

Eco Design, Internal Environment Management, Just In Time And Organizational Performance: Examining Moderating Role Of Trust

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Abstract

The prime objective of the present study is to examine the impact of Just in time production, internal environmental management, and eco-design on organizational performance. Furthermore, the moderating role of trust between internal environment management and organizational performance is examined as well. The data for the present study is collected from the customers of the textile industry through convenient sampling. The response rate was 74%. The collected data was analyzed through PLS-SEM. The findings of the study revealed that eco-design and internal environmental management significantly impact organizational performance. Whereas trust moderates positively the relationship between internal environment management and organizational performance. On the other hand, the impact of just-in-time production on organizational performance is not significant. The findings of the present study are helpful for practitioners and decision-makers of the textile industry dealing in the supply chain in developing a strategy to enhance organizational performance.

Keywords— Eco-Design; Trust; Organizational Performance; Internal Environment Management; Indonesia

Abstrak

Tujuan utama dari penelitian ini adalah untuk menguji dampak produksi Just in time, manajemen lingkungan internal dan desain lingkungan terhadap kinerja organisasi. Selain itu, peran moderasi kepercayaan antara manajemen lingkungan internal dan kinerja organisasi juga diperiksa. Data untuk penelitian ini dikumpulkan dari pelanggan industri tekstil melalui pengambilan sampel yang mudah. Tingkat tanggapannya adalah 74%. Data yang terkumpul dianalisis melalui PLS-SEM. Temuan penelitian mengungkapkan bahwa desain lingkungan dan pengelolaan lingkungan internal berdampak signifikan terhadap kinerja organisasi. Sedangkan kepercayaan memoderasi secara positif hubungan antara manajemen lingkungan internal dan kinerja organisasi. Di sisi lain, dampak just in time production terhadap kinerja organisasi tidak signifikan. Temuan dari penelitian ini sangat membantu bagi para praktisi dan pengambil keputusan industri tekstil yang berurusan dengan rantai pasokan dalam mengembangkan strategi untuk meningkatkan kinerja organisasi.

Kata kunci— Desain Ramah Lingkungan; Kepercayaan; Kinerja Organisasi; Pengelolaan Lingkungan Internal; Indonesia.

I. INTRODUCTION

The success of any organization is mainly dependent upon its overall performance, also known as organizational performance. Organizational performance shows the ability of the organization to achieve its organizational goals by implementing strategies effectively. There are several factors which impacts organizational performance like outcomes, efficiency, and effectiveness of the business model. One of the important reasons for good organizational performance is the level of skills that the leaders of the organization pose (Randeree & Al Youha, 2009). These skills are tested at the stage of strategy implementation. In order to accomplish the goals and objectives, several activities are performed by the organizations. In order to be a successful organization, these repeatable activities for their strategic goals and objectives play an important role.

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Therefore, there exist very close relationship among objectives of organization and performance of the organization. For this reason, organizations allocate most of their resources which are available so they can achieve pre-determined objectives. Therefore, two aspects, namely organizational input and organizational objectives, may be considered as the objectives of the organization (Singh *et al.*, 2016).

Organizations all around the globe are facing several challenges. These challenges include an increase in demand for goods, pollution control, the decline in natural resources and global warming. On the other hand, stakeholders of the organizations all around the globe are getting aware of these environmental impacts of industries. These firms have the pressure to minimize the environmental impact of their production process (Galdeano-Gómez *et al.*, 2008). Internal environmental management systems, eco-design, and green technologies are required to be implemented by the organizations so they can fulfil these demands (Rehema *et al.*, 2016).

Reducing the environmental impact of the production process during the production process is the main aim of eco-design. The product life cycle is mainly composed of the process of raw material, production process, distribution process and usage process. Eco-Design impacts all the product life cycle stages including recycling, recovery, usage, distribution, packaging, production, and extraction of raw material. In the process of product design, eco-design is the new approach which involves identifying different environmental aspects which are related to the production of products (Richard, 2019).

