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BEST PRACTICES: SYNCHRONIZING THE CORPORATE CULTURE WITH THE SPIRIT OF INNOVATION, SUSTAINABILITY, AND GOOD GOVERNANCE

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PREFACE

Transformation into digitalization has taken over all aspects of business in year 2019. Success in converting to transformation requires careful co-operation, planning and participation. Over the years, we have seen a change in a role of traditional leadership workplace. Innovation and sustainability are becoming the driving engines for corporations to strive in the more complex globalized market. As businesses are moving across national and cultural borders, good corporate governance is then playing an important role to ensure the sustainability of the business.

With this current situation, The Business Management Program of Petra Christian University cooperation with The Business Management Program of Phuket Rajabhat University conducts the third international conference on management and entrepreneurship (the 3rd i-CoME) to address the issues on innovation, sustainability, and governance. This conference is made possible with the support of Jurnal Manajemen dan Kewirausahaan (Journal of Management & Entrepreneurship), an accredited scientific journal, and several other accredited journals. The conference will present six keynote speakers from six different countries such as USA, UK-China, Mexico, and India.

This conference is also calling for research articles and papers from scholars, researchers, and students from all over the world. There are six sub-themes with various topics covering on management and entrepreneurship that are ready to be explored and discussed. The conference will be a forum where fellow academics share experiences, exchange knowledge, work hand-in-hand, utilize a new technology, and find managerial solutions for a better business world. The detailed information is available in the i-CoME 2019 website: i-come.petra.ac.id.

Indonesia, August 9, 2019
Editor

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THE EFFECT OF ERP PRACTICE, SCM PRACTICE, TO PRODUCTION PERFORMANCE WITH IT INFRASTRUCTURE AS A MODERATING

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ABSTRACT

Information technology is a system that is used by many companies to unite many business function systems within the companies. The integrated information technology used by those companies is called Enterprise Resources Planning (ERP). The practice of ERP usage by companies is to obtain integrated data system among departments. The ERP practice must be aligned with the company operational system and must be customized for regular updates. This research distributes 74 questionnaires to manufacturing companies that main system is using ERP, with nine questionnaires rejected by the respondents due to company confidentiality, and 63 questionnaires are valid for further data process and analysis with PLS. ERP practice can increase SCM practice, and improve production performance of manufacturing companies. As an intervening variable, IT infrastructure upgrade can increase the effect of ERP practice to SCM practice because the information quality can become valuable information sharing for supply chain partners. The upgraded IT can increase the effect of ERP practice to production performance because it helps management to make proper decisions.

Keywords: *ERP practice, SCM practice, production performance, IT infrastructure.*

INTRODUCTION

The manufacturing companies must build their competitive advantage through the company strategy. The strategy must be able to create uniqueness that is not possessed by competitors. In the global market, the creation of strategy to respond the market and to innovate is very valuable for business capability, especially in facing severe competition marked by the increasing challenges of fast changing consumer preferences and shorter product life cycle (Chen, 2018). Since globalization has caused many alterations in business strategies, the direct impacts of globalization to business environment lately affect product processes, product packaging, product assembly, product storage and sales, and distribution across international borders and continents (Arlbjørn & Lüthje, 2012). Several push factors include cost reduction, company responding speed, increasing product quality and production flexibility, and reduced cycle times. This push factors are crucial for global competition (Arlbjørn & Lüthje, 2012).

Production process is very vital for business sustainability, especially for manufacturing companies. Without efficient and effective processes, manufacturing companies cannot grow and excel in global markets. Therefore, the manufacturing companies have to pay attention to their processes, especially the production methods, which contain competitive advantages for the company's sustainability. The manufacturing processes, which are focused on the production performance, are intended to yield efficient and effective production processes. The production performance in most manufacturing companies is connected to the production capacity, efficient production material use, efficient human resource use, and efficient energy use as the overhead costs.

To reach optimal production performance, manufacturing companies have to connect the SCM practice with other production activities. The SCM practice in a company is often reflected in the organization culture, customer relationship, information and communication technology, benchmarking, company performance measurement, and lean manufacturing. Proper SCM practice will increase company performance. In the production department, SCM practice is conducted by removing any obstacles that offer no significant added value to the company, implementing just in time management to the production to make proper amount of goods in time, implementing agile manufacturing (Gorane & Kant, 2016), and implementing information technology in the company (AL-Shboul, Garza-Reyes, & Kumar, 2018).

