



Rural Economy and Digital Transformation in Driving Sustainable Development

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Abstract. This research examines how the transition from conventional business to online business can affect MSME business in rural economy of Sleman Regency. The results of the study show that website ownership and digital payment systems encourage the expansion of the MSME market. Digitalization has brought consumers closer to buyers through information that can be accessed widely. The ease of transactions driving consumer spending and increase the demand for goods. Most MSMEs in Sleman Regency have used the internet to support their businesses. However, this utilization is sub optimal. The business processes carried out merely on conventional models using of digital technology, especially as a medium of communication with consumers.

Keywords: rural economy, digital economy, MSMEs, sustainable development.

1 Introduction

The principle of sustainable development is the key to building a good, quality and sustainable future. One of them is providing increased worker skills which further increases competitiveness so that community welfare increases. The principles of sustainable development prioritize social equality and justice. This means that the benefits of development must be distributed and felt fairly across all levels of society, so that no group is left behind or suffers from inequality. Indonesia still faces challenges in accelerating the reduction of poverty levels in society. On the other hand, rural areas have various potentials that need to be managed into value-added activities and products in order to encourage increased income and welfare of local [1]. Economic empowerment of rural communities requires the support of the role of entrepreneurs along the value chain of the product or commodity being developed, both in the production subsystem (groups of farmers, breeders, fishermen, craftsmen), processing, marketing, and supporting subsystems.

Rapidly developing digitalization is closely related to the need for a workforce with digital expertise and skills, but existing education and training is not enough to meet the demand for digital skills that meet needs [2]. If this continues to happen, it could cause gaps in the development of technological progress [3] resulting in inequality in the economic, educational and social welfare sectors. The digital and information divide has become an issue in rural communities [4]. It is important for the government to provide telecommunications and internet infrastructure to connect villages. This is an effort to make the population literate in information and communication technology, so that they are able to educate themselves and make people's lives prosperous.

The digital divide arises due to issues of connectivity and digital inclusion [5]. Gaps arise because not all individuals and communities, including the most disadvantaged, benefit from smart and digital services from access to fast and reliable internet connections. Limited

geographic conditions cause rural areas to be isolated, resulting in difficulties in improving infrastructure and investing in connectivity and network [6]. The impact is rural digital exclusion and a lack of ability to adapt technology quickly [4]. Rural businesses still have obstacles, especially access to quality broadband and digital services. In particular, lower connectivity can hinder companies from adopting new technologies, innovation, business development, and digital internationalization [7].

The aim of this research is to review the main obstacles and opportunities for rural businesses in the digital era and to enhance their digital growth. This is important because rural businesses can play an important role in a country's economic growth [8]. When businesses grow, they contribute to increasing national income, increasing taxes that can be used for infrastructure development and public services, and increasing people's purchasing power.

2 Literature Review

Rural economy is an economic system that focuses on economic activities carried out in rural areas. The rural economy is generally dominated by the agricultural, livestock, fisheries and other economic activities related to natural resources and primary production activities. The rural economy often involves micro, small and medium enterprises (MSMEs) which are the backbone of the economy in the area. Meanwhile, digital transformation refers to the use of digital technology and the adoption of digital innovation [9]. Digital transformation has changed the way of doing business and provided new opportunities and challenges in economic development, including in the rural sector. Digital transformation involves the application of information and communication technology (such as the internet, e-commerce, social media and other digital applications) to increase efficiency, competitiveness and market access for business actors. Digital transformation also affects the way products or services are produced, distributed and marketed [2].

The digital economy is considered one of the keys to a sustainable economy that builds the national economy to be stronger, more inclusive and collaborative. However, on the other hand, there is a positive side that has emerged, namely the acceleration of digital technology development. Technology is only available to those who can access it. With the various conveniences offered by online activities, a new problem has emerged, namely the digital divide, both between regions and between social strata. If linked to the UN's Sustainable Development Goals (SDGs), the direction of the digital divide is one of the obstacles to modernizing villages and their communities through digital technology. The digital divide is very important for the achievement of several SDGs, although there is no specific SDG that directly addresses the problem of inequality and poverty by overcoming the digital divide [3].

Various studies on the digital economy have been carried out over the last few years, especially in relation to economic development. Various perspectives emerge, the digital economy plays an important role in many aspects, such as high-quality development [10], market risks [11], and economic growth [8]. However, Digital transformation also presents challenges for rural economies, including gaps in technology access, limited digital infrastructure, and a lack of digital skills among rural businesses [12].

It is believed that the demand for workers with digital technology skills will increase in the coming years. This is supported by the business sector, public organizations and government institutions which are carrying out digital transformation for service operations. The problem is, there is still a gap in the need and availability of competent workers, especially in rural

businesses. Low digital skills cause the competitiveness of rural companies to be lower than urban companies [13]. The dominance of the elderly workforce in rural areas is also a challenge in developing the rural economy, because this age group has low levels of literacy and digital skills. Research findings clearly illustrate that the digital gap related to digital literacy still dominates in rural area [14]. This is caused by the lack of digital skills and the training obtained to improve these skills.

