DOES SUPPLY CHAIN PERFORMANCE MEDIATES THE RELATIONSHIP BETWEEN CRITICAL SUPPLY CHAIN MANAGEMENT COMPONENTS AND ORGANIZATIONAL PERFORMANCE?

C. Ganesh Kumar*
T. Nambirajan**

PURPOSE
TO test the mediating effect of supply chain performance in the relationship between critical supply chain management components and organizational performance of manufacturing industries.

Design/Methodology/Approach: *Based on the review of literature relating to supply chain management and organizational performance variables, a conceptual model was framed and the resulting hypothesis were tested using Structural Equation Modeling (SEM), the survey data was collected from the sample of 255 executives of manufacturing firms through structured questionnaire.*

Findings: *Results support the research model and also suggest the existence of direct and indirect relationship between practices, competence and performance on organizational performance.*

Research Limitations: *The study covers only manufacturing enterprises and does not concentrate on the business firms engaged in services sector and this study has been conducted at a macro level, ignoring the micro aspects of individual industries*

Practical Implications: *Understanding the causal relationship between critical component of supply chain management and organizational performance of manufacturing firms will be of immense utility to the policy-makers and practitioners.*

Originality/Value: *This research paper work is the first empirical work that particularly explores the causal relationships between critical supply chain components, supply chain performance and organizational performance; hence this research paper fills the gap in the supply chain literature.*

Key Words: Supply Chain Management Components, Supply Chain Performance, Mediating Effects, Structural Equation Modeling, Organizational Performance.

Introduction

Supply Chain Management is a complex subject, which is an important determinant of success or failure of any manufacturing enterprise. Many manufacturing operations are designed to maximize throughput, and to lower costs with little consideration for the impact on inventory levels and distribution capabilities. Purchasing contracts are often negotiated with very little information beyond historical buying patterns. The result of these factors is that there is no single, integrated plan for the organization – there are as many plans as businesses. Clearly, there is a need for a mechanism through which these different functions can be integrated together. SCM is a strategy through which such integration can be achieved (Ahmed et al., 2002). It is absolutely essential for executives of manufacturing enterprises to be thoroughly aware of all the essential components of supply chain management and understand

* *Ph.D Research Scholar, Department of Management Studies, Pondicherry Univeristy, Pondicherry, India.*

** *Professor and Head, Department of Management Studies, Pondicherry Univeristy, Pondicherry, India.*

the impact that it might exert on the overall efficiency of the organization. This knowledge will enable them to focus on those variables which add value to organizations. Considering the significance of Supply Chain Management, especially in Indian context and particularly in the Union Territory of Puducherry, the researcher has made a sincere attempt to find a solution to the research problem of "What is the mediating impact of supply chain performance on the relationship between components of SCM and the organizational performance in Indian context?".

This paper is organized as follows. First, the relevant literature is reviewed and a framework of supply chain management and organizational performance is presented. Next, the conceptual model and the data used for testing the causal linkages are introduced between supply chain and organizational performance of manufacturing firms. The results of mediating effects from the structural equation modeling analysis are presented and then discussed on conclusions and implications. Finally, some discussion on limitations and suggestions are offered for future research.

Theoretical Background and Conceptual Framework

Research in supply chain management has increasingly applied theories and conceptual contributions drawn from the strategy literature. The resource based view of the firm is a particularly appropriate theoretical framework for studying the performance implications of managing the supply chains (e.g., Olavarrieta and Ellinger, 1997).

Based on the literature review of past research work, a conceptual model has been framed and seven hypotheses have been formulated, which are portrayed in Figure 1. The objectives of this research study are to empirically assess the mediating impact of supply chain performance on the relationship between components of SCM and the organizational performance. In the proposed conceptual model, unobserved or latent variable about the manufacturing enterprises have been measured through the response of the executives regarding the different statements included under each of the variables.

Supply chain concerns, supply chain practices and supply chain competence have been taken as independent variables while supply chain performance and organizational performance have been considered as dependent or endogenous variables in respect of the supply chain management components studied in this research. The hypotheses formulated based on the review of literature have been listed in the forthcoming discussions.

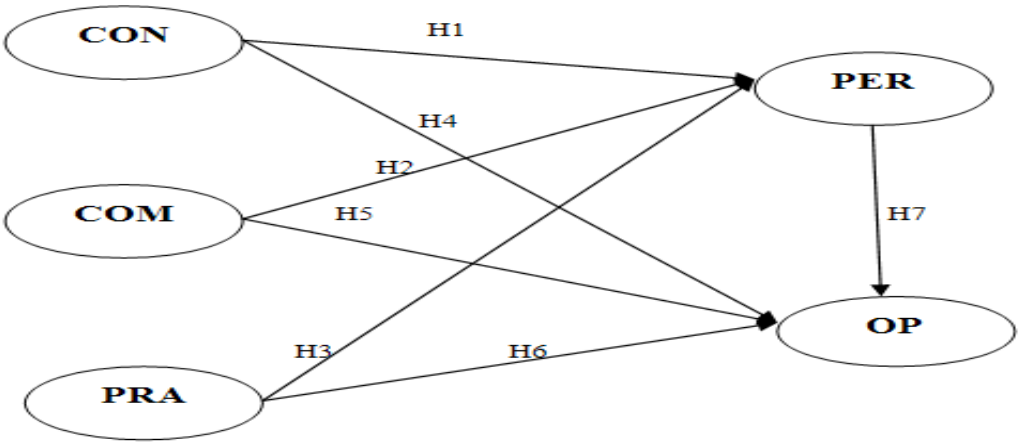


Figure 1: Conceptual Model Proposed in the Research Work

Vanichchinchai and Igel (2011) have conducted research with the objective to explore the effects of total quality management practices on supply chain practices and supply chain performance on Thai automotive industry by framing a conceptual model and testing using SEM. Their findings revealed that total quality management practices have direct impact on supply chain practices while supply

chain performance and supply chain practices have an indirect impact on supply chain performance and Deshpande (2012) has conducted literature review on supply chain management dimensions, supply chain performance and organizational performance with the objective of reviewing and developing a conceptual framework that shows linkages of supply chain management dimension on supply chain performance and linkage of supply chain performance and organizational performance.

