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Stephanie Wissmann

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Zeplin Jiwa Husada Tarigan, Sautma Ronni Basana, and Hotlan Siagian

Abstract— This study aims to examine the effect of internal information management on firm performance with the mediating role of supplier partnership and sustainable supply chain management (SSCM). The study used the population 87 manufacturing companies domiciled in East Java of Indonesia. One respondent represents each company from the management level such as supervisor or manager. Of 87, 57 companies have completed the questionnaires, and the response rate is 65.50%. Data collection used a questionnaire designed with a five-item Likert scale. Data analysis used the partial least square technique with Smart-PLS software version 3.0 to examine the hypotheses. The finding revealed that six hypotheses are supported and two additional finding. Internal information management affects supplier partnership, SSCM, and firm performance directly. Supplier partnership influences SSCM and firm performance. SSCM influence firm performance. Two additional finding: internal information management mediate the effect of internal information management on the firm performance, and SSCM mediates the influence of internal information management on the firm performance. This study paves the way for the manager in improving firm performance in the context of supply chain management. This paper also makes several contributions to enriching the theory on supply chain management.

Index Terms— Internal information, supplier partnership, sus¬tai¬¬na¬ble SCM, Firm Performance.

The authors are with Petra Christian University, Jl. Siwalankerto 121-131, Surabaya 60236, East Java, Indonesia (e-mail: zeplin@petra.ac.id, sautma@petra.ac.id, hotlan.siagian@petra.ac.id).

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The Effect of Internal Information Management on Firm Performance, through Supplier Partnership and Sustainable SCM

Zeplin Jiwa Husada Tarigan, Sautma Ronni Basana, and Hotlan Siagian

***Abstract*—This study aims to examine the effect of internal information management on firm performance with the mediating role of supplier partnership and sustainable supply chain management (SSCM). The study used the population 87 manufacturing companies domiciled in East Java of Indonesia. One respondent represents each company from the management level such as supervisor or manager. Of 87, 57 companies have completed the questionnaires, and the response rate is 65.50%. Data collection used a questionnaire designed with a five-item Likert scale. Data analysis used the partial least square technique with Smart-PLS software version 3.0 to examine the hypotheses. The finding revealed that six hypotheses are supported and two additional finding. Internal information management affects supplier partnership, SSCM, and firm performance directly. Supplier partnership influences SSCM and firm performance. SSCM influence firm performance. Two additional finding: internal information management mediate the effect of internal information management on the firm performance, and SSCM mediates the influence of internal information management on the firm performance. This study paves the way for the manager in improving firm performance in the context of supply chain management. This paper also makes several contributions to enriching the theory on supply chain management.**

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I. Introduction

In the recent few years, there has been a shift in the consumer demand on the product. Attention on environmental sustainability has become a trending topic, particularly on the product that used natural sources. Consequently, the company such as manufacturing company has to take into account the issue of environmental sustainability in their operational practices in the pursuit of company sustainability. The consumers often question whether the production process adopted by manufacturing companies is environmentally friendly or not. Speaking about the product, it involves all the organizations within the supply chain network. Not only companies as producers, but suppliers, distributors, retailers, and consumers also need to be involved in preserving environment protection. The reason behind this demand for the environment issue awareness is the fact that industry operation development has increasingly caused environmental damage. Globalization of the industry has resulted in ecosystem disturbance between humans and the environment in which the industry operates [1]. In response to this trending requirement, a new approach oriented on environmental sustainability has emerged called a sustainable supply chain management (SSCM). This new approach takes into account the environmental issue in all the process of the supply chain involving the supplier, manufacturer, distributor, retailer, and the consumer. This SSCM include the environmental sustainability issues in operational activities while creating, protecting and increasing socio-economic, and long-term value for all stakeholders. The environmental sustainability practices in all the process along the supply chain network applied in the real-time and continuously at each stage of the supply chain management process [2]. Manufacturing companies need to adopt SSCM practices if they want to survive and compete in the global economy. Research by Kim *et al*. [3] states that the adoption of SSCM by the company can provide benefits for the company and achieve the company's goals.

