

Effects of JIT, TQM Competences and Product Design on Financial Performance of the Firm: Does Supply Chain Moderates?

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Abstract- The aim linked with the ongoing literature is to analyze the influence of new product design, TQM competences and just-in-time inventory system on the financial performance of the manufacturing companies in Indonesia. The objectives also include the examination of the moderating role of supply chain management among the links of new product design, TQM competences, just-in-time inventory system and financial performance of the manufacturing companies in Indonesia. The data was obtained by using questionnaires while analysis was conducted by using smart-PLS. The results exposed that new product design, TQM competences and just-in-time inventory system have positively associated with the financial performance of the manufacturing companies in Indonesia. The findings also showed that supply chain management positively moderated among the links of TQM competences and financial performance. These results are beneficial for the new researchers who want to investigate it further along with the regulators who want to develop policies related to the supply chain, TQM and firm performance.

Keywords; *New product design, TQM competences, Just-in-time inventory, Supply chain management, financial performance*

1. Background

From the past few decades, financial performance is countered as an eminent element which is important for companies. Companies usually strive for various benefits where the earning of profits is significantly important. For the competitive behaviors, businesses offer various services and products in the markets to earn profits which help to sustain the financial conditions of companies. Using the operational skills companies employ various capable measures for attaining financial gains where the role of various variables are eminent [6]. The capabilities of operations involve various processes through which companies help environments of businesses to growth certainly with the efficiency of certain management skills and operational capabilities [18]. The consistency of operational capabilities involves routine works where the numerous measures are employed to develop reasonable systems of management. Within the system of management, the specific set of skills by operational management could enhance the performance of

companies. Although, the performance of companies are prevalent on the set of various capabilities the dominance of exceptional methods by using effective management system could help in managing various areas of businesses. The operations are used in companies to solve plenty of issues that exist between the performance of companies and sustainable environments [17]. Wide variables exist in the performance of companies but the effectiveness of operational variables successfully help companies to strive better than the leading circumstances. The configuration of various resources into operational management enhances the capable measures and financial performance in different ways.

Within the management of companies, the skills of labor, as well as skills of operations, are eminent in the ascertainment of business performance. Therefore, the performance is determined through different factors where the importance of financial performance dominate in companies through which all benefits earned could help workers to motivate for their work [30]. It is the ultimate responsibility of workers to act efficiently for the betterment of companies; therefore, effective worker skills and effective process of management by workers could contribute to increasing businesses. Many companies are indulged in various operations, while the usual instance of such businesses prevails on earning maximum and losing minimum while remaining in the competitive markets. Various functions are involved in operational management which is performed following the distributions of designations in companies [4]. Planning of tasks is involved in operational management which could significantly enumerate the operational performance within the organizations as well as outside the organizations. It could influence the other competitors that strive for the same objectives in global markets where effective planning dominates significantly between the companies with all strategic measures. The proper hiring of staff for the accomplishment of the task requires effective planning but the effectiveness of operational management over the staff could enumerate the significance of operational works [21]. When the companies employ various strategic measures also inserts

various hidden aspects for reducing the expenses where financials of companies are under observation. Budgeting is a dominating element that exists in the companies for the reduction of expenses and enhancement of achieving targets in global markets [8]. Therefore, the financial performance of companies is based on various factors where effective controls are required to be established for attaining significant performance. Management of people and projects are based on the operational activities which are rendering positive elaborations of a company's performance [11].

The tasks assigned by operational management involves the start of project and management of employees which are indulged in the project; therefore, the key elements are brought forward to ascertain the performance of project and employees. Operational capabilities usually ensure the implications of strategies toward businesses which help companies to attain profits and reduction of elements that disrupt the performance of companies [20]. The importance of newly designed products dominates in the intentions of customers that are ready to buy the product, although designs costs but the effective strategic measure for selling product could retrieve costs. Customers usually require a solution to the problems, therefore, effective planning of new products could enumerate better resulting outcomes from the businesses which impact the financial performance of companies [32]. The competence of companies are ascertained through the quality management where customers are conscious about the quality of product and companies are conscious to attain benefits. The policy of just in time prevails with importance in companies where customers require solution also are intended to avail the solution within time [19]. Therefore, effective planning and inducing proper measure could help to attain significant performance. The use of supply chain management significantly inserts a vital role among the constraints that prevail in the attainment of the financial performance of companies [16]. The effects of operational measures positively enumerate the performance of companies where the role of a variety of variables also dominate in firm performance. The elective strategies for better financial performance positively enumerated by the level of measures adopted by companies [36]. There is the relation among the capable measures prevail in operations and financial performance of the businesses.