Therefore, it is important for the government, educational institutions and related parties to support the adoption of digital technology in rural areas through adequate policies, training and infrastructure. In facing digital transformation, rural economies need to take advantage of the opportunities offered by digital technology to increase the competitiveness, prosperity and sustainability of the rural sector [15]. With the right strategy and comprehensive support, the rural economy can grow and develop inclusively in the ever-changing digital era.

3 Research Methods

The research method was carried out empirically in order to confirm its theoretical aspects, which were mainly based on a quantitative framework of estimation of cross section data from 200 MSMEs in Sleman Regency. The sampling technique used purposive random sampling with the aim of fulfilling the representativeness of the data which includes factors of age, gender, education, and line of business. This study uses the Ordinary Least Squares analysis to estimate how the variables influence online business (ONLINE), website ownership (WEB), human resources (HUMAN), transactions using QRIS (QRIS), other digital financial transactions (PAY) on sales value (OMZET). MSMEs. The research model is as in the following equation.

$$OMZET = \alpha_0 + \alpha_1 ONLINE + \alpha_2 WEB + \alpha_3 HUMAN + \alpha_4 QRIS + \alpha_5 PAY + \varepsilon \quad (1)$$

The stages of the research were carried out by testing the hypothesis and testing the classical assumptions. Hypothesis testing uses the t test to determine the significance of the effect of the independent variable on the dependent variable. Furthermore, the classical assumption test includes multicollinearity test, heteroscedasticity test, and autocorrelation test.

4 Results and Discussion

This research examines how the transition from conventional business to online business can affect MSME business in Sleman Regency. The results of the study show that website ownership and digital payment systems can encourage the expansion of the MSME market. Digitalization has brought consumers closer to buyers through information that can be accessed widely. The ease of transactions also encourages consumer spending so that the demand for goods increases.

Table 1. Regression results

Dependent Variable: OMZET

Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.28119	0.235390	60.67033	0.0000
ONLINE	0.090441	0.307846	0.293785	0.7696
WEB	0.810072	0.304806	2.657670	0.0092
HUMAN	0.291994	0.283539	1.029820	0.3057
QRIS	0.478160	0.249120	1.919399	0.0579
PAY	0.462898	0.237671	1.947642	0.0544
R-squared	0.243739	Mean dependent var		14.91394
Adjusted R-squared	0.204351	S.D. dependent var		1.116188
S.E. of regression	0.995630	Akaike info criterion		2.886141
Sum squared resid	95.16288	Schwarz criterion		3.040551
Log likelihood	-141.1932	Hannan-Quinn criter.		2.948667
F-statistic	6.188073	Durbin-Watson stat		1.620576
Prob(F-statistic)	0.000052			

Table 2. Multicollinierity test

Variance Inflation Factors

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.055408	5.701376	NA
ONLINE	0.094769	8.030644	1.417173
WEB	0.092906	2.717987	1.945226
HUMAN	0.080394	3.811775	2.055369
QRIS	0.062061	3.631183	1.566393
PAY	0.056488	2.393347	1.407851

Table 3. Heteroskedaticity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.281143	Prob. F(5,96)	0.2784
Obs*R-squared	6.380338	Prob. Chi-Square(5)	0.2709
Scaled explained SS	9.408242	Prob. Chi-Square(5)	0.0938

Table 4. Autocorreation test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.787214	Prob. F(2,94)	0.1731
Obs*R-squared	3.736549	Prob. Chi-Square(2)	0.1544

MSMEs that only do online business without paying attention to innovation in promotions and ease of transactions have not been able to increase sales turnover. Limited information and payment methods cause products to be less attractive to consumers. The impact is that the online business being run has not been able to encourage higher sales turnover.

Every company realizes that the use of technology, especially the internet, has changed the interaction process between companies and consumers. Consumer behavior has shifted from being traditional to relying on digital technology [16]. It is undeniable that the use of the internet including web sites and social media provides benefits for companies [17] such as increasing demand, better consumer relations, increasing new customers and the ability to reach consumers on a global scale [18]. Digital infrastructure has transformed many rural enterprises have changed the way of doing business such as online retail activities, online payment systems, online accounting tools, and so on.

Apart from technology developing rapidly, people's behavioural patterns in carrying out economic activities have indeed undergone major changes. One example that can be easily seen is that people are becoming more and more fond of carrying out online transactions. This is also accompanied by an increasing number of companies making digital transformation the centre of their business activities, both in marketing, payments, customer service and so on.

Innovation in the digital economy sector is an important key in supporting the success of digital transformation strategies. The government itself has currently innovated in creating digital-based payment systems, such as QRIS, BI FAST, SNAP. In fact, this step has received a positive response from the public, where the value of digital transactions continues to increase rapidly. In order to support digital transformation in the economic sector, the government continues to strive to build regional connectivity at the ASEAN level. One of them is cross-border payments such as cross-border QR cooperation between Indonesia and Thailand.

