The Mediating Role of Alliance Integrated Network in the Relationship between Service Supply Chain Management Practices and the Indonesian Public Healthcare Organizational Performance

Boonsri Suteerachai[1], Yananda Siraphatthada[2]

[1,2]*Graduate School, Suan Sunandha Rajabhat University, Bangkok, Thailand*
[1]boonsri.su@ssru.ac.th
[2]yananda.si@ssru.ac.th

Abstract- **The main aim of the current study is to investigate the relationship between the supply chain management practices and the Indonesian public healthcare organizational performance. Furthermore, the mediating role of alliance integrated network in the relationship between service supply chain management practices and the Indonesian public healthcare organizational performance is also examined. The study aims to overall assess the organizational performance of healthcare sector. The measures of hospital services include, promptness, health care delivery, cost, efficient and effective diagnosis, internal customer satisfaction, treatment, safety, and decrease in process time. Total quality management includes technology, its implementation, managing relationship with the patient, innovation, patient satisfaction, supplier relationship management, efficient service delivery, and speed of recovery. By employing the survey-based methodology, the study has used the SEM-PLS technique to answer the questions raised in current study. This study, which is among the pioneering studies on the current issue will be helpful for policymakers and researchers in examining the link supply chain management practices, alliance integrated network and the Indonesian public healthcare organizational performance.**

Keywords: *Supply chain management practices, Alliance integrated network, Organizational performance, Indonesia*

1. Background

In recent times, the service sector accounts for the largest share in the GDP of developed economies. Over and above, the service sector also plays a major role in creating employment opportunities in the developing as well as in developed economies [1]. The services sector majorly contributes Indonesia's GDP, with 58% contribution of GDP in 2010, and targeted to expand it by an annual increase of 6.8% of GDP (Economic Planning Unit & Department of Statistics Indonesia, 2010). Seemingly, this sector has been increasingly obtaining enough attention than any other sectors in Indonesia. The healthcare industry in Indonesia is considered as one of the significant service sectors having a potential of successfully competing and becoming a foreign exchange earner. An intermittent theme covering all aspects of National Key Economic Areas (NKEAs), emphasizes upon strengthening and ensuring quality of value chain, particularly specialization. Therefore, international healthcare accreditation is imposed through emphasizing the quality as a strategic policy [2].

Healthcare industry can further contribute in the Indonesian economy. Hence, considering factors that could improve the organizational performance of healthcare is quite important. From several factors, SCM practices are considered as critical for improving organizational performance of healthcare. Supply chain responsiveness and SCM practices are somehow related, resulting in increased competitive advantage, which consequently leads to better organizational performance. (Jermsittiparsert, Sutduean, Sriyakul, Sangperm, & Prianto, 2018) Furthermore, effective SCM practices increase revenues, enhance service delivery, reduce costs and improves customer satisfaction [3].

A study [4] exhibited that no significant difference is found among the SCM practices of services and manufacturing organizations operating in Indonesia. The services organizations possess unique characteristics which demand to distinguish between the generic and service SC [5].

Indonesian healthcare spending has been growing from 4.3 to 4.8 percent of GDP in 2008 and 2009 respectively. It is exhibiting higher trends than other neighboring economies, i.e. Thailand, Malaysia, Philippines, Singapore and Brunei

Darussalam [6]. For this purpose, the Ministry of Health in Indonesia planned about 7% increase of healthcare expenditure by 2020, in order to meet the standards of developed economies [7]. The Indonesian budget added four main strategies for improving its citizens' quality of life through issuing billions for building hospitals, obtaining medicines, equipment, and increasing the hospital staff. Regardless of all these areas, the local newspapers still published complaints. It is perceived that public hospitals have low efficiency and productivity, stressful medical staff, unhappy patients, and long waiting hours.

In November 2011, the Sun dated has mentioned a complaint about the many hospitals, regarding the toilet facility shortage, particularly for the disabled patients. The patients having terminal and serious diseases have to wait longer. The news reported that due to limited equipment, professionals, and drugs, the Indonesian hospitals have failed to deal with the current patient demand, since public healthcare is providing services to 80% of the total population (The Sun, 2010). A projected figure by United Nation shows that by 2020, about 7.1 percent of the Indonesian populations would consist of persons that age 65 or above [8], and is recognized to be an ageing society in view of United Nations. It indicates that ageing society requires more and better healthcare facilities that signifies higher healthcare spending and usage of healthcare facilities [9].