Past literature has discussed the concept of just in time in several researches. It reflects the regular search of ways by which waste can be reduced, and the raw material is produced only at the time of need. The basic purpose of the JIT concept is to reduce the cost. At the time of need, all good required are gathered according to the philosophy of JIT. Therefore, according to JIT, organizations must produce goods with no stocks and minimum waste. Researchers have also defined JIT as the concept in which goods and services are delivered after production just in time, sold to the customer just in time, fabricated just in time, and material purchased just in time. According to researchers, no goods or services must be manufactured or delivered to customers until there are need and demand for that specific good or service. Several different theories regarding JIT are tested by scholars in past literature. In the relationship of a buyer and supplier, the focus of JIT is to focus on the flow of information with an effort to maximize the cost and minimize the cost of the supply chain. The basic objective of Jit is to remove every kind of waste which is involved in supply chain activity (Mishra *et al.*, 2013).

The internal environment of any organization is formed by the internal elements of the organization, including the culture of corporate, management and current employees which impacts the behaviour of all stakeholders. Most of these elements impact the organizations. As mentioned, that environmental degradation is the major concern for most of the societies around the globe. Therefore, external as well as internal programs are adopted by the organizations to minimize the impact of harmful production activities. Internal environment management is based on putting different activities, so the organizational internal goals and objectives can be achieved. These internal goals may be designed by the CEOs, Managers and imposed by law. Importance of environmental management is emphasized in a number of areas including outbound and inbound logistics, manufacturing and purchasing (De Giovanni, 2012).

Researchers have given attention to the concept of trust since the last few years in almost every discipline of life. Trust plays an important role to make the decision regarding any product or services. Trust developed is an important asset of the organization. Trust is the basic factor which contributes to the success of the organization (Nugraha & Hakimah, 2019). It is because trust has the ability to lead as well as develop and cooperative behaviour by which effectiveness, productivity and efficiency can be enhanced (Nugraha *et al.*, 2020). In past literature, trust is considered as the pre-requisite to build a good relationship with customers and develop commitment. The situation when one party have confidence over the other party in terms of integrity and reliability, trust is developed (Alireza Mosavi, 2012).

Textile industry around the globe plays an important role in the growth of country's economy and contribute to GDP as well. Since the last two years, there is growth in the textile sector of Indonesia (Hakimah *et al.*, 2019; Nugraha & Hakimah, 2019). In fact, this sector has enjoyed 6% growth for the last two years. In 2017, the revenue generated by the textile sector of Indonesia was 12.39 billion USD in 2017-18 from 11.8 billion USD, which was recorded in 2016 (Van Der Eng, 2013). In this situation, the organizations involved in this sector must focus on adopting the measures by which they can improve the performance and minimum damage to the environment. Therefore, the basic purpose of this study is to examine the impact of JIT, internal organizational management, and eco-design on organizational performance. Moreover, the moderating role of trust will be examined, as well.

II. LITERATURE REVIEW

A. *Organizational Performance*

Organizations gain sustainability from the dynamic condition, which is resulted from its action to develop stakeholders which are perpetual, including the value development of the shareholders. The organization which is serving the environment and society will serve the customers more as compared to those organizations which do not serve society or environment (Hakimah *et al.*, 2019). It is the evaluation of performance on the basis of sustainability (Jaaron *et al.*, 2008). Importance of organizational sustainability will be assessed based on several frameworks developed by past researchers. There can be three general categories of these frameworks. The dimensions include social sustainability, environmental sustainability, and economic sustainability. A number of scholars have mentioned that performance can be measured by operational performance, social performance, environmental performance and economic performance (Geng *et al.*, 2017).

B. *Eco-Design*

Researchers have defined eco-design as project practices which have the aim to create efficient processes and product. This concept was initiated first time by WBCSD, also known as world business council for sustainable development. Its conference was held in Rio. The process of eco-design is very entailing and pro-active. All stages of the product life cycle are influenced by it, including recycling, recovery, use, distribution, packaging, production, extraction and raw material (Jeswiet & Hauschild, 2005). For the designing of the products, it is the new approach. Environmental aspects are involved in connecting and identifying the products and include these products in the process of product development (Nowosielski *et al.*, 2007).