The adoption of the SSCM requires intensive coordination among all parties within the supply chain network. Hence, communication and an integrated information management system is a must to make sure the flow of material, information, and finance are running well. Without a consistent sharing of information between companies within a supply chain, the transaction cannot take place properly. Information flow moves in two directions, namely information on goods demand from customers and the flow of information about related fulfilment of orders. This fact shows that the implementation of the SSCM requires an adequate and well-managed information system. As defined, the implementation of SSCM will involve all the organization within the network including the supplier. Hence, a mutually beneficial partnership with the supplier is required to ascertain the successful implementation of the SSCM. Good cooperation with suppliers in the long term will support the implementation of SSCM because the supplier would likely to comply with the purchaser requirement once they have long term agreement. Partnership with the supplier will be optimal once communication and an information system integrating all units involving in the process of procurement have been established. The availability of the data and the updating of the information regarding the material requirement planning and the material specification enable the purchasing department to procure the material in the right time, and the right specification. This information system also allows the purchasing department to communicate with the supplier in complying with the environmental issue requirement. A good relationship with suppliers will have an impact on material availability, shorter lead time, and better material quality. The appropriate internal information management can provide real-time, and

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The authors are with Petra Christian University, Jl. Siwalankerto 121-131, Surabaya 60236, East Java, Indonesia (e-mail: zeplin@petra.ac.id, sautma@petra.ac.id, hotlan.siagian@petra.ac.id).

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accurate information to support daily operations and will improve company performance.

The supplier is an essential part of the supply chain and have an impact on performance improvements. Companies must be able to maintain good relations with suppliers, in the pursuit of the high quality of products or services purchased, and improved company performance. Relationships can succeed well if the company make the best efforts to build excellent collaboration with suppliers. Other research also shows that partnership collaboration between suppliers and buyers will have an impact on improving company performance [4]. The partnership should be a focal point for the management to build good relationships with suppliers. Among the benefit of the excellent partnership with the supplier are the reduction, even, the elimination of the risk from good ordering errors, the reduction of the transaction cost [5]. A good partnership will provide benefits for the company, such as reducing operational costs, increasing customer satisfaction, reducing lead time, reducing inventory costs, and increasing company competitiveness. Partnership management consisting of partnership selection, partnership establishment, and partnership sustention has a significant effect on innovation performance [6].

From the above discussion, it can be summarized that several previous studies have examined the direct impact of internal information management, supplier partnerships, and SSCM on company performance separately. This study is present to fill the gap and focuses on examines the influence of internal information management on company performance through the mediating role of the supplier partnerships and SSCM.

II. Conceptual Framework the Research

In the era of globalization, the competition is not anymore on the quality, price, or delivery but has shifted toward how the organization produced the product and how the organization exploits the natural resources to meet customer demand. The awareness of the organization on the environmental sustainability issue has become one of the competitive advantages of the company. Therefore it is necessary to ensure that all stages of the process along the supply chain network are connected and integrated covering from the supplier to the consumer. The impact of global industrial development, at a certain level, has damaged the ecosystem of the human being and the environmental/natural conditions [1]. Environmental sustainability must be appropriately managed in the course of creating, protecting, and enhancing environment, social, and economic values in the long term for the interests of all stakeholders [2].

Internal Information management is an approach concept that describes the extent to which the company's internal data has been well integrated. Internal information management is measured using indicators consisting of 1) integration of data with other departments, 2) planning integration with others department, 3) accurate data integration, and 4) data relevancy for the task and activity. Internal information management has a positive impact on overall company performance.

The quality of information is also one of the critical factors for building effective operational performance. Reliable internal information management can provide the data on time, accurate, and up to date which at the end, enable the supplier to deliver the order as requested and improve the supplier performance [7]. Company needs a good relationship with suppliers (supplier partnership) to improve supply chain performance. With an integrated information system allow sharing of information between partner which is required the collaboration.

Supply chain management requires good quality of cooperation among various parties, suppliers, distributors, and retailer who aim to increase customer satisfaction and minimize costs [8]. Internal information management integrated the company, and its suppliers which enable the partnership to obtain adequate information. Collaboration with suppliers will provide an increase in SCM performance especially in continuous improvement and security in building a long-term supply agreement. Supplier relationship management (SRM) is a systematic approach to developing and managing partnerships. SRM focused on creating values based on open communication, trust, and collaboration built with suppliers. Suppliers can take responsibility for the raw material quality, and on time material delivery. The indicator used to measure supplier partnerships are: 1) sharing information with another department, 2) building collaboration between suppliers and companies, 3) continuously coordinating, and 4) sharing difficulties faced by the company.

