An Empirical Study on the Organizational Effectiveness of Third Party Logistics Services

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Abstract

Organizational effectiveness (OE) is an important concept of visionary achievement to organizational mission and strategy. The main objectives of this study are to empirically investigate the construct of OE in third party logistics (3PL) services, and to explore and verify its reliable indicators of the construct. Based on the literature and previous studies, a modified OE instrument is developed, and applied it to the 3PL services for empirical verification. Findings of the analysis show that OE of 3PL consists of three underlying dimensions: cycle time, customer services and reputation & goodwill. The outcomes of this study provide an appropriate instrument in measuring the OE of 3PL services, and potential for using the instruments in other professional services measurement.

1. Introduction

Organizational effectiveness (OE) can be defined as the extent to which an organization effectively achieves its visionary outcomes through its products and service provided to customers and markets. Research on OE has been conducted in many service sectors, such as financial, marketing, retailing and logistics services [1], [24], [18], [3],[10] and aimed academically to develop conceptual measurement scale to specify OE, and practically to provide recommendations for enhance organizational customer services and core competency [14], [1].

However, an intensive literature review in the organizational performance perspective revealed that few studies on OE of third party logistics (3PL) have been carried out to articulate the effects and implications of the OE of 3PL in logistics and supply chain management (SCM) areas [1], [18]. This paper reports an empirical research on the OE of 3PL service providers in Hong Kong logistics and transport companies.

2. Literature Review

A conceptual and measurement model of the OE of 3PL providers is developed based on literature of organizational performance, 3PL business nature and SCM to reflect both tangible and intangible outcomes of professional logistics services. The model consists of five constructs, namely, productivity, financial and marketing performance, cycle time, customer services, and reputation & goodwill. They are regarded as the dimensional facets of the OE of 3PL [1],[24],[18],[3],[10]. Figure 1 presents the conceptual and measurement model of the OE of 3PL service providers.

Productivity refers to the economy of scale of 3PL service providers and the rate to utilize organizational resources, such as human resource, physical facilities and equipments, information technology, information and systems, organizational knowledge, experience, etc. to produce or provide expected services to its customers or business partners. It reflects basic 3PL services, and also represents nowadays some value-added services of 3PL for extending and enhancing professional service levels.

Financial and marketing performance represents a 3PL's both expected and actual financial and marketing performance in its industry and marketplace. When engaging in a cooperative buyer-supplier or supply chain relationship, a 3PL provider and its partners expect to benefit from the relationship both in marketplace and financial performance.

As Larson [15] stated that OE in marketing and financial performance is an important determinant in a firm's competitiveness. The empirical research shows that long-term cooperative agreements have a positive impact on OE in terms of acquisition costs when the level of uncertainty is relatively high. Establishment and development of long-term relationships with supply chain partners can lead to improved financial performance of a 3PL. According to Larson [15], purchasing coordination of the firm's activities can make an impact on total costs. For example, Ford's success demonstrates that companies can increase their competitiveness by implementing cooperative relationships with its service partners [29].

Moreover, 3PL must be flexible to meet changing demands and expectations in the marketplace. Not only must the organization be adaptable but it should also be able to change quickly, if necessary. An organization, especially 3PL service provider, which has been highly adaptable and dynamic, can achieve more market shares [23].

Cycle time can be defined as the service time of a 3PL from the anticipation or reception of a service demand to the service complete fulfillment. A 3PL service provider with shorter cycle time has higher probability to be better positioned and to capture the first mover advantages, to outrun its competitors, and to build brand loyalty. It also enables them to offer a wider range of new services and service niches [22]. To compress cycle time, a 3PL continually strives for upgrading their service efficiency, using state-of-the-art technology, reorganizing service processes, etc.

Reduced cycle time, in turn, contributes to a 3PL's OE either directly or indirectly. Schilling et al. [22] found that faster cycle time alone may not increases a firm's performance, faster product development cycles, when combined with certain organizational practices, are associated with a firm's perceived overall performance. Thus, reducing cycle time or increasing speed to market has become more important and critical for a 3PL to increase its chances of success in supply chain especially outsourcing logistics services.

Customer Service is a strategic weapon in attracting and retaining customer and has become one of the most significant factors in the success of both manufacturing and service providers [11],[27],[26]. It is frequently cited as an important issue in SCM. Ellram [9] describes SCM as a mean of maximizing the efficient use of resources in order to achieve the customer service goals in a supply chain. Cooper [6] suggest that the objectives of SCM include those of lowering cost while maintaining at specific levels of customer services or improved customer services.

