Implementation of the Enterprise Resource Planning (ERP) System in Micro, Small, and Medium Enterprises (MSMES) Business Actors

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A B S T R A C T
Several MSMEs in Indonesia have used the Enterprise Resource Planning (ERP) system to run their business, maintain their business, and become market leaders. However, in this ERP system, there are several limitations for MSMEs, especially in the ability of human and financial resources. This study was divided into two parts. In the first part, universal success indicators from the ERP success measurement literature were tested using factor analysis. Data were collected on 27 success indicators through a structured questionnaire from the ERP system end-users. The results obtained were analyzed whether ERP is suitable to be implemented, meeting the goals in managing a business run by MSMEs.

A B S T R A K
Beberapa UMKM di Indonesia telah banyak menggunakan system sistem Enterprise Resource Planning (ERP) dalam menjalankan bisnisnya untuk dapat mempertahankan bisnisnya dan mampu menjadi pemimpin pasar. Namun dalam system ERP ini terdapat beberapa keterbatasan pada UMKM terutama pada kemampuan sumber daya manusia dan keuangan. Penelitian ini dibagi menjadi dua bagian pada bagian pertama indikator keberhasilan universal dari literatur pengukuran keberhasilan ERP akan diuji menggunakan analisis faktor. Data akan dikumpulkan mengenai 27 indikator keberhasilan melalui kuesioner terstruktur dari pengguna akhir sistem ERP. Hasil yang nantinya akan diperoleh apakah ERP sudah sesuai untuk diterapkan memenuhi tercapainya tujuan dalam pengelolaan sebuah bisnis yang dijalankan oleh UMKM.

INTRODUCTION

In Indonesia, many MSMEs are developing while facing constant changes during the pandemic, so a system is needed to create innovation and digital technology to achieve customer satisfaction, attain business success, and gain a broader market share. In this regard, ERP systems can be referred to complex enterprise-level information systems. The level of complexity is always based on the need for synchronization of business processes and integration of various functioning applications within the organization. It, in turn, can smoothly automate the movement of materials, the flow of information, mobilization of financial resources, and access. It is clear that for other operational activities within an organization, all of these activities if carried out using a database stored in one location

without any physical constraints in accessing it, can be called an ERP system (Kumar, Maheshwari & Kumar, 2002).

For the definition of MSMEs, according to the Ministry of Cooperatives and MSMEs in Aufar (2014:8), Small Businesses (UK) and Micro Enterprises (UMI) are business entities with a net worth of at most IDR 200,000,000, excluding land and buildings for business premises and have annual sales of at most IDR 1,000,000,000. Meanwhile, Medium Enterprises (ME) are business entities owned by Indonesian citizens with a net worth of more than IDR 200,000,000 up to IDR 10,000,000, excluding land and buildings. Besides, according to Inna Primiana, MSMEs are an economic activity that drives Indonesia's development, such as the manufacturing industry, agribusiness, agriculture, and human resources. In this sense, MSMEs mean the recovery of the Indonesian economy through the development of the trade sector for community empowerment programs in need of work.

On the other hand, ERP systems are the main business functions that unite data and computerize most internal business procedures and information systems in company production, logistics, allocation, accounting, finance, and human resources (Saimagambetova & Imashova, 2017). An ERP system is needed in the face of increasing and growing business competition. According to Prasad et al. (2018), companies must clearly understand the business implications and problems the system is designed to solve. Beijsterveld & Groenendaal (2016) claimed that the problems encountered with ERP implementations arise because software purchased from vendors usually includes all data for solutions that do not allow business people to achieve the desired level of functional interoperability with self-developed systems.

