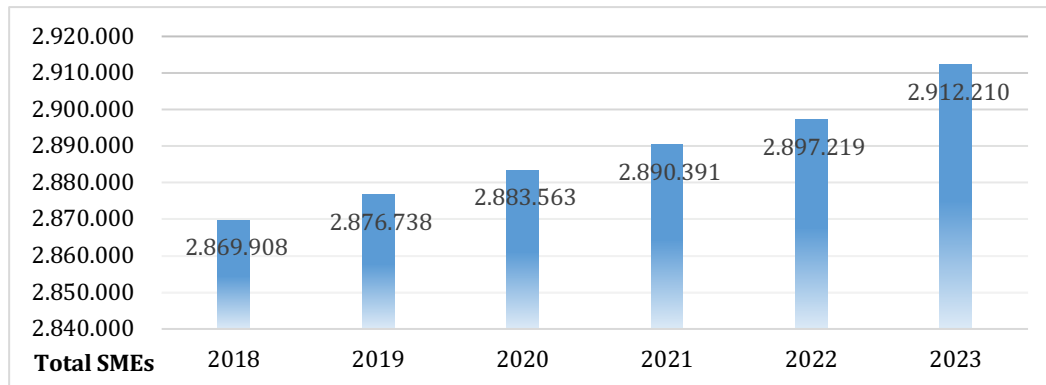
Figure 1. Projected SMEs in North Sumatra Region
Source: North Sumatra Cooperative and SMEs Office

According to Mishra and Zachary (2015), the process of the entrepreneurial progress movement uses a value creation framework consisting of two stages. The first stage of the business framework is that a desire for entrepreneurial intentions drives entrepreneurs. The second stage is incorporating entrepreneurial competencies to improve production performance. Similar things are also expressed (Acs et al., 2013) choosing to become an entrepreneur because of the desire to move forward and Dyer et al. (2008) trigger cognitive processes to generate new business ideas. This differs from Hill et al. (2002), which remarked that entrepreneurial barriers occur when SMEs are compelled to search for new opportunities to create, expand the client base, and promote deeper abilities through extra financial support. Therefore, this study contributes to offering the concept of community empowerment with the adaptation of local brand technology to mediate or fill the gap.

In addition to life strategies and companies moving forward, another thing discussed is the support of government policy to improve the production performance of SMEs. Government support provides positive stimulus in technology development assistance. According to Doh and Kim (2014); Howell et al. (2019); Hadiyati (2015); Mizrahi (2017) noted that improved the production performance of SMEs through the formulation of marketing planning strategies contributing to national economic growth. According to preliminary research by Tang et al. (2007), government support through marketing, research and development strategies in the business became positively related to the business performance of small companies. However, Chaston et al. (1999) revealed that introducing organizational learning into the SMEs sector is an exciting proposition that solely applies to large companies. In addition, Fornes et al. (2012) noted that for companies that are already labor-intensive funding, support for government policies is not crucial in regional, national and international expansion because it can better expand into international markets. From the inconsistency of the study, the gap provides conceptual solutions through

government policy support needed for large and small scales, primarily mediated by local brand empowerment and moderation analysis of technological adaptations to SMEs production performance.

Livelihood activities as individual strategies in maintaining the existence of livelihood, then the living strategy can utilize the social infrastructure that develops in society with technological adaptation. Beaudry and Pinsonneault (2005; 2010); Robinson et al. (2005) explained that the acceptance of technology is useful in increasing sales, knowledge, and performance of jobs in the field. Similar points are expressed by Luan et al. (2019); Rahman and Mannan (2018), which mentioned that consumers are increasingly bombarded with information technology media. The greater impact of technology adoption leads to consumers on perception and product decision-making. However, consequences resulting from users' connection to a virtual world will affect a person's actions in environmental adaptation (Bystrom et al., 1999; McCreery et al., 2013; Nowak & Biocca, 2003; Witmer & Singer, 1998). To fill this research gap, a real-time information technology adaptation service is required to offer dynamic engagement with connected consumers (Buhalis & Sinarta, 2019; Sinarta & Buhalis, 2018), and augmented reality media are useful in managing SMEs actors more efficiently and more precisely in planning product promotion costs (Bolesnikov et al., 2019) as well as giving rise to a sense of embodiment or confidence that can interfere with feelings to influence purchasing decisions (Slater et al., 2020). Therefore, the benefits of this research provide breakthroughs in SMEs productivity by contributing to technological adaptation and integrated into augmented reality applications for operational cost savings or product or service promotion costs.