Huo (2012) has conducted research with the objective to investigate the impact of supply chain integration on organizational capability and performance through structural equation modeling (SEM) based on data collected from 617 Chinese companies. The research findings revealed that supply chain integration have direct and indirect effect on organizational capability while supply chain integration act as partial and full mediating effect on organizational performance and Ou et al., (2010) have investigated the effect of supply chain management practices on firm performance using SEM by collecting sample from Taiwan manufacturing industries. Their conclusion was that supply chain practices have a positive effect on performance while it will exert an indirect impact on financial performance and customer value.

Sukati et al., (2012) have studied the relationship among supply chain strategy, supply chain practices and supply chain performance by collecting primary data by administering a questionnaire to 200 managers working in Malaysian manufacturing firms. The data analysed using statistical tools of simple mean, reliability, validity test, correlation and multiple regression, revealed that supply chain practice has a significant effect on supply chain performance while supply chain strategy exert a weak impact on supply chain performance.

Vijayasarathy (2010) has proposed a research model and tested the proposed hypotheses that supply chain technology affects supply chain performance using the moderating variables of process innovation, partnership quality and uncertainty. Based on the data collected by administering an online questionnaire to 276 manufacturing enterprises and analysed using the statistical tools of factor analysis and ANCOVA model, the research revealed that supply chain technology uses have moderated through process innovation and quality and Cook et al., (2011) have explored the linkage among supply chain practices and organizational performance with moderating effect of company role on supply chain by surveying US manufacturing enterprises. The data analysed using Regression revealed that supply chain practices have a significant impact on organizational performance and company's role on supply chain has significant difference with respect to supply chain practices.

Kristal et al., (2010) have tested a conceptual model exploring the effects of supply chain (SC) strategy on capabilities and organizational performance of 174 US manufacturing enterprises. The data analysed using cluster analysis and Structural equation model (SEM), revealed that combinative capabilities act as mediating variable for supply chain strategy and organizational performance. They conclude that SC strategy have a direct and indirect effect on capabilities and organizational performance.

Qrunfleh and Tarafdar (2012) have assessed and tested a conceptual model to find out the impact of supply chain information strategy on supply chain performance and organizational performance by collecting sample data through means of questionnaire to 205 manufacturing firms and hypotheses were tested using SEM. The results shows that there is a significant and positive association among supply chain performance and firm performance and supply chain performance have a mediating effect on supply chain information strategy and organizational performance and Wong and Wong (2011) have conducted research and proposed a conceptual framework on linkage of supply chain management, knowledge management capability and firm performance in the Asia Pacific region. Data analysed using statistical tools of Mediated regression analysis and path analysis reveal that supply chain management practice have positive and significant impact on knowledge management capability and firm performance.

Yusuf et al., (2012) have explored the relationship among agile supply chain competiveness and business performance of 158 UK managers working in oil and gas industry. The data analysed using normality test, correlation and one-way ANOVA revealed that supply chain agility have a significant effect on competiveness and business performance and Tan (2002) has indicated in his research work that there

is a direct relationship among supply chain competence and organizational performance, while Wisner (2003) proved that there is a relationship between quality commitment and understanding of the supply chain dynamics and hence not on business performance.

Chow et al., (2008) found that supply chain competence has very positive effect on organizational performance in US and Taiwan manufacturing enterprises and Koh et al., (2007) observed in his study that high levels of supply chain practices have high impact on operational performance, while Bhatnagar and Sohal (2005) identified the impact of location decision framework and its resultant effect on the supply chain uncertainties and manufacturing practices and Hsu et al., (2009) has identified the direct relationship between operations capability and supply chain management practices and its resultant impact on the organizational performance, while Bayraktar et al., (2009) has validated that supply chain practices positively impact the operational performance of manufacturing enterprises and Li et al., (2005) found the existence of a direct relationship between organizations with high levels of SCM practices and its market competitive advantage and organizational performance, while Ou et al., (2010) has identified that customer-firm-supplier relationship management and its resultant impact on the internal contextual factors, shall exert positive effects on organizational performance.

Wong et al., (2011) identified the resultant positive influence of knowledge management capabilities on supply chain practices, while Sundram et al., (2011) have found existence of direct relationship among supply chain practices and supply chain performance and Lee et al., (2011) found that organizational performance have association with SC innovation factor constructs, while Ellinger et al., (2012) have found out that higher supply chain competence exerts impact on customer satisfaction, organizational performance and shareholder value. Yang and Su (2009) has found that ERP factors like operational, tactical, and strategic benefits exert impact on organizational performance.

Based on the above literature, the following second set of hypotheses have been arrived at:

H1: The level of supply chain concern positively influences the degree of supply chain performance.

H2: The level of supply chain competence positively influences the degree of supply chain performance.

H3: The level of supply chain practice positively influences the degree of supply chain performance.

H4: The level of supply chain concern positively influences the degree of organizational performance.

H5: The level of supply chain competence positively influences the degree of organizational performance.

H6: The level of supply chain practice positively influences the degree of organizational performance.

H7: The level of supply chain performance positively influences the organizational performance.

H8: Supply chain performance mediates the relationship between supply concerns, competence, practices on organizational performance.

The above hypotheses shall be tested for exploring the existence of any causality relationship among the proposed variables using SEM framework.

Research Methodology

The research design of the proposed research work is causal in nature. The research work has been conducted mainly based on primary data.

Survey Instrument and Data Collection

In addition to the literature review, in-depth interviews with operations and purchasing managers were used to identify pertinent dimensions of the constructs of interest. Interviews help to ensure that the constructs of interest and the associated relationships, as reported in the literature, are consistent with industry practice. A draft survey instrument was reviewed by a sample of academics with relevant expertise, to obtain feedback on the comprehensiveness, clarity, face validity, and

readability of the scales and survey instructions. Based on the feedback, a modified instrument was developed and tested by senior managers. In response to their feedback, further minor changes were made.

Sampling and Research Design

The research design of the proposed research work is causal in nature. The research work has been conducted mainly based on primary data. The data collection instrument used for this research is a well structured questionnaire using personal interview with managers and executives of manufacturing firm.The sampling frame for the study was collected from the list of manufacturing firm operating in Union Territory of Puducherry, from the Department of Industry and commerce, Government of Pondicherry. Sample size was fixed as 255 based on the pilot study and the sampling technique that has been used to extract sample from population is simple random sampling using lottery method. The main study was conducted using final questionnaire and the reliability of the questionnaire was tested with reliability test that shows the consistency result and the test revealed that the consistency of the questionnaire was improving. The results are represented in tabular and figurative forms. The statistical tool used in this research work is Structural Equation Modeling (SEM) using LISREL software.

