Market-Driven Logistics Strategies of the Logistics Service Provider

by

Ms. Sarinya Choosanit

A Final Report of the Three-Credit Course
CE 6998 Project

Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science
in Computer and Engineering Management
Assumption University

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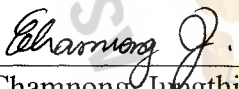in Computer and Engineering Management
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| Project Title | Market-Driven Logistics Strategies of the Logistics Service Provider |
|---|---|
| Name | Ms. Sarinya Choosanit |
| Project Advisor | Dr. Chamnong Jungthirapanich |
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The Graduate School of Assumption University has approved this final report of the three-credit course, CE 6998 PROJECT, submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer and Engineering Management.

Approval Committee:

_____
(Dr. Chamnong Jungthirapanich)
Dean and Advisor

_____
(Prof.Dr. Srisakdi Charmonman)
Chairman

_____
(Assoc.Prof. Somchai Thayarnyong)
CHE Representative

November 2004

# ABSTRACT

The objectives of this project are identification of the level of importance of the attributes that are valued by the customers, comparison of these attributes between the selected company and its competitors, determination of the customer's selection criteria for a Logistic Service Provider and total establishment of the market-driven strategy for a selected Logistic Service Provider according to the result of marketing research.

Survey was used to gather data from 45 customers through questionnaires. It comprises of three parts: General data that covered 2 objectives, Customer satisfaction by comparing between the customer's expectation and perception in terms of important attributes and Demographic Profile. Descriptive analysis and T-test analysis were utilized through the SPSS 11.5 program.

Results of the analysis indicated that 1) attributes that are valued in the customers' perspective are Accuracy, Speed and Service respectively, 2) the customers compare that their own company has Business experience, Reputation with Other clients, Strategic Direction, Physical Facilities and Equipment, Operations, Chemistry and compatibility factors better than the other 3PLs they used, 3) influencing factors for the selection criteria are Business Experience, Reputation, Information Technology and Cost, 4) the customers are dissatisfied according to the attributes especially in Cost, Security, Accuracy respectively.

Market-driven strategies focusing on direction to the customer needs according to market research results on this study are Cost reduction, Performance improvement, Responsiveness enhancing, Healthy Relationship and increase in Competitive advantages.

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# I. INTRODUCTION

## 1.1   Background of the Project

Recently, the dynamics of the market place have changed. Markets are increasingly characterized by sophisticated and demanding customers and consumers within a competitive environment that is far more volatile and less predictable than before. Under these conditions marketing's reliance on the classic "4Ps" of product, price, promotion and place is no longer sufficient to achieve market leadership. Instead, winning companies are those that can speed up the rate of innovation, bring new products and services to the market place faster, and replenish demand in shorter lead time and with greater reliability- these companies are more responsive. Creating the responsive organization has to be the main priority of management in any business, and achieving it requires a much greater focus on the processes through which demand is met. This is the arena of marketing logistics: the critical interface between the market place and the organization seeking to satisfy customer requirements along with marketing logistics networks described in terms of "the system of efficiently and effectively making and getting products and services to end-users who are far from the "Supply chains" and " marketing channels".

Traditionally, marketing and logistics have been managed separately within most businesses. The linkages between the two have been poorly understood and the strategic importance of customer service, until recently, was not always recognized. As markets become commoditiesed and as customers become more time and service sensitive, the need to manage the marketing and logistics interface increases.

To win and retain customers requires an understanding of what those customers value and a focus on the processes whereby the value can consistently be delivered.

Customer value equation is the ratio between the value that customers perceive they are getting and the price they are prepared to pay. Hence, the challenge is to identify ways in which customer value can be enhanced through marketing strategies that go beyond the traditional focus on brands and images.

Today's successful integrated logistics service provider is a dynamic firm, utilizing a combination of systems, facilities, transportation, and materials-handling techniques. It is managed and staffed with logistics professionals. As a result, it is the significant reason why many companies have been in the process of extending their logistics organization beyond the boundaries through the use of a supplier of third-party or contract logistics services. The growth of the Logistic Service Provider (3PL) industry had been known as a major phenomenon of the 1990s.

The purpose of this project is to study the marketing logistics strategies through the customer's value of a Logistics Service Provider as a case study. The survey method is used to determine customers' perspectives in terms of the selecting criteria factors, customer value, satisfaction, perceptions and expectations of performance and best used for tracking performance on a sociological approach.

## 1.2 Objectives of the Project

(1) To determine the level of the important factors of the selection criteria for a Logistic Service Provider

(2) To compare factors of the selection criteria between the selected company and its competitors.

(3) To identify the level of importance of the attributes that are valued by the customers of the selected Logistics Service Providers.

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(4) To establish a guideline for developing a market-driven logistics strategy of Logistics Service Business

## 1.3 Scope of the Project

As this project emphasizes the Logistics Service Providers' branches in Thailand, The scope of this project is studying the customer satisfaction, in which a part of marketing-logistics integration, of the existing customers will select a Logistics Service Provider based on the existing business process.

## II. LITERATURE REVIEW

Recently, firms have directed considerable attention toward working more closely with other supply chain participants, including customers, suppliers and various types of logistics suppliers that has resulted in the development of more meaningful relationships among the companies involved in overall supply chain activity. As a result, many companies have been in the process of extending logistics organizations into those of other supply chain participants and facilitators. One-way beyond the boundaries of the company is through the use of a supplier of third-party or contract logistics services.

### 2.1 Definition of Logistics Service Provider (Third-Party Logistics: 3PL)

Essentially, a third-party-logistics firm may be defined as an external supplier that performs all or part of a company's logistics functions. This definition is purposely broad and is intended to encompass suppliers of services such as transportation, warehousing, distribution, financial services, and so on.

Depending on the firm and its positioning in the industry, the terms contract logistics and outsourcing are sometimes used in place of third-party logistics.

### 2.2 Types of Logistics Service Provider (Third-Party Logistics: 3PL)

Although most Logistic Service Provider (3PL) firms promote themselves as providers of a comprehensive range of logistics services, it is categorized in one of several ways as follows:

2.2.1 Transportation Based

Included among the transportation-based suppliers are firms such as Ryder, Monlo Logistics, Schneider Logistics, FedEx Logistics, and UPS Logistics,

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most of which are subsidiaries or major divisions of large transportation firms. Some of the services provided by these firms are leveraged, in that they utilize the assets of other companies; and some are nonleveraged, where the principal emphasis is on utilizing the transportation-based assets of the parent organization. These firms extend beyond the transportation activity to provide a more comprehensive set of logistics offerings. The major elements that fits corporate heritage involve the commercial transportation industry, its approaches to operations, management, and planning significantly utilize and leverage information technologies.

2.2.2 Warehouse/Distribution Based

Traditionally, most warehouse/distribution based logistic suppliers have been in the public contract warehousing business and have expanded into a broader range of logistics services. For instance, DSC Logistics, USCO and Exel. Based on traditional orientation, these firms have already been involved logistics activities such as inventory management, warehousing distribution, and so on. With experiences, facility-based operators have found the transition to integrated logistics services to be less complex than have the transportation providers. Logistic Service Provider (3PL) firms that emerged from larger cooperate logistics organizations should be included such as Caterpillar Logistics Services, Intral Corporation and IBM who have significant experience in managing the logistics operations of the parent firm.

2.2.3 Forwarder Based

This category includes companies such as Kuehne &Nagel, Fritz, C.H. Robinson, and Hub Group, that have extended their middleman roles as forwarders and/or brokers into the broader range of 3PL services. Essentially, these firms are non-

asset owners, are very independent, and deal with a wide range of suppliers of logistics services.

2.2.4 Financial Based

This category includes firms such as Cass Information Systems, CTC, GE Information Services, and FleetBoston Financial Corporation. These firms provide services such as freight payment and auditing; cost accounting and control; and logistics management tools for monitoring, booking, tracking, tracing, and managing inventory.

2.2.5 Information Based

There existed significant growth and development of Internet-based, business-to-business electronic markets for transportation and logistics service since these resources effectively represent alternative sources for those in need of purchasing transportation and logistics services. For instance, Transplace, Nistevo. (Clifford F. Lynch, 2000)

**2.3 Logistics Service Provider (Third-Party-Logistic) Research Study**

One significant research study, "Third-Party-Logistics Study: views form customers" is conducted on an annual basis by Dr. C. John Langley Jr., in conjunction with Cap Gemini Ernst & Young and Ryder System, Inc. This study provides a comprehensive look at the third-party-logistics industry from the perspective of the customers and users of third-party services.

2.3.1 Study Objectives

(1) Measure the development, growth, and utilization of 3PL services across major industry markets, and deepen the knowledge of the services they provide.

(2) Identify customer needs for information technology-based services, and evaluate how well Logistic Service Providers (3PLs)s are responding to those needs.

(3) Understand how customers purchase and manage 3PL services and how they structure relationships with Logistic Service Providers (3PLs). Also, see how Logistic Service Providers (3PLs)s relate to global needs of their customers and how customers may involve management consultants with the third-party-logistics process.

(4) Examine the overall customer value framework as it relates to the use of 3PL services. Included is an understanding of customers' satisfaction with 3PL services, problems they have experienced and how Logistic Service Providers (3PLs) are viewed by customers.

The principal vehicle for gathering logistics customer perspectives was a survey sent via the internet to the chief logistics executives at prominent companies in the following industries: automotive, chemical, computers and peripherals, consumer products, electronics, medical supplies and devices, retail and telecommunication. These industries were selected because they view logistics as strategically important and are making purposeful moves toward an integrated supply chain management. The total number of surveys sent by E-mail to companies in these industries was 725. Of these, a total of ninety-three usable responses was received, for an overall response rate of 13 percent.

Of the ninety-three responding executives, 71 percent indicated their companies currently use or are considering the use of 3PL services. As indicated in Figure 2.1, the percentage of respondents indicating their firms use 3PL services has remained relatively consistent during the years this study has been conducted.

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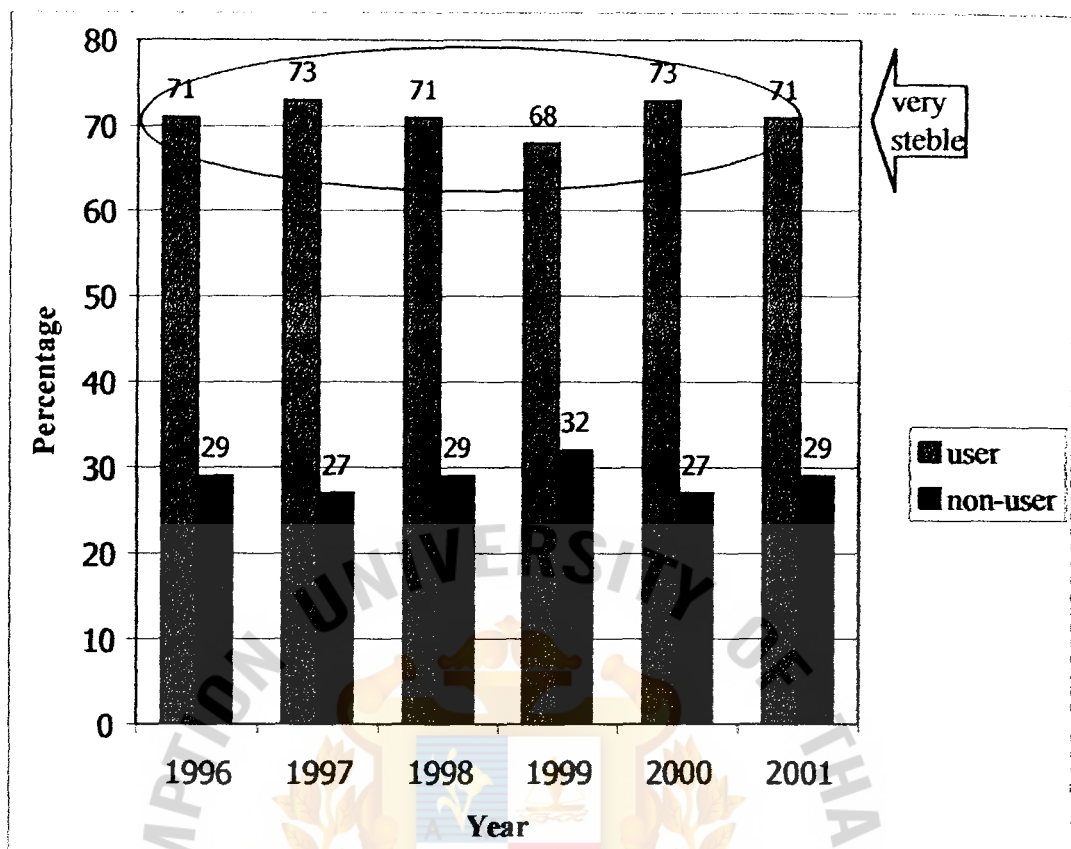
Figure 2.1. 3PL User/Nonuser Experience, 1996-2001 (Lkangley, 2001).