The organizational performance must be improved for achieving strategic values, mission, and corporate objectives [10]. Where, organizational performance are those organizational tasks which help to develop organizational goals and objectives, track the progress, and make necessary adjustments for achieving these goals. It plays an essential role in organization management. The propensity to proactively materialize the gaps in the organizational performance may mitigate those risks which influence the achievement of organizational goals. Previous researches attempted to extensively emphasize upon the organizational performance, particularly in the manufacturing sector. Organizational performance can usually be measured through shareholder return, product sales, and financial performance. However, profits, productivity, sales, stock prices, market share, and debt ratios are the measures which are used by business firms [10]. Other measures emphasize upon customer service, product quality, and competitive position [11]. Healthcare industry measures must be capable of seizing the true nature and applicability of the organizational performance of healthcare sector [10]. During 1990-2007 the researches on the public healthcare, generally emphasized on the service delivery, financing dimensions and staffing [12]. However, in order to consider organizational performance under healthcare industry. [13] employed morbidity rates, mortality, cost recovery, occupancy rates, and board-certified physicians as the specific measures.

2. Literature Review

2.1. Organizational Performance

A term organizational performance is referred to the ways a firm satisfies the market requirements and financial objectives of its organization [14]. Organizational performance is generally estimated through non-financial and financial criterion [15]. The financial objectives can be measured with business performance, return on investment, organizational effectiveness, sales growth and profit [15], whereas, the non-financial performance measures involve market share, innovativeness [16], quality improvement and resource planning [17]. The concept of organizational performance can also be considered in terms of SCM perspective, which involves supply chain integration, organizational coordination, and boost in revenues [18]. The other aspects of organizational and operational performance are R&D and innovation.

Several empirical researches [19] have attempted to examine the nature of association among organizational performance and SCM. The items which are extracted from literature to examine organizational performance are: higher accuracy, higher sales, improved coordination among the organizational departments, improved cost accuracy, better customer coordination, and improved supplier coordination [20]. In addition, for operational performance measurement, [20] used product return, lead time, sales level, inventory turnover, satisfying requirements of customers, and cost reduction [21]. These were then well organized as the key measures, namely responsiveness, assets, reliability, cost, revenue, customer satisfaction, safety & sustainability, and customer satisfaction. All these measures are adopted for the present research. Therefore, it is important to closely observe the aspects of SCM and identify those areas which could enhance the organizational performance of public health sector.

2.2. SCM Practices

The supply chain management practices refer to those activities that are performed for encouraging effective SCM [22]. SCM involves certain short-term goals, for reducing lead time and inventory and for improving the productivity, whereas, the long-term objectives involve supply chain integration and better market share. Various scholars have attempted to define the term SCM. The SCM referred to the practices which involve outsourcing, supplier partnership, continuous process flow, cycle-time compression, and sharing information technology. In another view, SCM

practices are those activities which the organizations undertake for encouraging effective SCM and is termed as the special strategic partnership among retailers and the suppliers [23]. However, [24], considered the SCM practices with regards to reduction in the duplication effects, through emphasizing upon key competencies, and utilizing the inter-organizational standards, i.e. electronic data interchange, reducing inventory level through delaying of customizations till the end, and activity-based costing. The SCM practices have also been classified into following dimensions: close customer partnership, close supplier partnership, just-in-time supply, few suppliers, strategic planning, holding safety stock, subcontracting, outsourcing, and e-procurement. A study also mentioned seven theoretical supply chain processes involving skills and capacity management, customer relationship management, information flow, demand management, service delivery management, cash flow, and supplier relationship. However, the SCM practices are generally categorized as customer relationship management, demand management, supplier relationship management, service performance, information & technology management, capacity and resource management, order process management, and service supply chain finance [25].

Previous studies focused merely upon the general forms of SCM that may be applicable to various organizations. In order to deal with this limitation, the requirement arises from the service organizations encouraging researchers to particularly focus on specific SCM forms, i.e. service supply chain management activities [26]. It further ensures extensive research in the service sector, through emphasis on Indonesian public healthcare. Therefore, information technology management, demand management, customer-relationship management, supplier relationship management, and capacity & resource management, are added into the research framework of this study.