Results and Discussion

SEM framework has been used to test the proposed conceptual model. SEM consists of two components. The first component relates to the using of Measurement Model or confirmatory factor analysis (CFA) which is employed to identify the items of each construct or variable and also evaluate the reliability and validity of each variable or construct. The second component relates to structural model or path analysis, which is employed to examine the causal relationship among constructs or variables. This section shall confine to the sub models of CFA and path analysis utilizing the LISREL 8.72 software. LISREL (Linear Structural Relations) software was developed by Joreskog and Sorbomin 1989 to use the SEM to explore the relationships among latent and observed variables.

Confirmatory Factory Analysis (CFA) or Measurement Model

CFA or measurement model in respect of each dimension namely, supply chain concerns, supply chain competence, supply chain practices, supply chain performance, and organizational performance of manufacturing enterprises are shown from Figure 1.

Measurement model for all constructs are tested and validated through CFA. The overall measurement model has been portrayed in Figure 2, displaying the reliability of the observed items and scale used to measure the unobserved constructs or latent variables

Results of overall Confirmatory Factor Analysis (CFA) are depicted in Table 1.

Results of goodness of fit test for CFA model are shown in Table 2.

Table 2: Results of Goodness of Fit Test for Confirmatory Factor Analysis

Model	Normed Chi-squre (x^2/df)	P-Value	GFI	AGFI	CFI	NFI	RMESA
Study model	2.25	0.00	0.87	0.85	1.00	1.00	0.070
Recommended Value	Less than 3	>0.05	0.8-0.9	0.8-0.9	0.8-0.9	0.8-0.9	Less than 0.080

The above table highlights the CFA or measurement model results. It can be inferred from the above table that the values of various goodness of fit indices are well within the desired limits. The normed chi-square is 2.25, GFI is 0.87, AGFI is 0.85, NFI is 1.00, RMSEA is 0.070 and CFI is 1.00.

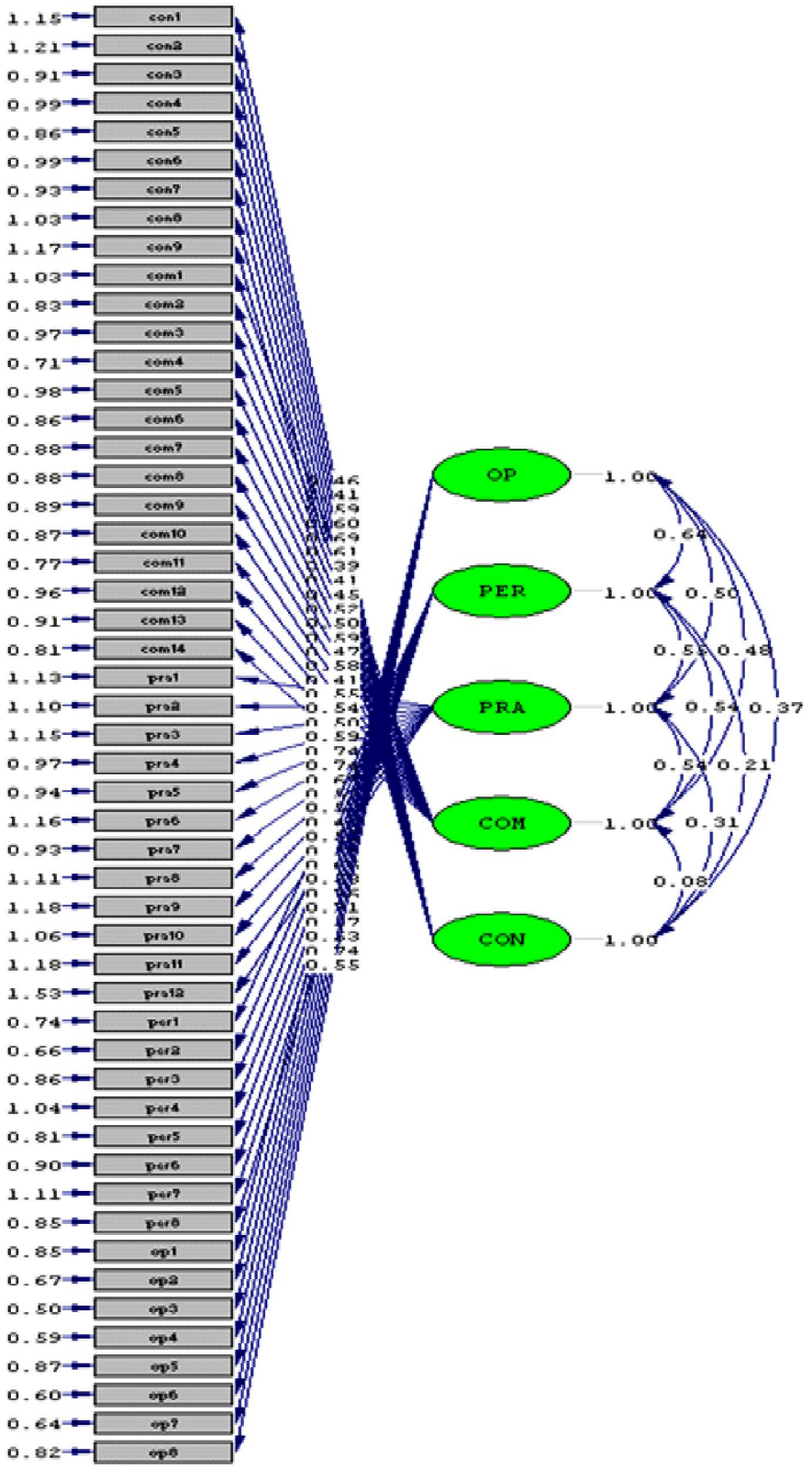


Figure: 2 Overall Tested Measurement Model

Table 1: Results of Overall CFA (Measurement Model)