The SSCM is an approach that must be adopted by manufacturing companies to be able to survive in global competition. Sustainability built by the company through a good relationship along the supply chain, i.e., between companies, suppliers, and customers will provide benefits to the company in achieving company goals [3]. SSCM is a set of activities stream in manufacturing industry from suppliers to customers which is related to material movement, the flow of information and funds in a continuous manner to enhance the economy, environment and society [9]. SSCM which is measured using six indicators which are: 1) sustainability at product design process, 2) sustainability on the process, 3) sustainability marketing, 4) sustainability on transportation, 5) sustainability on the purchasing, and 6) sustainability on packaging [10].

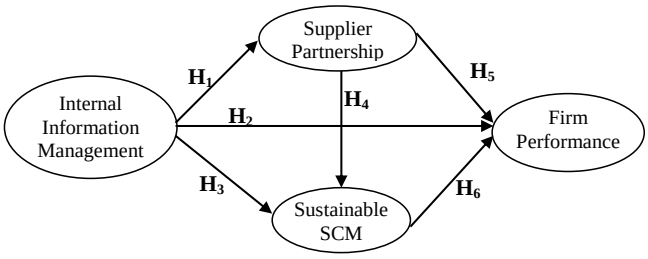

Fig. 1. Research conceptual model.

Partnerships can provide advantages for companies, particularly in respect of efficiency, operational effectiveness, and profitability [6]. The partnership is built through coordination between companies to avoid misunderstanding, build a special team to solve problems, hold the meetings or discussions, and finally share information about their business strategies [3]. Partnerships could improve performance through risk sharing, reduction of transaction costs, and process efficiency or improvement [11]. Firm performance since as order fulfillment, delivery flexibility to customer, delivery speed with supplier and customer, and flexibility to change volume with suppliers to provide higher

customer satisfaction [12]. The firm performance on this study is measured using five indicators as follow: 1) cost reduction, 2) operational efficiency, 3) operational effectiveness, 4) reduction in company inventory, and 5) company innovation increased.

Based on Fig. 1 above, six hypotheses can be taken from the research as follows:

H1: Internal information management affects supplier partnership
H2: Internal information management affects sustainable supply chain management.
H3: Internal information management affects performance
H4: High supplier partnership has an impact on sustainable SCM
H5: Supplier partnership that has a high impact on firm performance.
H6: Sustainable SCM affects firm performance

III. Research Method

The population of this study covers all companies that have used enterprise resource planning (ERP) software as data integration and has adopted sustainable supply chain management (SSCM), and number of permanent employees more than 100 people. These criteria are required to make sure that the population is homogenous. The total number of manufacturing which meets the criteria is 87 companies domiciled in East Java, Indonesia. Furtherly, 87 questionnaires were distributed to the companies with the assistance of 87 students who were studying operation management. Each company was represented by one respondent from the management level such as a supervisor or manager. Off 87, 57 questionnaires considered valid after performing data cleaning. The descriptive of the respondents can be summarized as follow: supervisor 34 respondents (60%), manager or head of the department 15 respondents (27%), and top management eight respondents (14%). Partial Least Square (PLS) technique with Smart PLS software version 3.00 used to analyze the collected data. The next step is to assess the measurement model in term of factor loading, cross-loading, and reliability. The result indicated that all indicators are valid in term of factor loading and cross loading. All factor loadings are higher than the minimum acceptable value of 0.500 (range 0.551 and 0.872).

Meanwhile, the cross loading of all indicators is also valid since the factor loading with its related variable is higher than the loading with other variables. The result of the analysis also indicated that all variables are considered reliable with the value of composite reliability and Cronbach Alpha is higher than 0.70 (range 0.743 and 0.869). Thus, convergent and discriminant validity indicates that all indicators are valid. Meanwhile, the reliability of the measurement model can be seen from the composite reliability value, and Cronbach's absence shows that each variable is reliable. Thus, the next step is analyzing internal models.

IV. Analysis and Result

The primary objective of this study is to examine the effect of internal information management on firm performance through the mediating effect of supplier partnership and sustainable supply chain management. As indicated by the result, this study verified that all six hypotheses are supported. Table I demonstrated the result of the path coefficient for each relationship. All the coefficient values are positive (range 0.254 and 0.545) and the t-value is higher than 1.96 (range 0.219 and 5.418). The first finding confirmed that internal information management affects the supplier partnership. Internal Information management which is reflected by an integration of data with others departments, planning integration, and data relevancy, will reasonably affect the supplier partnership in the form of sharing information, building collaboration between suppliers and companies, continuous coordination, and sharing of difficulties faced by the company.