Although the overall percentage of companies using 3PL services remains relatively constant from year to year, the use of 3PL services is seen to vary by firms in the industries studied. For example, two industries that tend to exhibit higher use of 3PL services are 1) computer and peripherals and 2) consumer products (90 and 85 percent, respectively). Among those industries typically indicating less use of 3PL services are automotive, chemical, and retail. In the current study, firms in these industries exhibited Logistic Service Providers (3PLs) use in the range of approximately 50-60 percent.

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A summary of specific shippers who were identified in another study utilize multiple Logistic Service Providers (3PLs)s. Based on the information in that table, General Motor was observed to have used twenty-five third-party providers.

2.3.2 Activities of Logistics Service Provider (Third-Party Logistics: 3PL)

Table 2.1 summarizes the use of specific logistics services that were reported as being outsourced by respondents in 2001. According to the 2001 study, the activities most frequently outsourced to Logistic Service Providers (3PLs)s are warehousing, outbound transportation, freight bill auditing/payment, inbound transpiration, freight consolidation/distribution, and cross-docking. In contrast, the activities outsourced least frequently include product returns and repair, inventory management, traffic management/fleet operations, information technology, product assembly and installation, order fulfillment, order entry/order processing, and customer service.

Table 2.1.    Logistics Services Providers 2001(Lkangley, 2001).

| Logistics Service Providers' Activities | Percent Outsource |
|---|---|
| Warehousing | 73.7 |
| Outbound transportation | 68.4 |
| Freight bill auditing/payment | 61.4 |
| Inbound reputation | 56.1 |
| Freight consolidation/distribution | 40.4 |
| Cross-docking | 38.6 |
| Product marking/labeling/packing | 33.3 |

Table 2.1.   Logistics Services Providers 2001(Lkangley, 2001) (cont').

| Logistics Service Providers' Activities | Percent Outsource |
|---|---|
| Selected manufacturing activities | 29.8 |
| Product returns and repair | 22.8 |
| Inventory management | 21.0 |
| Traffic management/fleet operations | 19.3 |
| Information technology | 17.5 |
| Product assembly/installation | 17.5 |
| Order fulfillment | 15.8 |
| Order entry/order processing | 5.3 |
| Customer service | 3.5 |

Note: Figures refer to percentages of users indicating use of specific 3PL services.

A strategic issue is how customers feel that Logistic Service Providers (3PLs)s should position themselves in terms of depth and breadth of service offerings. Overall, and consistent with findings reported in earlier years' studies, respondents indicated significant agreement with the statement that "Third-party suppliers should provide a broad, comprehensive set of service offerings" and disagreement with the statement that "third-party suppliers should focus on a limited range of service offerings." This implies that there may be increased interest and desire at the client level for a single-source solution or a "lead logistics manager" role to the provision of integrated logistics services.

Views of non-customers. To help better understand those who were not among the users of 3PL services, the study asked a number of questions regarding

their choice not to be so involved. Responses for the 2001 study showed that there were two reasons that seemed to generate the most response in terms of explaining why firms choose not to outsource: "control over outsourced function would diminish," and "costs would not be reduced." Also reported were several other reasons, including: "service commitments would not be met," "logistics is a core competency." "we have more expertise," and "logistics too important to outsource."

Increasingly, and as reported in earlier years, there are many existing customers of Logistic Service Providers (3PLs) who have been satisfied with such relationships because they help to improve (rather than diminish) control over certain outsourced activities. Also prevalent among the reasons not to outsource is the belief that firms can perform internally at least as effectively as would be expected of a Logistic Service Provider (3PL). If this assertion is true, then the choice of not using a Logistic Service Provider (3PL) is understandable. The results form user firms, however, document that although there is room for improvement, users historically have been satisfied with Logistic Service Providers (3PLs), both from a cost and from a service viewpoint.

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2.3.3 Customer Value Framework
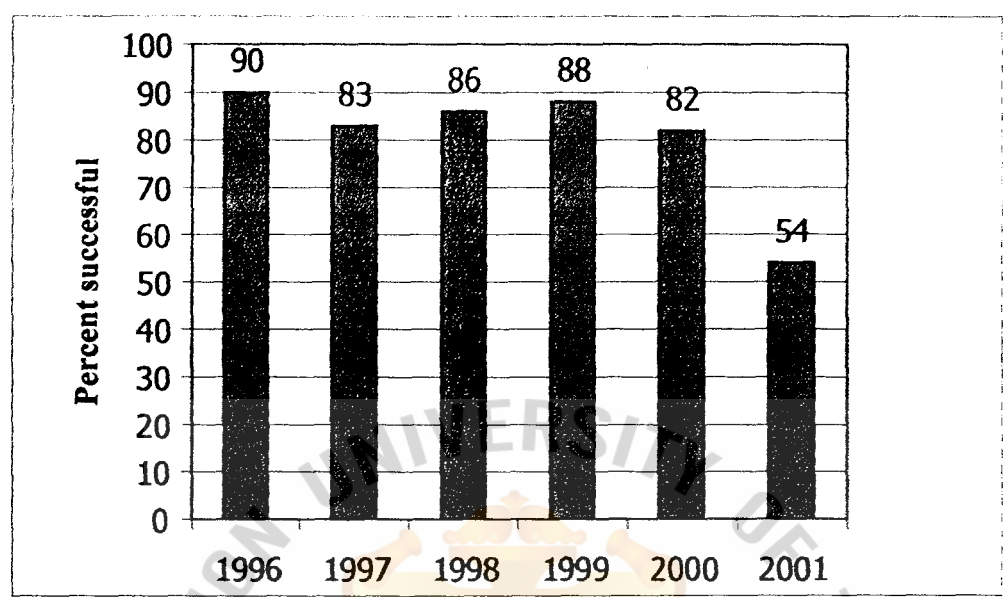


Figure 2.2.    Customer Evaluation of Outsourcing (yearly comparisons).

Figure 2.2 provides a six-year summary of the percentages of 3PL users indicating overall success with their outsourcing efforts. The 2001 results are strikingly different form those of previous years, in that only 54percent of the respondents rated their 3PL services as being either "extremely" or "somewhat" successful. Interestingly, the percentage figure for 2000 (82 percent) was reported as "suggesting a modest decline form the increasing trend of the two most recent years." Looking at closely at the actual responses, it is apparent that the percentage of 3PL users indicating "extremely" successful declined significantly. While this should be interpreted as an area of concern, it also may be indicative of increasing expectations by users of 3PL services. When the standards for success are increased, it would be expected that fewer provider relationships would be viewed as extremely successful.
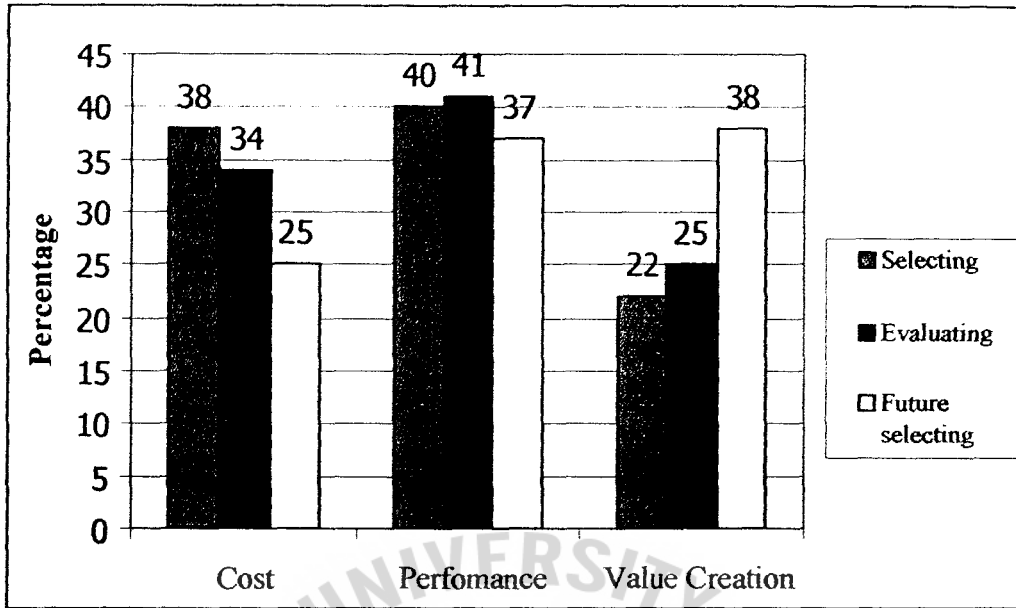
Figure 2.3.   Factors for Selecting and Evaluating 3PLs.

Figure2.3 provides information concerning the relative importance of cost, performance, and value creation as determining factors for evaluating and selecting Logistic Service Providers (3PLs). While cost and performance were cited as the most prevalent current factors for evaluation and selection, the data suggested that future selection processes will increasingly emphasize value creation. If this occurs, it would suggest that 3PL customers are moving beyond criteria that are easily measurable, such as cost and performance, and that they are becoming increasingly interested in assessing the overall value derived from their logistics outsourcing.

2.3.4 Quantifiable measures of Logistics Service Providers success

On a more positive note, respondents were asked about the types of improvements that are being experienced as a result of using a Logistic Service

Provider (3PL). The following averages were calculated based on individual responses:

(1) Logistics cost reduced by 8.2 percent

(2) Logistics assets reduced by 15.6 percent

(3) Average order cycle length changed from 10.7 to 8.4 days

(4) Overall inventories reduced by 5.3 percent

Respondents in the 2000 study reported experiencing a number of problems. Categorically, their responses tended to focus on several key areas of concern:

(1) Service level commitments have not been realized.

(2) Strategic management skills are lacking

(3) Cost reductions have not been realized.

(4) Costs "creep" and price increases occur once relationship has commenced.

(5) Continuous, ongoing improvements and achievements in offerings are lacking.

(6) Control over the outsourced function(s) has diminished.

(7) Consultative, knowledge-based skills are lacking

(8) Technology capabilities are available but are not being delivered to the client.

(9) Time and effort spent on logistics have not been reduced

This list should be viewed as a starting point for continuous improvement by Logistic Service Providers (3PLs). Overall, it suggests a need to meet service level and cost objectives and to avoid unnecessary increases in price to the customer once

the relationship has commenced. Also, it appears that some Logistic Service Provider (3PL) need to improve in the areas of strategic management, technology, and knowledge-based skills. These suggest expectations by the customers are currently not being met. Finally, there are users of 3PL services who feel that the time and effort spent on logistics have to decrease, and that their control over the outsourced function may have lessened. In the latter instance, the move to "hybrid" management of the Logistic Service Provider (3PL) responsibilities may be a useful alternative.

2.3.5 Logistics strategic Value and the Role of of Logistics Service Providers

Of the companies indicating current or intended use of 3PL services, 93 percent indicated their feeling that "logistics represents a strategic, competitive advantage for our company," and an equal number felt that " customers are placing greater emphasis on logistics customer services." As suggested in each of the earlier studies, these figures imply that the rise of 3PL services is not necessarily inconsistent with logistics being an area of strategic importance to the company. Thus, it is apparent that there are a significant number of firms that view logistics as a core competency and a source of competitive advantage, but that also have elected to outsource certain portions of their logistics and supply chain processes.

The 2001 study also includes a question relating to how respondents think of Logistic Service Providers (3PLs). Most users currently think of their Logistic Service Provider (3PL) as a "resource provider." While about one-half of this total view the Logistic Service Provider (3PL) as a "resource manager" and a "problem solver." To a lesser extent, Logistic Service Provider (3PL) are thought of as a "transportation strategist," "distribution strategist." "Supply chain strategist," or "orchestrator." While many Logistic Service Provider (3PL) relationships are certainly

deeper and more strategically focused than these characterizations would suggest, it appears that a valid objective is far more firms to be considered in these "higher-level" categories that imply a more meaningful, strategic relationship between a user and a Logistic Service Provider (3PL). *(Christopher, 1998)*

## 2.4   Identifying Potential Providers

Hundreds of firms offering a varying array of services for a variety of clients and the industry are segmented in a number of different ways. It is important to understand this segmentation, even though in some cases it is rather basic.

Additionally, there are two broader categories of provider that should be recognized at the outset of the identification process.

### 2.4.1 Asset and Non-Asset

All logistics service providers can be divided into two basic classifications: Asset based and Non-asset based.   Asset-based providers own/lease trucks, warehouses, and other tangible property that are used in executing their clients' requirements.   Non-asset-based providers do not own a major portion of the assets used, but contract with other firms to provide all or portions of the services.

Another group of providers, some of whom refer to themselves as facilitators, can be little more than brokers. Their major qualification are knowledge and experience which they use to develop logistics systems for clients through negotiating with and sub-contracting to other providers.

The financial community sometimes uses the terms "non-asset" and "information-based" providers interchangeably. While most information-based firms could safely be categorized as non-asset, not all non-asset providers are information-based.

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As with most logistics classifications, the line between asset and non-asset based firms is a little blurred. In many cases, a logistics provider will be a combination of the two. Perhaps the best way to classify them is through a rule of predominance. If they own most of the assets they use to fulfill their missions, they are asset-based. If not, then by default they fall into the other category.

## 2.4.2 Single Sourcing

The concept of single sourcing plays an important role in supplier selection. Some firms will prefer to deal with one lead provider to either perform or contract for all the functions being outsourced. The lead firm can be asset or non-asset based. Usually it will fulfill those requirements that it is equipped to handle and sub-contract to other organizations those services it does not provide. The term strategic alliance often is used to define these arrangements.