Table	Results of Measurement Model (Confirmatory Factor Analysis)				Results of Validity and Reliability Test Value	
Variables	Factor estimate	T - Value	Error Variance	R^2	Composite Reliability	Average Variance Extracted (AVE)
Supply Chain Concerns						
Con1: Lack of sophisticated information system.	0.46	14.29	1.15	0.15	0.73	0.47
Con2: Lack of ability in managing Supply chain inventories.	0.41	12.55	1.21	0.12		
Con3: Lack of cooperation among supply chain members.	0.59	17.88	0.91	0.28		
Con4: Lack of trust among supply chain members.	0.60	18.03	0.99	0.27		
Con5: Lack of interest among your suppliers or customers.	0.69	20.23	0.86	0.35		
Con6: Competition from other supply chains.	0.57	17.49	0.99	0.25		
Con7: Your firm's lack of leverage within your supply chain.	0.67	19.94	0.93	0.33		
Con8: Your suppliers' geographical distance.	0.72	20.50	1.03	0.34		
Con9: Your customers' geographical distance.	0.67	20.12	1.17	0.28		
Supply Chain Competence						
Com1: The ability to fill orders with improved accuracy.	0.61	22.47	1.03	0.27	0.84	0.46
Com2: The ability to forecasting sales with greater accuracy.	0.39	15.17	0.83	0.15		
Com3: The ability to issue notice on shipping delays in advance.	0.41	16.10	0.97	0.15		
Com4: The ability to respond to a request in a timely manner.	0.45	17.00	0.71	0.22		
Com5: The ability to make high quality products.	0.52	19.82	0.98	0.22		
Com6: The ability to deliver high-quality services.	0.50	18.88	0.86	0.22		
Com7: The ability to respond to the needs of key customers.	0.59	22.16	0.88	0.29		
Com8: The ability to work with key suppliers.	0.47	17.79	0.88	0.20		
Com9: The ability to manage supply chain inventory.	0.58	22.11	0.89	0.27		
Com10: The ability to meet a delivery on promised date.	0.41	15.78	0.87	0.16		
Com11: The ability to enhance supply chain's position in terms of integrity.	0.44	17.13	0.77	0.20		
Com12: The ability to enhance supply chain's position in terms of social responsibility.	0.48	18.51	0.96	0.19		
Com13: The ability to design low-pollution production process.	0.53	20.19	0.91	0.23		
Com14: The ability to design low-pollution delivering process.	0.58	22.05	0.81	0.30		
Supply Chain Practices						
Par1: Close partnership with suppliers.	0.55	22.63	1.13	0.21	0.73	0.55

Table	Results of Measurement Model (Confirmatory Factor Analysis)				Results of Validity and Reliability Test Value	
Variables	Factor estimate	T - Value	Error Variance	R^2	Composite Reliability	Average Variance Extracted (AVE)
Par 2: Close partnership with customers.	0.54	21.40	1.10	0.21		
Par3: Just in time (JIT) supply.	0.50	20.22	1.15	0.18		
Par4: Strategic planning.	0.59	23.76	0.97	0.26		
Par5: Supply chain benchmarking.	0.74	28.94	0.94	0.37		
Par6: Many suppliers.	0.74	29.29	1.16	0.32		
Par7: Holding safety stock.	0.69	27.52	0.93	0.34		
Par8: Subcontracting.	0.55	22.35	1.11	0.21		
Par9: E-procurement.	0.66	25.99	1.18	0.27		
Par10: Outsourcing.	0.66	25.92	1.06	0.29		
Par11: Third Party Logistics (3PL).	0.57	22.61	1.18	0.22		
Par12: Few suppliers.	0.18	7.54	1.53	0.02		
Supply Chain Performance						
Per1: Improvement in Lead time.	0.53	18.55	0.74	0.27	0.75	0.54
Per2: Improvement in inventory turns.	0.41	14.88	0.66	0.20		
Per3: Improvement in level of inventory write off.	0.54	18.93	0.86	0.25		
Per4: Improvement in Time to market (Product development cycle).	0.55	19.91	1.04	0.23		
Per5: Improvement of defect rate.	0.57	20.07	0.81	0.29		
Per6: Improvement in order item fill rate.	0.44	16.17	0.90	0.18		
Per7: Improvement in stock out situation.	0.52	18.65	1.11	0.19		
Per8: Improvement in set-up times.	0.48	17.63	0.85	0.21		
Organizational Performance						
Op1: Market share.	0.66	24.24	0.85	0.34	0.75	0.49
Op2: Sales growth.	0.58	21.86	0.67	0.33		
Op3: Profit margin.	0.76	27.69	0.50	0.53		
Op4: Overall product quality.	0.71	26.49	0.59	0.46		
Op5: Overall competitive position.	0.57	21.72	0.87	0.28		
Op6: Average selling price.	0.53	20.40	0.60	0.32		
Op7: Return on investment.	0.74	27.66	0.64	0.46		
Op8: Return on sales.	0.55	21.03	0.82	0.27		

Furthermore and more importantly, the factor loadings in respect of all the items included in the model exceed 0.5 and are highly significant at 0.05 level of significance. Hence, these results suggest that there is no need for any modifications in the model and the available data aptly fits into the proposed conceptual model.

Structural Model or Path Analysis

Structural model or path analysis is employed to estimate the strength of the causal relationship among unobserved or latent variables of dependent and independent variables. The sub models and overall model proposed in the proposed research is discussed at length in the following paragraphs.

Relationships between Supply Chain Concerns, Supply Chain Performance and Organizational Performance

The strength of relationships among supply chain concerns, supply chain performance, and organizational performance have been portrayed in Figure 3. Results for the proposed structural model have been shown in Table 3.

