TECHNOPRENEURSHIP ON MARKET PENETRATION AND PRODUCT DEVELOPMENT IN MICRO AND SMALL ENTERPRISES

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Abstract

This study aims at identifying the factors that affect the application of technopreneurship on micro and small enterprises in Majalengka Regency. The factors include market penetration, new product development, pricing, product quality, innovation, promotion, distribution, and network and collaboration. Employing accidental sampling, 111 entrepreneurs were sampled to take a questionnaire from which the results were analyzed using descriptive and verification statistics. The research model analyzed using Partial Least Square method and assisted by Smart PLS3 software. It was found that the results of the analysis on technopreneurship indicated that new product development, market penetration, promotion, and network and collaboration had been done adequately. Meanwhile, pricing, product quality, innovation, and distribution had been done well. Technopreneurship has significant effect on innovation, product quality, promotion, marketing, market penetration, and product development strategy.

Keywords: market penetration; MSMEs; product development; technopreneurship; Majalengka Regency

INTRODUCTION

Majalengka regency is to be a strategic area in terms of economic growth of the eastern area of West Java due to the opening of Kertajati International Airport in the near future. It is necessary for the people to prepare for this situation of highly competitive market development. Micro and small enterprises have an important role in supporting economic growth by creating and distributing jobs across the nation (Nurach & Thawesaengskulthai, 2011). The products of micro and small enterprises in Majalengka Regency are diverse, from foods to bamboo/rattan crafts, clay roofs/bricks, garments (jeans and veils), balls, ball craftsmen, blacksmiths, batik artists, etc. That being said, entrepreneurs' ability to diversify and differentiate their products according to the market demand is still low. The lack of information regarding the trends of consumer needs causes local products to be uncompetitive. As a result, the entrepreneurs fail to perform effective marketing. In order to address this, a synergy between people is needed in many aspects of product marketing management to improve the products competitiveness.

On another note, a strategy formulation based on the analysis of the external and internal environment can result in the effective strategy of market penetration and new product development (Rusliati et al., 2018). Market penetration strategy is one of the strategies mostly adopted with most of organizations focusing on various aspects of market penetration (Yogo, 2013). The choice and implementation strategies, considering the business growth prospective, offer the potential for organizations to identify the most suitable routes, if they wish to establish strategies oriented towards business growth policies (Aguilera-Castro et al., 2016). Technopreneurship is the process organizational creativity it is also a process of main streaming innovation to continually find solution to important corporate problems and implementing the solutions to, in turn satisfying the economy or target (Fowosire et al., 2017). Technoprenership is a process of merging technology with entrepreneurial talent and skills (Suradi et al., 2017).

The technopreneurship development model for micro enterprises is intended to utilize the development potential of local agricultural products to be more optimal and improve their competitiveness in the market as well as to produce and market the products effectively to generate profits in order to take advantage of the technological advancement in business. In this case, micro and small enterprises are encouraged to innovate and pay attention to the market demands so that their best products can enter the market and have high competitiveness. The opportunity for SMEs in the developed markets to expand into and grow in emerging markets lies in their characteristics: (1) flexibility, (2) small size matter, and (3) closeness to customers (Khalil, 2017).

Technopreneurship is the application of innovative technical science and knowledge done individually or by a group of people. These people create and manage a business and take financial risk in order to achieve their goals and perspective (Dolatabadi & Meigounpoory, 2013). It is an entrepreneurship development that employs technology as a crucial part of production and overall business development process (Mulyaningrum et al., 2008). According to (Lembaga Pengembangan Pendidikan, 2015; Suparno et al., 2008), Technopreneurship must be successful in two main tasks, which are: 1) ensuring that the technology works in accordance with the target customer and (2) obtaining an optimum benefit. Technopreneurship aims at producing scientists and engineers who create new products, industries, and markets (Okorie et al., 2014).

Entrepreneurship development only deals with selling and obtaining profits optimally, while technopreneurship development is intended to utilize local potentials to produce specific superior products and commercialize them to a wider market. Technopreneurs are skilled in three areas, namely; applied creativity, thrive in responding to challenge, and looking for unconventional solutions. They experience challenges and create visions for solutions (Selladurai, 2016). Technopreneurs are therefore those who make money out of existing or new technologies, which may or may not have been developed by themselves (Depositario et al., 2011).