The advantage is that there is no intimate relationship between the client and its full complement of providers. The very arrangement that simplifies communications and management can also be a detriment.

## 2.4.3 Geography

The most basic segmentation of providers is by geography. Firms can be local, regional, national, domestic, international, or global.

A local provider operates in one city or metropolitan area. This category would include one-city public or contract warehouses and local cartage companies. A regional firm will operate in multiple cities but will concentrate its operations in a geographic region.

A national provider is exactly what the term implies: a company that has operations not necessarily in every major market, but spread fairly evenly throughout the country.

An international provider is one that operates in their own country and other countries, and a global firm is one that is perceived at least, to have worldwide operations.

### 2.4.4 Integrated Logistics Providers

Some provider firms have gone far beyond their basic orientation and have become as skilled in other disciplines as in their core businesses. Sometimes referred to as integrated logistics providers, they offer total supply chain or logistics solutions, utilizing their won facilities and systems, or through strategic alliances with others. In many cases, they will offer in-house consulting services and logistics network design.

### 2.4.5 Consultants

Finally, a less time-and resource-consuming approach would be to retain a logistics consultant to aid in the identification of appropriate providers. Some firms may choose to use a consulting firm throughout the outsourcing process such as planning to implementation, while others may elect to use them only for the identification and qualification of potential service firms.

Many excellent consulting firms are in the logistics field, ranging form the independent to the large corporation. The individual consultants themselves often have extensive knowledge of the subject, and many have held positions with clients and/or providers.

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## 2.5 Selecting a Logistics Service Provider

Once the firm has established what functions it wishes to outsource, has developed a strategy for doing so and has identified potential providers, it is time to begin the evaluation and selection process.

Whether you are going to engage in a sample transactional arrangement, work toward a partnership solution through a RFI-Request For Information, or move directly to a RFP-Request For Proposal, it is important to first establish the selection criteria. These should encompass those strategic, tactical, and operational requirements that are critical to the company. While specific standards will vary with the outsourcing firm's unique needs, as well as the functions that are being outsourced, there are basic benchmarks that will be applicable to most arrangements.

2.5.1 Selection Criteria

(1)     Financial Stability

(2)     Business experience

(3)     Management Depth and Strength

(4)     Reputation with Other clients

(5)     Strategic Direction

(6)     Physical Facilities and Equipment

(7)     Operations

(8)     Information Technology

(9)     Quality Initiatives

(10)    Growth Potential

(11)    Chemistry and compatibility

(12)    Cost

Financial Stability

It is absolutely critical that the selected company be financially sound. Many outsourcing programs can be quite large with significant start-up expenses. The provider must have the financial resources to see the project through to profitability. In more than a few cases, providers have seriously underestimated capital and operating cash requirements, and client firms have not been diligent enough in exploring financial strength.

Some companies have placed minimum limits on financial assets and results of the providers, and others have adapted a policy of awarding contracts only if the total value is below a certain percentage of the provider's total revenue.

With the influx of new firms into the industry, as well as, the unsatisfactory financial performance of others, it sometimes is difficult to identify financially qualified and stable providers. Many logistics providers are privately held, and as such either refuse to disclose financial results or are reluctant to do so.

Business Experience

Experience in providing logistics services in general, as well as in the client industry, is extremely important. The provider must be well grounded in the services being provided and ideally will have experience in the client's own industry.

While the latter is not absolutely essential, the provider must be able to demonstrate that the skills it does possess can be transferred with reasonable dispatch and efficiency.

Management Depth and Strength

When outsourcing it is important to remember that one of the products being purchased is expertise in providing the particular services. The

logistics service provider must have a strong, skilled organization, as well as adequate, qualified management.

Bench strength is a problem for some providers and it is critical that the clients have a clear understanding of the management and labor force that will be devoted to the relationship. If at all possible, the potential client should be introduced to the manager with whom it will be working. If this person is not yet in the organization, the client should ask to be a part of the selection process.

Reputation with Other clients

The best substitute for personal experience is that of other customers and clients. The provider should be asked to provide a client list with contacts and telephone numbers.

A sufficient number of these-at least five-should be contacted to satisfy the outsourcing firm that it has a good cross section of performance. If possible, the potential client should choose the ones to be contacted, and should be wary of a limited number of references already por-determined by the provider.

When talking with other clients, it is important to determined if the provider simply does well what they are told, or if they have a commitment to continuous improvements in performance and customer satisfaction.

Strategic Direction

Just as the outsourcer should have a strategy, so should the provider, many do not and still others seem to have a planning horizon for one afternoon. Granted, the logistics strategy of the client and the provider eventually should be one and the same, but the well-managed service firm is one that will have some sense of its own goals and objectives, as well. It should be well grounded in its current

activities, but also have a strategy for expanding and improving on these. It should have commitment and direction.

### Physical Facilities and Equipment

It goes without saying that the physical facilities must be sufficient to support the outsourced activity.

Warehouses should be clean and well lit with ceilings high enough to allow for extensive racking when required. Loading and unloading facilities should be adequate for the operation, and other unique operating characteristics should be provided for. For example, the ideal building for a cross-dock operation is quite different form the most efficient order fulfillment facility.

Warehouse and transportation equipment should be clean, painted and well maintained. Regular preventive maintenance and replacement policies should be in place.

### Operations

A careful evaluation of the provider's current operations will be required. Some of the necessary information will come out of discussions with other clients, but there will be no substitute for an in-depth operations and productivity assessment by a qualified individual or team.

This evaluation should include not only the basic physical operations, but also such things as commitment to best practices, housekeeping, attention to detail, human resource practices, and quality of procedures manuals.

Information Technology

In any logistics operation, state-of-the-art systems are critical; and in such specialized areas as cross docking, order fulfillment, and freight bill payment they are an absolute necessity.

Any involvement with electronic commerce will require systems much more sophisticated than those usually available from most logistics service providers. State-of-the-art order processing systems, including such functions as the ability to verify credit cards, will be a must.

The evaluation of information technology assets will require knowledgeable experts in the field and should include such areas as hardware, software, operating systems, bar coding, imaging, handheld device, sensor-based systems, satellite and other tracking systems and internet access. Very important will be an understanding of, and compatibility with, various ERP systems.

Replacement and developmental budgets and schedule should be in place, and the entire function should be supported by sufficient, qualified staff.

Information technology requires substantial capital and expertise, and some logistics service providers have not been particularly strong in these areas. Just as with the financial analysis, investigation of these capabilities may be tedious, but it is absolutely necessary.

Quality Initiatives

The progressive logistics service provider usually will have a formal quality or continuous improvement program. Some may be ISO certified, while others my have lesser, but meaningful programs in place.

The provider selected must be one who is committed to ongoing performance enhancement, and has an identified procedure for accomplishing this.

Growth Potential

Most firms project ongoing growth through volume increases, new products, or new markets; and it is important for the logistics service provider to be in a position to support that growth.

While there probably will not be excess capacity immediately available, the selected provider should be in a position to provide that capacity or new services over a short or long term, depending on client requirements.

Chemistry and Compatibility

For over two thousand years, the Chinese have practiced the tradition of Fang Shui. Meaning literally wind and water, it is about being in harmony with one's surroundings and relationships. Although usually considered in more physical terms such as placement of structures and landscaping, its ultimate goal is to exist in a harmonious environment.

This is the same goal for which we should strive in outsourcings and relationships. While business decisions should be made on the basis of hard facts and figures, decision-makers are human and should not ignore human instincts.

Just as marriage partners should be chosen with care, so should logistics partners. Instincts and impressions should be needed; and if personal chemistry and compatibility are a concern at the outset, more often than not, the situation will not improve over time.

Cost

While it should not necessarily be the last in importance, neither should cost be the first and foremost consideration. While it must be considered in the selection process, it should be a factor in deciding among firms that meet all the other criteria.

The manager who selects a provider solely on the basis of cost has committed to an outsourcing strategy that will have little chance of success.

2.5.2 Evaluation Criteria

Evaluation criteria should be listed so the provider will know by what benchmarks it will be evaluated.

Once the responses have been received, they should be evaluated according to the established criteria. Using the rating sheets, the top three should be identified, notified and scheduled for oral presentation, as well as personal visits by the selection team. Oral presentations often will reveal weaknesses, strengths, and provide other impressions not readily identifiable in the written responses. *(Lynch, 2000)*

**2.6  Customer Satisfaction**

Customer satisfaction has gained new attention within the context of the paradigm shift form transactional marketing to relationship marketing, which referred "to all marketing activities directed toward establishing, and maintaining successful relational exchanges" in numerous publishing, satisfaction has been treated as the necessary premise for the retention of customers, and therefore has moved to the forefront of relational marketing approaches. As a result, customer satisfaction has developed extensively as a basic construct for monitoring and controlling activities in the relationship-marketing concept. This is exemplified through the development and publication for a large number of companies, industry-wide, and even national

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satisfaction indices (E.W. Anderson, Fornell, and Lemann, 1994

laboratory experiment suggested that the perceived performa

significant influence on satisfaction in addition to those indulgences from expected

performance and subjective disconfirmation. However, expectation and subjective

disconfirmation seem to be the best conceptualization in capturing customer

satisfaction formation. The investigation found that the ratio of perceptions and

expectation results in a scale with lower reliability, lower relative validity and the

dimensions that were more difficult to interpret to that the scale was developed using

the "differences of perception". See Figure 2.4
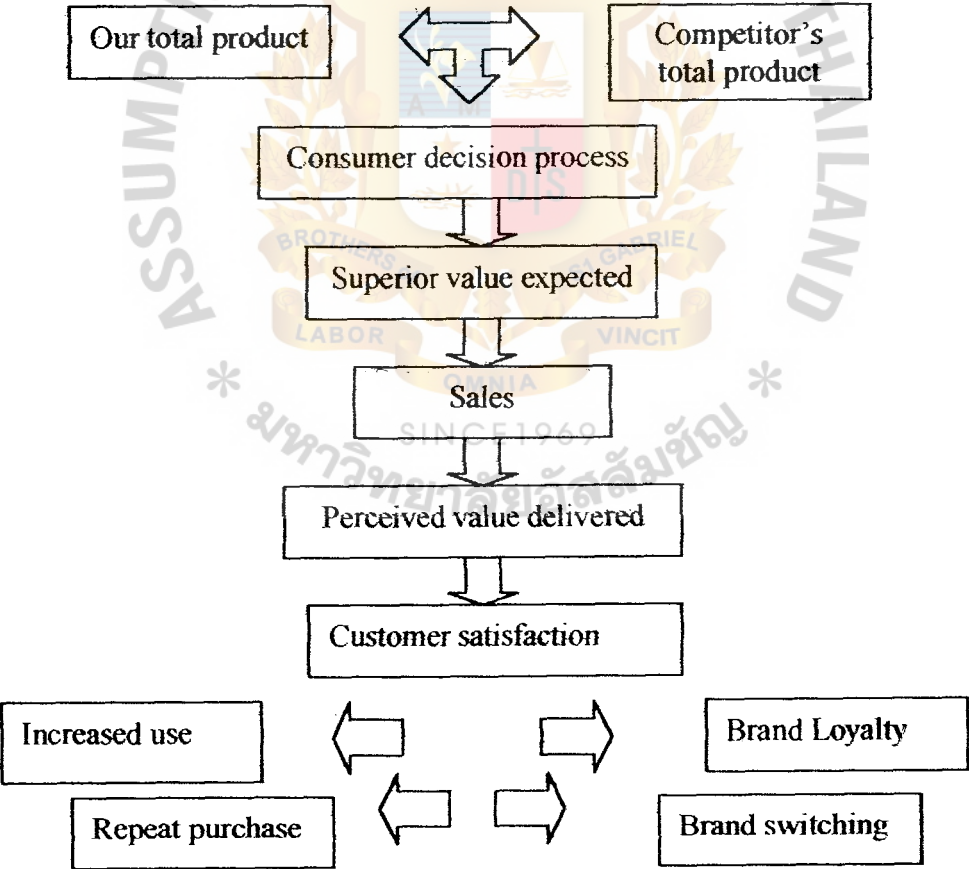


Figure 2.4.    Customer Satisfaction Outcome (Hawkin, 2001).

## 2.7 Customer Value Concept

There are a number of differet meanings for the word value. There is the value that is used to describe a set of standards that are held by a certain group and clss of people. Value is also used in the sense of "value added", referring to the incremental utility that is added at various stages of the production or distribution process. Customer value is the perspective of an organization's customers considering what they want and believe that they get from buying and using a seller's product. Value is the consumer's overall assessments of the utility of a product based on perceptions of what is received and what is given.

Value in the marketing concept is the perceived worth in monetary units of a set of economic, technical, social and service benefits received by the customers in exchange for price paid for a product or service, taking into consideration the available supplier's offerings and prices.