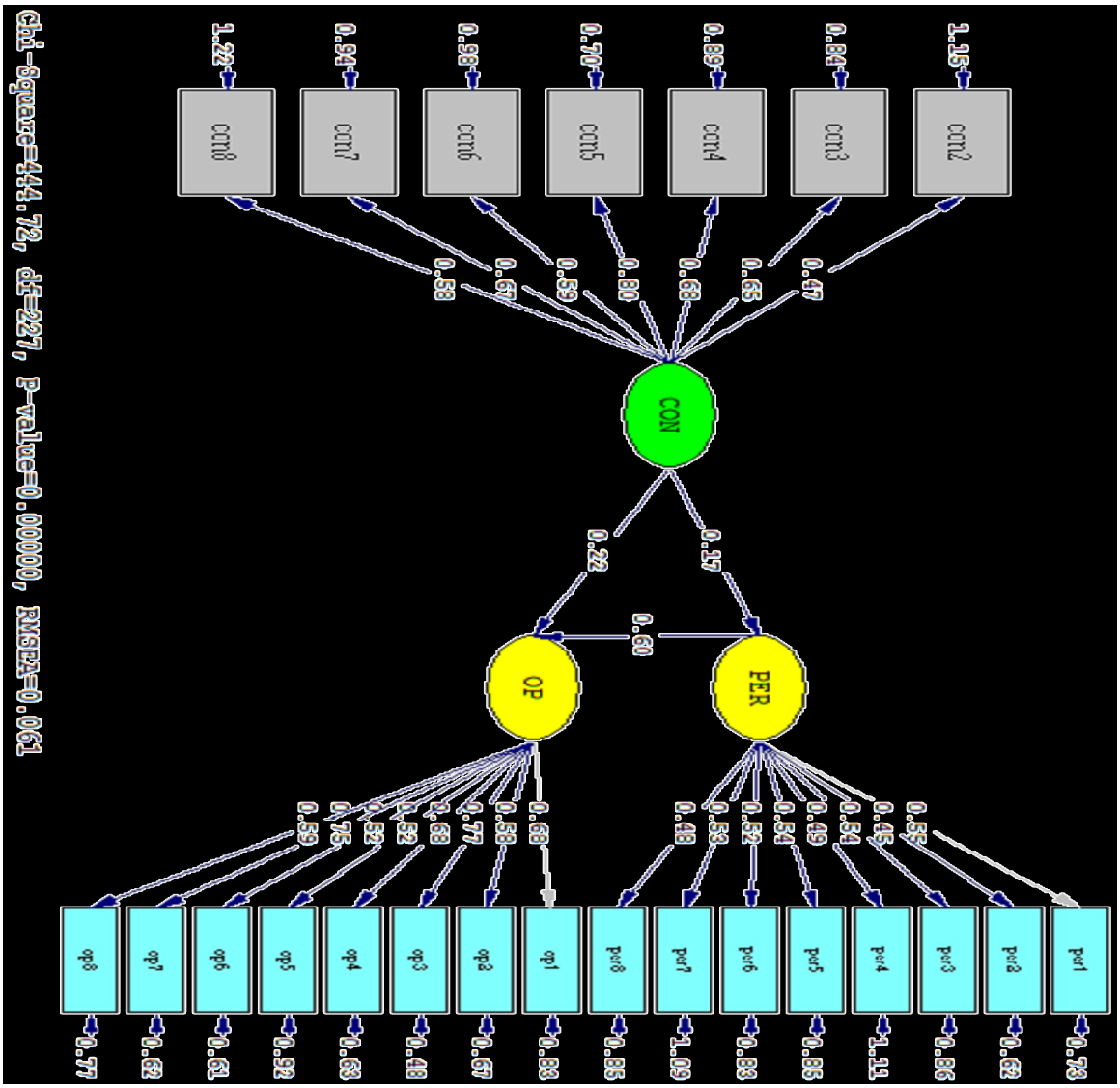


Figure: 3 Sub-Concept Model 1

Results of the Sub-Concept Model 1 have been shown in Table 3.

Table 3: Results of Sub-Concept Model

Independent Variable	Dependent Variable	Path coefficient	Standard Error	T-value	P-value	R 2
S C Concerns	SC Performance	0.17	0.015	11.05	0.00	0.029
S C Concerns	Organizational Performance	0.22	0.019	11.09	0.00	0.44
SC Performance	Organizational Performance	0.53	0.074	8.09	0.00	

Figure 3 portrays three causal relationships. These relationships are between supply chain concern and supply chain performance, supply chain concerns and organizational performance, and between supply chain performance and organizational performance. From Table 3, the beta value, error value and t-value corresponding to the first causal relationship between supply chain concerns and supply chain performance are 0.17, 0.015, and 11.05 respectively. This proves the point that supply chain concerns have a positive causal relationship with supply chain performance.

The beta value, error value, and t-value in respect of the second causal relationship between supply chain concerns and organizational performance are 0.22, 0.019, and 11.09 respectively. This serves as a testimony to the point that supply chain concerns have a positive causal relationship with organizational performance. With respect to the third causal relationship, the beta value, error value, and t-value corresponding to the relationship between supply chain performance and organizational performance are 0.53, 0.074, and 8.09 respectively. This serves as a proof to the point that supply chain performance has a positive causal relationship with organizational performance.

Relationships between Supply Chain Competence, Supply Chain Performance, and Organizational Performance

Strength of relationships among supply chain competence, supply chain performance, and organizational performance has been portrayed in Figure 4. Results for the proposed structural model are shown in Table 4.