Micro and small enterprises are often faced with functional management challenges. Technopreneurship development, which combines the use of appropriate technology and entrepreneurship, is expected to increase the competitiveness of SMEs by creating local products based on the market needs. Collaboration between suppliers, entrepreneurs, and output markets is fundamental to ensure the availability of resources and markets. Furthermore, social network usage can also mediate the relationship between entrepreneurial orientation and SME growth (Eggers et al., 2017). The ability of SMEs to produce various processed products from local agricultural products in accordance with the market demands requires the diversification and differentiation of products.

Based on the discussion above on the condition of the society and SMEs in Majalengka Regency, they generally have certain characteristics. First, they are not doing a lot of product diversification and differentiation according to the market demands. Second, they do not make any attempt to optimize their production and marketing in order to have a high level of competitiveness. Third, they possess a strong entrepreneurial passion that has not been optimal developed. Technopreneurship for micro and small enterprises based on local agricultural products in Majalengka Regency may produce several benefits. First, it can develop a technology-based entrepreneurial passion. Second, it can increase the competitiveness of local agricultural products. Third, it can increase the number of technology-based entrepreneurs who can provide employment, income, and community welfare. Technopreneurship development can be carried out by designing technology-based production programs, marketing local products, and implementing business collaboration model. They cover all business activities, including understanding market demand, making products, meeting demands, and designing joint activities and financing.

Technopreneurship development is affected by product, price, promotion, place, and network and collaboration, which are also referred to as the critical success factors (Musa et al., 2017). (Rosly et al., 2015) explained that creativity has a significant relationship with technopreneurial intention. Utilization of appropriate technology in business development that is the rooted in an established entrepreneurial spirit should be able to maximize the process and results of the business unit that was raised (Siregar et al., 2020). Modern competitive economies are knowledge-based and innovation driven (Adeoti, 2019).

The implementation of technopreneurship has a positive and significant relationship to the performance of SMEs (Samuel Taiwo et al., 2021). A technopreneur is new age entrepreneur who makes use of technology to invent a new innovation and brings it to market (Fund et al., 2020). Techno-entrepreneurs use technology and make innovations that make a change in economy (Gurana et al., 2022). The concept of technopreneurship constitutes an interesting proposition for businesses that are willing to increase their level of innovativeness (Oyedele et al., 2020). The proposed hypothesis, there is an effect implementation of tecnopreneurship on market penetration, new product development, pricing, product quality, innovation, promotion, distribution, and network and collaboration.

METHODS

This study used a mixed method with an explanatory sequential design. The quantitative method was implemented in the form of a survey, while the qualitative method was implemented phenomenon logically. The data was collected using participatory observations, in-depth interviews, and questionnaires from the same source. In this study, the analysis unit was micro and small enterprises (SMEs) in 26 districts in Majalengka Regency. By using accidental sampling, 111 respondents were selected to be observed and interviewed, which include the Cooperative and Micro, Small, and Medium Enterprises officials of Majalengka Regency. The collected data was analyzed using descriptive and verification statistics with Partial Least Squares (PLS) and assisted by software SmartPLS3. The data is non parametrically assumed to mean that the data does not refer to one particular distribution. Convergent validity is tried by checking the reliability or validity of the indicators of each item through the loading factor value 0.5.

RESULTS

It was found that new product development was generally in the range of 40.54%-54.95%, which means that the entrepreneurs had implemented this strategy. The highest indicators in new product development were broadening key activities to more complex businesses since developing new products (54.95%) and gaining high growth by identifying new markets for new products that are related to previous products (49.55%). This shows that new product development had been carried out sufficiently by the entrepreneurs. Additionally, the indicator that fell below average was new product development targets are carried out for certain customer groups.

Market penetration was generally in the range of 51.35%-77.48%, which means that the entrepreneurs had implemented it. The highest indicators in market penetration were market development to maintain competition and market expansion (77.48%) and product sales for different customer groups (66.67%). Pricing has several indicators, namely price points that benefit the customers to maintain and obtain customers, product quality that conforms with customer expectations, low prices are inappropriate if the customers consider the quality of the product to be substandard, and competitors and customers monitoring to get the expected profit. Pricing was generally in the range of 55.86%-68.47%, which means that the entrepreneurs had implemented this strategy. The highest indicators in pricing were price points that benefit the customers to maintain and obtain customers (68.47%) and competitors and customers monitoring to get the expected profit (65.77%).