The customer value definitions have been shown in various meanings such as the following:

The difference between the benefits that a customer is receiving from the acquired products and services and the effort and cost that the customer has to invest to get the product. (www.ecommerce.etsu.edu)

Dependent on product quality, service quality, price and fulfillment time, it reflects the degree to which products and services satisfy customers' expectations about price, function, and quality (www.highered.mcgraw-hill.com)

The overall value of a product (offering) as used by the customer. This is also referred to, by economists, as the value-in-use. Usually customer value takes on a longer term character than is attributable to value-in-use. (www.lieb.com)

## 2.8    Relationship between Customer Value and Customer Satisfaction

The concept of customer value indicate a strong relationship to service quality and thereby customer satisfaction. Both concepts are intergrated into an intertwined relationship model as illustrated in Figure 2.5.
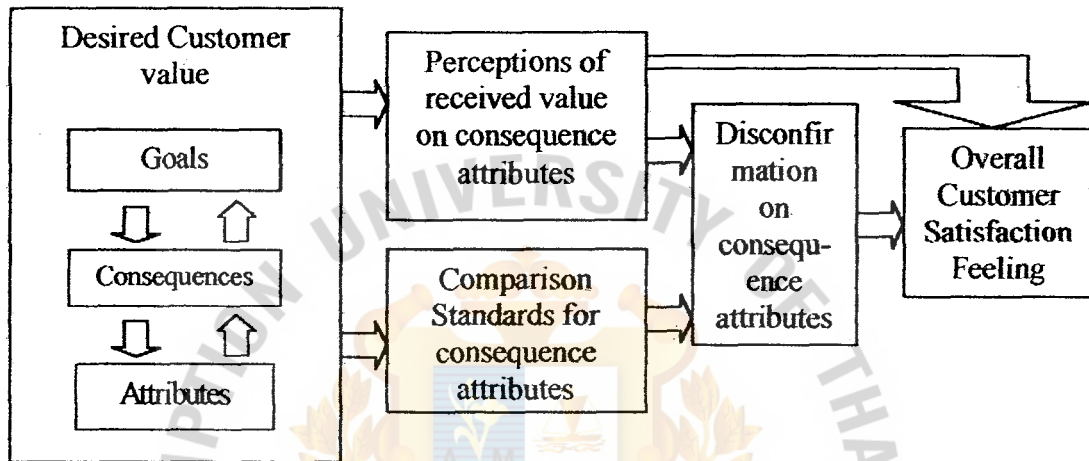


Figure 2.5.    Relationship between Customer Value and Customer Satisfaction. (Journal of the Academy of Marketing Science)

The overall customer satisfaction is the customer's judgment of the evaluation of experiences from buying and comparing the outcome of the services with their expectation. The desired value is the guide to which customers' perspectives of the services or products performance through the comparison process on the same attributes and consequences are constructed. Received value is the direct formation of overall satisfaction and is compared to standards to form disconfirmation perceptions in another route to influence the overall satisfaction feelings.

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## 2.9  Providing Superior Customer Value

The first step in achieving leadership in market-perceived quality and value is to understand what causes customers in your targeted market to make their decisions-to decide that one product offers better value than another. Understanding that is the most central objectives of a customer value analysis.

Figure 2.6 summarizes how customers make purchase decisions. The factors that contribute to quality in the customer's mind need not be mysterious. Customers will gladly tell you what they are. A customer value analysis uses information from customers to show how customers make decisions in your marketplace. And in giving you that information, it suggests what you need to change to ensure that more of them will buy from you.

- Customer buys on value
- Value equals quality relative to price
- Quality includes all nonpriced attributes; Product and Customer Service
- Quality, Price and Value are relative

Value { Price
        Quality { Customer Service
                   Product
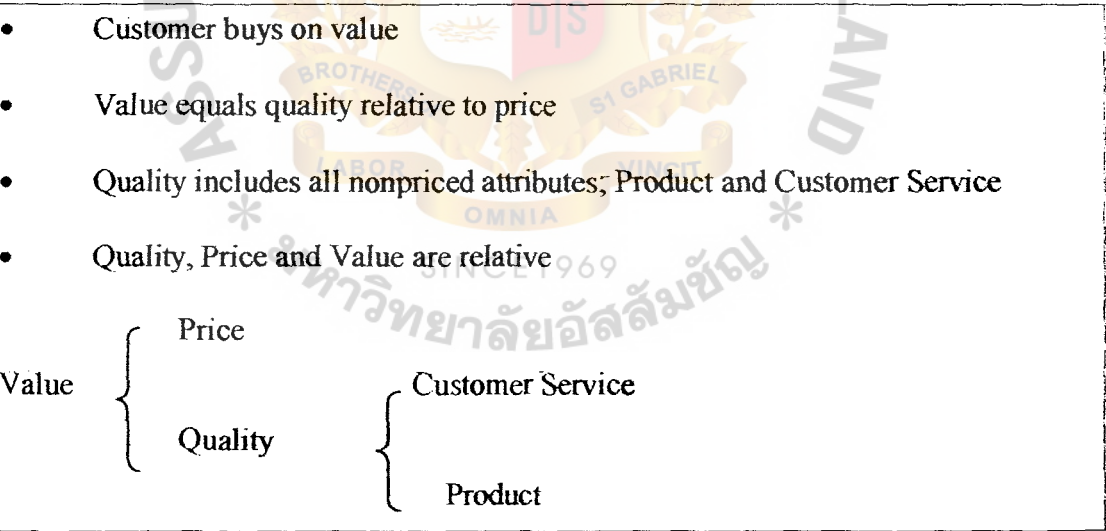
Figure 2.6.   How Customers Select among Competing Suppliers.

The simplest customer value analysis consists of two parts: First, you create a customer value profile that compares your organization's performance with that of one or more competitors. This customer value profile itself usually has two elements:

(1) A market-perceived quality profile

(2) A market-perceived price profile.

Second, once you have created the customer value profile, you draw a customer value map.

2.9.1 The Basics of a Market-perceived Quality Profile

Among the elements of a customer value analysis, the single most important is the market-perceived quality profile. This is a chart that does three things:

(1) It identifies what quality really is to customers in your marketplace

(2) It tells you which competitors are performing best on each aspect of quality.

(3) It gives you the overall quality performance measures based on the definition of quality that customers actually use in making their purchase decision.

The market-perceived quality profile is the most important part of the customer value analysis because it summarizes the aspects of the marketplace that are usually easiest to change to improve your business. In many markets, price is an even greater driver of customer decisions than market-perceived quality. But cutting prices will not usually improve your bottom line.

### 2.9.2 The Basics of a Market-perceived Price Profile

Price plays a powerful role in most buying decisions. The customer's perception of how much a product costs is often a composite of several different factors.

One simple way to study price is to ask customers how satisfied they are with the price of the product, on the same scale you ask them their satisfaction with the quality attributes. The ratio of customers' satisfaction with prices of the average competitor to customer's satisfactions with prices of the firm being analyzed, can then be used on the price side of the value map.

## III. RESEARCH METHODOLOGY

### 3.1 Research Classification

Marketing research can be classified on the basis of either technique or function. Experiments, surveys, and observational studies are just a few common research techniques. Classifying research by its purpose or function shows how the nature of the marketing problem influences the choice of methods. The nature of the problem will determine whether the research is exploratory, descriptive or causal.

3.1.1 Exploratory Research

Exploratory research is conducted to clarify the nature of ambiguous problems. Management may have discovered a general problem, but it may need research to gain a better understanding of the dimensions of the problem and to aid analysis. Exploratory research is not intended to provide conclusive evidence from which to determine a particular course of action. Usually exploratory research is conducted with the expectation that subsequent research will be required to provide such conclusive evidence. Thus, exploratory research might help crystallize a problem and identify information needed for future research.

3.1.2 Descriptive Research

The main purpose of descriptive research is to describe characteristics of a population. The marketing manager frequently needs to determine who purchases a product, portray the size of the market, identify competitors' actions, and so on. Descriptive research seeks to determine the answers to who, what, when, where, and how questions.

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Accuracy is of paramount importance in descriptive research. While they cannot completely eliminate errors, good researchers strive for descriptive precision. Frequently, descriptive research attempts to determine the extent of differences in needs, attitudes, and opinions among subgroups.

### 3.1.3   Causal Research

The main goal of causal research is to identify cause-and-effect relationships between variables. In causal studies researchers typically have an expectation about the relationship to be explained, such as predicting the influence of price, packaging, advertising, and so on on sales. (William G. Zikmund, 1994)

For this research, the descriptive research was used to describe the characteristics of population and to determine the level of important of attributes and comparison among others in the customer's perspective and extend the differences in needs, attitudes and opinions among subgroups.

## 3.2   Research Design

Research design is a master plan that specified the methods and procedures for collecting and analyzing the needed information: it is a frame work for the research plan of action.

### 3.2.1 Surveys

The most common method of generating primary data is through surveys. A survey is a research technique in which information is gathered from a sample of questions, and designing the format of the printed or written questionnaire is an essential aspect of the development of a survey research design.

3.2.2 Experiments

Marketing experiments hold the greatest potential for establishing cause-and-effect relationships. Experimentation allows investigation of changes in variable, while manipulating one or two other variables. Ideally experimental control provides a basis for isolating causal factors by eliminating outside, or exogenous, influences. An experiment controls conditions so that one or more variables can be manipulated n order to test a hypothesis.

3.2.3  Secondary data

Like exploratory research studies, descriptive and causal studies use previously collected data. Although the terms secondary and historical are interchangeable, we will use the term secondary data.

3.2.4  Observation

The main advantage of the observation technique is that is records behavior without relying on reports from respondents. Observation methods often are noncreative because data are collected unobtrusively and passively without a respondent's direct participation. (Zikmund, 1994)

For this research, the survey method was exerted to gather primary data from the studied company's customers. This research, however, collected data and information from both primary and secondary sources.

**3.3   Determining Sample Size**

3.3.1 Sample Size Criteria

In addition to the purpose of the study and population size, three criteria usually will need to be specified to determine the appropriate sample size: the level of

precision, the level of confidence or risk, and the degree of variability in the attributes being measured (Miaoulis, 1976). Each of these is reviewed below.

The Precision Level

The level of precision, sometimes called sampling error, is the range in which the true value of the population is estimated to be. This range is often expressed in percentage points, (e.g., ±5 percent), in the same way that results for political campaign polls are reported by the media. Thus, if a researcher finds that 60% of farmers in the sample have adopted a recommended practice with a precision rate of ±5%, then he or she can conclude that between 55% and 65% of farmers in the population have adopted the practice.

The Confidence Level

The confidence or risk level is based on ideas encompassed under the Central Limit Theorem. The key idea encompassed in the Central Limit Theorem is that when a population is repeatedly sampled, the average value of the attribute obtained by those samples is equal to the true population value. Furthermore, the values obtained by these samples are distributed normally about the true value, with some samples having a higher value and some obtaining a lower score than the true population value. In a normal distribution, approximately 95% of the sample values are within two standard deviations of the true population value (e.g., mean).

In other words, this means that, if a 95% confidence level is selected, 95 out of 100 samples will have the true population value within the range of precision specified earlier .There is always a chance that the sample you obtain does not represent the true population value. Such samples with extreme values are represented

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by the shaded areas in Figure 3.1. This risk is reduced for 99% confidence levels and increased for 90% (or lower) confidence levels.
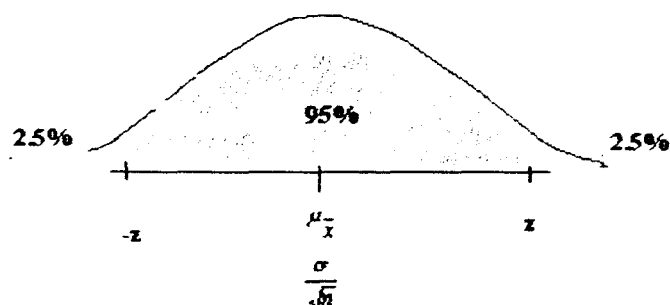


Figure 3.1.    95 % of sample area mean within two standardized deviations.

Degree Of Variability

The third criterion, the degree of variability in the attributes being measured refers to the distribution of attributes in the population. The more heterogeneous a population, the larger the sample size required to obtain a given level of precision. The less variable (more homogeneous) a population, the smaller the sample size. Note that a proportion of 50% indicates a greater level of variability than either 20% or 80%. This is because 20% and 80% indicate that a large majority do not or do, respectively, have the attribute of interest. Because a proportion of .5 indicates the maximum variability in a population, it is often used in determining a more conservative sample size, that is, the sample size may be larger than if the true variability of the population attribute were used.

3.3.2  Strategy for Determining Sampling Size

There are several approaches to determining the sample size. These include using a census for small populations, imitating a sample size of similar

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studies, using published tables, and applying formulas to calculate a sample size. Each strategy is discussed below.

Using A Census For Small Populations

One approach is to use the entire population as the sample. Although cost considerations make this impossible for large populations, a census is attractive for small populations (e.g., 200 or less). A census eliminates sampling error and provides data on all the individuals in the population. In addition, some costs such as questionnaire design and developing the sampling frame are "fixed," that is, they will be the same for samples of 50 or 200. Finally, virtually the entire population would have to be sampled in small populations to achieve a desirable level of precision.

Using A Sample Size Of A Similar Study

Another approach is to use the same sample size as those of studies similar to the one you plan. Without reviewing the procedures employed in these studies you may run the risk of repeating errors that were made in determining the sample size for another study. However, a review of the literature in your discipline can provide guidance about "typical" sample sizes which are used.