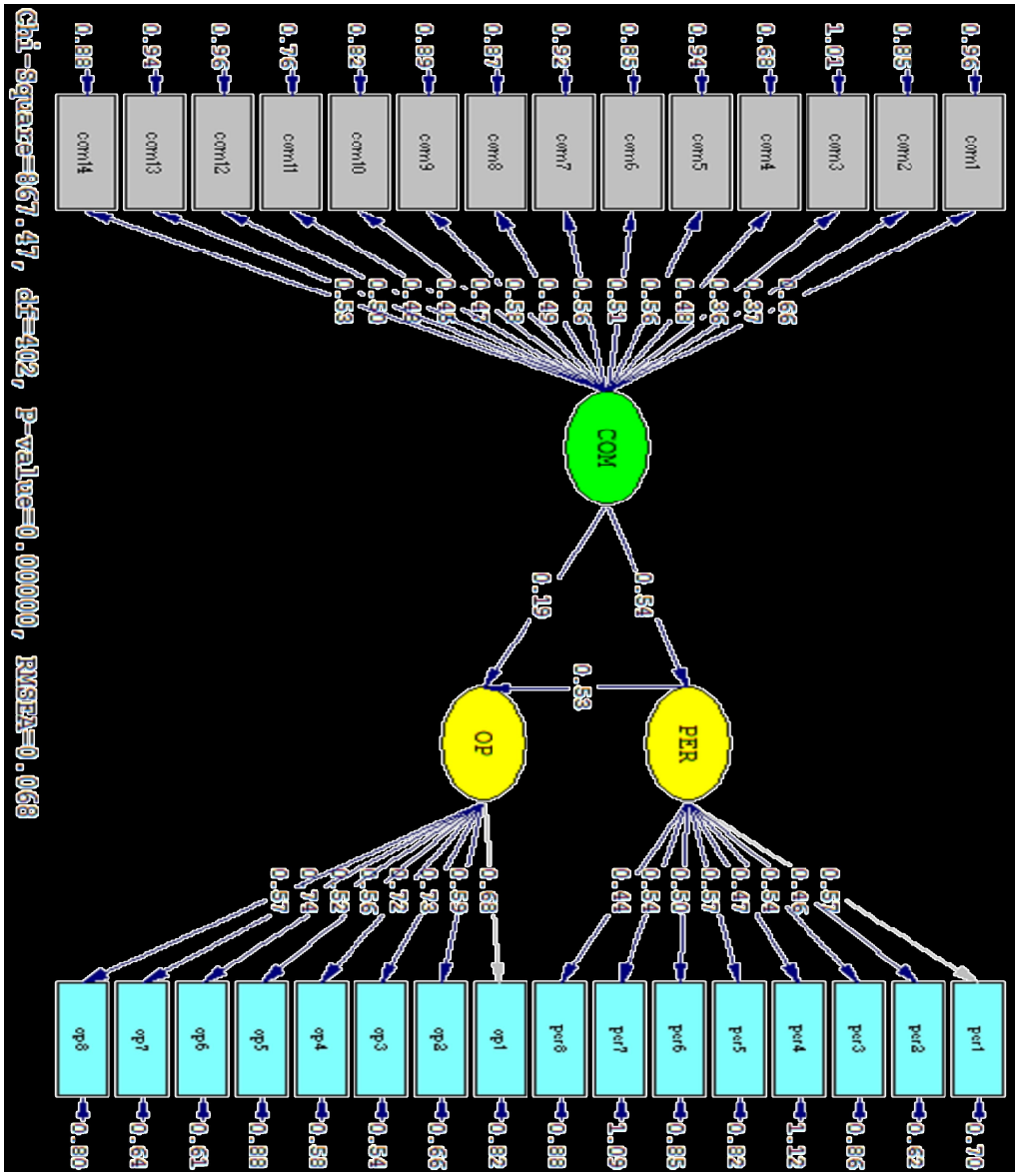
Results of the Sub-Concept Model 2 have been shown in Table 4.

Table 4: Results of Sub-Concept Model 2l

Independent Variable	Dependent Variable	Path coefficient	Standard Error	T-value	P-value	R 2
S C Competence	SC Performance	0.54	0.021	25.25	0.00	0.29
S C Competence	Organizational Performance	0.19	0.027	6.99	0.00	0.42
SC Performance	Organizational Performance	0.53	0.070	7.55	0.00	

Figure 4 portrays three causal relationships namely, relationship between supply chain competence and supply chain performance, relationship between supply chain competence and organisational performance, and relationship between supply chain performance and organisational performance. It can be inferred from Table 4 that the beta value, error value, and t-value corresponding to the first causal relationship between supply chain competence and supply chain performance are 0.54, 0.021, and 25.25 respectively. This serves as a testimony to the point that supply chain competence has a positive causal relationship with supply chain performance.

Taking the second causal relationship, the beta value, error value, and t-value corresponding to the



relationship between supply chain competence and organizational performance are 0.19, 0.027, and 6.99 respectively. This proves the point that supply competence has a positive causal relationship with organizational performance. With respect to the third causal relationship, the beta value, error value, and t-value corresponding to the relationship between supply chain performance and organizational performance are 0.53, 0.070, and 7.55 respectively. This proves the point that supply chain performance has a positive causal relationship with organizational performance.

Relationships between Supply Chain Practices, Supply Chain Performance, and Organizational Performance

Strength of relationships among supply chain practices, supply chain performance, and organizational performance have been portrayed in Figure 5, while Results in respect of the proposed structural model have been displayed in Table 5.