Customer service is also an operational function and outcome that contributes to the ultimate goal of 3PL service providers in terms of customer value and satisfaction. In logistics and SCM context, customer service is also described as an organizational process or a set of activities within the firm or among supply chain partners. It focuses on facilitating the customer interface – delivering product, fulfilling customer orders, and providing information visibility to customers.

Reputation & Goodwill refers to an organizational intangible assets, it enhances organizational creditability, customer confidence in 3PL service provider's product and services, brand name recognition, customer loyalty, and OE in realization of organizational vision.

Referring to literature, different definitions of reputation have evolved over time. Weigelt and Camerer [25] viewed reputation as a set of attributes that is ascribed to a firm inferred from its past actions. Also, reputation is the socially constructed outcome of a legitimate process [21]. Dutton et al. [7] construed "reputation" and "identity" as separate appraisals of the same target. Carter and Deephouse [5] illustrated that reputation is multi-dimensional concept with historical case study of Wal-Mart's management of its reputation among suppliers and consumers. An organization's reputation for producing high-quality products and quality services may be the most strongly-weighted dimension in a consumer's purchasing decision. It is reasonable to suggest that a positive goodwill and reputation of outsourcing logistics can achieve organizational performance of outsourcing logistics.

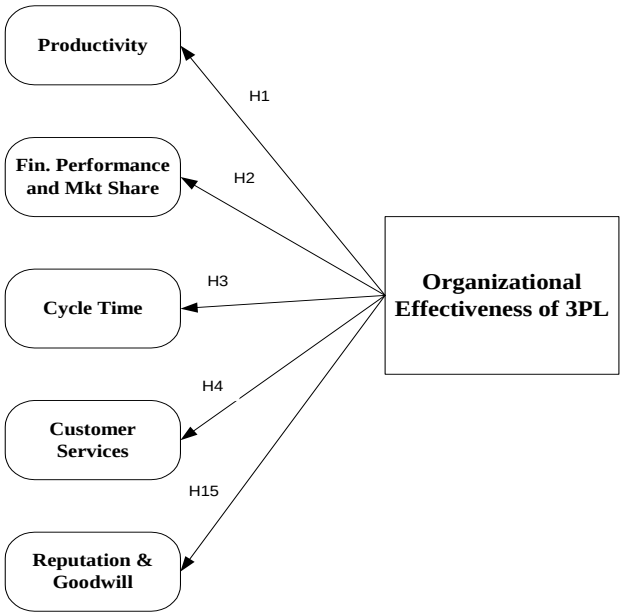

Figure 1: The measurement model of OE of 3PL service providers

Based on the above 3PL dimensions, hypothesis of organizational effectiveness (OE) of 3PL is established as follows. Table 1 gives the research hypotheses indicated in the measurement model of Figure 1, and Table 2 provides the detailed measurement items for the five measurement dimensions in Figure 1.

Table 1: Research hypothesis of OE of 3PL service provider

H1	A better organizational effectiveness of 3PL service provider has higher productivity.
H2	A better organizational effectiveness of 3PL service provider result in better financial performance and market share.
H3	A better organizational effectiveness of 3PL service provider has shorten product or service cycle time.
H4	A better organizational effectiveness of 3PL service provider has better customer services to its partners and customers.
H5	A better organizational effectiveness of 3PL service provider has a better reputation and goodwill.

[Insert Table 2 Here]

3. Methodology

Pilot study of the developed scale of OE of 3PL service provider is conducted to confirm content validity of the scale among respondents in twenty 3PL service providers' business partners. Survey method is then deployed to collect data of the revised measurement scale from the business partners of four identical 3PL companies and the internal stuff of the four 3PL companies in Hong Kong.

To eliminating the confounding effect, we designed the data collection into two divisions: One is the expected OE of 3PL provider and the other is actual OE of 3PL provider. In this way, we collected 2×2 sets of completed questionnaires from: (1) the expected OE of 3PL provider by its staff; (2) the actual OE of 3PL provider by its staff; (3) the expected OE of 3PL provider by its partners; and (4) the actual OE of 3PL provider by its partners.

Randomly selected 3PL employees were divided into two groups, one group staff completed the self evaluation questionnaire of expected OE of 3PL provider by employees, and the other group answered the self evaluation questionnaire of actual OE of 3PL provider by employees. An identical survey method was also applied to each business partners of four 3PL companies in which each business partner's two respondents (informants) completed the questionnaire of expected OE of 3PL provider by partners and the questionnaire of actual OE of 3PL provider by partners respectively. Table 3 indicates the survey method and sampling size.