Researchers defined eco-design as a solution which is sustainable for services and products changes which minimize negative sustainability. Moreover, positive sustainability is maximized, which impacts the ethics, society, environment, and economy through-out the life cycle of the product. Eco-Design is defined as the process in which design performance is considered in terms of safety, health and environment over the process and product throughout the life cycle. Among other practices of green supply chain management, eco-design is an important practice. It is discussed with other names in past literature, including sustainable design, clean design, life cycle design, and conscious design. Most of the time it takes place at the stage of product design with a purpose to make it sure that environmental concern of the life cycle of the product can be well known before beginning the manufacturing of product (Gheorghe & Ishii, 2007).

C. *JIT Practices*

Researchers have defined practices of JIT as the operating concept, which was designed to minimize the waste. The basic purpose of JIT is to produce services and goods without wastage. It can be achieved by the organizations if they test every step, whether it is adding value to the service or product. Organizations which have used the concept of JIT have the minimum level of inventories in which everything is delivered at the time of need, place of need and amount in which it is required so the product can be produced (Mehra & Inman, 2014). Scholars mentioned that firms which opt to use the concept of JIT have the tendency to operate efficiently and fewer resources are used. Therefore, quality is improved, the inventory level is minimized, and the motivation level is maximized as well, so the problem can be solved at the time of occurrence. It has other disadvantages as well, including minimizing the cycle time because the products are produced at the request of the customer. By this way, the cost of saving is increased, and competitiveness is enhanced as well because the right products are delivered to customers in terms of value-based, quality and quantity on the basis of requirements (Shalakhya, 2015).

D. *Internal Environmental Management*

Researchers have pointed out that practices related to GSCM are considered as the internal management system. These practices can be administered and employed by one manufacturer. Scholars have also revealed that internal Management practices are an important part of the internal practices of GSCM (Mitchell & Hill, 2009). Researchers have defined internal management as the procedures and processes which are established so the organizations can achieve their intra environmental goals. In order to achieve such goals and aims, support from top management is required. Basically, such goals and aims are set for the supply chain management of organization (Zhu *et al.*, 2012). Enhancing efficiency is the aim of the internal environmental process, which is achieved through the synchronization of engineering and quality department. Moreover, the whole supply chain is involved as an extension of TQM. There are several factors to consider internal environmental management, including audits of the internal department, eco-labelling, certification on the basis of ISO 14001. Additionally, effective employment of different practices related to GSCM, including reverse logistics, green purchasing and eco-design is mainly dependent upon internal environment practices (Green *et al.*, 2012).

E. Customer Trust

Since last few years, researchers and practitioners got attracted by the concept of trust, especially in the marketing as well as organizational theory. In literature, trust plays an important role to maintain after developing the relationship among the parties which are involved in the process of exchange. This trust factor is important in the seller and buyer relationship in order to get the service or product (Nugraha *et al.*, 2020). In literature, researchers have defined trust as the amount of reliability which is ensured by one partner in the relationship of exchange. To develop trust, organizations maintain their obligations and promises are kept as well. These expectations are developed based on benevolence, honesty, and competence of the firm. The expertise of the organization develops the competence of the organization. The capacity of the organization is reflected in order to fulfil the expectations and making the transactions. It is key for the honest organization to fulfil its promises. Trust plays a critical role to shape behavioural intention among stakeholders. For example, customers of the organizations are retained through trust. The stakeholders want to be respected by the organization (Nguyen *et al.*, 2013).