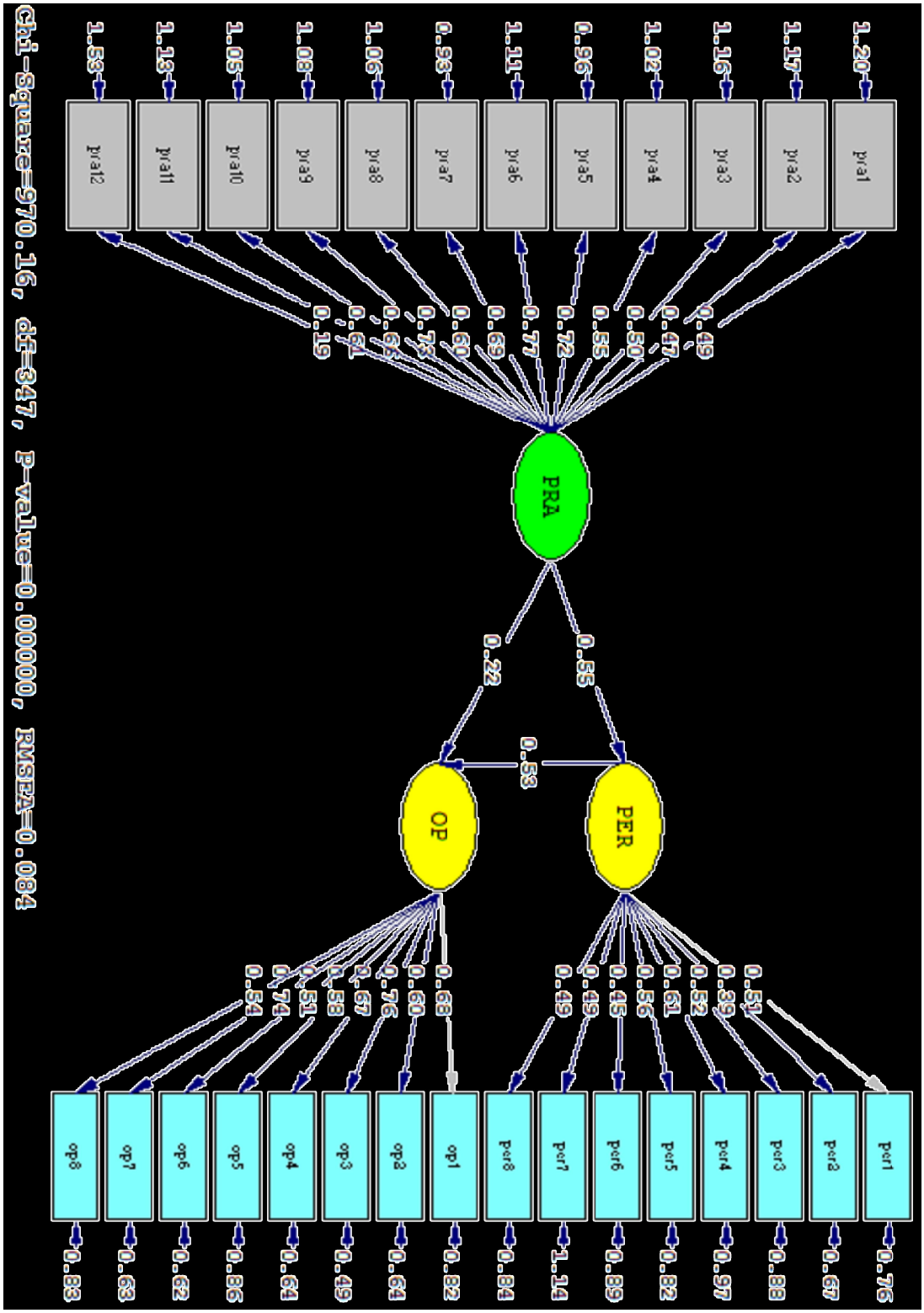


Figure 5: Sub-Concept Model 3

Results of the Sub-Concept Model 3 have been shown in Table 5.

Table 5: Results of Sub-Concept Model 3

Independent Variable	Dependent Variable	Path coefficient	Standard Error	T-value	P-value	R 2
S C Practices	SC Performance	0.55	0.020	27.65	0.00	0.30
S C Practices	Organizational Performance	0.22	0.027	7.94	0.00	0.45
SC Performance	Organizational Performance	0.53	0.084	6.25	0.00	

Figure 5 portrays three causal relationships namely, the relationship between supply chain practices and supply chain performance, supply chain practices and organisational performance, and supply chain performance and organisational performance. It can be inferred from Table 5 that the beta value, error value, and t-value corresponding to the relationship between supply chain practices and supply chain performance are 0.55, 0.020, and 27.65 respectively. This proves the point that supply chain practices has a positive causal relationship with supply chain performance.

Taking the second causal relationship, the beta value, error value, and t-value corresponding to the relationship between supply chain practices and organizational performance are 0.22, 0.027, and 7.94 respectively. This serves as a testimony to the point that supply chain practices have a positive causal relationship with organizational performance. With respect to the third causal relationship, the beta value, error value, and t-value corresponding to the relationship between supply chain performance and organizational performance are 0.53, 0.084, and 6.25 respectively. This clearly suggests that supply chain performance has a positive causal relationship with organizational performance.

Sobel Test For Testing Mediating Effects

The Sobel test is a method of testing the significance of a mediation effect. In mediation, the relationship between the independent variable and the dependent variable is hypothesized to be an indirect effect that exists due to the influence of a third variable (the mediator) (E-Study Guide 2012). As a result when the mediator is included in a regression analysis model with the independent variable, the effect of the independent variable is reduced and the effect of the mediator remains significant. The Sobel test

Direct Path	Independent Variable→ Mediating Variable (beta)	Mediating Variable→ Dependent Variable (beta)	Independent Variable→ Mediating Variable (SE)	Independent Variable→ Mediating Variable (SE)	t-value	Sig Level	Mediating effect
Concerns→ Organizational Performance (0.22)	Concerns→ Performance (0.17)	Performance→ Organizational Performance (0.53)	0.015	0.074	6.04	0.01	supported
Competence→ Organizational Performance (0.19)	Competence→ Performance (0.54)	Performance→ Organizational Performance (0.53)	0.021	0.070	7.3	0.01	supported
Practices→ Organizational Performance (0.22)	Practices→ Performance (0.55)	Performance→ Organizational Performance (0.53)	0.02	0.084	6.15	0.01	supported

is basically a specialized t test that provides a method to determine whether the reduction in the effect of the independent variable, after including the mediator in the model, is a significant reduction and, therefore, whether the mediation effect is statistically significant.

In order to test the mediating effects of supply chain performance on supply chain management components and organizational performance of manufacturing industries, three different path analysis were estimated and results were discussed in the previous section. Sobel test was used to find out the mediating effect of supply chain performance in the three models. The results show that the mediating effect of supply chain performance between supply chain management components and organizational performance i.e., supply chain concerns, competence and practices effect on organizational performance are mediated by the supply chain performance of the manufacturing industries.

Conclusions and Implications

Supply chain components are constituted by many variables such as supply chain concerns, supply chain competence, supply chain practices, and supply chain performance. These variables differ among different manufacturing enterprises. So a conceptual model is proposed and empirically tested using SEM based on data collected from the manufacturing enterprises. This research has identified that supply chain performance act as a strong mediating variable to influence the organizational performance of the manufacturing firms, Hence, manufacturing firms concentrating on improving their supply chain concerns, competence and practices can significantly improve their performance as the former impacts the latter indirectly through their impact on supply chain performance. Hence, managers should concentrate on improving the supply chain concerns, competence and practice to enhance the efficiency of their firms.

References

Ahmed, S.M., Azhar, S., and Ahmad, I. (2002). Supply Chain Management in Construction: Scope, Benefits, and Barriers, Delhi Business Review, Vol. 3, No. 1, January - June 2002, Accessed on December 20, 2013, *http://delhibusinessreview.org/v_3n1/dbrv3n1b.pdf.*

Bayraktar, E., Demirbag, M., Koh, S.C. L., Tatoglu, E., and Zaim, H. (2009), A Causal Analysis of the Impact of Information Systems and Supply Chain Management Practices on Operational Performance: Evidence from Manufacturing SMEs in Turkey, *International Journal of Production Economics*, Vol. 122, No. 1, pp.133-149.