2.3. Alliance Integrated Network

The healthcare service organization comprises of different services and products, i.e. catering, pharmaceuticals, medical devices, medical waste, laundry cleaning, general waste management, vehicle-fleet management, housekeeping, and home-care products, in addition it also involves various parties. According to [27] strategic healthcare alliances are known as the organizational clusters which jointly make decisions and efforts for efficient delivery service. The alliance network formation is an initial step to realize and integrate the significant benefits, which are obtained through integration, to develop cooperation and collaboration for enhancing the medical service quality, improvement in performance, and for achieving competitive advantage and reduction in costs. Therefore, alliance integrated network refers to the network capability produced from the synergistic effect of IT, which implies the ideal information access between the members, and decision-making process integration enabling efficient decision-making and collaboration between network members. A study [19] added the tools of supplier relationships and IT collaboration as the aspects of SC practices. Employing inter-organizational system, namely electronic data exchange has also been recommended by [28]. In another study, investigation of the information technologies, is proposed to the companies, i.e. radio-frequency management for electronic data interchange, shared databases, and transportation tracking ensure invoicing and order placement. A study reported a direct association among performance and SCM, in addition it also found indirect association through communication technology and information. The study also revealed the integral role played by alliance integration network for mediating the relation among organizational performance and service SCM practices.

2.4. Organizational Performance and SCM Practices

Supply chain efficiency and innovation are positively associated with organizational performance. Apart from that, customer value creation involving fewer medical errors, speedy patient care processing, and efficient data management, were reported to have positively influenced the performance of an organization. In view of [29] the SCM practices must be converted into combinatory for valuing the performance effectiveness of these practices [29]. The empirical evidence indicated the way SCM practices improve the competitive capabilities of an organization, such as, product differentiation, cost leadership, customer service. In another study, a direct positive affect of SCM practices have found on the performance of medium as well as small enterprises. Similarly, a significant impact of IT adoption, leadership, training, and customer orientation have found on the performance of service organization [30]. Furthermore, with the help of empirical research have shown that SCM practices, i.e. supplier relationship management and quality management positively influence the overall performance of an organization. Besides, effective SCM activities also enhance the market and financial performance of service organization.

The above discussion shows that SCM and organizational performance are closely related and are suitable to apply in this study as well in context

of public healthcare. Therefore, the study proposes a positive relation among organizational performance and SCM (Rajiani & Pyplacz, 2018).
The supply chain management (SCM) practices were identified as, sharing information-technology, cycle-time processing, information technology sharing, strategic supplier partnership, continuous process, and outsourcing. A study observed three SCM practices, namely, purchasing, customer-relationship management, and quality. In addition, SCM practices were also considered in terms of postponement strategy and electronic data interchange found information flow, customer-relationship management, postponement strategy, information quality, internal operation practices, and strategic-supplier partnership as the six important SCM practices. Another study identified seven SCM practices in the service organization, such as, capacity & resource management, information & technology management, demand management, customer-relationship management, order process management, and supplier-relationship management, and service process management. And also found various SCM practices including continuous process flow, cycle-time compression, information sharing, just-in-time supply, outsourcing, customer partnership, strategic SC benchmarking, few suppliers, e-procurement, numerous suppliers, sub-contracting, and safety stock. [31] discovered capacity & skills management, information flow, supplier and customer relationship management, cash flow, service-delivery management, and demand management as the theoretical service processes of the supply chain. Furthermore, [19] have classified SCM practices of service organization into information flow, strategic supplier partnership, internal operations, training, information & technology management, and customer relationship management (Tabor, 2018).
A study [32] also examined postponement strategy, customer relationship management, information flow, strategic supplier partnership, agreed goal & vision, information quality, award sharing and risk as SCM practices. Another study identified a number of SCM practices of service organizations, namely, capacity & resource management, demand management, information & technology management, order process management, service supply chain finance, service performance management, supplier and customer relationship management. Following the study, [26] adopted seven SCM practices to examine being the SCM service practices, namely customer and supplier relationship management, demand management, service performance management, capacity and resource management, order process management, and information and technology management. On the basis of the literature, five main dimensions that have been widely acknowledged as the SCM practices by researchers are attempted to apply in the healthcare sector. These are: customer and supplier relationship management, capacity & resource management, demand management and IT management. Therefore, the SCM practices is taken as a multidimensional concept consisting of above mentioned dimensions (Ochkovskaya, 2018).