F. Eco-Design and Organizational Performance

The damages which are caused to nature by the activities of industries can be reduced by the eco-design. Different researchers explained the PLC explanation and eco-design strategy of Eco-Design as the end-of-life design, product usage design, product distribution design, design for manufacturers and design for raw materials. Reducing the impact on the environment is the main focus of eco-design. There are a number of other benefits of eco-design including increasing the competitiveness through the launch of new services or product, try to target potential customers and new market entrance, reduction of cost and many others (Knight & Jenkins, 2009). It is expected that all of these will enhance the financial performance of the organization. With the help of eco-design, raw material usage can be reduced, wastes can be reduced, and large environmental footprints can be reduced which results in the usage of large environmental resources which may impact the effectiveness and efficiency of the organization keeping the environmental impact minimum. It's been revealed by the researchers that eco-design has a positive impact on the performance of the organization. On the other hand, environmental performance is positively impacted by organizational performance, including environmental performance, economic performance, competitive advantage and market share enhancement (Rehema *et al.*, 2016).

H1: Eco-design and Organizational performance are significantly related to each other.

G. JIT practices and Organizational performance

The organizational performance is directly impacted by the JIT implementation. It is an important concern for practitioners and academicians. Several manufacturing organizations have observed the benefits of implementations of JIT. These benefits are in terms of output, productivity, and quality. To examine these relationships, several studies are conducted. These studies have pointed out JIT selling, and JIT purchasing is directly impacted by JIT production. Basically, JIT production is the internal JIT and JIT selling is the external JIT (Bashar & Hasin, 2019). In the present era, when there is immense competition in the business market, it is important for organizations to enhance internal capabilities all over the networks of the supply chain (Yang, 2014). Inventory turnover, cycle reduction, lead time reduction and on-time delivery are the main factors of performance of any firm of dealing in manufacturing of goods (Bashar & Hasin, 2019).

H2: JIT practices and Organizational performance are significantly related to each other.

H. Internal Environmental Management and Organizational Performance

Trading status of any organization is the basis of the internal environment of the organization. Its procedure, policies, interests of stakeholders, control systems, operational system, management skills, staff skills, physical resources and finances are included in it. Researchers have mentioned that organizational factors are related to the internal organizational factors which impact the capacity of the organization by which the objective achieving ability is damaged, development as well as the implementation of any plan is impacted as well. As a result, the performance of the organization is damaged (Abd Ghani *et al.*, 2010). Researchers have mentioned that the performance of the organization is influenced by the internal environment of the firm. The management of different aspects is highlighted through organizational environmental factor including style, shared value, systems, staff, skills, and structure. They are considered as the important internal factors which impact organizational performance. Therefore, the organizational performance of an organization is impacted by the internal structure as well as the system of the organization (Kinyua-Njuguna, 2013).

H3: Internal environmental management and Organizational performance are significantly related to each other.

I. Trust: Role as Moderator

Researchers defined trust as trustors have the intention of regarding vulnerability acceptance because of the behaviour of trustees. Researchers have mentioned that trust is a kind of benevolence and reliability of trustee, which is recognized later. Phenomena of trust were primarily founded in 1983. Later this concept is considered comprehensively in the field of e-commerce, marketing, supply chain and economics (Pirson & Malhotra, 2011). Researchers have defined as consumer's willingness to rely on the basis of the company upon the confidence of the consumer. In the field of business, the confidence of the consumer is perceived as one of the important factors for a collaborative relationship. Researchers have pointed out that organizations must develop trust among their customers in order to maintain long term relationship with their customers and survival in the market. Scholars have mentioned that trust will only be developed if one party have confidence in the integrity and reliability of other parties during the exchange process (Pirson & Malhotra, 2011).

On the other hand, trust is also defined as the consumer's willingness to rely on the exchange process of another party. If one party have confidence over the other party, it will have positive behavioural influence over the other party. Scholars have mentioned that if one party believes that positive results will be the outcome of the actions of other parties, trust is developed (Schoorman et al., 2007). Moreover, past studies have revealed that there exists an inconsistent relationship between internal environmental management and organizational performance (Laariet et al., 2016). All this reflects the need for moderator in this relationship. Moreover, trust has a significant relationship with organizational performance. (Ng, 2015). Therefore, its hypothesized that

H4: Trust act as a moderator between Internal environmental management and Organizational performance.