Using Published Tables

A third way to determine sample size is to rely on published tables which provide the sample size for a given set of criteria. Tables present sample sizes that would be necessary for given combinations of precision, confidence levels, and variability.

Using a Simplified Formula For Proportions

Yamane (1967) provides a simplified formula to calculate sample sizes. This formula was used to calculate the sample. A 95% confidence level and P = .5 are assumed for equation below.

$$\text{Equation 3:} \quad n = \frac{N}{1 + N(e)^2}$$

On account of small population of the studied company's clients, approximately 50 companies, this research should be used a census sampling method. However, at least the sample size should be 44, calculated from Yamane's formula at 95% confidence level.

### 3.4  Data Collection Method

The researcher collected the data by using primary data and secondary data.

The primary data was collected by distributing the questionnaires among the whole (50) respondents who are the studied company's customers.

The secondary data is gathered from textbooks, Internet, theses, and others related researches.

### 3.5  Research Tools

The researcher determines the operation plan by utilizing the survey method of primary data collection. The questionnaire was separated into 3 parts as follows:

Part 1: General Data

The general data includes the important factors of selection of the third-party logistic service provider (3PL) criteria with the customers' perspectives, comparison of the studied company's services with others in terms of selection criteria factors in

case of clients who utilized more than one 3PL company, and the important attributes valued by the customers' perspectives.

Part 2: Customer Satisfaction

It consists of the customers' expectations and perceptions in each attributes valued by the customers' perspective in order to measure the customer satisfaction.

Part 3: Demographic Profile

This part is designed to provide information of the customers including the department that evaluated the questionnaire, type of business, annual sales volume, and the relationship period.

Statistical Package for Social Science (SPSS) version 11.5 program was utilized to analyze and summarize the collected data.

## 3.6 Research Variable

Table 3.1.    Measurement Level of Research Variables.

| Part | Variable | Sub-variable | Level of measurement |
|------|----------|--------------|----------------------|
| 1 | Ranking the important factors to select a 3PL | • Financial Stability<br>• Business experience<br>• Management Depth and Strength<br>• Reputation with Other clients<br>• Strategic Direction<br>• Physical Facilities and Equipment<br>• Operations<br>• Information Technology<br>• Quality Initiatives | Likert scale, Ordinal scale |

Table 3.1.    Measurement Level of Research Variables (cont').

| Part | Variable | Sub-variable | Level of measurement |
|------|----------|--------------|---------------------|
|  |  | • Growth Potential<br>• Chemistry and compatibility<br>• Cost |  |
|  | Compare and contrast between own companies and competitors | • Financial Stability<br>• Business experience<br>• Management Depth and Strength<br>• Reputation with Other clients<br>• Strategic Direction<br>• Physical Facilities and Equipment<br>• Operations<br>• Information Technology<br>• Quality Initiatives<br>• Growth Potential<br>• Chemistry and compatibility<br>• Cost | Likert scale, Ordinal scale |
|  | Ranking the attributes valued by customers | • Service<br>• Speed<br>• Accuracy<br>• Cost<br>• Procedure<br>• Communication<br>• Relationship<br>• Facility Possibility<br>• Information Technology<br>• Security | Likert scale, Ordinal scale |

Table 3.1. Measurement Level of Research Variables (cont').

| Part | Variable | Sub-variable | Level of measurement |
|------|----------|--------------|----------------------|
| 2 | Expectation on values | <ul><li>Service</li><li>Speed</li><li>Accuracy</li><li>Cost</li><li>Procedure</li><li>Communication</li><li>Relationship</li><li>Facility Possibility</li><li>Information Technology</li><li>Security</li></ul> | Likert scale, Ordinal scale |
| | Perception on values | <ul><li>Service</li><li>Speed</li><li>Accuracy</li><li>Cost</li><li>Procedure</li><li>Communication</li><li>Relationship</li><li>Facility Possibility</li><li>Information Technology</li><li>Security</li></ul> | Likert scale, Ordinal scale |
| 3 | Department/Section | | Nominal |
| | Type of Business/Industry | | Nominal |
| | Annual Sales Volume | | Ordinal scale |
| | Relationship period | | Ordinal scale |

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## 3.7 Research Framework

Part 2 of this research utilizes the disconfirmation model of customer satisfaction in order to measure the levels of customer satisfaction and comparison between the customer expectation and perception on performance. The disconfirmation of expectation model has been shown in Figure 3.2
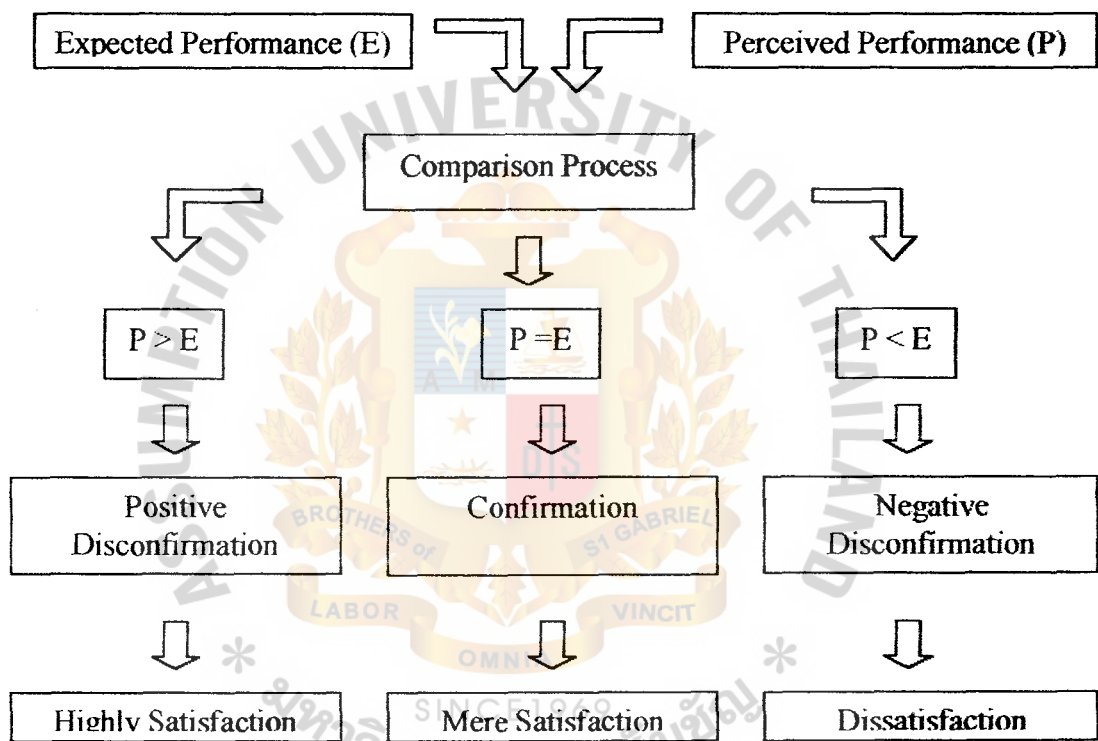


Figure 3.2. Disconfirmation of the Expectation Model.

For part 2, the conceptual framework as shown in Figure 3.3 below, was designed to evaluate the level of satisfaction by comparing expectations and perceptions in terms of 10 attributes valued in the customers' perspective, which identify by interviewing 3 professional executive officers in the logistics provider

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business. This framework indicated Dependent variable and Independent variable as shown in Figure 3.3.

**Independent Variables**                    **Dependent Variables**
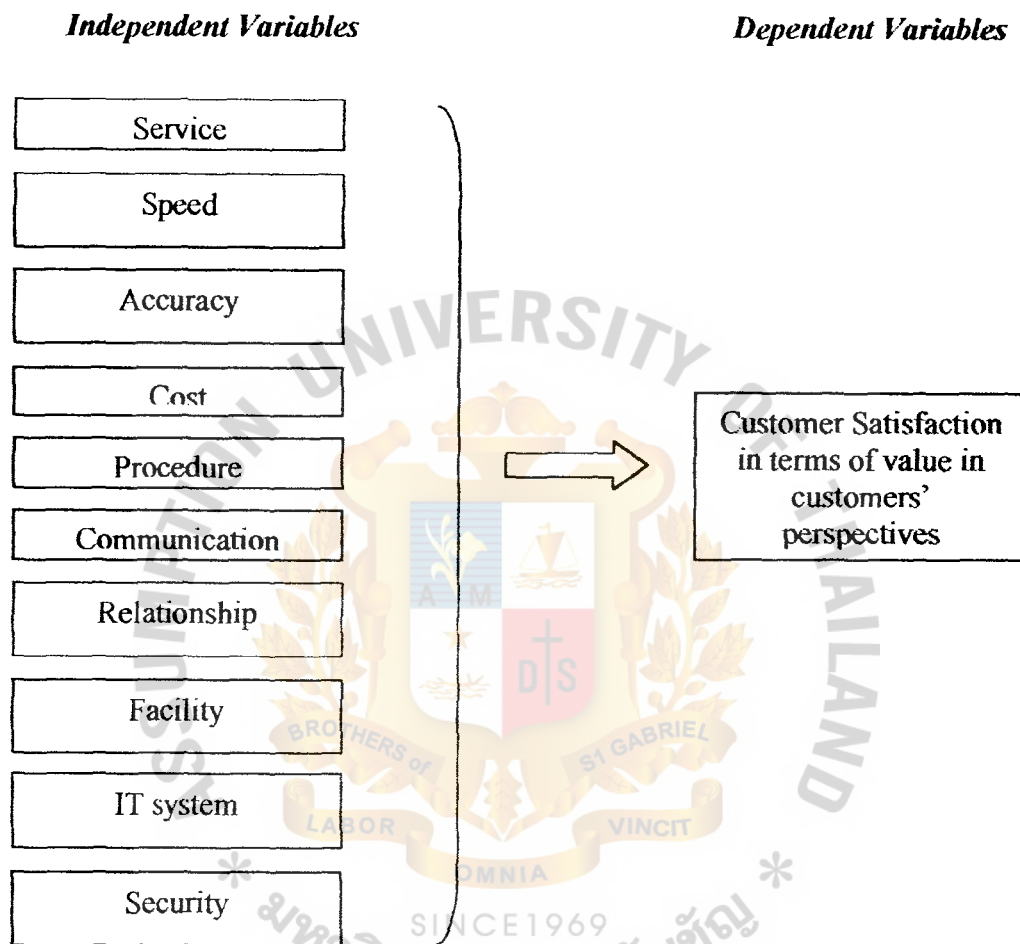


Figure 3.3. Research Framework.

## 3.8 Hypotheses

Hypotheses will be formulated to assert significant differences between expectation and perception according to independent variables with 10 attributes as follows.

*Hypothesis 1*

Ho  =  There is no significant difference between customer expectation and customer perception in terms of service

H1  =  There is a significant difference between customer expectation and customer perception in terms of service

*Hypothesis 2*

Ho  =  There is no significant difference between customer expectation and customer perception in terms of speed

H1  =  There is a significant difference between customer expectation and customer perception in terms of speed

*Hypothesis 3*

Ho  =  There is no significant difference between customer expectation and customer perception in terms of accuracy

H1  =  There is a significant difference between customer expectation and customer perception in terms of accuracy

*Hypothesis 4*

Ho  =  There is no significant difference between customer expectation and customer perception in terms of cost

H1  =  There is a significant difference between customer expectation and customer perception in terms of cost

*Hypothesis 5*

Ho  =  There is no significant difference between customer expectation and customer perception in terms of procedure

H1 = There is a significant difference between customer expectation and customer perception in terms of procedure

*Hypothesis 6*

Ho = There is no significant difference between customer expectation and customer perception in terms of communication

H1 = There is a significant difference between customer expectation and customer perception in terms of communication

*Hypothesis 7*

Ho = There is no significant difference between customer expectation and customer perception in terms of relationship

H1 = There is a significant difference between customer expectation and customer perception in terms of relationship

*Hypothesis 8*

Ho = There is no significant difference between customer expectation and customer perception in terms of facility possibility

H1 = There is a significant difference between customer expectation and customer perception in terms of facility possibility

*Hypothesis 9*

Ho = There is no significant difference between customer expectation and customer perception in terms of information technology

H1 = There is a significant difference between customer expectation and customer perception in terms of information technology

*Hypothesis 10*

Ho = There is no significant difference between customer expectation and customer perception in terms of security

H1 = There is a significant difference between customer expectation and customer perception in terms of security

## 3.9 T-Test Analysis

The T-test will be used to test a hypothesis stating that the mean scores on variable will be significantly different for two independent groups. Hence, all 10 hypotheses were tested for the difference between customer expectation and perception in terms of each attribute by the t-test analysis.
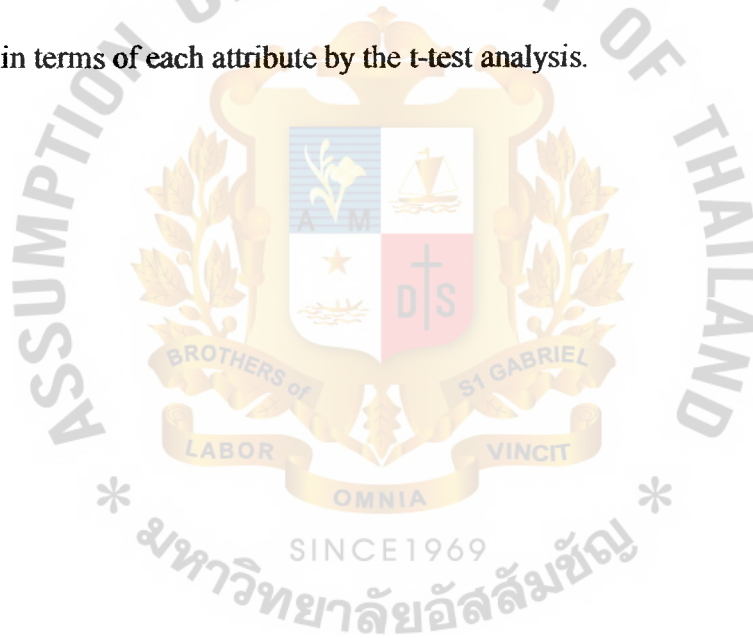
# IV. DATA ANALYSIS

Statistics are mathematical techniques for analyzing numerical data to accomplish various purposes. These purpose are directly related to the research questions and the type of research design the researcher is choosing to accomplish the study. Quantitative research implies the use of numerical data, but qualitative researchers also use statistical analysis as a supplement to interpretive analysis.

