Journal of Information Systems and Informatics
Vol. 6, No. 4, December 2024 e-ISSN: 2656-4882 p-ISSN: 2656-5935
DOI: 10.51519/journalisi.v6i4.875 Published By DRPM-UBD

Development of a Digital Village Concept based on Information Technology Infrastructure and Strategy Management to Facilitate SPBE Ogan Ilir Regency

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Abstract

Technology in the digital era is currently progressing very rapidly. This is marked by the increasingly massive number of social media users in everyday life. Survey results from the Indonesian Internet Service Providers Association (APJII) in 2022 recorded that the number of internet users in Indonesia reached 196.7 million people. This number increased by 23.5 million or 8.9% compared to 2018. With information technology and the internet, information is now becoming more easily spread and can be accessed by all levels of society thanks to the internet, not just people in urban areas, but people living there. in rural areas too. The Ogan Ilir Regency Government initiated information technology infrastructure including village internet or Digital Village to solve the problem of inequality in digitalization of society in rural and urban areas. Development and implementation of a digital village is a program that implements electronic-based government system (SPBE) services to the community and empowers the community based on the use of technology. This research aims to conduct a survey of information technology infrastructure to identify village potential, marketing and accelerating access and public services. Apart from that, this research also identifies digital-based life patterns of people in rural and urban areas, as well as to advance economic development in rural areas to improve SPBE services in Ogan Ilir Regency. The method used is a quantitative method for surveying and mapping the use of information technology in villages and ultimately producing the concept of an independent digital village. Research data was obtained from surveys and FGDs with the Ogan Ilir district government, village heads, village communities and micro, small and medium enterprises. Meanwhile, secondary data will be obtained through the results of MSME and village profiles from the Central Statistics Agency.

Keywords: Digital Village, SPBE, Ogan Ilir, Information Technology, Infrastructure

1. INTRODUCTION

Technology in the digital era is currently progressing very rapidly, this is shown by the increasingly massive number of social media users in everyday life. Survey

results from the Indonesian Internet Service Providers Association (APJII) in 2022 recorded that the number of internet users in Indonesia reached 196.7 million people. This number increased by 23.5 million or 8.9% compared to 2018 [1]. Technological developments in the digital era have made the use of the internet a new and mandatory medium in everyday life. This progress certainly forces people to become literate in information technology. Information is becoming more easily spread and can be accessed by all levels of society thanks to the internet, not only people in urban areas, but people in rural areas too. This development presents challenges in providing government services to villages, where villages are required to be able to adapt to technological advances by reducing the digital gap through digital village development [2, 3].

The Ogan Ilir Regency Government initiated village Internet or Digital Village to address the issues of inequality in community digitalization in rural and urban areas [4, 5]. Development and implementation of a digital village is a program that implements electronic-based government system (SPBE) services to the community and empowers the community based on the use of technology. This program aims to develop village potential, marketing and accelerate access and public services. Apart from that, village digitalization aims to equalize the digital-based lifestyle patterns of people in rural and urban areas, eradicate the gap between traditional and modern lifestyles and to advance economic development in rural areas.

Ogan Ilir Regency is one of the areas in South Sumatra Province. Ogan Ilir Regency is divided into 16 sub-districts which have 241 villages or sub-districts with a total area of 2,666.97 km2 [6]. An Electronic-Based Government System (SPBE) or e-Government is a government administration that utilizes information and communication technology to provide services to the public. The aim of the SPBE in accordance with the Regulation of the Regent of Ogan Ilir Lematang Ilir Number 60 of 2021 concerning the Electronic-Based Government System Master Plan (SPBE) is to create clean, effective, transparent, accountable government governance and reliable quality public services based on information technology and communication, as well as creating synergy between regional apparatus in the implementation of electronic-based information systems and services.