This study differs from previous scholars since previous studies discussed more increasing business productivity supported solely by using capital (Baños-Caballero et al., 2010; García-Teruel & Martínez-Solano, 2007; Pais & Gama, 2015) and human resources (Aragón-Correa et al., 2008; Hayton, 2003; Ogunyomi & Bruning, 2016; Onkelinx et al., 2016; Sheehan, 2014). The purpose of this research certainly wants to contribute that the ability of SMEs to have a life strategy, move quickly in the business, and support government policies moderated by technology adaptation can increase the empowerment of local brands of communities mediated by augmented reality applications can increase resources other than human beings with additional technological science in increasing selling value and have competitive advantages.

METHODS

This study adopted an explanatory approach to testing the influence between individual variables. Independent variables consist of livelihood activities, fast-moving enterprise, government policy support, brand local empowerment, and augmented reality preference. Meanwhile, dependent variables are SMEs production performance as well as acceptance of adaptive technology mediation. As for the operating definition of independent, dependent, and mediation variables, and can be viewed in Table 1. All variables are provided in a Likert Point-5 scale (1= strongly disagree, 5=strongly agree).

Table 1. Variable Measurement Instruments

| Variable	Dimension/Indicator	Sources
Livelihood Activities	Human Capital Natural Resources Social Capital Financial Capital Physical Capital	(Chambers & Conway, 1992a)
Fast Moving Enterprise	Entrepreneurial spirit Transformation into a big business	(Al-Aali & Teece, 2014)
Government Policy Support	Local raw material resources SMEs intervention and escort Academic policy Applicative policy	(Doh & Kim, 2014)
Brand Local Empowerment	Consumer ethnocentrism Consumer patriotism Consumer nationalism	(Batra et al., 2000), (Steenkamp & Baumgartner, 1998)
Augmented Reality Preference	Quality and quality of information Communication process efficiency Flexibility, flexibility and tolerant of uncertainty from dynamic environments Sustainability of business productivity Work environment in business	(Pascoal et al., 2018)
Acceptance Adaptive Technology	Projecting virtual objects into reality Turn a catalog into a visual medium Transformation of promotional media Technology development adaptation Transactions through technology	(Technol. Adapt. Aging, 2004)
Production Performance SMEs	Production management Marketing management Financial management Business management Business continuity	(Hudson et al., 2001)

Data Collection and Sample Techniques

Questionnaires are used as the main instrument of research. To ensure the quality of our instruments, we provided conducts trials, validity, and reliability tests. Original English questionnaires and Indonesian translations, the items are carefully examined by the author to ensure that the author still retains the original meaning of the questionnaire. The samples were collected from SMEs in Sumatra from all fields. To produce robust statistics, we followed the rule of thumbs in Hair et al. (2011), who mentioned that the sample in the study was at least 45 (for 5 independent variables). Thus, the total sample used in this study is 115 SMEs. Questionnaires were distributed using structured surveys during the period October 2021 to December 2021 to 115 respondents, namely SMEs in Sumatra. We adopted purposive sampling techniques in selecting respondents with SMEs business criteria already issued products. The questionnaire consists of two parts. The first section contains questions about the demographic characteristics of respondents, including age, gender, income, business type. The second section

contains details of statements about livelihood activities, fast-moving enterprise, government policy support, brand local empowerment, augmented reality preference, acceptance of adaptive technology, and production performance SMEs. The data obtained is then processed using the Structural Equational Modelling-PLS method.

Conceptual Framework and Hypothesis
Based on this background and previous literature, this study proposes the following conceptual framework and hypothesis (see Figure 2).
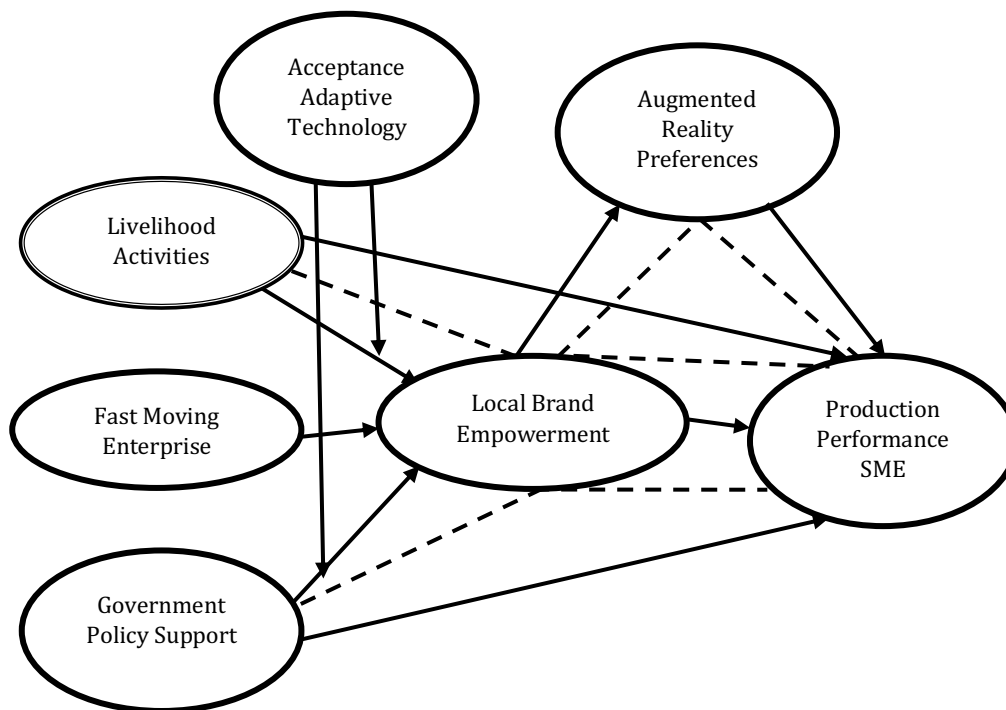
Figure 2. Conceptual Framework