Bhatnagar, R. and Sohal, A.S. (2005), Supply Chain Competitiveness: Measuring the Impact of Location Factors, Uncertainty and Manufacturing Practices, *Technovation*, Vol. 25, No. 5, pp.443-456.

Chow, W.S., Madu, C.N., Kuei, Chu-Hua, Lu, M.H., Lin, C., and Tseng, H. (2008), Supply Chain Management in the US and Taiwan: An Empirical Study, *Omega*, Vol. 36, No. 5, pp.665-679.

Cook, L.S., Heiser, D.R., and Sengupta, K. (2011), The Moderating Effect of Supply Chain Role on the Relationship between Supply Chain Practices and Performance: An Empirical Analysis, *International Journal of Physical Distribution and Logistics Management*, Vol. 41, No. 2, pp.104-134.

Deshpande, A.R. (2012), Supply Chain Management Dimensions, Supply Chain Performance and Organizational Performance: An Integrated Framework, *International Journal of Business and Management*, Vol. 7, No. 8.

Ellinger, A., Shin, H., Northington, W.M., Adams, F.G., Hofman, D., and O'Marah, K. (2012), The Influence of Supply Chain Management Competency on Customer Satisfaction and Shareholder Value, *Supply Chain Management: An International Journal*, Vol. 17, No. 3, pp.249-262.

E-Study Guide For: Handbook of Research Methods in Clinical Psychology by Michael C. Roberts (2012), ISBN 9781405132794, Accessed on December 20, 2013 http://books.google.com/books?id=ZTF9Ee3sWgwCandpg=PT74&lpg=PT74&dq=In+mediation,+the+relationship+between+the+independent+variable+&+the+dependent+variable+is+hypothesized+to+be+an+indirect+effect+that+exists+due+to+the+influence+of+a+third+variable+(the+mediator)&source=blandots=Ej_A9CPYxHandsig=faV8J6vtJUr0rBGb1s7VStBWYjwandhl=enandsa=X&ei=dGeZUvDuG8TmoATPoIHYBw&ved= 0CFMQ6AEwBg.

Hsu, C.C., Tan, K.C., Kannan, V.R., and Keong, L.G. (2009), Supply Chain Management Practices as a Mediator of the Relationship between Operations Capability and Firm Performance, *International Journal of Production Research*, Vol. 47, No. 3, pp.835-855.

Huo, B. (2012), The Impact of Supply Chain Integration on Company Performance: An Organizational Capability Perspective, *Supply Chain Management: An International Journal*, Vol. 17, No. 6, pp.596-610.

Koh, S.C.L., Demirbag, M., Bayraktar, E., Tatoglu, E., and Zaim, S. (2007), The Impact of Supply Chain Management Practices on Performance of SMEs, *Industrial Management and Data Systems*, Vol. 107, No. 1, pp.103-124.

Kristal, M.M., Huang, X., and Roth, A.V. (2010), The Effect of an Ambidextrous Supply Chain Strategy on Combinative Competitive Capabilities and Business Performance, *Journal of Operations Management*, Vol. 28, No. 5, pp.415-429.

Lee, S.M., Lee, D., and Schniederjans, M.J. (2011), Supply Chain Innovation and Organizational Performance in the Healthcare Industry, *International Journal of Operations and Production Management*, Vol. 31, No. 11, pp.1193-1214.

Li, S., Rao, S., Ragunathan, T., and Ragunathan, B. (2005), Development and Validation of a Measurement Instrument for Studying Supply Chain Management Practices, *Journal of Operations Management*, Vol. 23, No. 6, pp.618-641.

Ou, C.S., Liu, F.C., Hung, Y.C., and Yen, D.C. (2010), A Structural Model of Supply Chain Management on Firm Performance, *International Journal of Operations and Production Management*, Vol. 30, No. 5, pp.526-545.

Qrunfleh, S. and Tarafdar, M. (2012), Supply Chain Information Systems Strategy: Impacts on Supply Chain Performance and Firm Performance, *International Journal of Production Economics*.

Olavarrieta, S. and Ellinger, A.E. (1997), Resource-based Theory and Strategic Logistics Research, *International Journal of Physical Distribution and Logistics Management*, Vol. 27, No. 9/10, pp.559-587.

Sukati, I., Hamid, A.B., Baharun, R., and Yusoff, R.M. (2012), The Study of Supply Chain Management Strategy and Practices on Supply Chain Performance, *Procedia - Social and Behavioral Sciences*, Vol. 40, pp.225-233.

Sundram, V.P.K., Ibrahim, A.R., and Govindaraju, V.G.R.C. (2011), Supply Chain Management Practices in the Electronics Industry in Malaysia: Consequences for Supply Chain Performance, *Benchmarking: An International Journal*, Vol. 18, No. 6, pp.834-855.

Tan, K.C. (2002), Supply Chain Management: Practices,Concerns, and Performance Issues, *The Journal of Supply Chain Management.*

Vanichchinchai, A. and Igel, B. (2011), The Impact of Total Quality Management on Supply Chain Management and Firm's Supply Performance, *International Journal of Production Research*, Vol. 49, No. 11, pp.3405-3424.

Vijayasarathy, L.R. (2010), An Investigation of Moderators of the Link between Technology Use in the Supply Chain and Supply Chain Performance, *Information and Management*, Vol. 47, No. 7-8, pp.364-371.

Wisner, J.D. (2003), A Structural Equation Model of Supply Chain Management Strategies and Firm Performance, *Journal of Business Logistics*, Vol. 24, No. 1, pp.1-26.

Wong, W.P. and Wong, K.Y. (2011), Supply Chain Management, Knowledge Management Capability, and their Linkages towards Firm Performance, *Business Process Management Journal*, Vol. 17, No. 6, pp.940-964.

Yang, C. and Su, Y. (2009), The Relationship between Benefits of ERP Systems Implementation and its Impacts on Firm Performance of SCM, *Journal of Enterprise Information Management*, Vol. 22, No. 6, pp.722-752.

Yusuf, Y.Y., Gunasekaran, A., Musa, A., Dauda, M., El-Berishy, N.M., and Cang, S. (2012), A Relational Study of Supply Chain Agility, Competitiveness and Business Performance in the Oil and Gas Industry, *International Journal of Production Economics*.