In order to build synergy in the implementation of SPBE that has legal force among the Regional Apparatus Organizations (OPD) of Ogan Ilir Regency, it is necessary to have a digital village information technology infrastructure survey as a basis for supporting Regional Government SPBE services that are used by all OPD and the community. The Regional Government SPBE was prepared by taking into account the direction of policies, strategies and initiatives in the areas of SPBE governance, SPBE services, ICT and human resources to achieve the strategic objectives of the Ogan Ilir Regency SPBE in 2021-2026 and the

development objectives of the state civil apparatus as stipulated in National RPJP 2005-2025 and Grand Design for Bureaucratic Reform 2010-2025. The development of this digital village needs to be carried out in a planned and structured manner by involving all levels of the Ogan Ilir Regency Government in determining the direction of development and the evaluation process. Referring to this data, the study aims to carry out identification by measuring access and use of ICT by village communities, the final result of which is an independent digital village model to support SPBE services.

The combination of the information technology (IT) infrastructure concept developed by Duncan [7] and the management strategy theory developed by Stea and Harindranath [8] is used as a basis for innovation and problem-solving approaches in digital village capabilities. The digital village IT infrastructure concept has the ability to reach IT infrastructure, Flexibility IT Infrastructure [7], IS standards and procedures, and IT management [9, 10]. Meanwhile, IT strategy business in villages consists of information intensity, perceived role of IT, IT-business alignment and strategy [8]. IT infrastructure is defined as a set of IT resources that can be used together and the foundation for enabling information technology-based services in an organization. Management strategy is the alignment between IT and business referring to the suitability of information system strategies and plans with strategies and goals. Alignment means not only communicating organizational goals and objectives at a particular point and time, but also active interaction between IT plans on an ongoing basis so that changes in one are reflected in others. It was also added that in previous research, these two concepts or theories were widely used to measure and identify IT infrastructure capabilities in companies and government organizations. In this research, this theory will be modified and adapted to measure the extent of the benefits and usefulness of IT infrastructure in villages to facilitate SPBE in Ogan Ilir district.

Numerous previous studies only focused on developing digital villages for tourism [11, 12], empowering communities and small businesses [13, 14] and rural economics [15]. Additionally, there are also previous studies that focused on developing village internet network designs. [4], and the use of information technology in villages [11]. However, only a few previous studies have focused on village IT capability development and the digital village concept. So, based on this gap analysis, this research will develop and implement digital village infrastructure to support SPBE services in the villages of Ogan Ilir regency.

To address the issues above, this research will use the concept of IT infrastructure capability and strategic management to build a digital capability village concept. IT infrastructure capability consists of reach IT infrastructure, Flexibility IT Infrastructure. Meanwhile, IT strategy management in villages consists of information intensity, IT-business alignment. Reach IT infrastructure is used to

measure the extent to which village IT infrastructure can reach all components or devices owned by the community and reach services owned by MSMEs, villages and Ogan Ilir district OPD. Furthermore, IT infrastructure flexibility is used to measure the extent of flexibility of platforms, networks, data and applications owned by MSMEs, villages and Ogan Ilir district OPD. Final. For IT strategy management, information intensity is used to measure the extent of the ability of MSMEs and villages to process information and the frequency of information updates in each service. Lastly, IT business alignment is used to identify the extent to which IT utilization planning is linked to village goals.

2. METHODS

The method that will be used in this research is quantitative using an IT infrastructure capability and strategic management approach [16, 17]. This aims to get an idea of the extent of IT infrastructure capabilities in the village and the use of ICT that will be used to develop village internet infrastructure which will lead to a digital village in Ogan Ilir Regency. Quantitative methods, focus groups and surveys will be used in this research. The indicators were developed based on the grand theory of IT infrastructure capability and strategy management. IT infrastructure capability consists of reach IT infrastructure, Flexibility IT Infrastructure. Meanwhile, IT strategy management in villages consists of information intensity and IT-business alignment.