However, several barriers prevent mid-sized businesses from fully implementing ERP into their business processes. For this reason, this study aims to determine whether the implementation of the ERP system for MSME actors is in accordance with the goals and benefits of their business. The variables measured to determine operational efficiency consisted of inventory, cash and cash equivalents, cost of goods sold (HPP) minus depreciation, operating income, and selling, general and administration expenses (SG&A). In addition, implementing an ERP system takes a lot of time, training, resources, capital, and organizational change (Haddara & Moen 2017). Several causes of ERP implementation failure are described in the following conditions: [1] Poor planning. Planning should cover several issues related to business and user availability for system configuration decisions. [2] Poor project management. Few companies make ERP without involving a consultant. [3] Lack of software evaluation. Organizations do not understand what and how ERP systems work and other reasons (BF Billyan and MI Irawan 2021). Literature and previous studies have shown that most ERP implementation projects in larger organizations failed about 40%. It was also found from research studies that almost all implementations, i.e., 90%, exceeded the set deadlines or had exceeded financial budget estimates of 67%. It has been made that the initiative to implement an ERP system is considered entirely unacceptable (Chang & Gable, 2000; Plant & Willcocks, 2007).

In implementing the company's human resource planning system, the system is expected to enable the organization to optimally exploit the available resources to be more efficient and effective in the implementation of business plans, reduce response times due to effective transfer of information, and in turn, facilitate the real-time decision-making process through a series of integrated programs that contribute to the accurate sharing of

information among all business units. Through supply chain integration, it is realized through improved communication and coordination between internal processes and external partners, such as relationships with suppliers, distributors, and customers. It supports coordination between supply chain members who manage inter-and intra-organizational activities, ranging from (receiving customer orders, providing raw materials, manufacturing, distribution, ending with the delivery of products to end consumers). It is also to achieve greater efficiency in the flow of products, services, and information that deliver higher value to customers at the right time, at the right place, at the right price, and with high quality. On the other hand, the success of supply chain integration is reflected in the added value to customers, the reputation of the organization quality, on-time delivery, and ensuring global viability and viability (Hasan Shalih Suliman Al-Qudah 2020)

Therefore, the results of this study offer a unique opportunity for medium-sized businesses to turn their operations into instruments of strategic competitive advantage. Some advantages of this ERP system for MSMEs in carrying out their daily routine activities are that it can help users complete their tasks quickly and accurately by saving enough time for other tasks. For all data that ERP users can access a whole in a wide range, they can also develop creativity in carrying out work to be more innovative and productive, benefiting MSMEs in the long term. Moreover, if the system has a positive impact on its application, it can be said that the implementation is successful.

RESEARCH METHOD

The research design carried out in this study was quantitative descriptive research. Descriptive research collects data based on the factors that become the research object, then analyzes these factors to look for benefits (Prabowo and Heriyanto, 2013). Meanwhile, quantitative research tests the objective theory by examining the relationship between variables (Wahidpure, 2017). Besides, the independent variable in this study was the performance of human resources, whereas the dependent variables were the quality of the system and the quality of information. Hua-Yang Lin, Ping-Yu Hsu, and Ping-Ho Ting (2006) also found that the more end-users use the system, the more user satisfaction. Usage and user satisfaction have a directly proportional relationship. Princely Ifinedo (2007) asserted that ERP systems are different from other IT systems because ERP implementation includes technological, operational, managerial, strategic, and organizational components.

In addition, this study used primary and secondary funds to identify problems. Primary data were collected through questionnaires and interviews, while secondary data were accessed from various journals, online resources, and books. The questionnaire included quality system, quality information, service quality, individual impact of ERP system, employee impact on ERP system, the impact of ERP system excellence, and benefits of ERP system. The subjects of this research consisted of 35 MSMEs that had implemented an ERP system in running their business. Data analysis techniques were carried out and analyzed with SPSS for factors and AMOS for SEM. The research model can be described as follows:
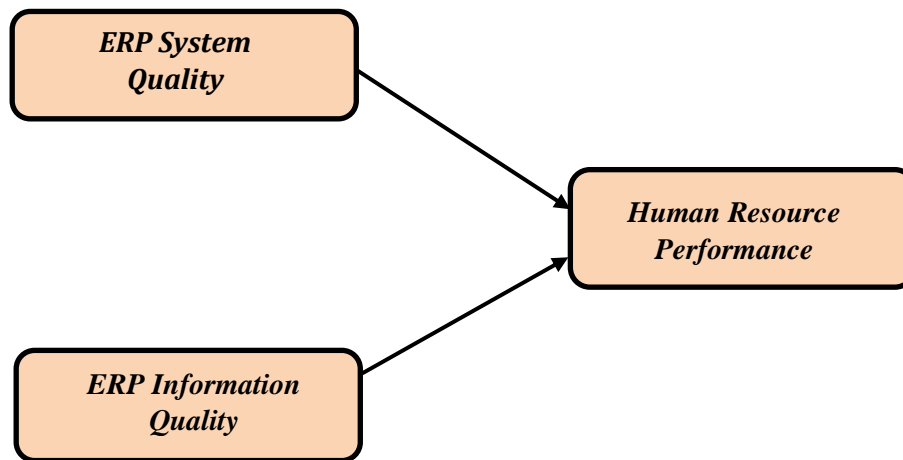
Figure 1. Research Model