Product quality was generally in the range of 67.57%-83.78%, which means that the entrepreneurs had implemented this strategy. The highest indicators in the product quality were consistent product quality standards (83.78%) and improving product quality as a result of increasing customer expectations, competition, and government regulations (78.38%). Innovation was generally in the range of 60.36%-92.79%, which means that the entrepreneurs had implemented it.The highest indicators were the production process is always made more efficient (92.79%) and products are always developed according to consumer tastes (81.08%). Promotion was generally in the range of 47.75%-63.06%, which means that the entrepreneurs had implemented it. The highest indicators were participating in events to display products (41.44%) and promotion using discounted prices (36.94%).

Distribution was generally in the range of 56.76%-72.97%, which means that the entrepreneurs had implemented itwell. The highest indicators were product sales outside local area (72.97%) and products are always available when needed (69.37%). Network and collaboration were generally in the range of 14.41%-83.78%, which means that the entrepreneurs had not had broadnetwork and collaboration.The highest indicators were raw materials can be easily obtained (51.35%) and good relationships with customers (44.14%).

Technopreneurship has several indicators, namely running a modern business based on technology, being creative in producing strong products, knowing the weaknesses of competitors in creating products, associating with the community, finding creative solutions to every problem faced, utilizing internet-connected mobile phones to support business progress, using software for financial recording activities, always obeying the plan and the time limit set. The following paragraph is an elaboration based on the results of data processing. Technopreneurship was generally in the range of 0%-82.88%, which means that technopreneur already existed but there were some indicators that were still lacking, including the use of software, running a business with technology, and using mobile phones for business.

The measurement model for validity and reliability test, the coefficient of model determination, and the coefficient for the equation model, can be seen in Figure 1.
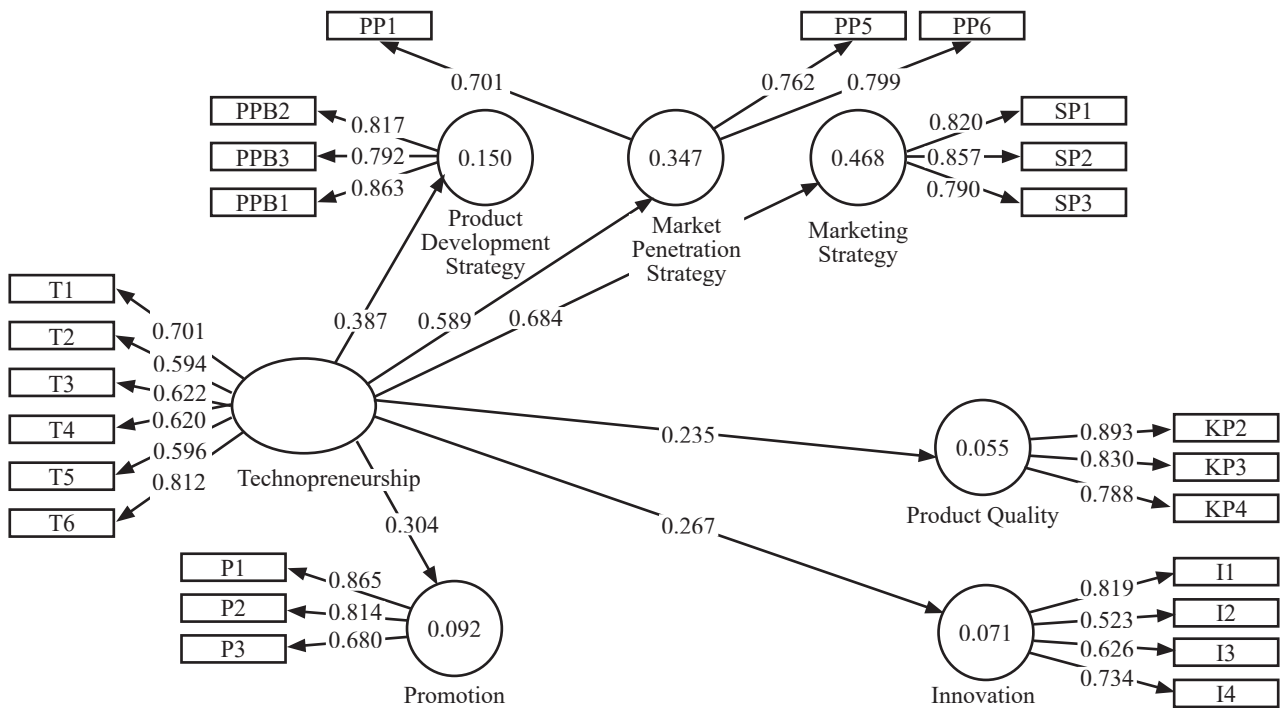
Source: Data processed, 2022

Figure 1. Outer Test Results of the Revised Model

Discriminant validity was done by looking at the cross-loading value shows the magnitude of the correlation between each construct and its indicators from other block constructs. The model has good discriminant validity, because the square root of the average variance extracted for each construct was greater than the construct in the model. The results were shown in Table 1.