Information:
⟶ : Direct effect
----▸ : Mediation effect

The following are the hypothesis proposed in this study based on Figure 2.
H1: Livelihood activities has a significant impact on brand local empowerment of SMEs
H2: Fast moving enterprise has a significant impact on local brand empowerment of SMEs
H3: Government policy has a significant impact on local brand empowerment of SMEs
H4: Acceptance adaptive technology has a moderating effect on livelihood
H5: Acceptance adaptive technology has a moderating effect on government policy on local brand empowerment of SMEs
H6: Local brand empowerment has a significant influence on augmented reality preference of SMEs

H7: Augmented reality preference has a significant impact on product performance SMEs

H8: Brand local empowerment has a significant impact on product performance of SMEs

RESULTS & DISCUSSION

Based on the results of the processing of research data, the characteristics respondents are drawn in Table 2.

Table 2. Characteristics of Respondents

Characteristics of Respondents	Amount	Percentage
Business Type		
Creative Industries	9	7.8
Trade	54	47
Services	27	23.5
Manufacturing (Raw Material Processing)	5	4.3
Other	20	17.4
Total	115	100
Last Education		
Senior High School	35	30.4
Bachelor Degree	28	24.3
Magister	42	36.5
Other	10	8.7
Total	115	100
Business Length		
<1 Years	37	32.2
1-5 Years	48	41.7
5-10 Years	10	8.7
>10 Years	20	17.4
Total	115	100
Average Operating Income Per Month		
< Rp 5,000,000	78	67.8
Rp 5.000,001 to Rp 25,000,000	26	22.6
Rp 25,000,001 to Rp 50,000,000	6	5.2
> Rp 50,000,000	5	4.3
Total	115	100

Based on Table 2, it can be known that the majority of SMEs are in the field of trade (47%). SMEs actors were eliminated by respondents with the last magister education of 36.5%. Meanwhile, judging by the length of the business, many SMEs are only standing around 1-5 years (41.7%), with the majority of SMEs earning a small amount of < Rp 5,000,000 per month (67.8%).

Reflective-Measurement Models Results
Validity and Reliability
Referring to Hair et al. (2011), reflective model bending consists of internal consistency reliability, indicator reliability, convergent validity, and discriminant

validity. Internal consistency reliability, composite reliability should be higher than 0.70 (in exploration research, 0.60 to 0.70 is considered acceptable). Indicator reliability, the value of others loading the intended variable indicator should be higher than 0.70. Convergent validity, AVE must be higher than 0.50. Discriminant validity, using HTMT criteria to assess the validity of discrimination in PLS-SEM where the trust interval of HTMT statistics should not include a value of 1 for all construction combinations. Based on Table 3, it appears that the model-reflective errant model meets the specified rule of thumb. To obtain the appropriate rule of thumb, several indicators are not included for further analysis (e.g., X1.2, X1.4, X1.5, X3.1, X3.2, X3.3, Z3.4, and Y1.4).

Table 3. Reflective-Measurement Models Results

Latent Variable	Indicator	Convergent Validity			Internal Consistency Reliability Composite Reliability	Discriminant Validity
		Loading	Indicator Reliability	AVE		HTMT confidence interval does not include 1
		> 0.70	>0.50	>0.50	0.60-0.90	
Adaptive Technology (Z2)	Z2.1	0.924	0.924	0.772	0.944	Yes
	Z2.2	0.868	0.868			
	Z2.3	0.921	0.921			
	Z2.4	0.922	0.922			
	Z2.5	0.745	0.745			
Augmented Reality (Z3)	Z3.1	0.949	0.949	0.890	0.960	Yes
	Z3.2	0.962	0.962			
	Z3.3	0.919	0.919			
Brand Local (Z1)	Z1.1	0.838	0.838	0.780	0.914	Yes
	Z1.2	0.927	0.927			
	Z1.3	0.882	0.882			
Fast Moving Enterprise (X2)	X2.1	0.983	0.983	0.814	0.897	Yes
	X2.2	0.813	0.813			
Government Policy (X3)	X3.4	0.950	0.950	0.577	0.713	Yes
Livelihood Activities (X1)	X1.1	0.781	0.781	0.547	0.827	Yes
	X1.3	0.835	0.835			
Product Performance (Y1)	Y1.1	0.936	0.936	0.657	0.900	Yes
	X1.2	0.919	0.919			
	X1.4	0.821	0.821			
	X1.5	0.854	0.854			