TABLE I: Hypotheses Test Result and T-statistic

Hypotheses	Original Sample (O)	T Statistics (|O/STDEV|)	P Values
Internal Information Management → Supplier Partnership (H1)	0,545	5,418	0
Internal Information Management → Sustainable SCM (H2)	0,321	2,541	0,011
Internal Information Management → Firm Performance (H3)	0,304	2,841	0,005
Supplier Partnership → Sustainable SCM (H4)	0,481	3,768	0
Supplier Partnership → Firm Performance (H5)	0,382	3,605	0
Sustainable SCM → Firm Performance (H6)	0,254	2,198	0,028

The second result indicated that internal information management influences sustainable supply chain management. The implementation of the internal information management such as data integration and planning integration using an accurate data will improve the adoption of the SSCM into practices which is reflected in the term of environmental sustainability awareness at the product design, production, marketing, transportation, purchasing, and on packaging process. Third result support hypotheses H3 where internal information management has a positive impact on manufacturing performance. In practices, it is reasonable that with the availability of the accurate data, the organization will be able to realize the production planning on the right time, right specification, a right quantity which improves the performance. The fourth finding proved that the supplier partnership affects SSCM.

As understood, sustainable supply chain management involves all the parties along the network including the supplier. Hence, the better the relationship with the supplier, the better the implementation of the SSCM. The data support hypotheses five (H5) stating the effect of the supplier partnership on the firm performance. An excellent relationship with the supplier will improve firm performance. The supplier contributes to the production cost and delivery schedule.

The supplier partnership, therefore, affects firm performance. The last finding is proof that SSCM does affect firm performance. The adoption of the SSCM practices into the operational process of the firm contributes an overall improvement on firm performance and also improve the reputation of the firm due to firm awareness on the environmental sustainability issue.

Since all the hypotheses on the model are supported, we can draw additional and exciting findings about the mediating role of the supplier partnership and the SSCM.

This result demonstrated that supplier partnership indeed mediates the effect of internal information management on the firm performance. The second additional finding also proves that sustainable supply chain management (SSCM) mediate the effect of the internal information management on the firm performance. In summary, the research model of this study proves that internal information management contributes a substantial influence on the performance of the manufacturing firm when the firm establishes an excellent partnership with the supplier and adopt the sustainable supply chain management into their practices. This study provides an insight for the manager of the manufacturing firm in enhancing the firm performance. This study also contributes an enrichment on the current theory on supply chain management.

V. Conclusion

The present study aimed to examine the effect of internal information management on firm performance through the mediating role of the supplier partnership and sustainable supply chain management. The main finding can be summarized as follow: 1.) The internal information management affects the supplier partnership, 2) the internal information management influence the SSCM, 3) the internal information management affects the firm performance. 4) the supplier partnership affects the SSCM, 5) the supplier partnership influences the firm performance, and 6) the SSCM affects the firm performance. 6) the SSCM improve firm performance. The additional finding from this research regarding the mediating role can be drawn as follow: 1). Supplier partnership mediates the effect of internal information management on the firm performance, 2) the SSCM affects the firm performance. The study provides an insight for the manager how to enhance the firm performance in the context of SCM. This study recommended that further research is undertaken in the other industry which uses hazardous material which can damage environmental stability.

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Zeplin Jiwa Husada Tarigan obtained his bachelor degree in electric and telecommunication engineering, and master's degree in industrial management from Sepuluh Nopember Institute of Technology. He obtained his doctorate degree from University of Brawijaya, Malang, Indonesia. He has experienced as a manager in PPIC and BPO PP SAP R/3 in some manufacturing industries. At the moment, he is a full-time faculty member at Petra Christian University, teaching in the program magister management or master's program. His research interests are ERP and operation management.

Sautma Ronni Basana obtained his bachelor degree in economics from Universitas Brawijaya, Malang, Indonesia, and his master's degree in economics from University of Indonesia, Jakarta, Indonesia. He obtained his doctorate degree from University of Brawijaya, Malang, Indonesia. He is an associate professor on financial management in Petra Christian University, Surabaya, Indonesia. His research interests are financial management and ERP (Enterprise Resources Planning).

Hotlan Siagian is working as an assistant professor in Petra Christian University, Surabaya, Indonesia. He completed his doctoral of business management in 2014 from Padjadjaran University in Bandung, Indonesia. He got a strong research background and has published several papers on supply chain management and business process re-engineering. He is an Indonesian citizen and a fellow of Indonesian supply chain and logistic association.