Table 1. Extracted Square Root Value of AVE

	Innovation	Product Quality	Promotion	Marketing Strategy	Market Penetration Strategy	Product Development Strategy	Technopreneurship
Innovation	0,685						
Product quality	0,071	0,838					
Promotion	0,446	-0,084	0,790				
Marketing strategy	0,026	0,079	0,168	0,823			
Market Penetration Strategy	0,389	0,102	0,388	0,415	0,755		
Product Development Strategy	0,695	-0,002	0,491	0,162	0,531	0,825	
Technopreneurship	0,268	0,235	0,304	0,684	0,589	0,388	0,662

Source: Data processed, 2022

Reliability assessment can also be done by observing composite reliability, which is a statistical technique to test the real value of the variables provided that the reliability value of composite reliability is always higher than the value of Cronbach's Alpha.

Table 2. Value for Cronbach's Alpha, Composite Reliability, and AVE

	Cronbach's Alpha	Composite Reliability	AVE
Innovation	0,656	0,775	0,469
Product quality	0,813	0,876	0,702
Promotion	0,696	0,832	0,624
Marketing strategy	0,761	0,863	0,677
Market Penetration Strategy	0,624	0,799	0,570
Product Development Strategy	0,764	0,864	0,680
Technopreneurship	0,746	0,822	0,438

Source: Data processed, 2022

Table 2 shown that all constructs have an AVE value > 0.50, except for the dimensions of innovation and technopreneurship, where the composite reliability value > 0.70 and Cronbach's alpha > 0.60 for all variables. Although there are several variables that have an AVE value of 0.50, it can still be concluded that the construct has good reliability because it is represented by the values of the other 2 tests. The significance assessment of the prediction model in testing the inner model can be observed from the P-Value value. The results are shown in Table 3.

Table 3. P-Value Results (Bootstraping)

	T Statistics	P Values	Result
Technopreneurship → Inovation	3,164	0,002	Significant
Technopreneurship → Product Quality	2,123	0,034	Significant
Technopreneurship → Promotion	3,436	0,001	Significant
Technopreneurship → Marketing Strategy	13,541	0,000	Significant
Technopreneurship → Market Penetration Strategy	8,897	0,000	Significant
Technopreneurship → Product Development Strategy	4,472	0,000	Significant

Source: Data processed, 2022

DISCUSSIONS

Micro and small enterprises in Majalengka Regency had implemented new product development strategy. The highest indicators were broadening key activities to more complex businesses since developing new products and gaining high growth by identifying new markets for new products related to previous products. However, the problem with product development is the absence of new product development targets for certain customer groups. Market penetration had been implemented, with the highest indicators being market development to maintain competition and market expansion and product sales for different customer groups. In spite of this, increasing sales by offering new products to markets that have not yet taken place. This result was in accordance with (Yogo, 2013), who found that market penetration strategy is one of the most adopted growth strategies with most oforganizations focusing on various aspects, including aggressive promotion, relationship marketing, service positioning, and market segmentation.

Pricing strategy had been implemented, with the highest indicators being price points that benefit the customers to maintain and obtain customers and competitors and customers monitoring to get the expected profit. However, the customers complained that some products had not met the expected quality. Product quality had been maintained, with the highest indicators being consistent product quality standards and improving product quality as a result of increasing customer expectations, competition, and government regulations. However, one indicator was still lacking, namely customer satisfaction and loyalty through quality products.

Innovations had been made, with the highest indicators being the production process is always made more efficient and products are always developed according to consumer tastes. However, innovation in packaging was still not done regularly. Promotion had been carried out but the intensity is still lacking. The highest indicators include participating in events to display products and promotion using discounted prices. However, one indicator was still lacking, namely collaborating with similar companies to promote products.