Table 3: Survey method and sampling size of the study

	3PL Employee's self evaluation	3PL partners (customers) Evaluation
Expected OE	169	201
Actual OE	155	217

All 46 measurement items together are used as the indicator variables of OE of 3PL service provider in five dimensions for this study. Except financial performance and market share (FINMA), they are to be evaluated in a seven-point Likert scale; where value "1" represents extremely disagree to "7" extremely agree. Additionally, 9 measurement items of FINMA are measured in a seven-point Likert scale; where value "1" represents 1-5% growth rate to "7" represents 30% or above growth rate.

4. Findings and Implications

Descriptive statistics are analyzed, while exploratory factor analysis (EFA), reliability test and confirmatory factor analysis (CFA) to test the construct validity and measurement loadings are conducted accordingly. In addition, gap analyses are also conducted to examine the loading differences of indicator variables, to confirm those variables from both sides of the 3PL service providers and 3PL partners (customers); and practically, the actual OE differences derive meaningful information to the 3PL companies for their service improvements.

After model refinement, three dimensions of OE of 3PL provider – cycle time, customer service and reputation and goodwill are consistently confirmed by the outcomes of data analyses. All indicator variables are significantly loaded to its dimensions, and the dimensions are also significantly specify the constructs of OE of 3PL provider, thus the conceptual and measurement model of OE of 3PL provider is accepted as a good representation of the concept and consistently fitted with the data sets.

CFA were performed for the OE of 3PL provider separately. Since three factor loadings and residuals needed are estimated, degrees of freedom is defined to be the difference of estimator parameters and number of estimators [16], which is equaled to zero in the present situation, so the model is saturated, and thus no goodness of fit tests were available.

[Insert Table 4 Here]

Figure 2 and Table 5 illustrate the factor loadings and the factor reliabilities of 4 measurement model of OE of 3PL service provider. The factor loadings reveal significant relationship, and all relations are very strong except for Cycle Time and Customer Service in the 3PL Expected Model. The Werts-Linn-Jorsekog coefficients also indicate very satisfactory construct reliabilities.

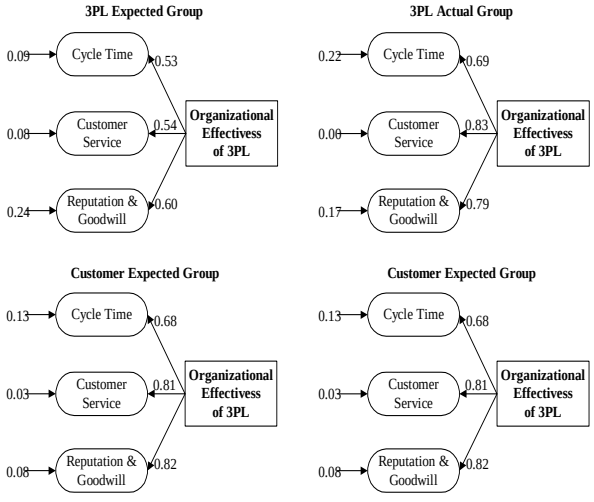

Figure 2: Organizational effectiveness of 3PL measurement models

[Insert Table 5 Here]

Independent-sample t-tests were conducted to compare the factor scores across different groups in table 5 and significant differences were found for all factors between the 3PL Expected and 3PL Actual, as well as 3PL Expected and Customer Expected.

Findings from the gap analyses are significantly meaningful. There has a gap between perception on customer service and reputation & goodwill between perceived and actual 3PL services. That means, there has real difference between expected and actual customer services requirements such as quick response, after-sale services, and customer complain on 3PL services. Moreover, reputation & goodwill like company image, brand name and prestige would also different for perceptual and actual 3PL services. However, there has a small difference on cycle time such as time delivery, minimum stock-out levels, stock rotation and order acceptance for expected and actual 3PL services.

In the group difference between OE of 3PL provider expected and customer expected, there has a gap between perception on cycle time, customer service and reputation and goodwill between 3PL employees and their partners. That means, there has different perception on time delivery, minimum stock-out levels, stock rotation, order acceptance between 3PL provider and its partners. Also, there has difference perception on customer service requirements such as quick response, after-sale services, and customer complain between 3PL service provider and its partners. Moreover, different views of reputation and goodwill like company image, brand name and prestige would also affect the perceived gap between 3PL provider and its partners.

We track down each of the four 3PL companies, to identify specifically what variables do contribute to the significant differences in OE constructs and variables, and thus practical recommendations for OE improvement are provided.