Structural Model Results
Collinearity Rating
Collinearity rating is based on VIF (inner VIF) value. The VIF value for each predictor should be higher than 0.20 (lower than 0.5) (Hair et al., 2011). In particular, in this study, several constructs act as predictors that will be assessed collinearity: (1) Livelihood Activities (X1), Fast Moving Enterprise (X2), and Government Policy (X3) as predictors of Brand Local (Z1); (2) Brand Local (Z) as a predictor of Augmented

Reality (Z3); and (3) Brand Local (Z), and Augmented Reality (Z3) as predictors of Product Performance (Y1). As seen in Table 4, all VIF values are already above 0.20 and below the threshold of 5. Therefore, linearity among predictor construction is not a critical problem in structural models.

Table 4. Inner VIF Rating

	Z2	Z3	Z1	X2	X3	X1	Y1
Adaptive Technology (Z2)			2.766				
Augmented Reality (Z3)							2.367
Local Brand (Z1)		1.000					2.591
Fast Moving Enterprise (X2)			2.416				
Government Policy (X3)			1.636				2.380
Livelihood Activities (X1)			3.328				1.400
Product Performance (Y1)							

Note(s): Adaptive Technology (Z2), Augmented Reality (Z3), Local Brand (Z1), Fast Moving Enterprise (X2), Government Policy (X3), Livelihood Activities (X1), Product Performance (Y1)

Structural Model Path Coefficients Rating
Path Coefficients Model
Bootstrap standard error allows calculation of t-values and p-values for all structural path coefficients. When the t values are greater than the critical value, we conclude that the coefficient is statistically significant in the probability of a particular error (that is, the level of significance). Table 5 shows that six hypotheses have t values greater than p values, so six hypotheses (H1, H2, H3, H6, H7, and H8) are supported. Meanwhile, two other hypotheses were rejected, namely Hypothesis 4 and Hypothesis 5.

Coefficient of Determination (R^2 Value)
The most common measure used to evaluate structural models is the coefficient of determination (R^2 value). This coefficient is a measure of the model's predictive power and is calculated as the quadratic correlation between the actual and predicted values of a particular endogenous construct. The R^2 value ranges from 0 to 1, with a higher level indicating a higher level of prediction accuracy. It is difficult to provide a rule of thumb for the value of R^2, because it depends on the complexity of the research model and the research discipline. While the R^2 value of 0.20 is considered high in disciplines such as consumer behavior. In scientific research that focuses on marketing problems, the R^2 value is 0.75; 0.50 or 0.25 for endogenous latent variables were used as benchmarks with high, moderate, or weak degrees (Hair et al., 2011; Henseler et al., 2009; Mueller et al., 2016). In this study, augmented reality (Z3) is influenced by the local brand (Z1) by 48.3%. Livelihood activities (X1), fast moving enterprise (X2), and government policy (X3) affect the

local brand (Z1) by 73.5%. In addition, augmented reality (Z3) and local brand (Z1) have an effect on product performance (Y1) by 75.1%. Thus, it can be concluded that exogenous constructs affect endogenous constructs with moderate and high scales (see Table 6).

Table 5. Structural Model Path Coefficients

	Path Coefficients	t-values	p-values	95% Confidence Intervals	Significance (p < 0.05)
H1. Livelihood Activities (X) -> Local Brand (Z1)	-0.167	1.334	0.183	[-0.371; 0.072]	No
H2. Fast Moving Enterprise (X2) -> Local Brand (Z1)	0.266	2.101	0.036	[0.022; 0.466]	Yes
H3. Government Policy (X3) -> Local Brand (Z1)	0.367	5.616	0.000	[0.224; 0.490]	Yes
H4. Moderation Effect 1 -> Local Brand (Z1)	-0.062	0.895	0.371	[-0.211; 0.083]	No
H5. Moderation Effect 2 -> Local Brand (Z1)	-0.089	1.385	0.167	[-0.212; 0.066]	No
H6 Local Brand (Z1) -> Augmented Reality (Z3)	0.695	7.130	0.000	[0.447; 0.836]	Yes
H7. Augmented Reality (Z3) -> Product Performance (Y)	0.226	2.687	0.007	[0.068; 0.386]	Yes
H8. Local Brand (Z1) -> Product Performance (Y)	0.675	8.159	0.000	[0.526; 0.812]	Yes