## 4.1 Descriptive Analysis

These are mathematical techniques for organizing and summarizing a set of numerical data. Utilizing statistical measures that describe the sample as a whole, along with measures of statistical significance, it allows the researcher to make inferences about the total population. Computation of descriptive statistics is usually the first step in the analysis of data collected in a causal-comparative research study.

4.1.1 Measures of Central Tendency and Variability

A measure of central tendency is a single numerical value that is used to describe the average of an entire set of scores. The mean, median, and mode are three different measures of central tendency. The mean (usually considered the best and most stable measure of central tendency) is calculated by dividing the sum of all scores by the number of scores. Extreme scores significantly influence the mean scores. The median is the middle point in a distribution of scores. The median is more useful when the researcher wants to minimize the influence of extreme scores. The mode is the most frequently occurring score in a distribution of scores. The mode tends to be unstable when the sample size is small.

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Variability is the amount of dispersion of scores about the mean score or other measure of central tendency. The standard deviation is the measure of variability most often reported by researchers. The mean and standard deviation, together, provide a good description of how members of a sample scored on a particular measure. A range is the lowest and highest scores in a distribution of scores.

### 4.1.2 Correlation Coefficient

Correlation describes how scores in one distribution relate to scores in another, or how one variable is related to, or associated with another. A correlation coefficient has two components: direction and magnitude. Correlations can either be positive or negative. Magnitude of the coefficient will indicate the strength of the correlation. Correlation coefficients will range from -1.0 to + 1.0 with zero indicating no relationship between the variables being measured.

### 4.1.3 Presentation, Analysis and Interpretation

(1) Demographic Analysis

The demographic characteristics of the respondents consist of 4 variables as presented below.

Table 4.1. Department of Respondents.

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | General | 3 | 6.7 | 6.7 | 6.7 |
| | Sales and Marketing | 4 | 8.9 | 8.9 | 15.6 |
| | Customer service | 9 | 20.0 | 20.0 | 35.6 |
| | **Logistics** | 21 | 46.7 | 46.7 | 82.2 |
| | Import-Export | 8 | 17.8 | 17.8 | 100.0 |
| | Total | 45 | 100.0 | 100.0 | |

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The majority of respondents were derived from Logistics Department (46.7 %) and other respondents' departments were from Customer service (20 %), Import-Export (17.8 %), Sales & Marketing (8.9 %) and General (6.7 %) respectively.

Table 4.2. Type of Business of Respondents.

|  |  | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | **Electronic** | 41 | 91.1 | 91.1 | 91.1 |
|  | Electric Appliance | 4 | 8.9 | 8.9 | 100.0 |
|  | Total | 45 | 100.0 | 100.0 |  |

The main type of business of respondents was Electronic industry, which contains (91.1 %) and the rest of them was Electronic Appliance industry such as television, audio, stereo (8.9 %).

Table 4.3. Annual Sales Volume of Respondents.

|  |  | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Less than or equal to 1,000,000 THB | 4 | 8.9 | 8.9 | 8.9 |
|  | 1,000,001-5,000,000 THB | 8 | 17.8 | 17.8 | 26.7 |
|  | **5,000,001-10,000,000 THB** | 17 | 37.8 | 37.8 | 64.4 |
|  | 10,000,001-20,000,000 THB | 12 | 26.7 | 26.7 | 91.1 |
|  | more than 20 millionsTHB | 4 | 8.9 | 8.9 | 100.0 |
|  | Total | 45 | 100.0 | 100.0 |  |

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The annual sales volume of respondents range mainly between 5,000,001 – 10,000,000 baht (37.8 %) and the other ranges were 10,000,001-20,000,000 baht (26.7 %), 1,000,001-5,000,000 baht (17.8 %), and the annual sales volume was less than or equal to 1,000,000 baht (8.9 %) and more than 20 million baht (8.9 %) respectively. The key account customers and affiliated companies in the same group, have more than 20 million baht (8.9 %).

Table 4.4.    Relationship Period of Respondents.

|  |  | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | less than 1 year | 6 | 13.3 | 13.3 | 13.3 |
|  | 1-5 years | 23 | 51.1 | 51.1 | 64.4 |
|  | >5 – 10 years | 10 | 22.2 | 22.2 | 86.7 |
|  | more than 10 years | 6 | 13.3 | 13.3 | 100.0 |
|  | Total | 45 | 100.0 | 100.0 |  |

The large group of respondents in terms of relationship period ranges between 1-5 years (51.1%). The other groups' range were period > 5 –10 years (22.2%), period less than 1 year and more than 10 years (13.3 %) respectively. Period "more than 10 years" group is the key account in the same group along with 15 years.

(2) Important Factors of Selection Criteria Analysis

Table 4.5.    The 1st Priority Factors of Selection Criteria of Respondents.

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | **Business experience** | 23 | 51.1 | 51.1 | 51.1 |
| | Reputation with Other clients | 9 | 20.0 | 20.0 | 71.1 |
| | Operations | 6 | 13.3 | 13.3 | 84.4 |
| | Information Technology | 2 | 4.4 | 4.4 | 88.9 |
| | Chemistry and compatibility | 2 | 4.4 | 4.4 | 93.3 |
| | Cost | 3 | 6.7 | 6.7 | 100.0 |
| | Total | 45 | 100.0 | 100.0 | |

The first priority of selection criteria of respondents mainly focuses on business experience factor (51. %). The rest focus on Reputation with other clients (20 %), Operation (13.3 %), Cost (6.7 %), Information Technology (4.4 %) and Chemistry and compatibility (4.4 %) respectively.

Table 4.6.    The 2nd Priority Factors of Selection Criteria of Respondents.

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Financial Stability | 4 | 8.9 | 8.9 | 8.9 |
| | **Business experience** | 16 | 35.6 | 35.6 | 44.4 |
| | Strategic Direction | 3 | 6.7 | 6.7 | 51.1 |
| | Physical Facilities and Equipment | 5 | 11.1 | 11.1 | 62.2 |
| | **Operations** | 6 | 13.3 | 13.3 | 75.6 |

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Table 4.6.    The 2<sup>nd</sup> Priority Factors of Selection Criteria of Respondents (cont').

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Information Technology | 3 | 6.7 | 6.7 | 82.2 |
| Quality Initiatives | 3 | 6.7 | 6.7 | 88.9 |
| Growth Potential | 1 | 2.2 | 2.2 | 91.1 |
| Cost | 4 | 8.9 | 8.9 | 100.0 |
| Total | 45 | 100.0 | 100.0 | |

The second priority of selection criteria of respondents outstandingly emphasizes on business experience factor (35.6 %), the same as the first priority. Therefore, the next important factor is Operation (13.3 %). Others focus on Physical Facilities and Equipment (11.1 %), Financial Stability (8.9 %) and Cost (8.9 %), Strategic Direction (6.7 %), Information Technology (6.7 %), Quality Initiatives (6.7 %), Growth Potential (2.2%) respectively.

Table 4.7.    The 3<sup>rd</sup> Priority Factors of Selection Criteria of Respondents.

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Business experience | 1 | 2.2 | 2.2 | 2.2 |
| | Management Depth and Strength | 4 | 8.9 | 8.9 | 11.1 |
| | Reputation with Other clients | 4 | 8.9 | 8.9 | 20.0 |
| | Physical Facilities and Equipment | 1 | 2.2 | 2.2 | 22.2 |
| | Operations | 3 | 6.7 | 6.7 | 28.9 |
| | **Information Technology** | 13 | 28.9 | 28.9 | 57.8 |
| | Quality Initiatives | 4 | 8.9 | 8.9 | 66.7 |
| | Chemistry and compatibility | 5 | 11.1 | 11.1 | 77.8 |
| | Cost | 10 | 22.2 | 22.2 | 100.0 |
| | Total | 45 | 100.0 | 100.0 | |

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The third priority of selection criteria of respondents emphasizes on Information Technology (28.9 %) and the rest respondents focus on Cost (22.2 %), Chemistry and compatibility (11.1 %), Quality Initiatives (8.9 %), Management Depth and Strength (8.9 %), Reputation with other clients (8.9 %), Operation (6.7 %), Physical Facilities and Equipment (2.2 %), Business experience (2.2 %) respectively.

Table 4.8. The Summary of 3 Priority Factors of Selection Criteria.

| No. | Selection Criteria | Frequency | | | Score | | | Summ ation | Rank |
|---|---|---|---|---|---|---|---|---|---|
| | | Rank 1 | Rank 2 | Rank 3 | Scoring 1 | Scoring 2 | Scoring 3 | | |
| 1 | Financial Stability | 0 | 4 | 0 | 0 | 8 | 0 | 8 | |
| 2 | Business experience | 23 | 16 | 1 | 69 | 32 | 1 | 102 | 1 |
| 3 | Management Depth and Strength | 0 | 0 | 4 | 0 | 0 | 4 | 4 | |
| 4 | Reputation with Other clients | 9 | 0 | 4 | 27 | 0 | 4 | 31 | 3 |
| 5 | Strategic Direction | 0 | 3 | 0 | 0 | 6 | 0 | 6 | |
| 6 | Physical Facilities and Equipment | 0 | 5 | 1 | 0 | 10 | 1 | 11 | |
| 7 | Operations | 6 | 6 | 3 | 18 | 12 | 3 | 33 | 2 |
| 8 | Information Technology | 2 | 3 | 13 | 6 | 6 | 13 | 25 | |
| 9 | Quality Initiatives | 0 | 3 | 4 | 0 | 6 | 4 | 10 | |
| 10 | Growth Potential | 0 | 1 | 0 | 0 | 2 | 0 | 2 | |
| 11 | Chemistry and compatibility | 2 | 0 | 5 | 6 | 0 | 5 | 11 | |
| 12 | Cost | 3 | 4 | 10 | 9 | 8 | 10 | 27 | |
| | Total | 45 | 45 | 45 | | | | | |

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Consequently, three priorities factors of selection criteria are Business experience, Operation and Reputation respectively.

(3) Comparison of Selection Criteria between the Selected Company and its Competitors

Table 4.9.    Comparison of Selection Criteria between the Selected Company and its Competitors.

| | Financial Stability | Business experience | Managem ent Depth and Strength | Reputation with Other clients | Strategic Direction | Physical Facilities and Equipment |
|---|---|---|---|---|---|---|
| N    Valid | 41 | 41 | 41 | 41 | 41 | 41 |
| Missing | 4 | 4 | 4 | 4 | 4 | 4 |
| Mean | 2.93 | 3.20 | 2.95 | 3.46 | 3.56 | 3.22 |
| Std. Deviation | .412 | .901 | .669 | .977 | .502 | .822 |

| | Operations | Information Technology | Quality Initiatives | Growth Potential | Chemistry and compatibility | Cost |
|---|---|---|---|---|---|---|
| Valid | 41 | 41 | 41 | 41 | 41 | 41 |
| Missing | 4 | 4 | 4 | 4 | 4 | 4 |
| Mean | 3.46 | 3.39 | 3.05 | 3.66 | 3.73 | 3.29 |
| Std. Deviation | .711 | .494 | .805 | .656 | .449 | .750 |

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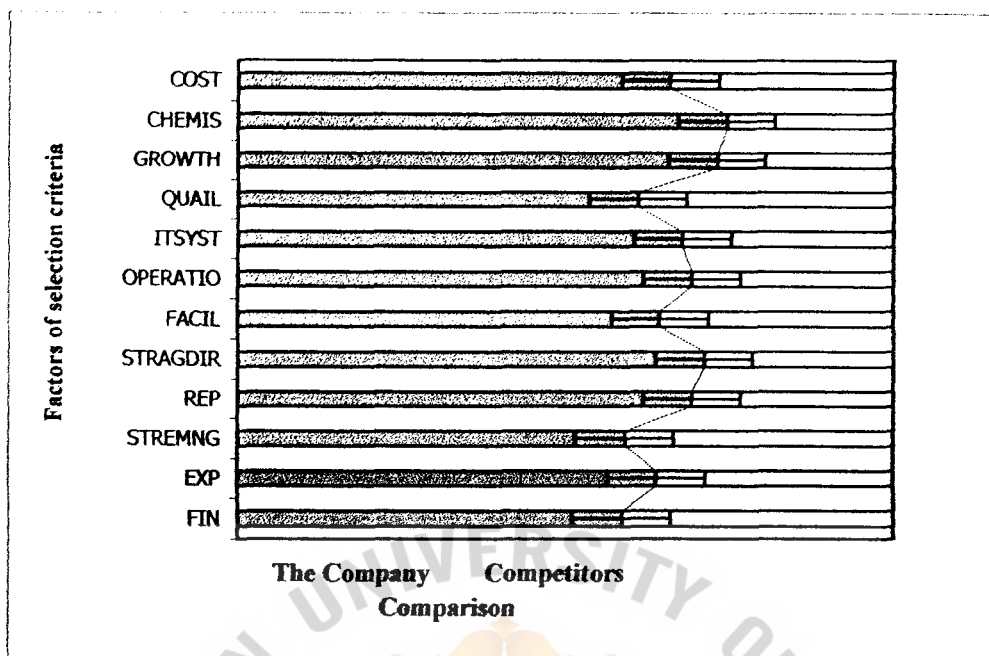
Figure 4.1. Image Profile of Studied Company versus
Its Competitors in Respondents' Perspective.