2. Hypotheses development

The competence behaviors are positively enumerated in literature discussing the lasting strategies that help to attain competitive environment. Companies usually choose various measures for the accomplishment of financial performance; therefore, the effectiveness of operational capabilities also dominate in the literature. The interaction between customers and firms are

enumerated by the use of operational works which help firms to attain various benefits [38]. The literature widely enumerated financial performance of the business in the literature that has described the numerous factors influencing financial performance of businesses. Using strong measures, companies could enhance the performance as well as a sustainable environment in competitive markets, while the usage of elected strategies from studies also dominates with eminence [34]. Firms usually improve the practices in the business environment that significantly enumerates the better results of performing impacts over the companies [13]. The outcomes of operational activities are associated with the growth and performance of organizations; therefore, using eminent measures as stated in the literature could help in achieving the financial performance of the companies [37]. Relationship between capabilities of operations and performance of firms significantly enumerates the factors that prevail between them and could result in ineffectiveness. By deploying the designs of new products, most of the companies attain the attention of customers, while the quality tends to be an important element which prevails in the minds of customers [15]. Although, just in time tends as a significant element for the customers to avail product but the role of supply chain management among the elected elements of the study could have positive effects widely discussed over the literature.

The literature widely enumerated the systematic approach used by the synergy of new product design which is known as a strategic measure of businesses. It is dependent on the variation of ideas that prevail in the minds of businesses to capture the markets and to attain the customer attentions. The use of ideas by businesses possible contribution toward the enhancement of performance whether financially and operationally [26]. The implication of new products toward the markets helps companies to attain the attention of global markets where changing environments are positively influencing the performance of companies. The combination of various ideas with design of arts evaluates the products in new shapes which are contributing element for the companies for attaining financial objectives which primarily designed by the organizations [12]. Science and technology have inserted a dominant role among the evaluation of ideas efficiently; therefore, role science and development has also been referring significance toward the betterment of organizational performance [29]. Design of new products is important for the creation of a financial wealth of companies, although it is considered as an intangible idea the effectiveness of such an idea could enhance financial performance more effectively [24]. Generating new ideas usually explore the area of resources in the global markets where companies usually attain joint efforts for attaining similar advantages [23]. The significance of new product

design dominated in literature by enumerating wide examples affecting the operational performance of organizations as well as the financial performance of organizations.

H1: New product design significantly influences the financial performance of the business.

Total quality management widely mentioned by the literature an important term which prevails in every organization. Customers are more satisfied through the performance of quality in products, while the companies are well concerned about their qualities. The quality not only disrupts the benefits of organizations but also disrupts the performance of the organization but the effectiveness of total quality management could assert dominant benefited outcomes from businesses [35]. The implementation of quality measures over the business regarding product could efficiently impact the intentions of the customer through which many customers are admired. Most of the companies earn maximum benefits through the use of quality management procedures where the levels of endorsement over the performance of organizations are achieved through strategic implications [5]. Organizational performance is measured through the position of organizations in markets but the financial performance is dependent on the products that exist in markets. Competitive advantage tends to be an important term which motivates companies to employ better strategies in global markets for retaining better performance assessments [7]. It not only enhance the financial performance of the organization but also helps in reduction of costs which are counted as wastage toward a new product. Usually, TQM help companies to lead towards the significant manufactured products with minimum cost, while the focus of companies remains on earning profits [9]. The process of improvement help companies to attain numerous benefits where the role of TQM significantly results in the performance of companies in a competitive environment.

H2: TQM competencies significantly influence the financial performance of the business.

The element of time prevails in markets with dominance which help companies to attain the diverted intentions of customers. Customer usually focuses on the single product which is available in various companies but the element of just in time tends an important measure over the performance of the business [10]. Companies launch various products into the market with significant measures where the product moves in steps from the day of introduction to end consumer. Some products are rare in the markets toward customers; therefore, the effectiveness of just in time places important impact on the consumers for buying other products from the same companies [28]. Money is an important need for companies through which companies can increase the

financial position of businesses. Businesses are differently operated into the competitive environment; therefore, the contexts of inventory is required to be placed to the customer in time with the effectiveness of quality and time. The aim of just in time usually intends companies to lower the cost by keeping inventory at some stage to meet the immediate requirements of consumer needs [33]. It is significant in companies that lead the markets where time frame dominates with importance; therefore, eliminating greater time frame for the product could enhance the delivery environment for the business [2].

H3: Just in time positively influences the financial performance of the business.