2.5. Mediating Role of an Alliance Integrated Network

A study [33] exhibited that SC performance is influenced by various components of market orientation, namely customer relationship management and supplier relationship management. However, supply chain collaboration acts as a mediator to improve the operational performance of the SC partners. A study [34] described that customers, suppliers, and functional departments as part of supply chain integration, creates coordination and link the process and information flows to fulfill on-time-delivery. Practical guidance is provided to the SC and logistics managers with regard to effective supply chain integration for affecting the customer delivery. Therefore, below figure explains the position, as follows:

2.6. Theoretical Foundation

A considerable amount of empirical studies are available advocating that organizational performance is affected by the Resource-Based View. The RBV theory explores how the capabilities and resources of an organization affect the organizational performance as a whole. Therefore, those resources and capabilities that are left undetermined in business processes and sustaining activities may not positively influence the organizational performance.
In this study, capacity & resource management is considered as a dimension of SCM practices. It refers to be the capacity and resource management of services, which are efficiently operated and effectively organized at the optimum point [35]. Thus, integration of RBV theory in a research framework may cause public healthcare SCM practices to positively affect the organizational performance, in case when the capabilities and resources are determined as the SCM practices. Achievement of competitive advantage is related with the core competencies, capabilities, and resources of an organization. According to [36], theory of competitive advantage motivates businesses and nations to implement policies for developing high quality goods that can yield high revenues. In order to satisfy customer request, competitive advantage plays an essential role. Contrarily, demand management refers to the

balancing and management of customer demand through obtaining updated information about the demand behavior [37]. Whereas, customer relationship management refers as the development and maintenance of customer-relationships that are long-term in nature, by continuously generating and understanding information regarding the customer demand [35].

The study has drawn the following hypothesis

H1: Supply chain management practices significant impact on the organizational performance.

H2: Alliance integrated network have significant impact on the organizational performance.

H3: Supply chain management practices significant impact on the Alliance integrated network.

H4: Alliance integrated network mediates the relationship between the supply chain management practices and organizational performance.

3. Methodology

The research employed method of questionnaire survey for data collection. For this, total 331 questionnaires were distributed in various construction organizations. For achieving high response rate, several reminders were given through phone calls and SMS. These efforts results in 195 questionnaires. Almost 17 out of 195 were not complete or useable. These questionnaires lack important responses and information by the participants. Almost 178 questionnaires were processed for further analysis. The total valid response rate was about 53.7 percent. This response rate is considered somehow sufficient for this research study. According to [38] the sufficient level of response rate for surveys is considered about 30 percent.

For testing the association among the constructs, the Smart PLS Structural Equation Modeling [39] has been used in this research. The technique is also known as second-generation approach. SEM is considered very effective approach and can be used as a good alternative for multiple regressions. The advantage of SEM over multiple regressions is its ability to handle multiple regressions with multiple dependent variables in contrast to multiple regressions, where one dependent variable can be used at a time. SEM approach can handle several dependent variables simultaneously. The researchers working in the field of behavioral science use SEM approach. Researchers are able to include latent variables in the research analysis using SEM to run path-analytic modeling. The variables, which cannot be observed and measured directly, are called latent variables. These variables are estimated through other measures this research, all the constructs are unobserved variables, which need to be estimated through their indicators. An inner model (structural) and outer model (measurement) are used in SEM analysis. The measurement of the study is adapted from the studies of [1]

4. Results

In a recent study conducted by [40] it has been suggested that goodness of fit measure is not suitable for measuring the validity of the model. The research claims that valid models cannot be differentiated from non-valid models while using simulated data in PLS path models with. In this way, the goodness of fit is not appropriate. A two-step process was suggested by [40] for model validity based on the advancement of PLS path modeling. This research study has used the two-step process in which, an outer model is assessed, and the inner model is assessed. More precisely, the assessment of the measurement model is done in first step, and in the second step, the structural model is assessed. The measures allocated to the unobserved or latent constructs are identified in the measurement model. On the other hand, the association between the dependent and independent unobserved constructs is incorporated in the structural model. The research can estimate, define and forecast the extent of association among the latent constructs through this approach. When the assessment of measurement model is done, the reliability of internal consistency, content validity, convergent and discriminant validity are required.

