

Logistics Contracting Effectiveness: The Perspective of Thai Electronics Manufacturers

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Abstract

Drawing from the literature and on the insights from customers, the current study empirically developed a six-factor model that explains logistics contracting effectiveness. These six factors include: (1) long-term orientation, (2) information sharing, (3) risk aversion, (4) conflict handling, (5) trust, and (6) proactive improvement. Based upon the study results, the researcher suggests that to enhance logistics contracting effectiveness, both customers and LSPs should emphasize developing long-term relationships, sharing appropriate information, and managing conflict effectively. Apart from these, LSPs should also emphasize building competence trust and trust in integrity. For policymakers, this study suggests that they should emphasize raising the awareness of Thai manufactures, particularly the small- and medium-sized firms, about the benefits of internally-integrated logistics. They should be encouraged to contract out their logistics activities to competent LSPs from whom they will gain almost instant access to sophisticated logistics expertise and technologies without incurring a substantial upfront investment.

Keywords: Logistics, contract logistics, logistics contracting effectiveness

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บทคัดย่อ

จากการทบทวนวรรณกรรมและการสัมภาษณ์ผู้ใช้บริการ งานศึกษานี้ได้พัฒนาแบบจำลองอธิบายประสิทธิผลของการจัดจ้างโลจิสติกส์ ซึ่งประกอบไปด้วย 6 ปัจจัยคือ (1) แนวโน้มความสัมพันธ์ระยะยาว (2) การแบ่งปันสารสนเทศ (3) การหลีกเลี่ยงความเสี่ยง (4) การจัดการความขัดแย้ง (5) ความเชื่อใจ และ (6) การปรับปรุงเชิงรุก จากผลการวิจัย ผู้วิจัยมีข้อเสนอแนะดังนี้ เพื่อเป็นการเพิ่มประสิทธิผลการจัดจ้างโลจิสติกส์ ผู้จัดจ้างและผู้ให้บริการ ควรเน้นการพัฒนาความสัมพันธ์ระยะยาว แบ่งปันสารสนเทศที่เหมาะสม และจัดการความขัดแย้งให้มีประสิทธิผล นอกจากนี้แล้ว ผู้ให้บริการยังควรเน้นการสร้างให้ผู้จัดจ้างมีความเชื่อใจในความสามารถและความซื่อตรงของผู้ให้บริการ สำหรับผู้กำหนดนโยบายสาธารณะ ควรเน้นในการสร้างการรับรู้ของผู้ประกอบการ โดยเฉพาะสถานประกอบการขนาดเล็กและขนาดกลาง ให้ทราบถึงประโยชน์ของโลจิสติกส์บูรณาการภายใน ผู้ประกอบการควรได้รับการสนับสนุนในการจัดจ้างผู้ให้บริการโลจิสติกส์ที่มีความรู้ความเชี่ยวชาญทางด้านนี้โดยเฉพาะ มาบริหารจัดการระบบงานโลจิสติกส์ ซึ่งจะส่งผลให้ผู้ประกอบการเข้าถึงความเชี่ยวชาญและเทคโนโลยีโลจิสติกส์ที่ทันสมัย โดยไม่จำเป็นต้องลงทุนล่วงหน้าเป็นเงินจำนวนมากในทรัพยากรเหล่านี้

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Introduction

Despite much local discussion about the importance of logistics and the emerging role of LSPs, there are not many studies available for understanding logistics contracting out, especially in the developing markets such as Thailand. Most studies have concentrated on service quality and just a few have attempted to explain contracting effectiveness (e.g., why some contractual relationships succeed while others fail) and to provide advice on how to improve the practice of contracting out for logistics services.

Objectives of the Study

The objectives of this study are:

- 1) to empirically develop a multidimensional instrument with good reliability and validity that logistics managers can use to assess the level of logistics contracting effectiveness, and
- 2) to offer some specific practical and policy recommendations.

Research Questions

In order to achieve the abovementioned objectives, this study asked two research questions:

- 1) What measures logistics contracting effectiveness?
- 2) What factors can logistics managers use to enhance contracting effectiveness?