The activities of businesses involve products which are provided to the customers by eliminating the delay procedures. Therefore, the effectiveness of supply chain management helps companies to attain benefits at various stages by eliminating various delays that occur in meeting end-customer needs [3]. Performance of organizations is measured through the implication of supply chain management where companies strive harder to achieve the objectives of firms. Role of supply chain management positively enumerates among the relationship between new products and financial performance while the existence of supply chain puts some effects over the relationships [31]. The dominance of total quality management and financial performance of the business is positively elaborated by literature discussing a variety of elements but the effective role of supply chain management among them tends significant influencing the relationships [4]. Customers require goods to meet at a significant stage and immediate basis which helps to attain the financial objectives of the business; therefore, studies enumerated supply chain management with significant impact over the attainment of the various objects [25]. Supply chain management has been countered an important measure which inserts moderating effect among the relationship between elected factors of this study including TQM competence, new products, just in time and financial performance of the business.

H4: Supply chain management significantly and positively inserts moderating effects among the relationship between new product design, and financial performance of the business.

H5: Supply chain management significantly and positively inserts moderating effects among the relationship between TQM competences and financial performance of the business.

H6: Supply chain management significantly and positively inserts moderating effects among the relationship between just in time and financial performance of the business.

3. Methodology

The aim linked with the ongoing literature is to analyze the influence of new product design, TQM competences and just-in-time inventory system on the financial performance of the manufacturing companies in Indonesia. The objectives also include the examination of the moderating role of supply chain management among the links of new product design, TQM competences, just-in-time inventory system and financial performance of the manufacturing companies in Indonesia. The data was obtained by using questionnaires and simple random sampling was adopted for the selection of the respondents. During the personal visit, around 420 questionnaires have been forwarded to the respondents but out of them, only 270 were returned that represents 64.29 percent. The analysis was conducted by using smart-PLS because five constructs are adopted that consist of one predictive, one moderator and three predictors that made the model complex and PLS-SEM has provided the best results in this case. The predictive variable named as the financial performance of the business (FPB) has five items, moderator named as supply chain management (SCM) has six items, three predictors such as new product design (NPD) has five items, just-in-time (JIT) has seven items and TQM competences (TQMC) has four items [1]. These variables along with links are shown in Figure 1.

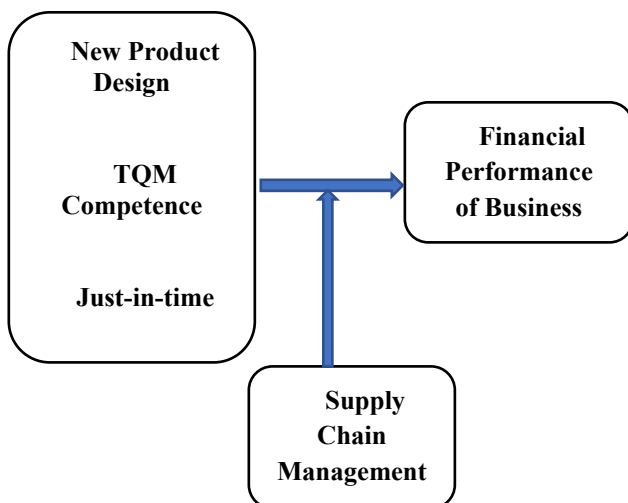


Figure 1. Theoretical framework

4. Results

The results indicated that the figures of Alpha and CR are larger than 0.70 while the figures of loadings and AVE are more than 0.50. These figures indicated that high correlation between items and valid convergent validity. These figure are highlighted in Table 1.

Table 1. Convergent validity

Items	Loadings	Alpha	CR	AVE
FPB1	0.823	0.852	0.9	0.693
FPB3	0.831			
FPB4	0.854			
FPB5	0.821			
JIT1	0.832	0.931	0.944	0.707
JIT2	0.863			
JIT3	0.845			
JIT4	0.811			
JIT5	0.876			
JIT6	0.861			
JIT7	0.794			
NPD1	0.938	0.944	0.958	0.82
NPD2	0.855			
NPD3	0.937			
NPD4	0.854			
NPD5	0.939			
SCM1	0.401	0.891	0.927	0.73
SCM2	0.918			
SCM3	0.961			
SCM4	0.895			
SCM6	0.96			
TQMC1	0.695	0.835	0.89	0.671
TQMC2	0.897			
TQMC3	0.769			
TQMC4	0.898			

The results also indicated that the figures of Fornell Larcker along with cross-loadings that show the links with variable itself are larger than link with other variables. These figures indicated that no high correlation between variables and valid discriminant validity. These figure are highlighted in Table 2 and Table 3.