Table 6. R-Square

	R-Square	Level
Augmented Reality (Z3)	0.483	Medium
Local Brand (Z1)	0.735	Medium
Product Performance (Y)	0.751	High

The Result of f^2 Effect Size

The effect size test (f^2) enables the assessment of exogenous construct contributions to endogenous latent variable R^2. f^2 effect size has values of 0.02, 0.15, and 0.35 indicating a small, medium, or large effect of exogenous constructs on endogenous construction. The result of f^2 effect size is provided in Table 7.

This research provides empirical evidence about the influence of local brand empowerment on the optimization of SMEs production performance in Sumatra. Based on the results of the structural model path coefficient test (see Table 5), it appears that livelihood activities, fast-moving enterprises, and government policy

have a positive and significant influence on local brand empowerment. Livelihood activities are sustainable if they can overcome and recover from pressures and shocks to maintain or enhance his/her abilities and assets while not damaging the natural resources base (Chambers & Conway, 1992b; Scoones, 1998).

Table 7. The Effect Size (f²) Test

	Z2	**Z3**	**Z1**	**X2**	**X3**	**X1**	**Y1**
Adaptive Technology (Z2)			0.155				
Augmented Reality (Z3)							0.087
Local Brand (Z1)		0.935					0.707
Fast Moving Enterprise (X2)			0.111				
Government Policy (X3)			0.310				0.009
Livelihood Activities (X1)			0.032				0.044
Product Performance (Y1)							

Note(s): Adaptive Technology (Z2), Augmented Reality (Z3), Local Brand (Z1), Fast Moving Enterprise (X2), Government Policy (X3), Livelihood Activities (X1), Product Performance (Y1)

This affects the empowerment of local brands in SMEs in Sumatera. The movement of accelerated business, record SMEs who already have an entrepreneurial spirit, and will transform into large and sustainable businesses that help increase local brand empowerment. In line with Nguyen et al., 2015 who mentioned that government policy has an impact on the growth factor of SMEs. In line with that, government support will also increase the empowerment of local brands by SMEs in Sumatra. Another empirical evidence presented by this study is that the increase in the cultivation of local brands also affects the increase in augmented reality and production performance. Zanuddin and Mukhtar (2019) stated that the ability of entrepreneurs to understand customer needs is key to business sustainability. Local brand empowerment and complementary augmented reality understanding in understanding customer needs, which will ultimately improve the production performance of SMEs in Sumatra.

In addition to producing the above two empirical findings groups, this study does not support the moderation of adaptive acceptance of the technology on livelihood activities and government support for increased local branding. Adaptive acceptance of technology is seen as something dynamic that SMEs must also follow themselves. This indicates that adaptive acceptance of technology does not interfere with the causal relationship of livelihood activities and government support for increased local branding.

CONCLUSIONS

This study examines the relationship between livelihood activities, accelerated business movement, and government policy support on optimizing the production performance of small and medium-sized businesses mediated by the empowerment of local brands. The acceptance of adaptive technology in the research of this conceptual model moderates the relationship of community livelihood activities and government policy support on local brand empowerment efforts and augmented

reality preferen ces into mediation that is expected to contribute to the production performance of SMEs. The desire of SMEs to move quickly is positive, and government policy support is contributing positively to empowering the use of local brands. The results of the data are based on demographic factors of SMEs community livelihood activities spread across the Sumatra region there is an insignificant negative relationship to the empowerment of local brands and a direct relationship to the production performance of SMEs. Uneven dissemination of technological adaptation based on human, financial, natural, social, and physical indicators is a consideration in the ability to moderate adaptation relationships and government policy support on local brand empowerment, but local brand empowerment occurs positive relationships in optimizing the production performance of SMEs with mediated use of augmented reality applications. The development of application technology is growing widely to assist SMEs businesses in creating a competitive advantage in product marketing performance amid the surge of outside brands in global competition.

The development of micro and small, and medium enterprises has been widespread around the world, so the limitations of this research data taken are only focused on some areas of Sumatra. Other limitations in this conceptual model need to be more in-depth research on the development of augmented application implementation based on a longer time span, and the durability of application features can be adjusted to the level of need and development of the latest information quality. For further researchers expected from the above limitations, this study can be continued by expanding variables with augmented reality technology relationships that affect innovation capabilities local brand confidence in marketing optimization performance. Some variables that can be used as a reference for moderation are price factors, marketing strategies, or information systems. In addition, important advice in the dissemination of technology dissemination is about improving the quality of human resources for SMEs actors because the limitations of literacy in technology learning have not been evenly distributed, and differences in educational demographic background, social strata, physical and financial between regions scattered in Sumatra. This is in order to be an important concern for the empowerment of advanced local technology literacy to improve the standard of their lives – each of the resources owned.