Table 1. Research Informants

Informan	Total	Informan Status
Head of the Regional Research and Development Agency (Balitbangda) Ogan Ilir	1	The Head of Balitbangda provided strategic information on the development of MSMEs in Ogan Ilir
Head of the Ogan Ilir Regional Research and Development Innovation Section	1	The Head of Section provided information about village innovation and MSMEs towards a digital village.
MSME Owners	3	Providing information on digital devices that have been implemented in their respective business processes and also information on the role of local governments in supporting the digitalization of MSMEs.
Total	6	

The object of this research is the Regional Research and Development Agency (Balitbangda) and MSMEs in Ogan Ilir Regency, South Sumatra. This research uses in-depth interviews with sources or informants as a form of data search and direct observation. The number of informants used as research respondents consists of several government and private elements as shown in Table 1. They will be selected to be interviewed based on their roles in their respective organizations involved in strategic planning. the process of developing and implementing digital MSMEs towards digital villages supports the implementation of SPBE. The questions that researchers ask informants vary according to the informant's capacity. The interviews were exploratory in nature, consisting of open questions that focused on participants' perceptions about the processes and factors that support the development of digital MSME infrastructure which are linked to six dimensions, namely reach IT infrastructure, Flexibility IT Infrastructure, information intensity and IT-business alignment. For the Balitbangda of Ogan Ilir district, interviews focused on their perceptions regarding strategic planning for MSME product innovation and digitalization of marketing and business processes. Informants from MSME players, interviews focused on business processes from suppliers to consumers. Table 2 is the interview questions given to informants.

Table 2. Interview Questions

No.	Dimension	Interview Questions	References
1.	Reach and Range	Are all information technology devices connected to the village internet infrastructure? Does the village/relevant department have an application as a means of communication and interaction with MSMEs?	[7], [10], [18]
2.	Flexibility	MSMEs have information technology infrastructure that is connected to every business process? Does the village have infrastructure that supports the digitalization of MSMEs?	[7], [18]
3.	Information Intensity	Information technology infrastructure provides updated information that is used for village and MSME operations?	[8]
4.	IT business alignment	Regional leaders always provide support for the development of IT infrastructure in the village? IT planning in line with support for village MSMEs?	[8], [10], [19]

To make this research more objective and accurate, researchers also sought additional information by conducting field observations. Table 2 shows the details of the informants in this study. Here the research team saw and observed

information technology infrastructure in several villages in Ogan Ilir district. Use this as material for consideration and comparison with the interview results.

The second phase is the focus group discussion (FGD) methodology. This method is well documented as a reliable and cost-effective method for collecting qualitative data. This method also has the power of a focus group in providing insight into a particular issue from a selected group of participants. Because FGD techniques depend on effective interaction between several participants. This is supported by the fact that well-designed FGDs provide researchers with the ability to observe how theories emerge in relation to the participants' points of view. In this regard, it should be noted that opportunities should be offered to all participants to express their thoughts. This study provides a deeper understanding of three key dimensions and expected data outcomes from focus groups: 1) articulated data, where participants express thoughts from direct questions; 2) attribution data, where the moderator tacitly provokes discussion; and 3) emergent data which refers to normative understanding.

3. RESULTS AND DISCUSSION

This section provides the research findings that are categorised into four dimensions including reach and range, flexibility, information intensity, and IT business alignment.

3.1. Reach and Range of IT infrastructure

Interviews were conducted in Tanjung Batu village and several villages in Ogan Ilir regency involving several MSME owners. This was conducted to identify the role of the reach and range dimensions of information technology in supporting their business operations. This interview also explored in more depth the types of information technology used by MSMEs in carrying out daily activities.
In the range and range aspect of information technology infrastructure, various applications and software are used by MSMEs to support their operations. The following are the perceptions of MSME owners in Ogan Ilir district.

MSME owner 1, a snack food entrepreneur, explained that *"The informant uses the Google Sheets application for stock management and simple financial recording which is connected to the internet. This Google Sheets application is combined with camera facilities on smartphones which are used to document (photos) and record every sale and purchase transaction for raw materials which will then be entered into Google Sheets. Just like MSME 1 owner, MSME 2 owner also take advantage of the automatic reporting features provided by these applications to find out profits, losses and simple daily cash flow. With this simple stock management application, players can monitor inventory more accurately and avoid stock shortages. Apart from that,*

MSMEs also rely on the use of logistics applications such as GrabExpress and JNT to send their products to customers outside the region."