Distribution had been done well, with the highest indicators being product sales outside local area and products are always available when needed. However, the indicator of location of sales was still particularly problematic because it was hard to obtain. Network and collaboration had not been very broad. The highest indicators include raw materials can be easily obtained and good relationships with customers. The problem that occurred was the lack of government support provided for the enterprises.Technopreneurship had been implemented well. The highest indicators of technopreneurship include always obeying the plan and the time limit set and finding creative solutions to every problem faced. This highlight that technopreneurship has already existed but there were some indicators that were still lacking, including the use of software, running a business with technology, and using mobile phones for business. Mastery of technology can lead to low product competitiveness (Mopangga, 2017).

Technopreneuship has significant effect on innovation, product quality, promotion, marketing, market penetration, and product development strategy. These mean technopreneurship as collaboration between business and application of technology, both in the process, system, parties involved, and the resulting product (Lembaga Pengembangan Pendidikan, 2015) need for business sustainability. Technopreneurship is either involved in delivering an innovative hi-tech product or makes use of hi-tech in innovative way to deliver its product to the consumer, or both (Fowosire et al., 2017). The results of this study strengthen the statement (Siregar et al., 2020), that the use of technology was necessary for business development. Increasingly fierce competition in the future, requires MSME's in Majalengka to be friendly to technology.

Based on the characteristics of the respondents, we obtained information that 64% of the respondents were above 37 years old and 86 % had high school education and below, with a length of business of more than 5 years. It showed that the development of technopreneurship for MSMEs requires strong effort, because entrepreneurs were not from millennial generation who were familiar to technology (Fund et al., 2020). However, entrepreneurs have sufficient business experience, so that they understand the business experience and condition they have been running on. The use of technology is needed for business development to meet demands of increasingly fierce competition in the future (Siregar et al., 2020). Micro and small entrepreneurs in Majalengka are required to be familiar to technology (Samuel Taiwo et al., 2021), they also support innovation, product quality, promotion, and formulation of marketing strategies, therefore, it has an impact on improving performance (Gurana et al., 2022); (Oyedele et al., 2020).

New product development must always be carried out, both with those which are related to current products and those that were completely new for the company for new customers. Market penetration can be done by means of new marketing, such as the use of social media. It does not only increase sales in the current market segment, but also marketing; therefore, sales levels will also increase better and market segments become wider. Better branding, labelling, and packing, such as the inclusion of PIRT (Pangan Industri Rumah Tangga) permits, halal, and expired dates (for food and beverages) are also expected to support market development efforts.

Improvement of product quality needs to be done continuously due to increasing customer expectations for the products purchased and the demand of competition. Product quality needs to be standardized to be able to ensure satisfaction and increase customer loyalty. Likewise, packaging innovations must be carried out regularly. Discount programs for customers, participation in events to showcase products, collaboration with business partners are efforts that need to be made in order to not only increased sales, but also invite new potential customers. Running a technology-based business (Adeoti, 2019), understanding competitors' weaknesses in creating products, utilizing internet connected smartphones to support business progress, using software for financial records also needed to be improved for business development.

CONCLUSIONS

This study draws several conclusions. First, it was found that new product development, market penetration, promotion, and network and collaboration have been done adequately, while pricing, product quality, innovation, and distribution had been done well. The room for improvement lies on customer-oriented new product development and product quality, different marketing, periodical innovation, promotional collaboration, more strategic location of sales, government support, software for financial records, and information technology for business. Second, it was revealed that technopreneurship have significant effect to innovation, product quality, promotion, marketing, market penetration, and product development strategy. The results of this study further strengthen the importance of technopreneurship in business sustainability.

REFERENCES

Adeoti, J. 2019. Technopreneurship and National Development: Powering Businesses and the Economy with New Technologies. December.

Aguilera-Castro, A., Entramado, V. V. 2016. Modelo Para La Formulación De Estrategias Orientado Al Crecimiento Empresarial De Las Pymes. Revistas.Unilibre.Edu.Co, 12(2), 30–40. https://revistas.unilibre.edu.co/index.php/entramado/article/view/432

Depositario, D. P. T., Aquino, N. A., & Feliciano, K. C. 2011. Entrepreneurial Skill Development Needs of Potential Agri-Based Technopreneurs. J. ISSAAS, 17(1).