The implementation of SCM is always related to the role of information technology usage of a company. Many manufacturing companies have implemented the information technology system that can integrate data in the real time, and that system is called ERP (Enterprise Resource Planning). The ERP practice is used by manufacturing companies to create production schedules of each finished products for each machinery daily and weekly, making material planning to prepare material for each production process which are matched with the schedules, controlling work in process (WIP) in the production floor to match with the inventory, conducting data entry in the production

department and reporting them for the costing needs of the accounting and finance department, transferring goods data from the production floor to the inventory to the finished good sections which are monitored by the ERP system.

The SCM practice and ERP practice in increasing the company performance must be supported by information technology that is possessed by the company in order to create benefits from both systems. SCM is a strategy used by a company to connect customers with suppliers to control information flows, goods distribution, and appropriate fund distribution. The integration between a company with internal and external sides is always needed (Hamister, 2012). The integration can happen with the help of information technology which unites all related departments such as the production department, finance department, accounting department, marketing department, and other cross functional department within the company. With the help of information technology, ERP practice assists to achieve and implement SCM practice. The use of information technology in a company relies on the continually upgraded information technology infrastructure. Adjusting the information infrastructure technology is closely related with the software and hard ware upgrades of the information technology. The newness of this research relies on the limited numbers of researches on the field of information technology upgrade adjustment to the SCM practice supported by the ERP practice in manicuring companies in Indonesia. There is also a few researches that discusses about the whole package of information technology infrastructure used in a company to improve production performance.

GRAND THEORY

Supply Chain Management (SCM) Practice

The SCM practice is defined as a chain of activities done by an organization to promote effective supply chain management. A research by Gawankar, Kamble, and Raut (2017) explores various SCM practice, such as customer relationship management, strategic supplier partnership, information sharing, information quality, lean retailing practises, and postponement practises. The SCM practice will bring impacts on the effective and efficient company performance. The SCM practice is to conduct active communication on supply chain flows, to manage compatible information exchange on supply chain flows, to communicate company development along supply chain flows, and to build strong teams across organization within supply chain flows (Hsu, Tan, & Laosirihongthong, 2014).

SCM practice that is proposed by AL-Shboul *et al.* (2018) exploring the SCM performance is about doing collaboration with supplier, controlling flexibility with company external sides, using internet for a company to gain internal access to various departments and external access to suppliers and customers, focusing on customers to maintain product loyalty, reducing company wastes through lean production, and integrate various across functional departments to form an internal integration. Chong, Chan, Ooi, & Sim, (2011) claim that SCM practices cover the area of strategic partnership with suppliers, good relationship building with customers, information sharing with partners, and usage of information technology for training and best internal operation. SCM practice becomes the best practice given to a company through SCM activities related to the departments of purchasing, production, logistics, and transportation. The indicators for the SCM practice variable are schedule production, integrated system, cross functional department, information quality, collaboration with suppliers, and coordination with customers.

Enterprise Resources Planning (ERP) Practice

Enterprise resources planning is cross functional integration in a company to unite data to become a single data base. A company uses ERP to facilitate its resource setting. ERP practice gives the exact information to key user and end user in their activity. ERP practice is able to be used by the management to coordinate and control the company operational to produce the effectivity and efficiency of Critical Success Factor (CSF) in implementing ERP. They are project team, top management involvement, strategic decision making, communication, project management, project support, minimum customization, organizational change management, business process alignment, software testing, performance measurement, education and training, technical possibilities (Reitsma & Hilletoft, 2018). According to Dezdar (2012), CSF is divided into two in implementing ERP, they are strategic success factor (top management support, project management, business process engineering) and tactical success factor (ERP vendor support, user training and education, enterprises wide communication). ERP practice that is used by a company to control and organize its activity related to its information technology.

A company uses ERP practice by building modules of each function as its needs such as module for sales and distribution, module for management material, module for procurement and analysis, module for production and control system, module for costing, module for finance, module for shop floor control system, module for human resource management, etc. ERP practice is used to give information to user, key user and management for them to see the condition of their company appropriately and it will give them to make decision appropriately. Indicator used in measuring ERP practice is alignment ERP system with operational system, customization ERP system, training key user and system development.