MSME owner 3, an entrepreneur and traditional clothing craftsman, stated that "*This service is very helpful in ensuring the product reaches the customer's hands quickly and safely. MSME owner 3, apart from using social media, also uses Google My Business to increase the visibility of his business in Google searches, so that customers outside the village can easily find and contact his business. MSME players also mentioned using online learning applications such as YouTube and online course platforms (such as Udemy and Coursera) to improve their skills, especially in terms of digital marketing and business management. By utilizing this technology, they feel better prepared to face the challenges of an increasingly competitive market.*"

From the results of this interview, it can be concluded that MSMEs in Ogan Ilir Regency Village have utilized various information technologies to expand their reach (*reach*) and increasing service variety (*range*) that they offer. Here it also shows that the main indicator of reach in IT infrastructure is the extent to which the infrastructure allows MSMEs to expand the reach of their business. Specific indicators include**,** availability of internet connectivity, which allows MSMEs in villages to access a wider market. Excellent connectivity ensures that MSMEs can connect with customers, suppliers and digital platforms without geographic restrictions. Access to digital platforms, information technology infrastructure must support access to e-commerce platforms, social media and messaging applications play an important role in expanding business reach. This indicator shows how easily MSMEs can utilize technology to interact with customers outside their local environment. The next indicator is integration with a wider market network, namely the ability of infrastructure to connect MSMEs with distribution networks and wider markets is also an important indicator. This includes infrastructure support that enables integration with digital supply chains and logistics. E-commerce platforms, social media, digital payment applications, stock management, logistics, and online learning are an integral part of the technological infrastructure they use. This combination of technology has helped MSMEs in the village to more effectively manage their business, expand markets, and increase operational efficiency, thereby encouraging overall village economic growth.

Next, the main indicator of the range in IT infrastructure is the ability of infrastructure to support various functions and applications in MSME operations in villages. The first indicator is the flexibility of using technology which allows MSMEs to use various types of applications and tools, ranging from simple inventory management to digital marketing applications. This indicator shows the extent to which infrastructure supports the various operational needs of MSMEs. Support for various internet-based platforms that enable integration of various platforms, such as digital payments, record-keeping systems, and analytical tools, provides a wider scope for business operations. This indicator measures how much

infrastructure can support the various applications needed by MSMEs. Next is operational speed and efficiency which is used to increase operational speed and efficiency, such as in terms of data processing and internal communications, which are also important indicators of range. Infrastructure that supports automation and real-time information access allows MSMEs to manage their business more efficiently.

The research results with the information technology (IT) reach dimension are in line with previous research conducted by Oyekola and Xu [20] showing that subscription-based service connectivity models, such as SaaS, enable MSMEs to access various IT features cost-efficiently, without the need for investment. big start. Additionally, IT's ability to support multiple platforms—such as web, mobile, and physical POS applications—increases the reach of the technology, enabling MSMEs to operate across multiple channels and reach more customers. Research by Intal, et al. [21] underlines that support for multi-platforms and infrastructure enables MSMEs and villages to maintain relevance in a fast-growing market with diverse customer preferences. IT range relates to how widely IT can be implemented and adapted to different business needs. Rojas, et al. [22] shows that the system allows the integration of various platforms, such as digital payments, record-keeping systems, and analytical tools, providing a wider scope for business operations enabling MSMEs to adapt and expand technology according to changing business needs. ELMS [23] emphasizes the importance of integration, which allows the system to become one between various systems and applications, facilitating workflow and consistent access to information throughout the organization. This research confirms that a broad range of IT, through its ability to integrate and adapt to various functions, supports MSME operations that are more efficient and responsive to market changes.