Scope of the Study

This study focuses on the evaluation of two key logistics services: transportation and warehousing. Transportation, in general, is said to be a physical movement of products from one place to another. It is one of the major activities within logistics, where the creation of time and place utility is performed (Coyle et al., 2013). If the transportation is outsourced to an LSP, the transport-related services are: tendering and contracting carriers (e.g., airlines), forwarding services, and tracking and tracing in-transit movements. Warehousing is another important logistics activity, storing products at and between point of origin and point of consumption. In addition to storage, there are two other major operations associated with warehousing: movement and information transfer (Lambert et al., 1998).

Literature Review

Logistics Contracting Effectiveness

In this study, logistics contracting effectiveness was defined as an LSP's performance on a contract and the various outcomes customer managers use to measure it. The researcher borrowed five items from Knemeyer and Murphy's (2004) scale that reflect the four most frequently mentioned reasons for logistics contracting out: operations improvement (Lynch, 2004), cost reduction realized from LSP expertise and economies of scales (Wilding & Juriado, 2004), asset reduction (Razzaque & Sheng, 1998), and headcount reduction (Bardi & Tracey, 1991). These five items are: (1) this contract has improved our logistics operations performance; (2) this contract has provided us with more specialized logistics expertise; (3) this contract has reduced our logistics cost; (4) this contract has reduced our level of owned assets; and (5) this contract has reduced our employee base.

The literature has also identified two *ex-ante* and twelve *ex-post* factors that may lead to successful logistics contractual relationships. These include: (*ex-ante* factors) top management championship, contract specificity, (*ex-post* factors) performance monitoring, incentives and penalties, proactive improvement, contract-specific investment, continuity, trust, information sharing, risk aversion, alternative dispute resolution, joint problem solving, conflict, and service recovery (Fernandez, 2005). However, the pretest respondents were unable to answer questions pertaining to the two *ex-ante* factors and two *ex-post* factors (incentives and penalties, and alternative dispute resolution). Noting that the inability to answer a question could lead to a nonresponse, the researcher thus decided to remove these four factors from the final questionnaire. The following discusses the remaining ten factors in detail.

Performance Monitoring

Due to its multidimensionality, logistics service requires a large set of performance measures. This set of measures should capture those dimensions of performance (Smith, 1993) which both customers and LSPs find useful in measuring the performance

of the outsourced logistics operations. From the customer's side, it is essential that they fully disclose their expectations for quality and services levels, and means for measuring performance within the outsourcing contract. From the LSP's side, it is not enough for them to just simply perform the functions they has been contracted to do; they must perform them up to appropriate predetermined standards.

Proactive Improvement

Wallenburg et al. (2010: 8) defined proactive improvement as “an LSP, which given that a potential innovation is beneficial to its customer, proactively enhances the service provided to the customer.” Based upon social exchange theory, customers should achieve higher benefits, in the form of better performance, from LSPs that display proactive improvement; and this increased value—functional and relational—received by the customers will raise the propensity that the customers maintain, and perhaps expand, the relationship with the LSPs (Lemon et al., 2002).

Contract-Specific Investment

The business model of logistics service is essentially based on the creation of customer-specific services and hence on adaptations by the LSPs (Ellinger et al., 2008). Customers expect tailored logistics solutions. In many cases, they insist on a specific location (site specificity), the usage of their equipment (physical asset specificity), and demand specific procedures or require periodical reports of specific key performance indicators (Large et al., 2011).

Continuity

Continuity, or long-term expectation, refers to “the degree to which the parties anticipate that their relationship will continue into the future with an indeterminate endpoint” (Heide & Miner, 1992: 268). Logistics services involving high asset specificity (e.g., site specificity, where a customer requests an LSP to set up a dedicated warehouse proximate to their factory) have a “lock-in” effect: for LSPs, it is difficult to transfer the assets created from the investment to another contract without incurring significant costs. For customers, switching to a new LSP can be an expensive proposition, since the current LSP has already invested in and developed specialized physical, human,

and technological assets and therefore can provide the service for less than a new LSP that would have to incur the cost of these assets for the first time (Williamson, 2008).