Information Technology Infrastructure

The fast changing information technology implementation in a manufacturing company starts with an implementation in a department to know all work activities of the unit function. The integration is first built from accounting system in the company and in controlling the warehouse. The next change is that the company is building the integrated cross functional in a company by implementing the integrated information technology called enterprise resources planning (ERP). Using ERP is able to improve the company by producing operational system effectively and efficiently. The next changing is by external participation to be included in the information system of the company. The company integrates the internal and external to make the integration data with the suppliers and customers. The integrated data between a company and customer in a supply chain stream management is called supply chain integration (Sundram, Bahrin, Munir, & Zolait, 2018).

The changes in a company should be supported by the use of information technology infrastructure. The company should upgrade the information technology software and hardware. Information technology capability can be reached if the company provide fund for information technology infrastructure upgrade to fit its needs such as in using automated data entry in the company's business process by using data capturing machine to replace human work (Chae, Koh, & Park, 2018). The architecture of information and communication technology (ICT) is divided into hard and soft (human) system (Huang, Gardner, & Moayer, 2016). Hard system is an information technology hardware related to network system, computer system, data base system and data processing system (Skotnes, 2015). On the other hand, soft system is related with knowledge system and all of the work of human competency. Indicators used in information technology infrastructure are the company fund to improve it, hardware upgrading as needed, software upgraded as needed and improving the employees' competency to use it.

Production Performance

The measurement of a company performance should be done continuously to improve in the operational area. The company operational is a process to produce the products from accepting customer order to the execution of production plan and the procurement of goods from supplier. The company gives efforts to build the good partnership with the supplier and customer. The company performance is determined from the non-financial and financial performance (Ya'kob & Jusoh, 2016). Tarigan (2018) states that operational performance can be measured by fulfillment of customer order, the accuracy of shipping according to the time that has been set, delivery flexibility, and company flexibility to production volume change. Sundram *et al.* (2018) say in the research that manufacturing performance is measured by the settling of the complaints from customer, the speed of order fulfillment, delivery due date and flexibility. Chae *et al.* (2018) states that business performance that is measured by its financial performance is measured from profit ratio and cost ratio. Production performance measured in this research is order fulfillment (Tarigan, 2018; Sundram *et al.*, 2018), delivery due date (Sundram *et al.*, 2018), delivery flexibility (Tarigan, 2018; Sundram *et al.*, 2018), quality product and capacity production.

The Relationship among Research Concepts

Business performance can be improved when companies can maintain sustainable business through sustainable SCM. Sustainable supply chain management (SSCM) is a simple relationship between supply chains of a business where three factors, namely economic, environmental, and social are considered in their operations. Coordinated relations between organizations in business where economic, environmental and social factors are considered to manage raw materials, information, capital flows are designed efficiently and effectively related to the procurement, production and distribution of services to meet stakeholder demand, increase profitability, competitiveness, and organizational sustainability (Ahi & Searcy, 2013). The results of this sustainable will provide increased supply chain management performance in increasing the efficiency and effectiveness of the company. This condition is obtained when the company is always able to run and implement SCM practice properly. SCM practice in companies can be quantitative and qualitative performance (Gandhi, Shaikh, & Sheorey, 2017).

Supply chain management practices have an impact on improving company performance. The company makes improvements in collaborating with customers and suppliers as one of the practical forms of SCM in improving company performance in the market share of performance and financial performance (AL-Shboul *et al.*, 2018). SCM practice in the company will improve organizational performance and innovation performance of the company because good internal operation and customer relationships will provide innovation for new products for the company. SCM practice also has an impact on organizational performance in reducing production costs in industries in Malaysia (Chong *et al.*, 2011).

SCM practice will make the process in the company efficient and effective in producing products with the help of information technology that is implemented (Devaraj, Krajewski, & Wei, 2007). Companies that have strong internal resources with adequate infrastructure support will have a strong supply chain position and have opportunities to improve company performance (Hsu *et al.*, 2014). SCM practice for companies is supported by a strong operational system through a well-functioning production system. Based on this explanation, conceptual research models can be formulated (Figure 1).