Table 2. Fornell Larcker

	FPB	JIT	NPD	SCM	TQMC
FPB	0.832				
JIT	0.421	0.841			
NPD	0.510	0.404	0.905		
SCM	0.444	0.470	0.502	0.855	
TQMC	0.721	0.365	0.414	0.445	0.819

Table 3. Cross-loadings

	FPB	JIT	NPD	SCM	TQMC
FPB1	0.823	0.324	0.381	0.306	0.598
FPB3	0.831	0.346	0.494	0.397	0.625
FPB4	0.854	0.365	0.450	0.436	0.606
FPB5	0.821	0.366	0.364	0.332	0.569

JIT1	0.330	0.832	0.298	0.379	0.308
JIT2	0.353	0.863	0.346	0.391	0.286
JIT3	0.321	0.845	0.311	0.370	0.279
JIT4	0.302	0.811	0.359	0.415	0.238
JIT5	0.389	0.876	0.364	0.415	0.323
JIT6	0.417	0.861	0.376	0.417	0.378
JIT7	0.342	0.794	0.312	0.376	0.314
NPD1	0.465	0.344	0.938	0.460	0.365
NPD2	0.459	0.395	0.855	0.443	0.398
NPD3	0.468	0.345	0.937	0.464	0.363
NPD4	0.453	0.399	0.854	0.444	0.394
NPD5	0.463	0.344	0.939	0.457	0.352
SCM1	0.162	0.671	0.191	0.401	0.145
SCM2	0.418	0.419	0.465	0.918	0.408
SCM3	0.421	0.375	0.473	0.961	0.443
SCM4	0.407	0.399	0.470	0.895	0.381
SCM6	0.419	0.375	0.470	0.960	0.443
TQMC1	0.423	0.207	0.284	0.355	0.695
TQMC2	0.723	0.369	0.408	0.356	0.897
TQMC3	0.501	0.245	0.247	0.350	0.769
TQMC4	0.655	0.340	0.387	0.413	0.898

The results also indicated that the figures of Heterotrait Monotrait (HTMT) ratio are less than 0.90. These figures indicated that no high correlation between variables and valid discriminant validity. These figure are highlighted in Table 4.

Table 4. Heterotrait Monotrait ratio

	FPB	JIT	NPD	SCM	TQMC
FPB					
JIT	0.468				
NPD	0.566	0.429			
SCM	0.500	0.589	0.541		
TQMC	0.833	0.398	0.457	0.510	

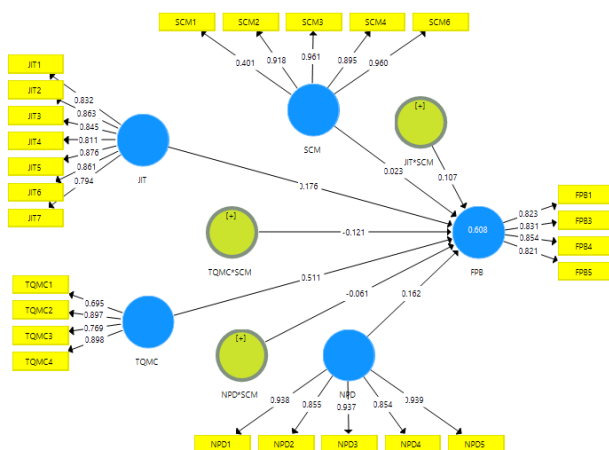


Figure 2. Measurement model assessment

The results also show the hypotheses testing and the figures highlighted that JIT, TQM competences and new product design have positive association with financial performance of the business and accept H1, H2 and H3. In addition, supply chain management positively moderated among the links of TQM competences and financial performance and accept H5. However, supply chain insignificantly moderated among the links of JIT, new product design and financial performance and reject H4 and H6. These relationships are highlighted in Table 5.