Trust

Moorman, Deshpande and Zaltman (1993: 82) defined trust as “a willingness to rely on an exchange partner in whom one has confidence.” The presence of trust in logistics service has many advantages: trust is associated with lower *ex post* transaction costs between customers and LSPs (Zaheer et al., 1998). At the individual firm level, LSP investments in dedicated equipment and adaptation of service processes are eased with the presence of trust (Sahay, 2003), and customers with a higher level of trust toward their LSPs exhibit a significantly higher perception of the LSP performance (Knemeyer & Murphy, 2004). At the integrated supply chain level, a higher level of trust in a channel relationship can lead to a higher level of customer satisfaction (Andaleeb, 1996).

Information Sharing

Information sharing is one of the essential factors influencing trust between organizations (Ross et al., 2007) and is critical to the effective and efficient management of any relationship (Tian et al., 2008). In the current research, information sharing refers to the extent to which a customer and its LSP freely and actively provide useful, often proprietary, information to each other (Hofer et al., 2009). This goes beyond the routine exchange of operational information, e.g., advance shipment notice, flight bookings, shipment status. Information needs to be shared in a timely manner, allowing partners to respond promptly and effectively to environmental events (Kuo et al., 2005).

Sharing critical information, while necessary for both strategic and operational coordination among logistics partners, however, fear of information leakage (Li, 2002) may discourage customers from sharing information with their LSPs. To solve such a problem, it is suggested that the customers and the LSPs jointly set information-sharing goals, determine the quality of the information, the extent of the sharing of information (Mohr & Spekman, 1996), and the frequency of different types of meetings, and which organizational levels are to take part in these meetings (Lehtonen, 2006).

Risk Aversion

LSPs' attitudes toward quality related risk influences their behavior in quality management and thus the quality of the services they provide to customers. Risk-neutral LSPs are more likely to produce substandard services due to limited quality control. When dealing with these LSPs, rigorous performance monitoring becomes necessary, which increases the transaction costs. On the other hand, risk-averse LSPs are more likely to apply strict quality control procedures and invest in quality management practices to improve their process and service quality so that they can deliver better quality services to customers (Starbird, 1994). They are also more willing to cooperate with customers to improve their quality management capabilities so as to reduce their risk of quality problems and failures.

Joint Problem Solving

Studying collaborative relationships in the facility services context, Lehtonen (2006) suggested that the success of a contractual relationship is naturally related to the service provider's ability to meet performance expectations. Expectations concerning the level of service should be translated into formal requirements through service-level agreements. If problems appear, it is important to react to them immediately to prevent the accumulation of problems and to keep up with the development of the relationship and the service. When conflicts arise, the manner in which the parties solve them is important.

Conflict

Following the agency theory, conflict can be defined as "a process in which one party perceives that its interests are being opposed or negatively affected by the other party" (Wall & Callister, 1995: 517). Conflict exists for many reasons: competition for resources, coordination of systems, distribution of work, and involvement in decision-making. Organizational conflict may be categorized into four types: interpersonal (e.g., between co-workers or superiors and subordinates), bargaining and negotiation (e.g., between labor and management), intergroup (e.g., between departments), and interorganizational (e.g., between companies) (Putnam & Poole, 1987). This study focused on interpersonal

(e.g., disputes between customer employees and LSP employees) and interorganizational conflicts (e.g., disputes between a customer firm and its LSP). Conflict may also be viewed as an episodic, singular occurrence, or as a cumulative experience. Given the long-term nature of contract logistics, this study views conflict as the cumulative perception experienced over multiple episodes (i.e., service transactions) between a customer and its LSP.

While conflict exists in many business relationships, it is believed to be especially important in the logistics contracting context in which performance aspects of the service delivery are often in competition with cost objectives. Given the substantial effect that outsourced logistics has on overall logistics performance and firm performance (Langley & Capgemini U.S. LLC., 2006), conflict needs to be managed effectively.