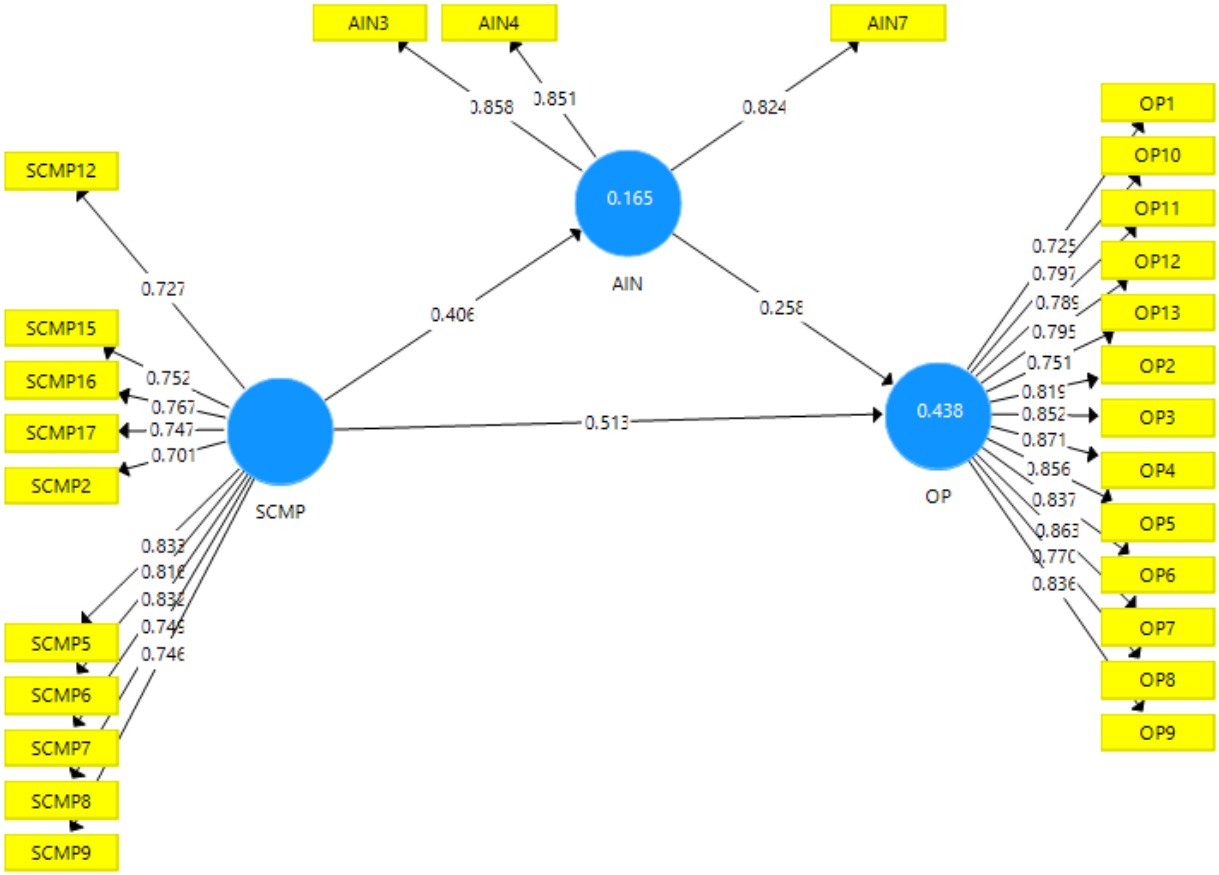

Figure 1. Measurement Model

The estimation of the outer loadings of the measure of each construct was assessed through the reliability of individual item. According to the researchers, items with values of 0.4 to 0.70 should be considered. In this research, 2 out of 61 items were eliminated because of the values below 0.40 (standard value). Considering the suggestions of [41] based on the issue of multi-collinearity, about 38 items have been eliminated. When the items are similar, they are less likely to measure a construct. When most of the items become similar in the research, to represent the item set, only one or two sample items are accepted. It has been recommended that one or two best indicators are sufficient. There must be a minimum of two estimated indicators in every latent for a model to be estimated (with latent variables). While estimating a complicated model, the degrees of freedom are increased. According to [41], the validity of single and multiple items are equal. The empirical and theoretical findings of the measures will be same when single-item measures are used only. According to [42], single-item indicators can be used in the research. The researcher proposed some constructs which can be measured through single item indicators.