Referring to Means of each factor of selection criteria in Table 4.9,
It implies that customers feel the studied company is almost equal to 'more satisfied'
(mean score 2.93-3.73) than other 3PLs they used. Factors that customers feel the
studied company's characteristics are satisfactory 'until equal to' are Chemistry and
compatibility (3.73), Growth Potential (3.66), Strategic Direction (3.56), Reputation
with other clients (3.46), Operation (3.46), Information Technology, Cost (3.39),
Physical Facilities and Equipment (3.22), Business experience (3.20), Quality
Initiatives (3.05), Management Depth and Strength (2.95), and Financial Stability
(2.93) respectively. Figure 4.1 illustrates a typical image profile based on differential
data.

(4) Important Attributes Valued by Respondents

Table 4.10. The 1st Priority Attributes Valued by Respondents.

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Service | 5 | 11.1 | 11.1 | 11.1 |
| | Speed | 5 | 11.1 | 11.1 | 22.2 |
| | **Accuracy** | 33 | 73.3 | 73.3 | 95.6 |
| | Cost | 2 | 4.4 | 4.4 | 100.0 |
| | Total | 45 | 100.0 | 100.0 | |

The first priority of attributes valued by customers or respondents was mainly Accuracy (73.3 %). The other attributes were Service (11.1 %), Speed (11.1 %), and Cost (4.4 %) respectively.

Table 4.11. The 2nd Priority Attributes Valued by Respondents.

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | **Service** | 11 | 24.4 | 24.4 | 24.4 |
| | Speed | 10 | 22.2 | 22.2 | 46.7 |
| | Accuracy | 5 | 11.1 | 11.1 | 57.8 |
| | Cost | 8 | 17.8 | 17.8 | 75.6 |
| | Communication | 5 | 11.1 | 11.1 | 86.7 |
| | Relationship | 2 | 4.4 | 4.4 | 91.1 |
| | Information Technology | 1 | 2.2 | 2.2 | 93.3 |
| | Security | 3 | 6.7 | 6.7 | 100.0 |
| | Total | 45 | 100.0 | 100.0 | |

The second priority attributes was Service (24.4 %), which was highly valued by respondents meanwhile Speed is a little lower (22.2 %). The other valued attributes were Cost (17.8 %), Accuracy (11.1 %), Communication (11.1 %), Security (6.7 %), Relationship (4.4 %) and Information Technology (2.2 %) respectively.

Table 4.12.    The 3rd Priority Attributes Valued by Respondents.

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Service | 9 | 20.0 | 20.0 | 20.0 |
| | Speed | 13 | 28.9 | 28.9 | 48.9 |
| | Cost | 10 | 22.2 | 22.2 | 71.1 |
| | Communication | 5 | 11.1 | 11.1 | 82.2 |
| | Relationship | 3 | 6.7 | 6.7 | 88.9 |
| | Information Technology | 3 | 6.7 | 6.7 | 95.6 |
| | Security | 2 | 4.4 | 4.4 | 100.0 |
| | Total | 45 | 100.0 | 100.0 | |

The third priority of attributes valued by respondents was mainly Speed (28.9 %). However, Cost (22.2 %) and Service (20 %) were closer to the highest frequency which means the respondents recognize Cost and Service almost equal to Speed. Others were Communication (11.1 %), Relationship (6.7 %), Information Technology (6.7 %) and Security (4.4 %) respectively.

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Table 4.13. The Summary of 3 Priority Attributes Valued by Respondents.

| No. | Selection Criteria | Frequency | | | Score | | | Summation | Rank |
|-----|-------------------|-----------|---|---|-------|---|---|-----------|------|
| | | Rank 1 | Rank 2 | Rank 3 | Scoring 1 | Scoring 2 | Scoring 3 | | |
| 1 | Service | 5 | 11 | 9 | 15 | 22 | 9 | 46 | 3 |
| 2 | Speed | 5 | 10 | 13 | 15 | 20 | 13 | 48 | 2 |
| 3 | Accuracy | 33 | 5 | 0 | 99 | 10 | 0 | 109 | 1 |
| 4 | Cost | 2 | 8 | 10 | 6 | 16 | 10 | 32 | |
| 5 | Procedure | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 6 | Communication | 0 | 5 | 5 | 0 | 10 | 5 | 15 | |
| 7 | Relationship | 0 | 2 | 3 | 0 | 4 | 3 | 7 | |
| 8 | Facility Possibility | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 9 | Technology information | 0 | 1 | 3 | 0 | 2 | 3 | 5 | |
| 10 | Security | 0 | 3 | 2 | 0 | 6 | 2 | 8 | |
| | Total | 45 | 45 | 45 | | | | | |

Consequently, three priorities attributes valued by respondents are Accuracy, Speed and Service respectively.

Referring to the demographic result from this research, The majority group of respondents is Electronic industry (91.1%) and another is Electronic Appliance industry (8.9 %). Most of the respondents have annual sales volume between 5,000,001-10,000,000 baht (37.8 %) and meanwhile the annual sales volume of more than 20 million baht (8.9 %) groups are the key account companies in the same group. Along with the relationship period, most of the respondents have relationship of 1-5 years with own company and absolutely the more than 10 years relationship groups are the companies in the same group as own company. Finally,

respondents were mainly evaluated from Logistics department (46.7 %); it means the result is concluded from logistics management aspects.

Research consequences in frequency when segmented by demographic factor which is the majority of respondents in this research (Crosstab analysis in SPSS) are as shown in Table 4.14.

Table 4.14.    The Summary from the Majority of Segmented Respondents.

| Objectives | Summary majority of respondents segmented by | | | |
| --- | --- | --- | --- | --- |
| | Department (Logistics) | Type of business (Electronic) | Annual sales volume (5-10 millions) | Relationship period (1-5 years) |
| Important factors of selection criteria analysis | 1. Cost<br><br>2. Business experience<br>3. Operation | 1. Business experience<br>2. Information Technology<br>3. Operation | 1. Business experience<br>2. Information Technology<br>3. Cost | 1. Business experience<br>2. Cost<br><br>3. Reputation |
| Comparison of satisfaction level with competitors | Satisfied in Business Experience, Reputation, Strategic Direction,<br><br>Physical Facility and Equipment,<br>Information Technology,<br>Growth Potential,<br><br>Chemistry and Compatibility,<br>Cost | Satisfied in Business Experience,<br>Reputation,<br>Strategic Direction,<br><br>Physical Facility and Equipment,<br>Operation,<br>Growth Potential,<br><br>Chemistry and Compatibility,<br>Cost | Satisfied in Business Experience,<br>Reputation,<br>Strategic Direction,<br><br>Physical Facility and Equipment,<br>Operation,<br><br>Chemistry and Compatibility | Satisfied in Business Experience, Reputation, Strategic Direction,<br><br>Physical Facility and Equipment,<br>Operation,<br><br>Growth Potential,<br><br>Chemistry and Compatibility |
| Important attributes valued by respondents | 1. Accuracy<br>2. Service<br>3. Speed | 1. Accuracy<br>2. Speed<br>3. Service | 1. Accuracy<br>2. Speed<br>3. Service | 1. Accuracy<br>2. Speed<br>3. Service |

## 4.2 Inferential Analysis

Inferential statistics help in the process of making inferences, specifically, they enable researchers to make inferences about a population based on the descriptive statistics that are calculated on data from a sample that represents this population. The basic purpose of any inferential statistics is to test the null hypothesis. A "p" value refers to the percentage of occasions that a chance difference between mean scores of a certain magnitude will occur when the population means are identical. In education research, a "p" value of .05 generally is considered sufficient to reject the null hypothesis. In other words, an observed result for a sample is not a chance finding. When an observed result is statistically significant, $p < .05$, then the null hypothesis is rejected.

### 4.2.1 Reliability Analysis

Reliability is the correlation between the observed variable and the true score when the variable is an inexact or imprecise indicator of the true score (Cohen and Cohen, 1983). Inexact measures may come from random inattentiveness, guessing, differential perception, recording errors, etc. on the part of the observers. These measurement errors are assumed to be random in classical test theory. Under such conditions, the reliability is the ratio of the true score to the observed score variance (Pedhazur, 1991).

Cronbach's alpha measures " internal consistency of items in a scale" (Garson,1999). It can be seen that alpha measures true variance over total variance. The range of the alpha is from 0 to 1.0. If the user obtains negative alphas, it means that his items are inconsistently coded. Consistent coding means all items have to be coded so that high values on the items correspond to high values on the total scale

scores. The alpha of a scale should be greater than .70 for items to be used together as a scale (Nunnelly, 1978). The alpha for the total scale is also computed assuming that the item under examination is deleted. If the alpha increases over the current total scale alpha when an item is deleted, then the rule of thumb is to delete the item unless it is theoretically necessary for the analysis.

As shown in Table 4.15, the alpha values indicate high coefficient of reliability so that the questionnaire is able to conduct the information for this research.

Table 4.15.   Reliability of Questionnaire part 2 about Customer Satisfaction.

| Item | Cronbach's Coefficient Alpha Indices |
|---|---|
| Expectation | 0.8771 |
| Perception | 0.9153 |
| Average Expectation | 0.7870 |
| Average Perception | 0.8692 |

4.2.2 T-test Analysis

The t test is used to determine whether an observed difference between the mean scores of two groups on a measure is likely to have occurred by chance or whether it reflects a true difference in the mean scores of the populations represented by the two groups. Researchers agree that t values yielding a p of .05 or lower are sufficient to conclude that a difference in mean scores of two groups can be generalized, inferred, to the populations represented by the samples used in the study.

One such assumption is that the scores in the population are normally distributed about the mean. When large deviations from these assumptions are present, then parametric statistics should not be used. (www.ed.isu.edu)

Both one and double sided probabilities are given. In one-sided tests it is assumed that before doing the test you had a hypothesis that one mean of the two means was bigger than the other mean, i.e. proportion. If it is not such a prior hypothesis, and only aims to test for a possible difference between the means, a double-sided test should be used; mostly multiply the p-value by two.

## 4.3 Hypothesis testing

To evaluate according to hypotheses, the researcher utilized common calculation, the average scores of sub attributes to analyze the paired t-test as illustrated in Table 4.16.

Table 4.16.    Description of Abbreviation No. on Table 4.17.-4.19., 4.21.-4.23.

| Abbreviation No. | Description |
|---|---|
| 1 | Services |
| 1.1 | Transportation Services |
| 1.2 | Inventory control services |
| 1.3 | Import/Export services |
| 2 | Speed |
| 2.1 | On-time delivery |
| 2.2 | Length of time to response urgent requests |
| 3 | Accuracy |
| 3.1 | Shipment accuracy |
| 3.2 | Document accuracy |
| 4 | Cost |

Table 4.16.　Description of Abbreviation No. on Table 4.17.-4.19., 4.21.-4.23.