Service Recovery

Service operations are complex, human-based processes involving the concurrent provision of many customer experiences and outcomes, and usually both providers and customers are involved in the service production process. As a result, in the delivery of service, failures are unavoidable; this in turn requires the need for service recovery (Hart et al., 1990). A service failure is a situation in which the expected outcomes of a service process or the process itself cannot be accomplished by the service provider or cannot meet the customer's prior expectations before taking the service from that provider (Spreng et al., 1995). Service recovery is the activities and responses the service provider performs to correct, amend, and restore the loss experienced by the customer due to the service failure. These should be done as quickly as possible, either during or shortly after the service encounter (Grönroos, 2007).

Research Methods

This is a quantitative study utilizing correlational design, collecting cross-sectional data to assess the association between the independent variables and the dependent variable. The primary statistical technique is stepwise regression analysis. The unit of analysis was the individual contractual relationship between a customer and an LSP.

The electronics manufacturing industry was chosen as the population of this study because it is the largest group of users of logistics services. According to Thailand Board of Investment (2012), there were about two thousand and three hundred electronics companies in Thailand. Based upon Yamane's (1967) simplified formula (ninety-five percent confidence level and degree of variability of .5), this study targeted at three hundred plus samples. The stratified systematic sampling technique was used to select the sample.

For data collection, the questionnaire was delivered personally, or emailed or faxed to the respondents with a telephone call explaining the objectives and benefits of the study, and urging them to complete the questionnaire. For respondents who were unable to complete the questionnaire the same day, a follow-up call was made a week later. Three hundred and sixty-two questionnaires distributed and three hundred and four complete, usable questionnaires returned, yielding a very high response rate of eighty-four percent.

Research Findings

The final questionnaire contained thirty items designed to measure ten factors namely, performance monitoring, proactive improvement, contract-specific investment, continuity, trust, information sharing, risk aversion, joint problem solving, conflict, and service recovery. To see if the data might suggest a different conceptualization of logistic contracting effectiveness, e.g., how many factors really exist and which items belong with which factor, an exploratory factor analysis was performed. Principal axis factoring with varimax factor rotation reclassified the thirty items into six factors (Table 1).

Table 1. Final Principal Axis Factoring with Varimax Factor Solution

Variable	Factor					
	1	2	3	4	5	6
V23 LSP Stays within Terms	.886					
V12 Access to LSP's Quality Information	.832					
V22 Customer is Confident about LSP's Qualifications	.809					
V33 LSP Provides a Dedicated Team	.752					
V11 Customer Measures LSP's Performance	-.634					
V40 Conflict, on the Whole		-.737				
V10 Customer Discloses Expectations		.696				
V38 Organizational Conflict		-.674				
V37 Together Solve Problems		.663				
V39 Operational Conflict		-.648				
V34 LSP Makes Special Efforts to Handle Unexpected Problems		.620				
V19 Customer will Continue Using the Current LSP			.359			
V28 Customer Informs in Advance				.795		
V27 Customer Provides Operational Information				.786		
V29 Each Party Provides Useful Information				.718		
V36 Together Identify Problems				.702		
V25 LSP Provides Operational Information				.499		
V26 LSP Provides Summary Reports				.436		
V14 LSP Modifies Processes					.832	
V13 LSP Makes Processes more Effective					.820	
V15 LSP Suggests Improvement					.785	
V24 LSP Shares Best Judgment					.775	
V17 LSP Invests in Quality Management Practices						.802

Table 1. Final Principal Axis Factoring with Varimax Factor Solution (continued)

Variable	Factor					
	1	2	3	4	5	6
V16 LSP uses Higher-Quality Equipment						.766
V18 LSP Applies Strict Quality Control Procedures						.723
V35 LSP is skilled in handling Unexpected Problems						.612
Eigenvalues	3.55	3.54	3.32	3.17	2.96	2.53
% of Variance	11.83	11.81	11.09	10.58	9.87	8.45
Cumulative	11.83	23.65	34.74	45.32	55.20	63.65
Cronbach's alpha	.89	.85	.90	.89	.89	.83

Factor 1 consisted of items V23, V12, V22, V33 and V11 and was labeled “trust”. Factor 2 had items V40, V10, V38, V37, V39 and V34 labeled as “conflict handling”. Factor 3 labelled as “long-term orientation” included V30, V20, V21, V31 and V19. Factor 4 had six items V28, V27, V29, V36, V25 and V26 and was labeled as “information sharing.” There were four items in factor 5, V14, V13, V15 and V24. This factor was labeled as “proactive improvement.” The final factor contained four items – V16, V17, V18 and V35 and was labeled as “risk aversion.”