Table 5. Path analysis

Relationships	Beta	S.D.	t-statistics	p-values
JIT -> FPB	0.176	0.053	3.317	0.001
JIT*SCM -> FPB	0.107	0.044	2.439	0.015
NPD -> FPB	0.162	0.052	3.092	0.002
NPD*SCM -> FPB	-0.061	0.046	1.322	0.187
TQMC -> FPB	0.511	0.049	10.523	0.000
TQMC*SCM -> FPB	-0.121	0.046	2.606	0.009

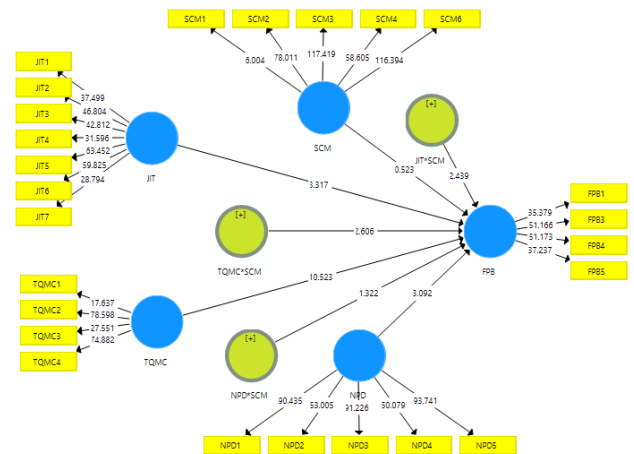


Figure 3. Structural model assessment

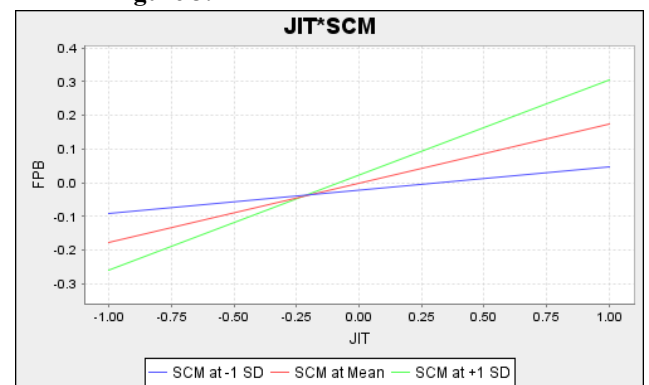


Figure 4. JIT*SCM

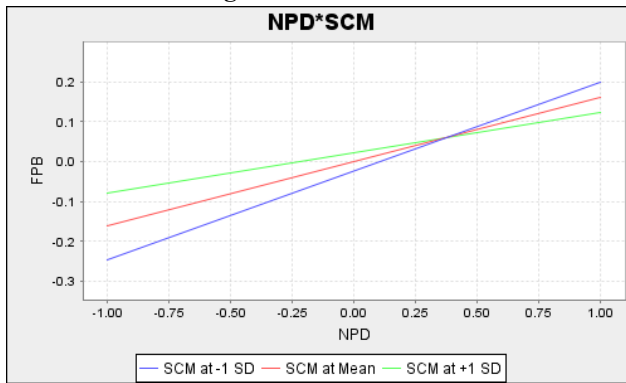


Figure 5. NPD*SCM

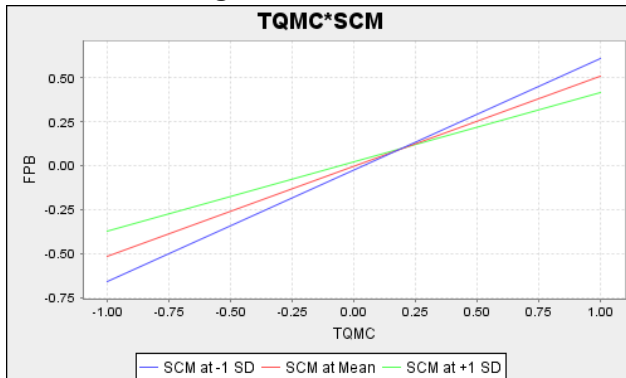


Figure 6. TQMC*SCM

5. Discussion and conclusion

The results exposed that new product design, TQM competences and just-in-time inventory system have positively associated with the financial performance of the manufacturing companies in Indonesia. These findings are matched with the outcome of Phan, Nguyen [27] who also found that financial performance of the business depends on the TQM competence and JIT. A study by Iqbal, Huq [14] investigated that JIT and TQM have a positive influence on the performance of the firm and matched the findings of the present study. The findings also showed that supply chain management positively moderated among the links of TQM competences and financial performance. These findings are similar to the outcomes of the Mas'udin and Kamara [22] who also exposed that firm performance depends on the JIT and TQM competences. These results are beneficial for the new researchers who want to investigate it further along with the regulators who want to develop policies related to the supply chain, TQM and firm performance. Thus, this is concluded that the manufacturing companies in Indonesia have effective TQM competences along with attractive product design and supply chain management practices that enhance the financial performance of the firm. It is recommended that the upcoming studies should expand the scope by including more industries in the studies. In addition, the present study also suggested that future studies should include mediation in the framework that is ignored by the ongoing study.

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