5 Conclusions

Most MSMEs in Sleman Regency have used the internet to support their businesses. However, this utilization is not yet optimal. The business processes carried out still rely on conventional models with a touch of the use of digital technology, especially as a medium of communication with consumers. There are still few who utilize digital technology, especially the internet, to support the production process, for example to search for raw materials or production equipment. There is a possibility that a company has not utilized digital technology, especially the internet, optimally because of the scope and size of the company. If it is estimated that the company will have to spend more effort than the convenience obtained, then the company will not use and utilize internet technology.

Security concerns and potential payment problems are several factors that prevent MSME entrepreneurs from immediately adopting and utilizing the internet optimally. It is necessary to

build a positive perception regarding the usefulness of digital technology, especially the internet, in running a business, disseminating information regarding the convenience it offers. Sufficient training is also needed for MSME entrepreneurs to be able to use the internet, this is so that doubts about using the internet can be reduced, so that use can be made optimally. Apart from that, training can also foster ease of use in using the internet so that MSMEs as the main support for the rural economy can grow optimally.

References

- [1] A. Steiner and S. Teasdale, "Unlocking the potential of rural social enterprises," *Journal of Rural Studies*, vol. 70, pp. 144-154, 2019.
- [2] T. Ritter and C. L. Pedersen, "Digitalization capabilities and digitalization of business models in business-to-business enterprises: Past, present, and future," *Industrial Marketing Management*, vol. 86, pp. 180-190, 2020.
- [3] V. B. Valdez and S. P. Javier, "The Digital Divide: From a Peripheral Issue to a Core Issue for all SDGs," in *Reducing Inequality*, 2020, pp. 1-14.
- [4] . Tiwasing, "Social media business networks and SME performance: a rural-urban comparative analysis," *Growth and Change*, vol. 52, no. 1, pp. 1892-1913, 2021.
- [5] K. Salemink, D. Strijker, and G. Bosworth, "Rural development in the digital age: a systematic literature review on the uneven availability, adoption, and use of ICT in rural areas," *Journal of Rural Studies*, vol. 54, pp. 360-371, 2017.
- [6] P. Tiwasing, B. Clark, and M. Gkartzios, "How can businesses in rural areas thrive in the digital economy? A perspective from the UK," *Heliyon*, vol. 8, no. 10, e10745, pp. 1-8, 2022.
- [7] Bowen and W. Morris, "The digital divide: implications for agribusiness and entrepreneurship. Lessons from Wales," *J. Rural Stud*, vol. 72, pp. 75-84, 2019.
- [8] M. B. Bulturbayevich and M. B. Jurayevich, "The impact of the digital economy on economic growth," *International Journal of Business, Law, and Education*, vol. 1, no. 1, pp. 4-7, 2020.
- [9] S. Bresciani et al, "Digital transformation as a springboard for product, process, and business model innovation," *Journal of Business Research*, vol. 128, pp. 204-210, 2021.
- [10] T. Zhao, Z. Zhang, and S. K. Liang, "Digital economy, entrepreneurship, and high-quality economic development: empirical evidence from urban China," *Management World*, vol. 36, no. 10, pp. 65-76, 2020.
- [11] J. Yang et al, "Big data, big challenges: Financial market risk management in the digital economy," *Journal of Enterprise Information Management*, vol. 35, no. 4/5, pp. 1288-1304, 2022.
- [12] E.. S. C. Berger et al, "Digital or not - The future of entrepreneurship and innovation: Introduction to the special issue," *Journal of Business Research*, vol. 125, pp. 436-442, 2021.
- [13] L. Townsend et al., "Increasing broadband access as a solution to the social and economic problems of the rural digital divide," *Local Econ.*, vol. 28, no. 6, pp. 580-595, 2013.
- [14] K. Onitsuka, A. R. T. Hidayat, and W. Huang, "Challenges to the digital divide in rural Indonesia," *E J Info Sys Dev Countries*, vol. 84 (12021), pp. 1-25, 2018.
- [15] D. Tortora et al, "'I digitize to exist'. In search of critical capabilities that influence corporate digital innovation," *Journal of Business Research*, vol. 129, pp. 193-204, 2021.
- [16] H. M. Taiminen and H. Karjaluo, "Use of digital marketing channels in SMEs," *Journal of Small and Medium Enterprise Development*, vol. 22, no. 4, pp. 633-651, 2015.
- [17] A. P. Shemi and C. Procter, "E-commerce and entrepreneurship in SMEs: the case of myBot," *Journal of Small and Medium Enterprise Development*, vol. 25, no. 3, pp. 501-520, 2018.
- [18] N. Jones, R. Borgman, and E. Ulusoy, "The impact of social media on small businesses," *Journal of Small Business and Enterprise Development*, vol. 22, no. 4, pp. 611-632, 2015.

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