REFERENCES

Acs, Z. J., Audretsch, D. B., & Lehmann, E. E. (2013). The knowledge spillover theory of entrepreneurship. *Small Business Economics*, *41*(4), 757–774. https://doi.org/10.1007/s11187-013-9505-9

Al-Aali, A., & Teece, D. J. (2014). International entrepreneurship and the theory of the (long-lived) international firm: A capabilities perspective. *Entrepreneurship: Theory and Practice*, *38*(1), 95–116. https://doi.org/10.1111/etap.12077

Alvarez, S. A., & Busenitz, L. W. (2007). The entrepreneurship of resource-based theory. In *Entrepreneurship: Concepts, Theory and Perspective* (pp. 207–227). https://doi.org/10.1007/978-3-540-48543-8_10

Amit, R., & Zott, C. (2001). Value creation in e-business. *Strategic Management Journal*, *22*(6–7), 493–520. https://doi.org/10.1002/smj.187

Aragón-Correa, J. A., Hurtado-Torres, N., Sharma, S., & García-Morales, V. J. (2008). Environmental strategy and performance in small firms: A resource-based perspective. *Journal of Environmental Management*, *86*(1), 88–103. https://doi.org/10.1016/j.jenvman.2006.11.022

Austin, J., Stevenson, H., & Wei-Skillern, J. (2006). Social and commercial entrepreneurship: Same, different, or both? *Entrepreneurship: Theory and Practice*, *30*(1), 1–22. https://doi.org/10.1111/j.1540-6520.2006.00107.x

Baños-Caballero, S., García-Teruel, P. J., & Martínez-Solano, P. (2010). Working capital management in SMEs. *Accounting and Finance*, *50*(3), 511–527. https://doi.org/10.1111/j.1467-629X.2009.00331.x

Batra, R., Ramaswamy, V., Alden, D. L., Steenkamp, J. B. E. M., & Ramachander, S. (2000). Effects of brand local and nonlocal origin on consumer attitudes in developing countries. *Journal of Consumer Psychology*, *9*(2), 83–95. https://doi.org/10.1207/s15327663jcp0902_3

Beaudry, A., & Pinsonneault, A. (2005). Understanding user responses to information technology: A coping model of user adaptation. *MIS Quarterly: Management Information Systems*, *29*(3), 493–524. https://doi.org/10.2307/25148693

Beaudry, A., & Pinsonneault, A. (2010). The other side of acceptance: Studying the direct and indirect effects of emotions on information technology use. *MIS Quarterly: Management Information Systems*, *34*(4), 689–710. h

Bolesnikov, M., Stijačić, M. P., Radišić, M., Takači, A., Borocki, J., Bolesnikov, D., Bajdor, P., & Dzieńdziora, J. (2019). Development of a business model by introducing sustainable and tailor-made value proposition for SME clients. *Sustainability (Switzerland)*, *11*(4). https://doi.org/10.3390/su11041157

Buhalis, D., & Sinarta, Y. (2019). Real-time co-creation and nowness service: lessons from tourism and hospitality. *Journal of Travel and Tourism Marketing*, *36*(5), 563–582. https://doi.org/10.1080/10548408.2019.1592059

Bystrom, K. E., Barfield, W., & Hendrix, C. (1999). A conceptual model of the sense of presence in virtual environments. In *Presence: Teleoperators and Virtual Environments* (Vol. 8, Issue 2, pp. 241–244). https://doi.org/10.1162/105474699566107

Chambers, R., & Conway, G. R. (1992a). Sustainable rural livelihoods: practical concepts for the 21st century. *IDS Discussion Paper*, *296*.

Chambers, R., & Conway, G. R. (1992b). Sustainable rural livelihoods: practical concepts for the 21st century. In *IDS Discussion Paper* (Vol. 296). Institute of Development Studies (UK).

Chaston, I., Badger, B., & Sadler-Smith, E. (1999). Organisational learning: Research issues and application in SME sector firms. *International Journal of Entrepreneurial Behaviour & Research*, *5*(4), 191–203. https://doi.org/10.1108/13552559910293146

Doh, S., & Kim, B. (2014). Government support for SME innovations in the regional industries: The case of government financial support program in South Korea. *Research Policy*, *43*(9), 1557–1569. https://doi.org/10.1016/j.respol.2014.05.001

Dyer, J. H., Gre gersen, H. B., & Christensen, C. (2008). Entrepreneur behaviors, opportunity recognition, and the origins of innovative ventures. *Strategic Entrepreneurship Journal*, *2*(4), 317–338. https://doi.org/10.1002/sej.59

Fornes, G., Cardoza, G., & Xu, S. (2012). The national and international expansion of Chinese SMEs: evidence from Anhui Province. *Journal of Chinese Entrepreneurship*, *4*(3), 221–242. https://doi.org/10.1108/17561391211262166

Fowosire, R. A., Elijah, O., & Fowosire, R. (2017). Technopreneurship: A View of Technology, Innovations and Entrepreneurship. *Type: Double Blind Peer Reviewed International Research Journal Publisher: Global Journals Inc*, *17*(7).