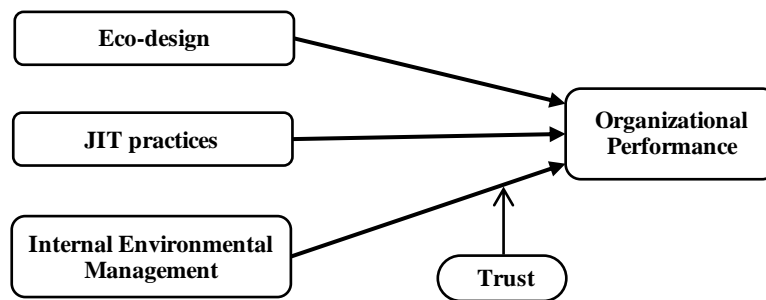


Fig 1. Research Framework

III. RESEARCH METHODOLOGY

The data is collected from the customers of the textile industry in Indonesia. The sampling technique used was convenience sampling. Total of 520 questionnaires was distributed among the respondents, and 394 usable questionnaires were received, which were further used for data analysis. The response rate was 74%. After collection of the data, it was imported in Excel software. As the main purpose of the present study is to examine the relationship between the mentioned variables of the present study. Therefore, PLS-SEM was used in the present study because it is developed and designed to ease the pressure, which is mounted due to the large sample size. Moreover, it also eases the tough requirements of the relationships which are to be met for CB-SEM (Joe F. Hair Jr et al., 2017; Henseler et al., 2009). The main benefit of using PLS-SEM is that highly complex models can be identified with more reliability. On the other hand, Supply chain management is a part of social science research. Among the studies conducted in the field of social sciences, it is very difficult to obtain normal data. While using PLS-SEM, this normality of the data is not the main requirement. Therefore, if the data is not normal, it is easy and possible to run by using PLS. Therefore, for the present study, the PLS technique was employed to analyse the data. The data was collected through random sampling. Later initial screening of the data was done through SPSS 25. Later Smart PLS 3.0 was used for data analysis. Moreover, for this reason, for more accurate results, PLS-SEM is the new generation in order to analyse the data.

IV. RESULT AND DISCUSSION

Partial least square (PLS) is the basis of findings and analysis in the present study. Past studies are used for the steps involved in PLS. In the first step, the reliability of the data is assessed. For this purpose, the measurement model is shown in figure 2 below, and factor loading is also mentioned in table 1 of outer loading. The

measurement model and outer loading table clearly showing that all of the factors retained for the present study have factor loading of more than 0.5.

Table 1. Outer Loading.

Item	ED	IEM	JITP	OP	TR
ED1	0.923				
ED2	0.907				
ED3	0.885				
IEM1		0.918			
IEM2		0.885			
IEM3		0.921			
IEM4		0.887			
JIT1			0.941		
JIT2			0.929		
JIT3			0.935		
OP1				0.927	
OP2				0.906	
OP3				0.920	
OP4				0.905	
TR1					0.788
TR2					0.845
TR3					0.804
TR5					0.760

