

The Study of mediating effect of Supply Management Capabilities on the relationship between Information Capabilities Management and the Organizational Performance

Narongchai Kitrangsikul, Chanongkorn Kuntonbutr

Faculty of Business Administration,
Rajamangala University of Technology Thanyaburi,
Pathum Thani, Thailand
e-mail: narongchai_k@mail.rmutt.ac.th
chanongkorn_k@rmutt.ac.th

บทคัดย่อ— การศึกษานี้มีวัตถุประสงค์เพื่อสังเกตบทบาทของการเป็นตัวแปรส่งผ่านของความสามารถในการจัดการด้านอุปทานต่อความสัมพันธ์ระหว่างตัวแปรแฝงสองตัว อันได้แก่ ความสามารถในการจัดการด้านสารสนเทศและผลการดำเนินงานขององค์กร การศึกษานี้มุ่งเน้นการวิเคราะห์อิทธิพลของตัวแปรส่งผ่านของความสามารถในการจัดการด้านอุปทาน ผ่านการเปรียบเทียบของสองแบบจำลอง โดยแบบจำลองที่หนึ่งไม่มีตัวแปรส่งผ่านและแบบจำลองที่สองมีตัวแปรส่งผ่าน กรอบแนวคิดการวิจัยของการศึกษานี้ได้ถูกพัฒนาจากช่องว่างจากงานวิจัยที่มีมาก่อนหน้านี้ โดยเน้นการศึกษาเชิงประจักษ์จากข้อมูลที่เกี่ยวข้องจากผู้ประกอบการในอุตสาหกรรมในประเทศไทยจำนวน 136 บริษัท

ผลจากการศึกษาแสดงให้เห็นว่าความสามารถในการจัดการด้านอุปทานทำให้เกิดอิทธิพลของตัวแปรส่งผ่านอย่างเต็มที่ต่อความสัมพันธ์ระหว่างความสามารถในการจัดการด้านสารสนเทศ และผลการดำเนินงานขององค์กร และส่งผลกระทบต่อผลการดำเนินงานขององค์กร ประโยชน์ในเชิงบริหารจัดการจากการศึกษา ทำให้เข้าใจถึงบทบาทอันสำคัญของความสามารถในการจัดการด้านอุปทานในการเชื่อมโยงประสิทธิภาพ และความสามารถต่างๆขององค์กรเพื่อสร้างความสามารถเชิงการแข่งขัน ดังนั้นองค์กรจึงควรให้ความสำคัญต่อบทบาทดังกล่าว และการนำมาใช้ให้เกิดผล สำหรับงานวิจัยต่อไป ผู้วิจัยสามารถศึกษาเพื่อวิเคราะห์อิทธิพลของตัวแปรส่งผ่านของประสิทธิภาพและความสามารถในการดำเนินงานขององค์กร ซึ่งจะช่วยขยายขอบเขตความรู้ความเข้าใจในสาขาการจัดการโซ่อุปทาน

คำสำคัญ: อิทธิพลตัวแปรส่งผ่าน ความสามารถในการจัดการด้านอุปทาน ความสามารถในการจัดการด้านสารสนเทศ ผลการดำเนินงานขององค์กร

Abstract— The purpose of this study was to observe the mediating role of supply management capabilities on the relationship between the two assigned latent variables, information management capabilities and organizational performance. The focus of this study was to examine the mediating effect of supply management capabilities through the comparison of the models with and without the presence of the mediator. A conceptual framework had been developed based on research gaps of the earlier studies with the empirical data collected from 136 Thai industrial companies.

The results of the study suggested that supply management capabilities had fully mediated the relationship between information management capabilities and organizational performance, as well as positively impacted the organizational performance. The implications of the research was that supply management capabilities had a crucial role in collaborating firm's competencies, create competitive advantage and consequently improve organizational performance, of which appropriate implementation was a key aspect. Future research on the mediating effect on firm's other capabilities would extend the knowledge of the field supply chain management.