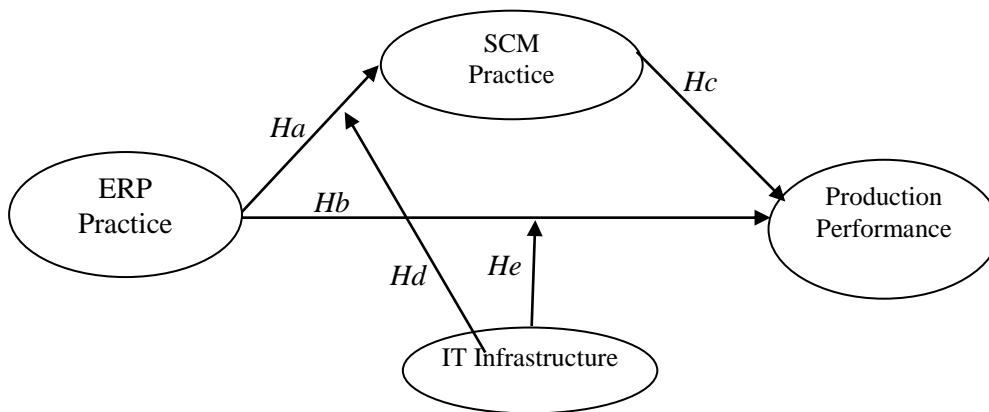


Figure 1. Conceptual framework ERP and SCM practice, production performance, IT infrastructure

Based on Figure 1, the research hypothesis can be constructed as follow:

- Ha*: ERP practice affects SCM practice in manufacturing companies.
- Hb*: ERP practice affects production performance in manufacturing companies.
- Hc*: SCM practice affects production performance.
- Hd*: ERP practice affects SCM practice in manufacturing companies with IT infrastructure as the moderating variable.
- He*: ERP practice affects production performance in manufacturing companies with IT infrastructure as the moderating variable.

RESEARCH METHOD

East Java is one of the largest provinces in Indonesia with the largest contribution to economic growth above Indonesia's national growth average. Indonesia's economic growth is 5.07% and the biggest contribution comes from Java Island at 5.66%. The economic growth of East Java is the largest compared to other provinces in Java island, with the main contribution from manufacturing industries amounting to (Prasetyo, 2019). Data retrieval from companies is done by visiting the company with the help of students as a data collection team. The questionnaires distributed were 74 questionnaires and 9 of the respondents refused to fill out questionnaires, but one questionnaire was not filled in completely. The total questionnaires that can be processed using PLS (Partial Least Square) analysis are 64 questionnaires. The results of data processing with PLS is to obtain a research model and to answer the research hypothesis

ANALYSIS AND DISCUSSION

This research focuses on the manufacturing companies in East Java that are obtained from the website of the Ministry of Industry. After the targeted companies are selected, the companies are contacted to make some appointments for interviews with the representatives of the companies, especially from the level of supervisor,

middle manager, head of department, or director. After some company visits and interviews, there are 64 company representatives willing to be the research respondents by filling the questionnaires for further data collection. The data are processed by PLS to obtain convergent validity and composite reliability.

Validity test is obtained by loading factor score. If the score is above 0.50, the validity can be accepted. The research instrument is reliable if the value is above 0.70. Based on the results of data processing, the reliability value of the ERP practice variable is 0.869, the SCM practice variable is 0.845, the production performance variable is 0.868, and the IT infrastructure variable is 0.925. The results of the obtained reliability values are above 0.70; so, the instrument is reliable. It is also supported by the Cronbach's Alpha values for each variable, with the ERP practice of 0.798, the SCM practice of 0.829, the production performance of 0.851 and the IT infrastructure of 0.891; so that it can be said that all variables have met the reliability requirements

The results of data processing show that the validity values which are indicated by the loading factor scores for all measurement items are above 0.5. For the variable of ERP practice, the indicator of the ERP system alignment to the operational system (ERP 1) is of 0.766, the ERP system customization (ERP2) is of 0.855, the key user training (ERP3) is of 0.803, and the system development (ERP4) is of 0.730. The SCM practice variable contains some indicators of the schedule production (SCM1) with the value of 0.625, the integrated system (SCM2) of 0.697, the cross functional department (SCM3) of 0.831, the information quality (SCM4) of 0.609, the collaboration with suppliers (SCM5) of 0.851, and the coordination with customers (SCM6) 0.785. For the value of loading factors of the variable information technology infrastructure, the indicator of the company fund to improve it (IT1) is of 0.734, the hardware upgrading as needed (IT2) is of 0.922, the upgraded software as needed (IT3) is 0.931, and the improvement of the employees' competency to use it (IT4) is of 0.876. Finally, the variable of the production performance surrenders the loading factor value for each indicator of the order fulfillment (PP1) of 0.820, the delivery due date (PP2) of 0.853, the delivery flexibility (PP3) of 0.695, the quality product (PP4) of 0.742, and the capacity production (PP5) of 0.842. Based on the results above, all research variables are valid and research instruments are reliable. The PLS output the data processing for the path coefficient to calculate the significancy of the impacts and to test the research hypothesis is observed in Table 1.