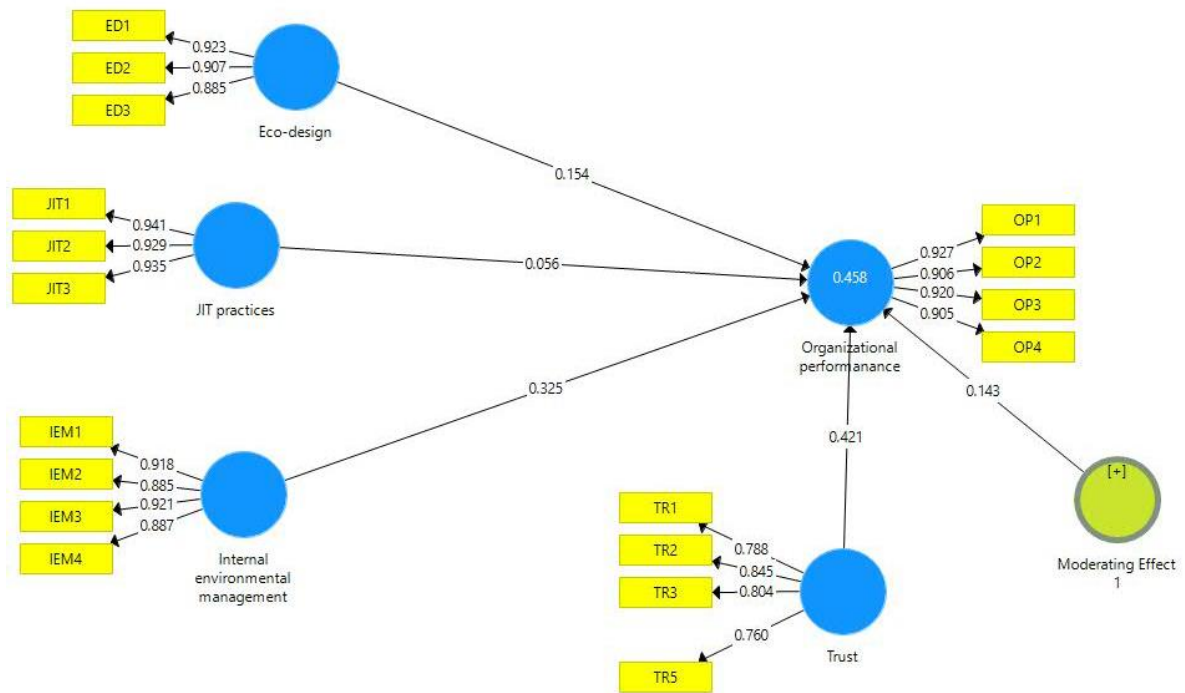


Figure 2: Measurement Model

From the results mentioned above, all scales are satisfied with the next condition. Researchers have mentioned that the value of composite reliability and Cronbach Alpha coefficient must be more than 0.7. Moreover, the value of AVE coefficient must be greater than 0.5 as well (Hair Jr et al., 2014). According to table 2 below, all these values meet the condition mentioned by (Hair Jr et al., 2014).

Table 2. Reliability and validity

Constructs	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
ED	0.889	0.889	0.931	0.819
IEM	0.924	0.926	0.946	0.815
JITP	0.928	0.931	0.954	0.874
OP	0.935	0.937	0.953	0.836
TR	0.812	0.818	0.876	0.640

Now the next step is to find the discriminant validity. It is critical to check the discriminant validity before testing the hypothesis of the research. Two points are cleared through discriminant validity regarding data. One of the items of the study is not overlapping with other items. Second, there exist difference among the items of the study (Compeau et al., 1999). In order to establish the discriminant validity criteria of Fornell and Larcker (1981) was established. The values of Table 3 below shows that the diagonal values are greater than the adjacent values. Thus the criteria of Fornell and Larcker(1981) are fulfilled.

Table 2. Discriminant Validity

	ED	IEM	JITP	OP	TR
ED	0.905				
IEM	0.384	0.903			
JITP	0.254	0.460	0.935		
OP	0.413	0.542	0.402	0.915	
TR	0.398	0.512	0.557	0.581	0.800