The stepwise regression analysis revealed that the above six factors together explained 76.30 percent of the variance in the dependent variable, which was highly significant, as indicated by the F-value. An examination of the t-values found that all six factors significantly contributed to the dependent variables (Table 2).

Table 2. Logistics Contracting Effectiveness Stepwise Regression Analysis

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	.008	.026		.000	1.000
Long-Term Orientation	.521	.028	.525	18.520	.000
Information Sharing	.458	.029	.454	16.049	.000
Risk Aversion	.382	.029	.376	13.269	.000
Conflict Handling	.223	.029	.218	7.686	.000
Trust	.152	.028	.153	5.403	.000
Proactive Improvement	.096	.028	.097	3.432	.001
$R^2 = .763$; SEE = .460; F = 159.445; Sig. F = .000					

The above overall model included data on both contractual and transactional customers. The researcher was curious that if these two customer groups possessed different views. Hence, a stepwise regression was run for each customer group.

Table 3. Stepwise Regression Analysis - Contractual Customers

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	.602	.046		13.184	.000
Proactive Improvement	.273	.039	.439	7.048	.000
Information Sharing	.271	.041	.411	6.565	.000
Long-Term Orientation	.257	.044	.353	5.890	.000
Trust	.101	.041	.148	2.444	.016
Excluded Variables					
Conflict Handling				.849	.397
Risk Aversion				1.910	.058
$R^2 = .501$; SEE = .428; F = 39.449; Sig. = .000					

As can be seen in Table 3, the stepwise regression model for contractual customers, proactive improvement, the least important variable in the overall model, had the highest positive regression weight in this model (.273), closely followed by information sharing (.271), long-term orientation (.257), and trust with the lowest weight (.101). Together,

these four variables accounted for fifty percent of the variance explained and were significant, as indicated by the F-value. Conflict handling and risk aversion did not contribute to the model.

While the transactional customers model was different from the contractual customers model (Table 4). It included five significant variables, which together accounted for seventy-two percent of the variance explained. Long-term orientation had the highest regression weight (.371), followed by risk aversion (.310) and information sharing (.295). Proactive improvement and conflict handling had low weights at .150 and .135 respectively. Trust was found to be not significant and was removed from the analysis.

Table 4. Stepwise Regression Analysis - Transactional Customers

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	-.397	.037		-10.628	.000
Long-Term Orientation	.371	.032	.547	11.739	.000
Risk Aversion	.310	.031	.492	9.932	.000
Information Sharing	.295	.032	.449	9.240	.000
Proactive Improvement	.150	.031	.233	0.476	.000
Conflict Handling	.135	.035	.187	3.878	.000
Excluded Variables					
Trust				-0.948	.345
$R^2 = .772$; $SEE = .307$; $F = 70.647$; $Sig. = .000$					

Discussion and Recommendations

Discussion of the Results

As stated in section logistics contracting effectiveness, the dependent variable, logistics contracting effectiveness, was defined as “an LSP’s performance on a contract and the various outcomes customer managers use to measure it,” and was measured with five items borrowed from Knemeyer and Murphy’s (2004) scale. All items were assessed using 11-point scales (0 = disagree; 10 = strongly agree). Table 5 shows the

mean scores of these items classified into three categories – highly agreed, agreed, and somewhat agreed using hierarchical cluster analysis (between-groups linkage cluster method with squared Euclidean distance interval measure).