3.2. Flexibility of IT infrastructure

The flexibility of information technology (IT) infrastructure is very important for the digitalization of MSMEs in villages to support the digitalization and growth of their businesses. According to the head of the innovation section of Balitbangda, Ogan Ilir district *"MSMEs and villages need IT infrastructure that allows MSMEs to have free data and application storage capacity, as well as new functions that are updated as the business grows without having to replace existing systems. For example, by using cloud computing services such as Google Drive, AWS or Google Cloud, MSMEs and villages can increase their digitalization capacity as needed without having to spend large amounts on hardware."*

Furthermore, he also revealed that *"Currently, there are many software companies or software houses that provide low-cost or free applications."* The flexibility of IT infrastructure, such as a modular system, allows MSMEs to choose the applications they need and add them. For example, a POS (Point of Sale) application such as

the MOKA application used by MSMEs or the QRIS payment system that already exists in mobile banking. For the Customer Relationship Management (CRM) module, most MSMEs and villages use social media such as WhatsApp, Instagram, Telegram and Tiktok. This modular approach allows MSMEs to adapt the technology used to their specific needs, while reducing the risk of unnecessary expenses. Interoperability is another indicator that is no less important. A flexible IT infrastructure must be able to integrate with various other systems and services used by MSMEs. For example, stock management applications that are integrated with e-commerce platforms such as Shopee and Tokopedia allow for automatic synchronization of product and order data. With good interoperability, MSMEs can avoid system isolation, so that data and business processes can run more smoothly and efficiently across all platforms used. MSME players say that *"This platform has really helped MSMEs in integrating stock, sales, payment and delivery of MSME products."*

Furthermore, adaptability is key in dealing with changes in technology and business needs. Adaptable IT infrastructure allows MSMEs to change or update systems without having to start from scratch. For example, every application used by MSMEs automatically updates its own system which has been adapted to technological developments. Thus, MSMEs can be reconfigured according to changes in their business processes. This ability to adapt is important so that MSMEs remain relevant and can keep up with market developments and changing technology. Ease of use and customization are also important indicators in assessing the flexibility of IT infrastructure. Technology that is easy to use and can be adapted to the specific needs of MSMEs allows business actors to adopt technology without having to have in-depth technical expertise. Financial recording applications, for example, must have an intuitive interface and be adaptable to various types of businesses and operational scales. In this way, MSMEs can focus more on business development without being distracted by technological complexity. Finally, cost efficiency and support for multi-platform and mobility are also important factors. A flexible IT infrastructure should enable MSMEs to control costs by paying only for the features they use, for example through a SaaS (Software as a Service) service model. In addition, support for access from various devices and locations, as well as the ability to support various sales channels, such as web, mobile and physical POS, will provide freedom for MSMEs in running their business operations. A good example is a digital payment system that supports transactions via multiple platforms, including QR codes, e-wallets, and bank transfers, allowing MSMEs to adapt to diverse customer preferences.

These indicators, rural MSMEs can maximize the use of flexible information technology infrastructure to support their growth and competitiveness in the

digital era. This flexibility allows MSMEs to adapt quickly to market and technological changes, and optimize their business operations without huge costs. The conclusion from the interview results above was that several indicators of IT flexibility in MSMEs in the village were obtained. Based on these indicators, information technology flexibility plays an important role in supporting various aspects of business operations. The modularity of the system allows MSMEs to adopt and adapt various technologies to their specific needs, from simple record-keeping applications to digital payment tools. The ability to integrate system manuals with new technology shows that MSMEs can adapt to developments without having to change the entire existing infrastructure. IT scalability is also an important indicator, where MSMEs can expand or reduce the use of technology according to their business growth, without facing major obstacles. IT mobility and accessibility enable MSMEs to manage their business from anywhere, using mobile devices, thereby increasing efficiency and responsiveness. This overall flexibility allows MSMEs to operate more dynamically and adapt quickly to changing business and market needs.