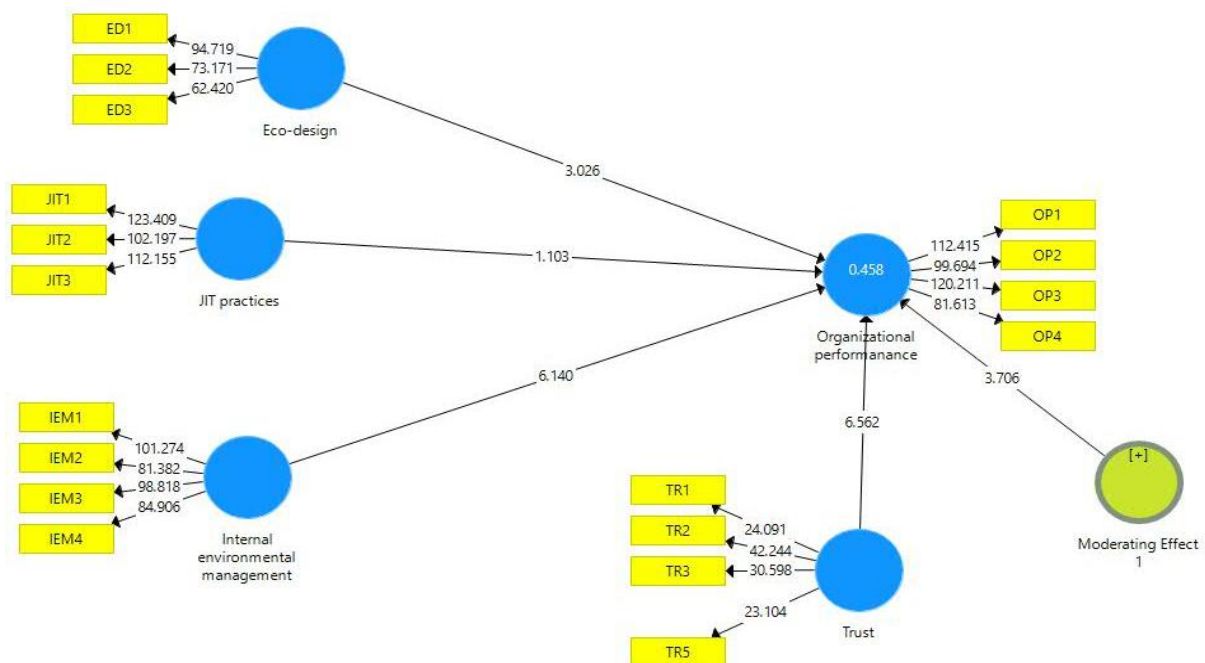


Figure 3: Structural Model

Now the next step is to assess the hypothesis. For this purpose, bootstrapping was done through PLS 3.0. The recommendations of bootstrapping at 5000 samples were followed. The basic purpose was to get the t-statistics and P Values of the present study. Table 4 below shows the direct as well as moderating results of the present study.

Table 4: Direct and Moderating results

Direction	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Stats (O/STDEV)	P Values
ED → OP	0.154	0.156	0.049	3.106	0.002
IEM → OP	0.325	0.327	0.056	5.831	0.000
JITP → OP	0.056	0.051	0.045	1.251	0.212
Moderating Effect 1 → OP	0.143	0.134	0.038	3.733	0.000
TR → OP	0.421	0.416	0.060	7.023	0.000

The table above shows the direct as well as the moderating results of the present study. From the above results, four out of five hypotheses are accepted. The impact of Just in time on organizational performance is not significant. Rest all the relationships are significant. Moreover, trust also moderates the relationship between IEM and OP. From the results, it's evident that H1, H3 and H4 are accepted. Thus, H2 is not accepted. Now in table 5 below, effect size R square is mentioned. The effect size shows the impact of the independent variables of the present study on the dependent variables. The findings show that the IV's of the present study impacts the OP more than 45%.

Table 5: R Square

DV	R Square	Adj. R Square
OP	0.458	0.451

V. CONCLUSION AND RECOMENDATION

In order to survive in current business competition, it is important for organizations to measure their organizational performance on a regular basis. By measuring their performance, organizations can easily make the necessary changes required to improve their performance. The basic objective of conducting the present study examined the impact of JIT, eco-design, and internal environmental management on organizational performance. The findings of the study revealed that customers around the globe are aware of the environment and do care for the environment. Therefore, they prefer the organizations which are adopting environmentally friendly activities. If organizations adopt IEM approach, it will impact organizational performance in a positive manner because people will get positive perception by the customers. On the other hand, if customers focus on environmentally friendly production, it will also develop a positive image in the mind of customers. Thus, organizational performance will be increased through an increase in sales and cost reduction. Moreover, the moderating role of trust is also examined among internal environmental management and organizational performance. The findings revealed that trust positively moderates the relationship between IEM and OP. This study fills the gap of limited studies in the area of supply chain addressing the environmental issues.

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