Table 5. Mean Scores of the Dependent Variable Items

Variable	Mean Scores			Sig. (2-tailed)
	Overall N = 304	Contract N = 162	Transact N = 142	
Highly Agreed				
V5 Improved Logistics Operations	6.76	7.61	5.78	.000
V6 Specialized Logistics Expertise	6.93	7.45	6.33	.000
Agreed				
V7 Reduced Logistics Cost	4.41	4.08	4.80	.000
Somewhat Agreed				
V8 Reduced Owned Assets	3.67	4.85	2.33	.000
V9 Reduced Employee Base	3.92	5.08	2.59	.000

Overall, the customers appeared to be satisfied with their logistics service experience. They agreed highly that the logistics contract provided them with more specialized logistics expertise and improved their logistics operations performance. While they agreed that the contract helped lower their logistics cost, they did not seem to be able to reduce much owned assets or headcounts.

As was shown in Table 2, there are six significant factors contributing to logistics contracting effectiveness, namely: long term orientation, information sharing, risk aversion, conflict handling, trust, and proactive improvement. However, when analyzed separately by type of customer, for the contractual model, only four factors were found to be significant: proactive improvement, information sharing, long term orientation, and trust; on the other hand, for the transactional model, there were five significant contributing factors: long-term orientation, risk aversion, information sharing, proactive improvement, and conflict handling. These are presented in Table 6.

Table 6. Significant Contributing Factors to Logistics Contracting Effectiveness

Factor	Standardized Coefficient		
	Overall	Contractual	Transactional
Long-Term Orientation	.525	.257	.371
Information Sharing	.454	.271	.295
Risk Aversion	.376		.310
Conflict Handling	.218		.135
Trust	.153	.153	
Proactive Improvement	.097	.273	.150

Long-Term Orientation as a Contributor to Logistics Contracting Effectiveness

Long-term orientation was the strongest predictor of logistics contracting effectiveness in both the overall and transactional models, and the third strongest in the contractual model. Table 7 shows that contractual customers had higher mean scores on all five long-term orientation items than transactional customers.

Table 7. Mean Scores Comparison – Long-Term Orientation

Long-Term Orientation Items	Mean Scores	
	Contractual	Transactional
Customer will outsource more activities	6.76	4.23
Customer will continue using the current LSP	6.34	5.03
The LSP adapts its procedures.	5.90	2.78
The customer is willing to invest in the relationship	5.59	3.42
The LSP makes a large investment	5.14	3.11

Contract logistics usually requires high contract-specific investment in physical, human (Williamson, 2008) or intangible assets such as procedures and systems (Large et al., 2011) to meet the specific requirements of the customer. According to transaction cost theory (Williamson, 2008), this creates considerable switching costs for both the LSP and the customer. To get the LSP to invest in idiosyncratic assets, the customer has to assure its LSP that the relationship will be continued. This actually benefits both—the LSP has “more years” to depreciate the assets, and accordingly charges lower fees to the customer.

Transactional customers handle most of their internal logistics activities (e.g., warehousing) by themselves and purchase external logistics services (e.g., freight forwarding) from LSPs. This was clearly reflected by the lower mean scores of all five long-term orientation items as compared to the contractual mode. However, the highest coefficient magnitude suggested that transactional customers viewed long-term orientation as the most important factor influencing the level of logistics contracting effectiveness.

Information Sharing as a Contributor to Logistics Contracting Effectiveness

For the current study, information sharing had the second strongest bearing on logistics contracting effectiveness overall and for the contractual models, and the third strongest for the transactional model (see Table 6). Table 8 shows that the contractual customers had higher mean scores on all six information sharing items than the transactional customers.

Table 8. Mean Scores Comparison – Information Sharing

Long-Term Orientation Items	Mean Scores	
	Contractual	Transactional
Each Party Provides Useful Information	7.45	6.77
Together Identify Problems	7.02	5.82
The LSP Provides Operational Information	6.92	4.81
The Customer Informs in Advance	6.41	5.38
The Customer Provides Operational Information	4.86	3.65
The LSP Provides Summary Reports	3.44	1.92

The results of this study clearly showed that both contractual and transactional customers realized the importance of open communication and cooperation between them and their LSP, as evidenced by the highest mean scores of items “each party provides useful information” and “together identify problems.” This goes beyond the routine exchange of operational information, e.g., daily stock balance report, as reflected by the lowest rating on the item “LSP provides summary reports.” However,

sharing sensitive information, although necessary for both strategic and operational coordination among logistics partners, can put a company in a vulnerable position. This explains why the item “customer provides operational information” had the second lowest rating on the part of both contractual and transactional customers. Li (2002) indicated that the greatest concern is information.