Keywords: *Mediating Effect; Supply Management Capabilities; Information Management Capabilities; Organizational Performance*

Introduction

The competitive condition in current world economy forced business organizations to adjust their working practices and restructure the way they operate their businesses. Various studies had emphasized the development of collaboration of firm's capabilities in

order for firm to stay competitive. Supply management had a key role in managing and developing comprehensive framework which focuses on collaborating firm's capabilities as to meet the higher demand from the transactions with the customers [1]. The integration of firm's cross-functional capabilities as well as an effective external linkage with business partners in the supply chain can improve the performance of the firm drastically [2-4].

The motivation of this study is to evaluate the mediating effect of supply management capabilities on the relationship between information management capabilities and the organizational performance. The mediating role of supply management capabilities to collaborate firm's other capabilities would have contributed for both academic research and managerial implications in the field of supply chain management.

I. THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

A. *Supply Management Capabilities (SMC)*

The strategic role of supply management had played a crucial part in corporate strategy. Cousins and Spekman [5] defined supply management capabilities as functional activities. Supply management strategies were valuable source of competitive advantage which collaborated supply operation functions [6, 7]. Supply management was a significant business performance enhancer [8]. Antonette, et al. [9] suggest supply management functions to include the management of the supplier base, supplier development, and supplier integration, while Sezhiyan and Nambirajan [10] define supply effort management to involve supplier's long term and strategic relationship, supplier involvement, and selection of quality suppliers. Supply management focuses on strategic relationships and develop close cooperation, and support the transfer of key resources, knowledge, and capabilities between firm and its supplier and helped to create long-term supplier orientation which involved cross functional coordination [11], which generates collaborative advantages among partners.

B. *Information Management Capabilities (IMC)*

Zhang, et al. [12] identified information management capabilities as the ability to deploy and leverage firm's IT capabilities in combination with firm's other resources and capabilities as to support and enhance distinctive competencies. Information technology had been one among all other productivity tools with the power to simultaneously increasing capabilities of the business and as well as, decreasing operational cost [13]. Information management capabilities can provide accurate, timely, and reliable information and influence firm performance [14]. The appropriate use of information management capabilities supported the competitiveness for the

organization. It was evident that effective and efficient use of IT was key factor to differentiate successful and less successful firms [15]. IT creates business value by supporting process innovation [16]. Organizations increasingly rely on information technology to improve the operational process and the performance of the firm [17]. Shang and Marlow [18] suggested that that information management capabilities had a positive influence on financial performance of the organization.

C. *Organizational Performance (OP)*

The main stream of organizational performance literature pointed out that the performance of the organization was the measurement based on multivariate effectiveness measures. Hove and Banjo [19] suggested that organizational performance was a sub set of business effectiveness. The framework to measure organizational performance used by Santos and Brito [20] was based on stakeholder theory as well as tested and adopted from previous empirical studies, the framework is used to identify potential indicators for the financial and non-financial performance aspect such as profitability, market share, customer and employees' satisfaction. This measurement of organizational performance dimensions had been affirmed by Rowe and Morrow [21] whom their study suggest evidence of a financial construct to be composed of financial reputation, market value and profitability. However, some other researcher suggested the organizational performance should have comprised of three main components those were customer focus, inter-functional coordination, and profitability [22].

It had been evident that supply management capabilities contributed greatly towards the sustained competitive advantage and the achievement of organizational and played crucial role in collaborating the cross-functional activities with other capabilities which, in this study was information capabilities. Having identified the importance of supply management capabilities and its potential mediating role, the research question for this study was that does supply management capabilities mediate the relationship between information management capabilities and organizational performance, therefore, the following hypotheses are put forth to establish the model relationships.

H1 : There is direct relationship between information management capabilities and organizational performance.

H2 : There is indirect relationship between information management capabilities and organizational through supply management capabilities.

H3 : Supply management capabilities mediates relationship between information management capabilities and organizational performance.