Based on the research model figure above, the hypotheses tested in this study are:

H1:   As the quality of ERP increases, the performance of human resources in business roles that have run the ERP system will increase.

H2:   With the increasing quality of information structured by the ERP system, it will improve the performance of human resources.

RESULTS AND DISCUSSION

Based on the results obtained from the questionnaire on MSMEs that had used the ERP system, there were 35 respondents. Data analysis was then carried out with SPSS and AMOS for SEM. The results obtained revealed whether indicators of success existed in the ERP system that MSMEs had run. Regarding the measure's reliability, Cronbach's Alpha was 0.83, well above the 0.70 limits as recommended by Nunnally. It indicates that the study measure had high reliability in accessing the research objectives.

Table. 1 Sample Profiles

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
MSME Owner	12	33.3	33.3	33.3
Employees	11	33.3	33.3	66,7
Customers	12	33.3	33.3	100.0
Total	35	100.0	100.0	

The main thing that is very influential on the research method is data collection (Neuman, 2011). From this list, data on inventories, cash and cash equivalents, operating expenses, selling, general and administrative expenses were collected. Then, they were compared and reviewed for the operational efficiency of MSMEs before and after using the ERP system. By using respondents to assess the level of significant importance based on a Likert scale model of 1 to 5 and for the highest probability of 5, the following measurement scale was used.

Table 2. Measurement scale

Rating	Equivalent
1	Very insignificant
2	Not significant
3	Cannot be determined
4	Significant
5	Very significant

Table 3. Case Processing Summary

Alpha Cronbach	N Item
0.83	27

Table 4. Reliability Statistics

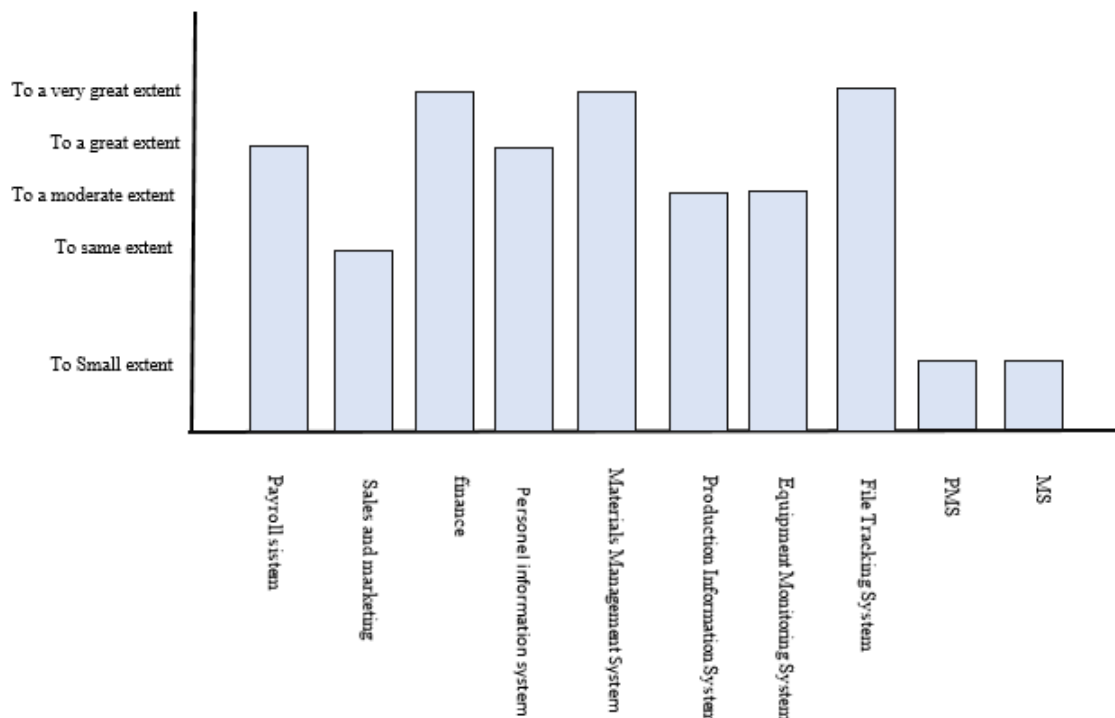|		No	%
Cases	Valid	35	100
	Exclude	0	0
	Total	35	100