Risk Aversion as a Contributor to Logistics Contracting Effectiveness

Due to their size and complex logistics operations, large customer-firms seek dedicated, customized logistics services from large international, usually asset-based, LSPs with a long-term agreement. International LSPs, operating and competing globally, realize the importance of quality management and are more likely to apply strict quality control procedures, hiring quality control personnel and investing in more expensive, higher-quality equipment. In other words, they are willing to pay more to avoid risks. For transactional customers, medium-size firms seek standard services mostly from local LSPs for a shorter period of time. Local LSPs, due to their smaller size, limited scope of operations and resources, are less likely to be able to invest in quality management practices. These differences explain why contractual customers rated higher than transactional customers on all four risk aversion items (Table 9).

Table 9. Mean Scores Comparison – Risk Aversion

Risk Aversion Items	Mean Scores	
	Contractual	Transactional
LSP Invests in Quality Management Practices	7.47	6.10
LSP Uses Higher-Quality Equipment	7.54	6.02
LSP Applies Strict Quality Control Procedures	7.60	6.65
LSP is Skilled to Handle Unexpected Problems	7.70	6.74

*Conflict Handling as a Contributor to Logistics Contracting Effectiveness***Table 10.** Mean Scores Comparison – Conflict Handling

Conflict Handling Items	Mean Scores	
	Contractual	Transactional
Conflict, on the whole (reverse-scored)	4.00	4.87
Organizational Conflict (reverse-scored)	2.88	3.96
Interpersonal Conflict (reverse-scored)	4.30	4.59
Customer Discloses Expectations	6.41	5.37
LSP Makes Special Efforts to Handle Unexpected Problems	6.36	5.37
Together Solve Problems	6.60	5.59

The results presented in Table 10 indicate that contractual customers had lower mean scores on the three conflict level items, and higher mean scores on the three conflict-solving items. It is believed that this was due to the long-term nature of contract logistics.

Trust as a Contributor to Logistics Contracting Effectiveness

Compared to contractual customers, transactional customers reported higher agreement on all four positive items and lower agreement on the reverse-scored item (Table 11).

Table 11. Mean Scores Comparison – Trust

Trust Items	Mean Scores	
	Contractual	Transactional
LSP Stays within Terms	4.33	5.82
Access to LSP's Quality Information	4.34	5.79
Customer is Confident in LSP's Qualifications	4.38	6.30
LSP Provides a Dedicated Team	4.49	5.75
Customer Measures LSP's Performance (reverse-scored)	5.68	3.15

Customers choose their LSP based on a number of criteria, one of which is the professionalism and skills of the LSP. The results indicated that transactional customers had high competence trust in their LSPs. They realized that their LSPs had the knowledge,

skills and experience to handle their logistics activities. Compared to larger international LSPs, small local LSPs are better able to personalize their interactions with their customers. This makes the customers feel as if they are provided with a dedicated staff that is prepared to make special efforts to solve their problems in a professional way.

Proactive Improvement as a Contributor to Logistics Contracting Effectiveness

Proactive improvement was the strongest factor influencing logistics contracting effectiveness in the contractual model, but lost much of its strength in the overall and the transactional models. However, both contractual and transactional customers seemed to agree that their LSPs were proactive (Table 12).

Table 12. Mean Scores Comparison – Proactive Improvement

Proactive Improvement Items	Mean Scores	
	Contractual	Transactional
LSP Shares Its Best Judgment	5.08	5.63
LSP Suggests Improvement	4.15	5.18
LSP Makes Processes more Effective	4.10	5.16
LSP Modifies Its Processes	3.82	5.32

The item “LSP Shares Its Best Judgment” had the highest mean score. This item was originally designed to measure “trust in integrity” (Komiak & Benbasat, 2004). The inclusion of this item in the proactive improvement factor (as suggested by PAF/Varimax analysis) suggested that trust and proactive improvement are interrelated—a certain level of trust is required for the customer to believe that the LSP’s proposed change is the best alternative and is useful and necessary. Furthermore, for proactive improvement to foster trust, the proposed change should also be in the best interest of the customer, not the LSPs themselves.