The results of this research are in line with research conducted by Machap, et al. [24] which shows that cloud computing services provide scalability that allows MSMEs to increase data storage and processing capacity in a cost-efficient manner. Meanwhile, RAMLI, et al. [25] underlines the importance of modular systems that enable MSMEs to add or replace technological components according to their specific needs without having to overhaul the entire system. Apart from that, adaptability and interoperability also play an important role in IT flexibility. Nguyen et al. (2019) emphasize that systems that can be reconfigured according to market changes provide the flexibility needed to remain relevant, while Lovely, et al. [26] and Tisyani and Sushandoyo [27] show that interoperable systems increase efficiency by integrating various platforms and applications. adding that ease of use, customization and cost efficiency through the SaaS model ensures the technology can be adapted to the budget and operational needs of MSMEs, supporting business success and growth in the digital era.

3.3. IT business Alignment

IT-business alignment is an important concept that refers to the alignment between information technology (IT) strategy and business goals. In the context of MSMEs and villages, IT-business alignment means that the use of information technology must support the achievement of MSME business goals and support economic development in the village as a whole. This alignment is important because technology implemented without consideration of business needs can result in inefficient investments and not provide significant added value. In MSMEs, IT-business alignment helps ensure that investments in information technology support daily operations and long-term business goals. For example, if

an MSME focuses on increasing production efficiency, then the technology chosen must contribute directly to that process, such as the use of an inventory management system or automation of production processes. This alignment is also important to ensure that the technology adopted supports business scale, whether it is in data management, communication with customers, or digital product marketing. At the village level, IT-business alignment also has an important role in encouraging inclusive and sustainable economic development. Information technology applied in villages must be in harmony with community needs and existing economic potential. For example, the IT infrastructure developed must be able to support initiatives such as digitizing MSMEs, promoting local products, and increasing market access for local farmers or craftsmen. By ensuring that technology supports business and village development goals, IT infrastructure not only becomes an efficient tool, but also has a positive impact on village communities as a whole. In addition, IT-business alignment helps MSMEs and villages make the right technology decisions based on business priorities. This includes identifying which technologies are truly needed when the time is right to make technology investments, and how to maximize the potential of existing technologies to achieve desired business outcomes. Without this coordination, MSMEs and villages can be trapped in using technology that is inefficient or too complicated, which in the end can hamper growth. It is also important to realize that IT-business alignment is a dynamic process and must always be evaluated and adapted to changes in business and technology. MSMEs and villages must continue to monitor developments in relevant information technology and ensure that this technology can continue to support the achievement of long-term business and development goals. Collaboration between business actors, village governments and technology providers is also key to creating an environment that supports effective IT-business alignment. By implementing the IT-business alignment concept effectively, MSMEs in villages can ensure that information technology is not just an additional tool, but actually functions as an enabler for sustainable business growth and village economic development. This alignment between IT and business is an important foundation in facing the challenges of digitalization and taking advantage of the opportunities that exist in an era of increasingly developing technology.

Based on the results of the interview above, it can be concluded that IT business alignment has several indicators for developing digital MSMEs. These indicators are that alignment between information technology and business goals is a key factor in improving performance and competitiveness [18]. The second is the strategic fit indicator showing that IT must support the strategic goals of MSMEs, such as increasing operational efficiency and expanding markets [28]. Alignment of IT with business processes ensures that technology is used optimally to support core business processes, such as stock management, sales and customer service. The third indicator is that communication between IT and business stakeholders

is important in ensuring that business needs are accommodated by the right IT solutions [29]. Measurement of IT contribution to business goals is another indicator that assesses the extent to which investment in technology produces added value for the business, such as increasing revenue or efficiency. By achieving IT-business alignment, MSMEs can maximize the potential of technology to support the achievement of business goals, strengthen operations, and increase adaptability to market changes.

3.4. Information intensity

Information intensity refers to the level of dependence a business has on information in its daily operations. In the digitalization of MSMEs, the role of information intensity becomes increasingly crucial. Information intensity describes how important and how much information is needed to run a business effectively and efficiently. This role includes aspects of collecting, processing and utilizing information for decision making, operational management and marketing strategy. In MSMEs, one example of applying information intensity is in managing customer data. Information about customer preferences, purchasing patterns, and product feedback becomes invaluable for tailoring more targeted product or service offerings.