Figure 2. Different Modules and Mapping Their Current Business Processes in ERP Software

Based on the results obtained from analyzing the responses of MSMEs that used the ERP system, particularly the computerization level carried out into their workflow processes, the business process mapping from all physical functional departments was carried out into the ERP System Software Entity. It was also found that departments like Finance, Materials Management, and File Tracking Systems were mapped to a greater

extent into software entities; departments like Payroll Information Systems and Personnel were mapped to a large extent. In contrast, departments like Production Information Systems and Equipment Monitoring Systems were mapped to moderate levels. At a certain level, departments like Sales & Marketing were mapped to some extent, whereas Departments like PMS and MIS were mapped to a small level in the ERP system.

From the values obtained through the Structural Equational Modeling approach to the ERP success measurement model as developed in Figure 5, it is evident that the factors contributing to the success of ERP implemented in MSMEs were the quality of ERP system information with a positive regression value of 0.86. It was followed by the contribution of the impact of the working group with a value of 0.65, revealing that the ERP system influenced each individual working in the group to function in the larger organization to achieve the assigned group's goals explicitly and contribute positively. Besides, it was uncovered that the organizational impact factor had a value of 0.15, stating that the ERP system contributed significantly to welfare and produced positive results supporting the organization.

CONCLUSION

Based on the results of research on the relationship between the quality of the ERP system and the performance of MSME employees carried out on 35 MSMEs that used the ERP system in processing all data, it was found that the ERP system could have a significant impact on the progress of its business in reaching a broad market. However, due to limitations, human resources who did not all master the ERP system would hinder the running of the existing ERP system. Besides, the quality of an appropriate ERP system would affect employee performance because, with the quality of the ERP system, it is beneficial to plan and manage resources in the form of applications designed to support various functions of business activities. Thus, with the ERP system, work will become easier and more efficient. Moreover, it will impact satisfaction for consumers, which can ultimately generate added value and provide maximum benefits for MSMEs and all interested parties (stakeholders) for the business.

REFERENCES

Ahmed Ra, Ovais dan Dr. D.K. Mahalik. 2021. *"Measuring ERP System Success: Success Indicators and Structural Equation Modelling Approach."* Turkish Journal of Computer and Mathematics Education. Vol.12 No.3(2021), 3736-3746.

Al-Hadi, M and Al-Shaibany, N. (2017). *Critical success factors (CSFs) of ERP in higher education institutions.* International Journal, 7(4), 92-95.

Al-Qudah., Suliman, Hasan Salih (2020). *"Impact of ERP System Usage on Supply Chain Integration: A Structural Equation Modeling, Jordanian Pharmaceutical Manufacturing Case study."* In: Journal of Economics and Business, Vol.3, No.2, 719-728.