Table 1
Direct and Moderating Coefficient for Path Coefficient

| Direct and Moderating Coefficient | Original Sample (O) | T Statistics (O/STDEV) | P Values |
|---|----------------------------|---------------------------------|-----------------|
| ERP Practices -> Production Performance | 0.547 | 5.329 | 0.000 |
| ERP Practices -> SCM Practices | 0.818 | 14.726 | 0.000 |
| IT Infrastructure -> Production Performance | 0.017 | 0.261 | 0.794 |
| IT Infrastructure -> SCM Practices | 0.298 | 3.544 | 0.000 |
| Moderating Effect 1 -> SCM Practices | 0.184 | 2.005 | 0.045 |
| Moderating Effect 2 -> Production Performance | 0.127 | 2.327 | 0.020 |
| SCM Practices -> Production Performance | 0.361 | 3.685 | 0.000 |

In Table 1, the value of the impact from ERP practice to SCM practice is obtained the path coefficient of 0.818 with the *p-value* of 0.000, so the first hypothesis is accepted as the *p-value* is smaller than 0.05. It can be said that ERP practice implemented by the company is able to improve SCM performance. This condition provides that the ERP implementation of the company to integrate the internal company can be used also in carrying out internal and external integration of the company. SCM practice can be improved with the presence of ERP practices for companies. This study supports the results of the study (Gorane & Kant, 2016) stating that ERP software is able to provide quality data to SC partner so as to provide a broader scale of economics to increase invoicing, increase services and increase competitiveness.

Table 1 also reveals the path coefficient of 0.547 with *p-value* of 0.000 for ERP practice to production performance, so the second hypothesis is also accepted as the *p-value* is smaller than 0.05. It is said that ERP practice in manufacturing companies in East Java is able to provide improved production performance. Company management, key users and end users can use ERP practice in coordinating and communicating between functions to make the right decisions. Joint decisions taken are able to provide improved performance for the company. This study is in accordance with the results of the study by Devaraj *et al.* (2007).

The next hypothesis is that SCM practice gives an effect on production performance with the path coefficient value of 0.361 and the *p-value* of 0.000, so the third hypothesis can be accepted. SCM practice that is used by companies in managing relationships with suppliers and customers is able to provide an increase in the company's production performance. This research is in accordance with the results of the study by AL-Shboul *et al.* (2018) which states SCM practice enabling to improve the company performance in terms of the financial performance and market share performance.

IT infrastructure as a moderating variable in ERP Practice has an influence on SCM practice in manufacturing companies. Table 1 shows that the *p-value* 0.045 is below 0.05, therefore, IT infrastructure is capable of being a moderating variable of ERP practice to SCM performance with the path coefficient value of 0.184. ERP practice in providing data integration within the company is used to generate supply chain practice in the form of information quality and information sharing between cross functional to be able to improve the performance of SCM companies (Sundram *et al.*, 2018; and AL-Shboul *et al.*, 2018).

IT infrastructure as a moderating variable in ERP Practice has an influence on production performance in manufacturing companies. Table 1 shows that the *p-value* of 0.020 is below 0.05; so, information technology infrastructure is capable to act as a moderating variable on ERP Practice to production performance of 0.127. This study supports a research of Gorane and Kant (2016), which states the availability of information technology capable of integrating such as ERP software becoming very important for the company. Information technology and communication manufacturing companies are able to produce effective and efficient business transactions, quick access to information, enable better customer service, reduce manual documents for companies, improve coordination and better communication, increase company productivity, and save time.

CONCLUSION

The results from the data process, it can be concluded that ERP practice can provided integrated technology which improves the supply chain practice. ERP practice in East Java manufacturing companies can provide information about order fulfillment and delivery due date through ERP system which can surrender efficiency and effectiveness on production performance. SCM practice can create quality information and collaboration with suppliers and customers so that it can improve the delivery flexibility and product quality of the production performance. IT infrastructure can bring effects to increase ERP practice toward SCM practice as the ERP practice can integrate company data so that information quality and information sharing can be done with business partners. Finally, IT infrastructure can bring significant effects of ERP practice to production performance as the management can obtain information on order fulfillment, due date data order, and production capacity in order to make proper decision, which in the end can improve company performance.

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