MSME owner 2, said that "*In this digital era, information is very important for us, especially in understanding customers and managing business. One of the indicators we use to measure how intensively information is used is the frequency and quality of the customer data we collect. For example, we are usually invited or facilitated by the MSME department to take part in exhibitions in several big cities such as Jakarta, Bandung and Palembang. We always collect data about customer preferences, such as what products they like most, and when they buy most often. From this information, we can adjust the products we offer to better suit their needs. This information is very useful for more personalized digital marketing campaigns. Apart from that, fast and accurate information from customers is also an important indicator in improving the quality of our services.*".

By intensive use of data, MSMEs can design more personalized and effective marketing strategies, for example through digital campaigns tailored to certain customer segments. Apart from that, utilizing this information can also help MSMEs improve customer service, which ultimately contributes to increasing loyalty and sales.

Apart from marketing, information intensity also plays an important role in MSME supply chain management. Precise information regarding stock availability, raw material prices and market demand trends can help MSMEs optimize inventory management and reduce the risk of overstock or stock shortages. By accessing real-time information through technology such as stock management systems or

mobile applications, MSMEs can respond to market changes faster and more efficiently. It also helps in making smarter decisions related to procurement of goods and management of resources. In the era of digitalization, the use of technology such as data analytics, cloud computing and e-commerce platforms strengthens the role of information intensity in MSMEs. Through data analytics, MSMEs can dig deeper information from the data collected, for example understanding sales trends based on time or customer demographics. Cloud computing allows MSMEs to store and access information from anywhere, thereby increasing operational flexibility and efficiency. Meanwhile, e-commerce platforms provide data on online customer behavior, which can be used to refine sales strategies and enhance customer experience.

MSME owner said that *"accuracy of stock information and speed of access to supply chain data are important indicators in our operations. With the right information, we can manage stock better. "We always monitor the availability of goods, raw material prices and market demand trends in real-time via the MSME WhatsApp group."*

Overall, information intensity plays an important role in increasing the competitiveness of MSMEs in the digital era. By managing and utilizing information effectively, MSMEs can make better decisions, increase operational efficiency, and provide products and services that are more relevant to market needs. Information intensity is not only about having access to information, but also how MSMEs can optimize the use of that information to support business growth and success.

In previous research, the concept of information intensity has been widely discussed as a key factor in business success, including in the MSME sector. According to [30], information intensity describes how important information is in the business value chain, from collecting raw materials to distribution to final consumers. In MSMEs, research by [31] shows that companies with high levels of information intensity tend to be more competitive because they are able to utilize data more effectively for decision making. This supports the importance of collecting the right data to understand markets and customers. Another study by [32] highlights the role of information processing in improving a company's responsiveness to market changes. They found that companies that have good analytical capabilities are able to adapt more quickly to changing demand and market conditions, which is especially relevant for MSMEs that often operate in dynamic environments. In this context, research by [33] also shows that the ability to process and analyze data is an important asset that allows MSMEs to not only survive but also develop amidst intense competition.

Furthermore, research by [34, 35] emphasizes the importance of utilizing information in supporting strategic and operational decisions. They found that

companies that effectively use information from multiple sources, such as customer data and market trends, tend to be more successful in product innovation and operational efficiency. This study is relevant for MSMEs who must maximize the information they have to support business growth and continuity. The challenge faced is how to integrate information into daily business processes to provide a significant impact. By referring to these previous studies, we can understand that information intensity is not only about having access to data, but also involves the ability of MSMEs to collect, process and utilize information effectively to achieve their business goals. This research also confirms that the success of MSMEs in the digital era is greatly influenced by how well they can utilize information as part of their business strategy. Based on the interview results above, this research builds a concept of digital village which determined by reach and range, flexibility, information intensity and business alignment as shown in Figure 1.