García-Teruel, P. J., & Martínez-Solano, P. (2007). Effects of working capital management on SME profitability. *International Journal of Managerial Finance*, *3*(2), 164–177. https://doi.org/10.1108/17439130710738718

Hadiyati, E. (2015). Marketing and government policy on MSMEs in Indonesian: A Theoretical Framework and Empirical Study. *International Journal of Business and Management*, *10*(2). https://doi.org/10.5539/ijbm.v10n2p128

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*, *19*(2), 139–152. https://doi.org/10.2753/MTP1069-6679190202

Hayton, J. C. (2003). Strategic human capital management in SMEs: An empirical study of entrepreneurial performance. *Human Resource Management*, *42*(4), 375–391. https://doi.org/10.1002/hrm.10096

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. *Advances in International Marketing*, *20*, 277–319. https://doi.org/10.1108/S1474-7979(2009)0000020014

Hill, J., Nancarrow, C., & Tiu Wright, L. (2002). Lifecycles and crisis points in SMEs: a case approach. *Marketing Intelligence & Planning*, *20*(6), 361–369. https://doi.org/10.1108/02634500210445419

Hitt, M. A., Ireland, R. D., Camp, S. M., & Sexton, D. L. (2001). Strategic entrepreneurship: entrepreneurial strategies for wealth creation. *Strategic Management Journal*, *22*(6–7), 479–491. https://doi.org/10.1002/smj.196

Howell, T. R., Noellert, W. A., MacLaughlin, J. H., & Wolff, A. W. (2019). The microelectronics race: The impact of government policy on international competition. In *The Microelectronics Race: The Impact of Government Policy on International Competition*. books.google.com. https://doi.org/10.4324/9780429312625

Hudson, M., Smart, A., & Bourne, M. (2001). Theory and practice in SME performance measurement systems. *International Journal of Operations and Production Management*, *21*(8), 1096–1115. https://doi.org/10.1108/EUM0000000005587

Luan, J., Shan, W., Wang, Y., & Xiao, J. (2019). How easy-to-process information influences consumers over time: Online review vs. brand popularity. *Computers in Human Behavior*, *97*, 193–201. https://doi.org/10.1016/j.chb.2019.03.028

Mair, J., Robinson, J., & Hockerts, K. (2006). Social entrepreneurship. In *Social Entrepreneurship*. https://doi.org/10.1057/9780230625655

McCreery, M. P., Schrader, P. G., Krach, S. K., & Boone, R. (2013). A sense of self: The role of presence in virtual environments. *Computers in Human Behavior*, *29*(4), 1635–1640. https://doi.org/10.1016/j.chb.2013.02.002

Mishra, C. S., & Zachary, R. K. (2015). The theory of entrepreneurship. In *Entrepreneurship Research Journal* (Vol. 5, Issue 4, pp. 251–268). https://doi.org/10.1515/erj-2015-0042

Mizrahi, S. (2017). Performance Management, Managerial Quality, and Government Performance: A Cross-Country Quantitative Analysis. *Public Policy and Performance Management in Democratic Systems*, 65–97. https://doi.org/10.1007/978-3-319-52350-7_4

Mueller, B. H., Lee, J. J.-Y. J. K. J.-S. J. J., Guest, G., MacQueen, K. M., Namey, E. E., Hair Jr, J. F., Sarstedt, M., Ringle, C. M., Bossuyt, S., Van Kenhove, P., Arnaud, A., Horta, H., Santos, J. M., Ponzi, L. J., Fombrun, C. J., Gardberg, N. A., Vakola, M., Bouradas, D., Ryan, G. W., … Akter, S. (2016). Australian community attitudes to privacy survey 2017. *Computers in Human Behavior*. https://doi.org/10.1145/272287.272299

Nguyen, Q. A., Sullivan Mort, G., & D'Souza, C. (2015). Vietnam in transition: SMEs and the necessitating environment for entrepreneurship development. *Entrepreneurship and Regional Development*, *27*(3–4), 154–180. https://doi.org/10.1080/08985626.2015.1015457