Dolatabadi, R. V., & Meigounpoory, M. R. 2013. Effective Determinants of Corporate Nano-Technopreneurship Process in Active Technological Knowledge Base Firms. International Journal of Academic Research in Economics and Management Sciences, 2(5). https://doi.org/10.6007/ijarems/v2-i5/350

Eggers, F., Hatak, I., Kraus, S., & Niemand, T. 2017. Technologies That Support Marketing and Market Development in SMEs—Evidence from Social Networks. Journal of Small Business Management, 55(2), 270–302. https://doi.org/10.1111/jsbm.12313

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).

Fund, N., Africa, S., & Edition, N. 2020. Technopreneurship in South Africa.

Gurana, M., Bba, S., & Pradesh, A. 2022. Empirical Study on Technopreneurship and Technology Based Companies in India. 7(3).

Khalil, M. 2017. Expansion of SMEs into Emerging Markets. Research Centre for International Trade Management.

Lembaga Pengembangan Pendidikan, K. dan H. A. 2015. Technopreneurship. In Thirty Years Hundred Stories. https://doi.org/10.1355/9789814695350-101

Mopangga, H. 2017. Technopreneurship *Untuk Pembelajaran dan Pemberdayaan Ekonomi Lokal di Provinsi Gorontalo*. Seminar Nasional & Call For Paper, FEB Unikama, 326–339.

Mulyaningrum, Buyung, E. bt, & Jabar, J. 2008. Food Technology for Small-scale Economic Activities to Address the Aim of Supporting Rural Entrepreneurs (Case Study on Food Processing Industries in Malacca State). Proceedings of MUCET (Malaysian Tecnical Universities Conference on Engineering and Technology), 1, 1–7.

Musa, H., Azmi, F. R., Mohamad, N., Shahbodin, F., & Fam, S. 2017. Creative Industry Learning And Development Towards Craft Product: Critical Success Factors Of Technopreneurship. Proceedings of Mechanical Engineering Research Day, May, 246–247.

Nurach, P., & Thawesaengskulthai, D. 2011. Innovative Performance Management Model for SME in Thailand. 1(5), 1–16.

Okorie, N. N., Kwa, D. Y., Olusunle, S. O. O., Akinyanmi, A. O., & Momoh, I. M. 2014. Technopreneurship: an Urgent Need in the Material World for Sustainability in Nigeria. European Scientific Journal, ESJ, 10(30), 59–73.

Oyedele, O. O., Paul, I. O., Ganiyu, I. O., Derera, E., & Oyero, M. A. 2020. Technopreneurship as a Pathway to Sustainable Business Performance: Empirical Evidence from SMES in Nigeria. The Journal of Accounting and Management, 10(2), 21.

Rosly, H. E., Junid, J., Lajin, N. F. M., & Rahim, H. L. 2015. The Relationship of Creativity and Technopreneurship Intention. International Academic Research Journal of Social Science, 1(1), 8–15. www.iarjournal.com

Rusliati, E., Mulyaningrum, M., & Sufyani, M. A. 2018. Development Strategies of Micro Business in Majalengka Regency. Trikonomika, 17(2), 101. https://doi.org/10.23969/trikonomika.v17i2.1050

Samuel Taiwo, A., Esther Feyisayo, A., & Dorcas, A. 2021. Technopreneurship and Performance of Women Entrepreneurs in Small Scale Enterprise, a Study of Selected Firms in Ado Odo Ota. International Journal of Humanities & Social Sciences Published by Cambridge Research and Publications IJHSS ISSN, 22(4), 149.

Selladurai, M. 2016. Conceptual Framework on Technopreneurship. SELP Journal of Social Science, VII(27), 92–97.

Siregar, D., Purnomo, A., Mastuti, R., Napitupulu, D., Sadalia, I., Sutiksno, D. U., Putra, S. H., Sahir, S. H., Revida, E., & Sinarmata, J. 2020. Technopreneurship. *Strategi & Inovasi*. Yayasan Kita Menulis.

Suparno, O., Hermawan, A., & Syuaib, M. F. 2008. Technopreneurship. RAMP, IPB, Bogor.

Suradi, S., M. Yasin, R., & Rasul, M. S. 2017. Increasing Technopreneurs For A Developing A Nation: The Majlis Amanah Rakyat (MARA) Experience. Journal of Technical Education and Training, 9(1), 73–86.

Yogo, N. A. 2013. Growth Strategies Adopted by Small and Medium Business Enterprises in Oyugis Town, Homa Bay County, Kenya. International Journal for Management Science and Terchnology, 3(4), 25–30.