For the transactional customers, first, being less sophisticated in logistics operations, they thus rely more on their LSPs’ expert advice and suggestions. Secondly, most if not all of their outsourced logistics activities are performed outside their premises (e.g., using

the LSP's multi-client warehouse); thus they are less involved in intermediate activities and focus more on outcomes (e.g., on-time delivery) in evaluating their LSPs. This could be the reason why transactional customers perceived their LSPs to be more proactive.

Recommendations

Below are specific practical recommendations based upon the six contributing factors discussed above:

Both Customer Managers and LSP Managers should Emphasize:

1) Long-term orientation—a healthy logistics contractual relationship needs to include a number of individuals at various levels within the customer and LSP firms. If an inter-firm relationship is based on only two individuals, changing just one player can jeopardize the continuity of the relationship. This means that LSPs need to identify key individuals within the customer firm and foster relationships between peers at the two firms. Such a linkage between various individuals at various levels provides a foundation for stability and longevity in the relationship.

2) Sharing appropriate information—customers sharing operational information with their LSPs will help the LSPs better plan their operations, resulting in better service and possibly lower costs—a savings that could then be passed on to the customers. Frequent communications and information sharing between the contracting parties are crucial for effective management of logistics outsourcing relationships. It is also suggested that communication channels in multiple organizational levels be established in order to cover strategic as well as operational information needs.

3) Managing conflict effectively—conflict can stress the relationship between LSPs and customers, and threaten the level of service that the customers subsequently offer to their customers, the end-customers (Murphy & Poist, 2000). In view of this, to avoid or lessen the impact of conflict, customers should fully disclose their expectations and work together with their LSPs to solve problems; and LSPs should be prepared to make special efforts to handle any unexpected problems.

LSP Managers should also Emphasize:

1) Enhancing competence trust—this trust covers LSPs’ technical, operational, human, and financial abilities. Apart from having knowledge, skills, and expertise in handling the customers’ logistics activities, LSPs should be risk averse, and be willing to invest in quality management practices and related preventive activities to reduce the risk of quality problems and failure, and to improve their capacity in providing better quality to customers. LSPs should also be proactive, and consistently improve the services provided to their customers with their own initiative.

2) Enhancing trust in integrity—integrity is based on experience from the interpersonal relationships between the LSPs and the customer and more especially on their perceptions of each other’s past behavior (Komiak & Benbasat, 2004). LSPs can enhance the trust of their customers by being open and effective communicators. Sharing information with their customers helps reduce information asymmetry and improves the LSPs’ decision transparency, which in turn develops trust.

Limitations and Future Research

As in all research, the current study has limitations. First, it focuses on only the two most outsourced logistics activities—transportation and warehousing—and collected data from only one industry—electronics manufacturing. Each industry has its own unique requirements beyond basic logistics capabilities, so there was a possibility that the results might have varied across industries as well as product categories. It could be argued that the analysis could be better achieved through a much broader scope and industry base. Future research may include other newer services (e.g., parts and service support or final assembly) and expand the industry base to cover other segments (e.g., retail or automotive).

Secondly, the stepwise regression analysis used in this study describes only typical cases or typical behaviors and practices. This is suitable for developing an explanatory model and testing theoretical propositions. However, as Meier and Gill (2000) argued, in order to identify those factors that managers can use to produce better results in the area of contracting, one should examine not the typical cases but the high-performing ones in order to see how they manage differently. The researcher attempted to separate the

sample, using cluster analysis and the summated scores of the five outcome items, into the high-performance group and typical-performance group. Out of three hundred and four cases, there were only seventy-seven high performers not meeting the required 20:1 case per variable ratio (Coakes & Steed, 2003). The researcher suspected that this low number of cases severely affected the explanatory strength of the model ($R^2 = .24$). Future research may target a larger sample size from which an adequate number of high-performing cases may be derived.

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