Table 1. Factor loading

	AIN	OP	SCMP
AIN3	**0.858**		
AIN4	**0.851**		
AIN7	**0.824**		
OP1		**0.725**	
OP10		**0.797**	
OP11		**0.789**	
OP12		**0.795**	
OP13		**0.751**	

OP2		**0.819**	
OP3		**0.852**	
OP4		**0.871**	
OP5		**0.856**	
OP6		**0.837**	
OP7		**0.863**	
OP8		**0.770**	
OP9		**0.836**	
SCMP12			**0.727**
SCMP15			**0.752**
SCMP16			**0.767**
SCMP17			**0.747**
SCMP2			**0.701**
SCMP5			**0.833**
SCMP6			**0.816**
SCMP7			**0.832**
SCMP8			**0.749**
SCMP9			**0.746**

The extent to which the intended latent constructs are represented by the items associated with similar latent constructs is referred as convergent. As per the suggestion of [41], the AVE approach has been used for estimating the Convergent validity of latent construct. It has been recommended that AVE of each latent construct must be greater or equal to 0.50 for achieving a sufficient level of convergent validity. According to [40], the AVE values estimated in this research came out to be in the range of 0.567 and 0.8771 as represented in table 4.8, reflecting high loadings. This shows that there is convergent validity among the constructs. The extent of difference of one latent construct from the others is referred as discriminate validity. In this research study, the discriminant validity was measured through AVE. suggestion. The association among the unobserved constructs was compared with the square value of AVE. lie in the acceptable range (0.56 and 0 .87).

Table 2. Reliability

	Cronbach's Alpha	**rho_A**	**Composite Reliability**	**Average Variance Extracted (AVE)**
AIN	**0.798**	**0.798**	**0.882**	**0.713**
OP	**0.957**	**0.961**	**0.962**	**0.662**
SCMP	**0.923**	**0.930**	**0.935**	**0.590**

Discriminant validity was estimated following the process suggested. According to [41], the AVE value to be 0.50 or greater than it was acceptable. The value of square of AVE should be higher than the value of correlation among the latent constructs in order to achieve the discriminate validity. The values have been presented in the table 3 The results reflect that the AVE values.

Table 3. Discriminant validity

	AIN	**OP**	**SCMP**
AIN	0.844		
OP	0.467	0.813	
SCMP	0.406	0.618	0.768

The next stage is the assessment of the structural model after ascertaining the measurement model in the present study. The procedure for the bootstrapping through a number of 5000 bootstrap samples and 195 cases to assess the significance of the path coefficients was applied.