II. METHODOLOGY

A. Population and Sampling

The study was aimed at investigating the mediating effect of supply management capabilities on the relationship between information management capabilities. The study had assigned ten groups of population from the industry, based on the guidelines of industrial clustering provided by the Federation of Thai Industries. The sample size was calculated according to Bentler and Chou [23] which offered simplified guideline for a trustworthiness of parameter estimates and proposed the ratio for sample size to the number of free parameters to be 5:1 ratio to be acceptable, the calculated sample size for this study was 125 samples.

B. Data Collection

The data of the industrial companies were obtained from the database from of Department of Business Development. The supply chain managers were the target informant. The key informant survey research strategy suggested that the key informants must be knowledgeable on issues being studied and willing and able to communicate this information [24]. The mail survey methodology was used for data collection. The data had been collected through combination approaches of both paper and web-based questionnaire. A total of 1,300 companies were mailed, the final respondents was 136.

C. Latent variables and observed variables

Seven-point Likert scales ranging from 1 to 7, are used to rate each question, with 1 = strongly disagree, 4 = neither, and 7 = strongly agree.

The supply management capabilities latent variable comprised of supplier selection, strategic supplier alliances, communication, and relationship as to measure firm’s practices and operational activities in the supply management. The information management capabilities latent variable comprised of IT infrastructure, Human IT resource, and Information sharing as to measure the firm’s abilities to acquire, deploy and leverage the IT assets, use and provide data and information to users at appropriate levels and to coordinate informational resources and put them into productive use, as well as to adapt to response to changing market needs and directions.

The organizational performance latent variable comprised of profitability, market share, market share, customer satisfaction, and employee satisfaction as to measure firm’s efficiency and effectiveness on achieving the predetermined objectives

D. Reliability and Validity

The questionnaire had been reviewed and assessed by 6 subject-matter experts for the validity of the measurement content, using Index of Item-Objective Congruence (IOC) method. The test of the reliability was using Cronbach’s alpha. The results showed that the alpha values for all variables were higher than 0.8. The testing of Variance Instruction Factor (VIF) for multi-collinearity, results were lower than 10 which reflected no multi-collinearity among all variables.

E. Convergent validity and discriminant validity

The convergent validity had been tested in prior to the evaluation with SEM, convergent validity was measured with confirm factor Analysis. Vanichbuncha [25] proposed that model can be considered converged if the factor loading values are greater than .6 and the AVE were higher than .5. The loading factors ranges from .69 to .92 while the squared correlation values from the study ranged from .53 to .72.

The assessment of discriminant validity was evaluated by comparing the Average Variance Extracted (AVE) value with squared correlation between variables [26]. Fornell and Larcker [27] suggested that the values of squared root AVE should be higher than squared correlation values as to be valid. The result indicated that the all the values as mentioned have supported the discriminant validity. The AVE values from each latent variable were greater than the level of correlation involved.

Table1. The comparison of square root AVE with correlation between constructs

	Supply Management Capabilities	Information Management Capabilities	Organizational Performance
Supply Management Capabilities	0.73		
Information Management Capabilities	0.72	0.81	
Organizational Performance	0.53	0.53	0.86

The squared root AVE in diagonal line

F. Measurement of Model Fit

The results of the measurement model indicated the Normed Chi-Squared fit index derived from Chi-Square/degrees of freedom (χ^2/df) was 1.932, indicating a good model fit between the data and hypothetical model [28]. The Goodness of Fit (GFI) value was .911 and the Adjusted Goodness of Fit (AGFI) value was .834. The Value of Root Means Square Error of Approximation was .072. The Normed Fit Index (NFI) and Comparative Fit

Index (CFI) value were .932, and .973 respectively. All of the data mentioned above demonstrate an acceptable model for this study [29].