Nowak, K. L., & Biocca, F. (2003). The Effect of the agency and anthropomorphism on users' sense of telepresence, copresence, and social presence in virtual environments. *Presence: Teleoperators and Virtual Environments*, *12*(5), 481–494. https://doi.org/10.1162/105474603322761289

Ogunyomi, P., & Bruning, N. S. (2016). Human resource management and organizational performance of small and medium enterprises (SMEs) in Nigeria. *International Journal of Human Resource Management*, *27*(6), 612–634. https://doi.org/10.1080/09585192.2015.1033640

Onkelinx, J., Manolova, T. S., & Edelman, L. F. (2016). Human capital and SME internationalization: Empirical evidence from Belgium. *International Small Business Journal: Researching Entrepreneurship*, *34*(6), 818–837. https://doi.org/10.1177/0266242615591856

Pais, M. A., & Gama, P. M. (2015). Working capital management and SMEs profitability: Portuguese evidence. *International Journal of Managerial Finance*, *11*(3), 341–358. https://doi.org/10.1108/IJMF-11-2014-0170

Pascoal, R., Alturas, B., De Almeida, A., & Sofia, R. (2018). A survey of augmented reality: Making technology acceptable in outdoor environments. *Iberian Conference on Information Systems and Technologies, CISTI*, *2018-June*, 1–6. https://doi.org/10.23919/CISTI.2018.8399155

Rahman, M. S., & Mannan, M. (2018). Consumer online purchase behavior of local fashion clothing brands. *Journal of Fashion Marketing and Management: An International Journal*. https://doi.org/10.1108/jfmm-11-2017-0118

Robinson, L., Marshall, G. W., & Stamps, M. B. (2005). An empirical investigation of technology acceptance in a field sales force setting. *Industrial Marketing Management*, *34*(4 SPEC ISS.), 407–415.

Samah, A. A ., & Shaffril, H. A. M. (2018). Sustainable livelihood for a better Adaptation towards Climate Change among Small Scale Fishermen in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, *8*(1). https://doi.org/10.6007/ijarbss/v8-i1/3817

Scoones, I. (1998). Sustainable rural livelihoods: a framework for analysis. *IDS Working Paper*, *72*, 22. http://forum.ctv.gu.se/learnloop/resources/files/3902/scoones_1998_wp72 1.pdf

Selladurai, M. (2016). Conceptual framework on technopreneurship. *SELP Journal of Social Science*, *VII*(27), 92–97.

Sheehan, M. (2014). Human resource management and performance: Evidence from small and medium-sized firms. *International Small Business Journal*, *32*(5), 545–570. https://doi.org/10.1177/0266242612465454

Sinarta, Y., & Buhalis, D. (2018). Technology Empowered Real-Time Service. In *Information and Communication Technologies in Tourism 2018* (pp. 283–295).

Slater, M., Gonzalez-Liencres, C., Haggard, P., Vinkers, C., Gregory-Clarke, R., Jelley, S., Watson, Z., Breen, G., Schwarz, R., Steptoe, W., Szostak, D., Halan, S., Fox, D., & Silver, J. (2020). The Ethics of Realism in Virtual and Augmented Reality. *Frontiers in Virtual Reality*, *1*. https://doi.org/10.3389/frvir.2020.00001

Steenkamp, J. B. E. M., & Baumgartner, H. (1998). Assessing measurement invariance in cross-national consumer research. *Journal of Consumer Research*, *25*(1), 78–90. https://doi.org/10.1086/209528

Tang, Y., Wang, P., & Zhang, Y. (2007). Marketing and business performance of construction SMEs in China. *Journal of Business and Industrial Marketing*, *22*(2), 118–125. https://doi.org/10.1108/08858620710730230

Technology for Adaptive Aging. (2004). In *Technology for Adaptive Aging*. https://doi.org/10.17226/10857

Uchehara, D. F. O. (2017). Effect of Micro, Small and Medium Enterprises MSMEs in Sustainable Rural Development in Nigeria. *International Journal of Trend in Scientific Research and Development*, *Volume-1*(Issue-6), 622–634.

Witmer, B. G., & Singer, M. J. (1998). Measuring presence in virtual environments: A presence questionnaire. *Presence: Teleoperators and Virtual Environments*, *7*(3), 225–240. https://doi.org/10.1162/105474698565686

Zada, M., Shah, S. J., Yukun, C., Rauf, T., Khan, N., & Shah, S. A. A. (2019). Impact of small-to-medium size forest enterprises on rural livelihood: Evidence from Khyber-Pakhtunkhwa, Pakistan. *Sustainability (Switzerland)*, *11*(10). https://doi.org/10.3390/su11102989

Zanuddin, H., & Mukhtar, N. (2019). Local product brand image: A case study of small and medium enterprises in Muar, Johor. *International Journal of Supply Chain Management*, *8*(1), 183–187.