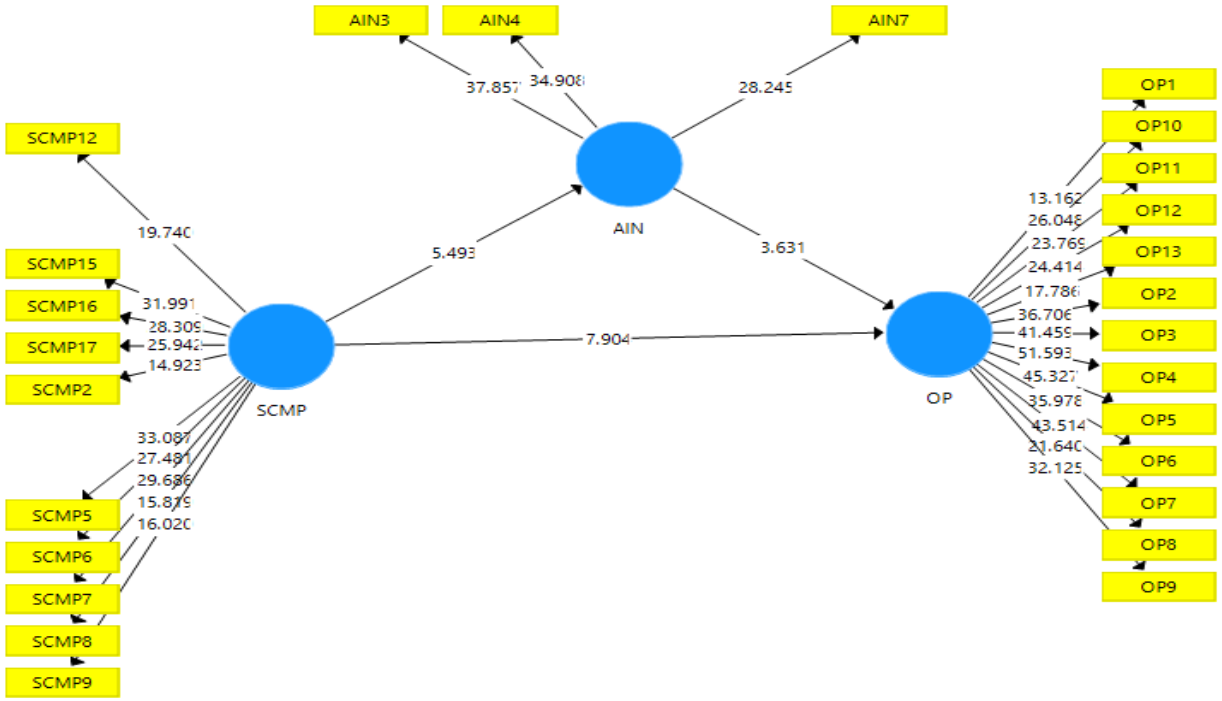

Figure 2. Structural Model

Structural model, according to [43], illustrates about the reliance and dependence of relationships in the hypothesized model. In partial least squares (PLS), structural model takes before the directional relationships between the variables, their t-values and the path co-efficient. The PLS approach is similar to the standardized beta coefficient estimated in the regression analysis. This research study has highlighted the model of evaluation. After this, the hypotheses have been tested for finding the correlation among the variables.

Table 4. Direct Relations

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
AIN -> OP	0.258	0.255	0.071	3.631	**0.000**
SCMP -> AIN	0.406	0.409	0.074	5.493	**0.000**
SCMP -> OP	0.618	0.623	0.055	11.324	**0.000**

The mediating role of alliance integrated network in the relationship between supply chain management practices and organizational performance is shown in the table 5

Table 5. Indirect Results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
SCMP -> AIN -> OP	0.105	0.105	0.036	2.895	**0.004**

The total variations in the dependent variable caused by the explanatory variables are demonstrated by the value of For the estimation of structural models in PLS-SEM, the value of R-squared is an important as well. It is referred to be the goodness of fit or coefficient of determination. According [43], the total changes in the dependent variable caused by the independent variable are represented through R-squared value. The minimum acceptance level of R-squared value is set to be 0.10. In PLS-SEM, the value of R-squared to be 0.19 is considered weak, 0.33 as moderate and 0.67 to be substantial. The R-squared value of

the endogenous latent variables has been presented in Table 6.

Table 6. R-Square

	R Square
AIN	0.165
OP	0.438

5. Conclusion

The present research has studied customer relationship management and demand management as the SCM practices of the service organizations. According to [44] the strengths of an organization can be plotted under two groups, namely, differentiation and cost advantage. Implementing the organizational strengths lead to differentiation, focus, and cost leadership. The focus of public health differentiator aims to deliver affordable healthcare facilities for every citizen. Whereas, the focus implies providing quality life and patients' wellbeing. Therefore, an effective supply chain due to the supplier relationship management and optimal contracting leads to effective cost leadership. The supplier relationship management refers to a process to maintain long-term associations between the suppliers and customers as the SC partners. Coordination, commitment, feedback, information sharing, and cooperation are the key components of developing a close relationship [35]. Therefore, the competitive advantage and RBV theories would combine the organizational performance with the five service SCM practices into the conceptual framework of this study.

In the fast-growing service sector, the public healthcare industry acts as a key component, because of the increasing demand for medical services in Indonesia. In Indonesia, the public healthcare has 74% contribution in hospital admissions, 55% on available doctors, and 78% in hospital beds. Therefore, public healthcare is required to improve the RBV perspective, since it explores how the resources and capabilities of an organization affects the overall performance of an organization. The literature review has clearly illustrated the way service SCM practices affect the organizational performance of healthcare industry. Therefore, the study postulated a conceptual model, which link detailed SCM practices in the service organizations, as the potential public healthcare determinants of organizational performance. These determinants are demand management, information & technology management, supplier and customer relationship management, and capacity & resource management. Furthermore, as the alliance-integrated network develops as a result of synergistic effect of IT, it can then act as a mediator in the relation among organizational performance and service SCM practices.

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