Aremu, Y., Shahzad, A., & Hassan, S., 2018. *Determinants of Enterprise Resource Planning Adoption on Organizations' Performance among Medium Enterprises.* LogForum, 14(2), pp.245–255.doi:10.17270/J.LOG.2018.277

B.C.M. Patnaik., Satpathy, Ipseeta., Debnath, Nitai Chandra (2019). *"THE EFFECT OF ERP SYSTEM IMPLEMENTATION ON REAL EARNINGS MANAGEMENT: EVIDENCE FROM AN EMERGING ECONOMY."* International Journal of Civil Engineering and   Technology (IJCIET). Volume 10, Issue 03.

B F Billyan and M I Irawan (2021*). "Analysis of Technology Acceptance of Enterprise Resource   Planning (ERP) System in The Regional Office of PT. XYZ Throughout Indonesia."*   J. Phys.: Conf. Ser. 1844 012008.

Chang, S. & Gable G. (2000). *A comparative analysis of major ERP life cycle implementation, management, and support issues in Queensland government"*, Queensland University of   Technology, Information Systems   Management Research Center, 1152– 1166.

ElFarmawi, Wouroud. 2019. *"Challenges Affecting the Implementation of Enterprise Resource Planning (ERP)"* dalam Journal of System Integration, Vol 10, No 3. University of Phoenix, Management.

Gupta, S; Kumar, S; Singh, K; Foropon, C and Chandra, C. (2018*). Role of cloud ERP on the performance of an organization: Contingent resource-based view perspective*. The International Journal of Logistics Management, 29(2), 659-   675.

Haddara, M., & Moen, H. 2017. *User Resistance in ERP Implementations: A Literature Review. Procedia Computer Science, 121, pp.859–865.* doi:10.1016/j.procs.2017.11.111

Hsu, P, F.; Yen, H, J, R. & Chung, J.C., 2015. Assessing ERP post-implementation success at the individual level: Revisiting the role of service quality. Information   & Management, 52, pp. 925-942.

Kähkönen, T., Smolander, K., & Maglyas, A., 2017. *Lack of Integration Governance in ERP Development: A Case Study on Causes and Effects. Enterprise Information Systems,* 11(8), pp.1173– 120 doi:10.1080/17517575.2016.1179347

Khan U., Asim M., and Manzoor S. 2020. *"Improving Supply Chain Management of a Distribution firm using ERP System"* EJBMR, European Journal of Business and Management Research Vol. 5, No. 2.

Mengistie, A, A.; Heaton, D, P.; Rainforth, M. Analysis of the Critical Success Factors for ERP   Systems Implementation in U.S. Federal Offices. ERP Future Conference Revised Papers Book, Innovation and Future of Enterprise Information Systems. P-183-198, 2013.

Mohamed. YJ Ahamed, Muneeb M. Musthafa & Faiz MMT Marikar. 2020. *"Challenges and   Benefits of ERP System and Non-ERP System Integration in a Developing Country."*   Global Journal of Management and Business Research: A Administration and   Management. Volume 20 Issue 10 Version 1.0.

Motwani, B. 2017. *Impact of Resources in Enterprise Resource Planning (ERP) Implementation   Process on Internal Process of an Organization. Amity Business Review*, 18(1), pp.68–   79.

P Supangi et al. (2020). *"Analysis of Implementation and Proposal Development of ERP System in CV Indah Jaya."* IOP Conference Series: Earth and   Environmental Science.

Prasad, D. S., Pradhan, R. P., Gaurav, K., Chatterjee, P. P., Kaur, I., Dash, S., & Nayak,   S. 2018.   *Analyzing the Critical Success Factors for Implementation of Sustainable Supply Chain   Management: an Indian case study.* Decision   (0304-0941), 45(1), pp.3–25.   doi:10.1007/s40622-017-0171-7

Seethamraju, R. 2015. *Adoption of Software as a Service (SaaS) Enterprise Resource Planning   (ERP) Systems in Small and Medium Sized Enterprises (SMEs).* Information Systems Frontiers,   17(3),   pp.475-492.   doi:10.1007/s10796-014-9506-5