III. THE ANALYSIS OF STRUCTURAL EQUATION MODEL

Structural Equation Model (SEM) had been constructed for the test of the proposed hypotheses. To determine the presence of mediating effect the path coefficient had been compare between the model with and without mediating variable, which was supply management capabilities in this study. The hypotheses set forth : H1 was not supported that there was no direct relationship between information management capabilities and organizational performance at .319 ($p \geq 0.05$); H2 was supported that there was indirect relationship between information management capabilities and organizational through supply management capabilities at .953 ($p < 0.05$); and H3 was supported that supply management capabilities mediated relationship between information management capabilities and organizational performance as the path coefficient between information management capabilities and organizational performance got smaller and became insignificant, from .421 ($p < 0.05$) to .319 ($p \geq 0.05$) with the presence of supply management capabilities (as the mediating variable) in the model.

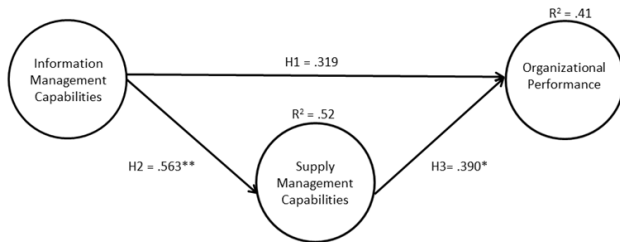


Figure1. Research Model Results

The model exhibited reasonable predictive ability as it explained 52 percent of the variance in Supply Management Capabilities and 41 percent of the variance in organizational performance.

IV. DISCUSSION AND CONCLUSION

The results supported that supply management capabilities exhibited an important role in enhancing information management capabilities to achieve superior

performance of the organization. The findings indicated that the supply management capabilities had fully mediated the relationship between information management capabilities and organizational performance at .953 ($p < 0.05$), this supported earlier study that supply management could collaborate the other capabilities of the firm by providing an effective supplier selection, created strategic supplier alliances, improved communication, as well as the strengthened relationship between business partners [30], the results also affirmed the work of Sauvage [31] that information technology was a significant tool which contributed to business success. IT resources included IT infrastructure, IT Human resource assisted in creating effective coordination between different department and provide necessary communication with their suppliers and business partners [32] and well as, increasing efficiency, lowering errors and reducing processing lead time [33]. Additionally, information sharing capabilities would enable information flows and significantly influences a firm’s ability to improve customer knowledge and related business processes [14, 34].

As for the test of the mediating effect, the path coefficient should ideally get smaller with the mediator being added into the model [35]. The comparison of the path coefficients with and without the presence of supply management capabilities had indicated that the path coefficient between information management capabilities and organizational performance got smaller from .421 ($p < 0.05$) to .319 ($p \geq 0.05$) with the presence of supply management capabilities (as the mediating variable) in the model.

Further, Preacher and Hayes (2008) suggested that the fully mediating effect occurs in the model if the indirect path is statistically significant and the direct path become insignificant. The results showed that the indirect path in the model was statistically significant which indicated that mediating effect had occurred. The indirect path from information management capabilities to organizational performance was statistically significant with path coefficient = .953 ($p < 0.05$). This suggested that the relationship between information management capabilities and organizational performance was fully mediated by supply management capabilities. This results expanded earlier research works which asserted that supply management were means to increase firm performance [36-39] and was also defined as practices that support the operational and strategic efficiencies, through the collaboration within internal functions and with other firms [40-42] as well as, lead to long term profitability and competitiveness [43].

In conclusion, the key findings of this study suggested that

1. Supply management capabilities played a crucial role in collaborating firm other capabilities such as

information management capabilities in this study and had positive impact on firm performance, this exhibited mediating role of supply management capabilities, it would be necessary that organization strategically collaborate its capabilities in order to achieve superior performance.

2. Information management capabilities had positive relationship with organizational performance both direct and indirect through supply management capabilities. The IT management policies e.g. IT infrastructure investment, IT Human resource development and information sharing are key aspects.

3. The implementation of collaboration or integration of firm's core capabilities could yield higher performance.

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