5. Conclusion

Many studies have emphasized the need to develop valid and reliable measure in servicing industries. Most of them have made many efforts to measure of organizational effectiveness (OE) in 3PL service. They have introduced the commonly used measure of OE, to 3PL services. Since outsourcing have heavily used to interact with their business partners and customers, the OE of 3PL is vital to achieve business success and strengthen its supply chain. The main purpose of this study is to examine the applicability of OE for 3PL service. From the confirmatory factor analysis and gap analysis, our study validities the applicability of a three-factor model of OE in the context of 3PL.

In conclusion, this empirical study is methodologically rigorous, and its findings enrich the literature of logistics management and OE. The study fills the literature gap and provides solid foundation for further studies of relationships management between 3PL companies and their business partners.

Appendix 1

Table 2: Measurement Items of Organizational Effectiveness of 3PL service provider

Dimension	Indicator Variable	Authors
Productivity (PRODU)	1) minimize the probabilities of service failure	[1]; [24]; [3]; [18]; and [10]
	2) provide consultancy services to customer's business operations	
	3) maximize the frequency of product replacement to customers	
	4) provide the service to enhance customer's competitive capability	
	5) have high service efficiency to customers	
	6) have high service order rate to customers	
	7) have efficient and reliable warehouse operation to customers	
	8) have efficient and reliable transportation services to customers	
	9) maintain a high productive level to customers	
Financial Performance and Market Share (FINMA)	1) have a _____ % net profit margin from logistics services	[8] ; [19] ; [29]; [10]; [23]
	2) have a _____ % return on investment from logistics services	
	3) have a _____ % growth of share values	
	4) have a _____ % return on net assets from logistics services	
	5) increase the service value _____ % per year to our customers	
	6) have a _____ % growth rate of financial position in logistics industry	
	7) have _____ % market share in logistics industry	
	8) have _____ % transaction volume in logistics industry	
	9) have a market growth rate at _____ %	
Cycle Time (CYCLE)	1) have a shorter cycle time than industrial average	[13]; [22]; [17];[12]; [10]
	2) have long equipment safety period	
	3) have minimum stock-outs levels to customers	
	4) have minimum back order to customers	
	5) have a high delivery consistency to customers	
	6) be capable to control stock rotation and record management (e.g. adjust stock in hand and re-orders)	
	7) have order acceptance and processing system to customers	
	8) provide pick and pack operations to customers	
	9) provide order fulfillment service to customers	
	10) accommodate returns handling to customers	
	1) serve the customers for purchase decision making	[9]; [11]; [27];[28] ; [26] ;[20] ; [10]; [23]
	2) provide good after sales services to customers	
	3) timely respond to customers' needs	

Customer Services (CUSTO)	4) have on-time delivery service to customers	
	5) get customers' feedback / comments	
	6) serve customers with correct quantity	
	7) have high satisfactory services to customers	
	8) quickly react to customer changes	
	9) be innovative to the customers' special requirement	
	10) be flexible to adapt customer changes	
	11) deploy value added logistics services for customers	
	12) deliver value added services beyond its normal practice	
	13) have fewer customers complaints	
Goodwill and Reputation (GOORE)	1) create a positive or favorable image in the customers' mind	[25]; [2]; [7]; [5]; [10]
	2) match our expertise with customers' strategic mission	
	3) have good brand name and prestige in logistics industry	
	4) have high relevance to current business with past experience	
	5) have good track record of customer services	

Appendix 2

Table 4: Results of standardized CFA factor loadings of organizational effectiveness

	3PL Expected	**3PL Actual**	**Customer Expected**	**Customer Actual**
Werts Linn Jorsekog coefficient	0.8718	0.9319	0.9570	0.9439
	ML Estimate λx			
Factor				
Cycle Time	0.53	0.69	0.68	0.62
Customer Service	0.54	0.83	0.81	0.68
Reputation & Goodwill	0.60	0.79	0.82	0.71

Appendix 3

Table 5: Comparisons of scores across factors on demographic variation

	3PL Expected VS 3PL Actual	Customer Expected VS Customer Actual	3PL Expected VS Customer Expected	3PL Actual VS Customer Actual
Factor	*t (eta squared)*	*t (eta squared)*	*t (eta squared)*	*t (eta squared)*
	Organizational Effectiveness of 3PL			
Cycle Time	2.64** (0.02)	-1.12 (N.A.)	6.49** (0.10)	2.31* (0.01)
Customer Service	5.99** (0.10)	-1.24 (N.A.)	7.19** (0.12)	-0.46 (N.A.)
Reputation & Goodwill	5.99** (0.10)	-1.32 (N.A.)	6.14** (0.09)	-1.35 (N.A.)

Note: * $p < .05$, ** $p < .01$; N.A.: Not Available

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