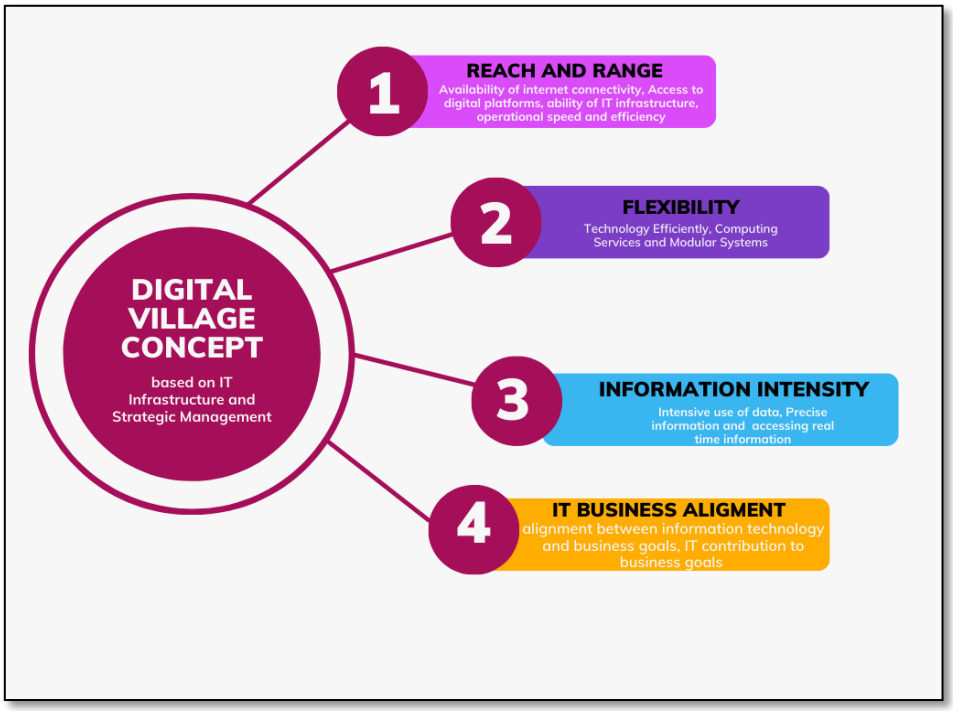

Figure 1. Digital Village Concept based on IT Infrastructure and Strategic Management

4. CONCLUSION

The conclusion of this research shows that the digitalization of MSMEs in villages is strongly influenced by four main factors: Reach and Range, IT infrastructure

flexibility, IT-business alignment, and information intensity. IT flexibility allows MSMEs to utilize technology efficiently according to their needs, through the use of cloud computing services and modular systems. IT-business alignment ensures that the technology adopted supports business goals, such as operational efficiency and market expansion. Meanwhile, information intensity plays an important role in collecting, processing and utilizing data to improve decision making, marketing and supply chain management. This research has several limitations. First, the research focuses on MSMEs in villages, so the results may not be completely relevant for MSMEs in urban areas. Second, limited access to technology in villages could be a barrier to implementation of the proposed technology. Third, the complex IT-business alignment process and limited data collection only through interviews create gaps in understanding about widespread technology adoption. For future research, it is recommended to conduct a comparative study between MSMEs in villages and cities to identify technology gaps. Further research could also focus on solutions to increase access to technology in remote areas, as well as exploring the impact of new technologies such as AI and big data on the digitalization of MSMEs. More concrete measurements of return on investment (ROI) from technology adoption, as well as training and technological literacy, are also important to support the development of MSMEs in villages more effectively.

ACKNOLEDGEMENT

The authors would like to express their deepest gratitude to the Ministry of Higher Education, Science and Technology of the Republic of Indonesia, particularly the Directorate of Research, Technology, and Community Service (DRTPM), for invaluable support, funding and guidance throughout this research. Special thanks are extended to the Rector of Universitas Sumatera Selatan for their encouragement and facilitation of this research. The authors also wish to acknowledge the significant contributions of the Research and Community Service Institute of Universitas Sumatera Selatan, whose support was instrumental in the successful completion of this research. This research was funded by the Directorate General of Higher Education, Research, and Technology (DG Diktiristek) in 2024 under the BIMA 2024 Grant (Grant No. 104/E5/PG.02.00.PL/2024).

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