(cont').

| Abbreviation No. | Description |
|---|---|
| 4.1 | Service prices |
| 4.2 | Discount |
| 5 | Procedure |
| 5.1 | Ease of understanding operation procedure |
| 5.2 | Convenience of process procedure |
| 6 | Communication |
| 6.1 | Staffs/sales cooperation |
| 6.2 | Responsiveness to customer requests |
| 7 | Relationship |
| 7.1 | Sales or personal relationship |
| 7.2 | Company relationship |
| 8 | Facility Possibility |
| 8.1 | Availability of trucks, tailors,etc |
| 8.1 | Availability of manpower |
| 8.3 | Availability of storage area |
| 9 | Information technology |
| 9.1 | Ability to provide information |
| 9.2 | Ability to integrate client's software and systems with that of other supply chain partners |
| 10 | Security |
| 10.1 | Damage prevention |
| 10.2 | Shortage prevention |

Table 4.17.    Paired Sample Statistics.

|  |  | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Pair 1 | AVGEXP1 | 4.5630 | 45 | .46505 | .06933 |
|  | AVGPER1 | 4.2074 | 45 | .23878 | .03559 |
| Pair 2 | AVGEXP2 | 4.8222 | 45 | .28515 | .04251 |
|  | AVGPER2 | 4.2556 | 45 | .50702 | .07558 |
| Pair 3 | AVGEXP3 | 4.8556 | 45 | .27432 | .04089 |
|  | AVGPER3 | 4.2000 | 45 | .59734 | .08905 |
| Pair 4 | AVGEXP4 | 4.2889 | 45 | .62603 | .09332 |
|  | AVGPER4 | 3.2889 | 45 | .53819 | .08023 |
| Pair 5 | AVGEXP5 | 4.2556 | 45 | .61812 | .09214 |
|  | AVGPER5 | 3.9556 | 45 | .41041 | .06118 |
| Pair 6 | AVGEXP6 | 4.4667 | 45 | .53725 | .08009 |
|  | AVGPER6 | 4.0111 | 45 | .54864 | .08179 |
| Pair 7 | AVGEXP7 | 4.3556 | 45 | .62724 | .09350 |
|  | AVGPER7 | 3.9000 | 45 | .75829 | .11304 |
| Pair 8 | AVGEXP8 | 4.1185 | 45 | .43898 | .06544 |
|  | AVGPER8 | 3.7407 | 45 | .67752 | .10100 |
| Pair 9 | AVGEXP9 | 4.3333 | 45 | .53300 | .07946 |
|  | AVGPER9 | 3.8778 | 45 | .21731 | .03239 |
| Pair 10 | AVGEX10 | 4.6444 | 45 | .40763 | .06077 |
|  | AVGPE10 | 3.9778 | 45 | .57362 | .08551 |

Table 4.18.    Paired Samples Correlations

|  |  | N | Correlation | Sig. |
|---|---|---|---|---|
| Pair 1 | AVGEXP1 & AVGPER1 | 45 | .380 | .010 |
| Pair 2 | AVGEXP2 & AVGPER2 | 45 | .321 | .031 |
| Pair 3 | AVGEXP3 & AVGPER3 | 45 | -.062 | .684 |
| Pair 4 | AVGEXP4 & AVGPER4 | 45 | .387 | .009 |
| Pair 5 | AVGEXP5 & AVGPER5 | 45 | .337 | .024 |
| Pair 6 | AVGEXP6 & AVGPER6 | 45 | .888 | .000 |
| Pair 7 | AVGEXP7 & AVGPER7 | 45 | .160 | .294 |
| Pair 8 | AVGEXP8 & AVGPER8 | 45 | .641 | .000 |
| Pair 9 | AVGEXP9 & AVGPER9 | 45 | .213 | .161 |
| Pair 10 | AVGEX10 & AVGPE10 | 45 | .038 | .803 |

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Table 4.19.    Paired Samples Test

| | | Paired Differences | | | | | t | df | Sig. |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | (2-tailed) |
| | | | | | Lower | Upper | | | |
| Pair 1 | AVGEXP1 - AVGPER1 | .3556 | .43461 | .06479 | .2250 | .4861 | 5.488 | 44 | .000 |
| Pair 2 | AVGEXP2 - AVGPER2 | .5667 | .49543 | .07385 | .4178 | .7155 | 7.673 | 44 | .000 |
| Pair 3 | AVGEXP3 - AVGPER3 | .6556 | .67270 | .10028 | .4535 | .8577 | 6.537 | 44 | .000 |
| Pair 4 | AVGEXP4 - AVGPER4 | 1.0000 | .64842 | .09666 | .8052 | 1.1948 | 10.345 | 44 | .000 |
| Pair 5 | AVGEXP5 - AVGPER5 | .3000 | .61607 | .09184 | .1149 | .4851 | 3.267 | 44 | .002 |
| Pair 6 | AVGEXP6 - AVGPER6 | .4556 | .25722 | .03834 | .3783 | .5328 | 11.881 | 44 | .000 |
| Pair 7 | AVGEXP7 - AVGPER7 | .4556 | .90342 | .13467 | .1841 | .7270 | 3.383 | 44 | .002 |
| Pair 8 | AVGEXP8 - AVGPER8 | .3778 | .52030 | .07756 | .2215 | .5341 | 4.871 | 44 | .000 |
| Pair 9 | AVGEXP9 - AVGPER9 | .4556 | .53110 | .07917 | .2960 | .6151 | 5.754 | 44 | .000 |
| Pair 10 | AVGEX10 - AVGPE10 | .6667 | .69085 | .10299 | .4591 | .8742 | 6.473 | 44 | .000 |

From Table 4.19 the Paired Samples test indicated the 2-tailed significant values of the whole 10 Hypotheses which are less than 0.05. Consequently, every hypothesis was not failed to reject null hypothesis. It means that the result of hypothesis 1-10 rejected null hypothesis (Ho) illustrated in Table 4.20. *Therefore, There is a significant difference in each attribute that is valued by respondents: Service, Speed, Accuracy, Procedure, Communication, Relationship, Facility Possibility, Information Technology and Security.*

Table 4.20.    Hypotheses Consequences.

| Hypothesis ($\alpha$ = 0.05) | Significant Value (2-tailed) | Result |
|---|---|---|
| H1o=There is no significant difference between customer expectation and   customer perception in terms of service | .000 | Reject H0 |
| H2o = There is no significant difference between customer expectation and   customer perception in terms of speed | .000 | Reject H0 |
| H3o = There is no significant difference between customer expectation and   customer perception in terms of accuracy | .000 | Reject H0 |
| H4o = There is no significant difference between customer expectation and  customer perception in terms of cost | .000 | Reject H0 |
| H5o = There is no significant difference between customer expectation and   customer perception in terms of procedure | .002 | Reject H0 |
| H6o = There is no significant difference between customer expectation and   customer perception in terms of communication | .000 | Reject H0 |
| H7o = There is no significant difference between customer expectation and   customer perception in terms of relationship | .002 | Reject H0 |
| H8o = There is no significant difference between customer expectation and    customer perception in terms of facility possibility | .000 | Reject H0 |

Table 4.20.    Hypotheses Consequences (cont')

| Hypothesis (α = 0.05) | Significant Value (2-tailed) | Result |
|---|---|---|
| H9o = There is no significant difference between customer expectation and customer perception in terms of information technology | .000 | Reject H0 |
| H10o = There is no significant difference between customer expectation and customer perception in terms of security. | .000 | Reject H0 |

According to the result of Disconfirmation of expectation model, the positive mean scores of difference between expectation and perception of each attribute shows that the respondents' expectations are more than perceptions. It implies that the customers are dissatisfied. The critical attribute that has the largest gap is Cost and followed attributes are Security and Accuracy respectively.

Table 4.21.-4.23. indicated values of the t-test for the disconfirmation in sub-attributes. It has shown profoundly detailed information of each attribute that which the respondents recognized. For instance, Cost, which is the critical attribute, consists of Discount (mean=1.02) and Service cost (mean=0.98) that implies that in Cost attribute the respondents are dissatisfied in Discount more than with Service cost. In Transportation service (1.1) (pair 1 in table 4.23), the significant value is more than 0.05 (0.229>0.05) so the null hypothesis has failed to reject Ho, hence there is no difference between the customers' expectation and perception in Transportation

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service. Also availability of storage area sub-attribute is (8.3) (pair 18 in table 4.23, 0.088>0.05), thus there is no difference between the customers' expectation and perception in the availability of storage area.

Table 4.21.    Paired Samples Statistics for Each Sub-attribute.

|        |         | Mean | N  | Std. Deviation | Std. Error Mean |
|--------|---------|------|----|----------------|-----------------|
| Pair 1 | EXP1.1  | 4.27 | 45 | .447           | .067            |
|        | PER1.1  | 4.07 | 45 | .780           | .116            |
| Pair 2 | EXP1.2  | 4.11 | 45 | .318           | .047            |
|        | PER1.2  | 3.73 | 45 | .809           | .121            |
| Pair 3 | EXP1.3  | 4.24 | 45 | .435           | .065            |
|        | PER1.3  | 3.69 | 45 | .596           | .089            |
| Pair 4 | EXP2.1  | 4.91 | 45 | .288           | .043            |
|        | PER2.1  | 4.42 | 45 | .499           | .074            |
| Pair 5 | EXP2.2  | 4.73 | 45 | .447           | .067            |
|        | PER2.2  | 4.09 | 45 | .701           | .105            |
| Pair 6 | EXP3.1  | 4.93 | 45 | .252           | .038            |
|        | PER3.1  | 4.33 | 45 | .769           | .115            |
| Pair 7 | EXP3.2  | 4.78 | 45 | .420           | .063            |
|        | PER3.2  | 4.07 | 45 | .539           | .080            |
| Pair 8 | EXP4.1  | 4.33 | 45 | .603           | .090            |
|        | PER4.1  | 3.36 | 45 | .679           | .101            |
| Pair 9 | EXP4.2  | 4.24 | 45 | .679           | .101            |
|        | PER4.2  | 3.22 | 45 | .420           | .063            |
| Pair 10| EXP5.1  | 4.24 | 45 | .743           | .111            |
|        | PER5.1  | 3.98 | 45 | .398           | .059            |
| Pair 11| EXP5.2  | 4.27 | 45 | .580           | .086            |
|        | PER5.2  | 3.93 | 45 | .539           | .080            |
| Pair 12| EXP6.1  | 4.27 | 45 | .580           | .086            |
|        | PER6.1  | 3.96 | 45 | .706           | .105            |
| Pair 13| EXP6.2  | 4.67 | 45 | .603           | .090            |
|        | PER6.2  | 4.07 | 45 | .618           | .092            |
| Pair 14| EXP7.1  | 4.38 | 45 | .716           | .107            |
|        | PER7.1  | 4.07 | 45 | .780           | .116            |
| Pair 15| EXP7.2  | 4.33 | 45 | .603           | .090            |
|        | PER7.2  | 3.73 | 45 | .809           | .121            |
| Pair 16| EXP8.1  | 4.29 | 45 | .458           | .068            |
|        | PER8.1  | 3.69 | 45 | .596           | .089            |
| Pair 17| EXP8.2  | 4.07 | 45 | .539           | .080            |
|        | PER8.2  | 3.71 | 45 | .727           | .108            |

Table 4.21.    Paired Samples Statistics for Each Sub-attribute (cont').

|        |         | Mean | N  | Std. Deviation | Std. Error Mean |
|--------|---------|------|----|----------------|-----------------|
| Pair 18 | EXP8.3 | 4.00 | 45 | .477 | .071 |
|        | PER8.3  | 3.82 | 45 | .834 | .124 |
| Pair 19 | EXP9.1 | 4.22 | 45 | .636 | .095 |
|        | PER9.1  | 3.89 | 45 | .318 | .047 |
| Pair 20 | EXP9.2 | 4.44 | 45 | .503 | .075 |
|        | PER9.2  | 3.87 | 45 | .344 | .051 |
| Pair 21 | EXP10.1 | 4.76 | 45 | .435 | .065 |
|        | PER10.1 | 4.27 | 45 | .580 | .086 |
| Pair 22 | EXP10.2 | 4.53 | 45 | .505 | .075 |
|        | PER10.2 | 3.69 | 45 | .668 | .100 |

Table 4.22.    Paired Samples Correlations for Each Sub-attribute.

|        |                    | N  | Correlation | Sig. |
|--------|--------------------|----|-------------|------|
| Pair 1 | EXP1.1 & PER1.1 | 45 | -.573 | .000 |
| Pair 2 | EXP1.2 & PER1.2 | 45 | .029 | .848 |
| Pair 3 | EXP1.3 & PER1.3 | 45 | .388 | .008 |
| Pair 4 | EXP2.1 & PER2.1 | 45 | -.049 | .748 |
| Pair 5 | EXP2.2 & PER2.2 | 45 | .367 | .013 |
| Pair 6 | EXP3.1 & PER3.1 | 45 | .352 | .018 |
| Pair 7 | EXP3.2 & PER3.2 | 45 | -.234 | .122 |
| Pair 8 | EXP4.1 & PER4.1 | 45 | .370 | .012 |
| Pair 9 | EXP4.2 & PER4.2 | 45 | .362 | .014 |
| Pair 10 | EXP5.1 & PER5.1 | 45 | .172 | .258 |
| Pair 11 | EXP5.2 & PER5.2 | 45 | .421 | .004 |
| Pair 12 | EXP6.1 & PER6.1 | 45 | .752 | .000 |
| Pair 13 | EXP6.2 & PER6.2 | 45 | .671 | .000 |
| Pair 14 | EXP7.1 & PER7.1 | 45 | .076 | .620 |
| Pair 15 | EXP7.2 & PER7.2 | 45 | .326 | .029 |
| Pair 16 | EXP8.1 & PER8.1 | 45 | .586 | .000 |
| Pair 17 | EXP8.2 & PER8.2 | 45 | .514 | .000 |
| Pair 18 | EXP8.3 & PER8.3 | 45 | .572 | .000 |
| Pair 19 | EXP9.1 & PER9.1 | 45 | .688 | .000 |
| Pair 20 | EXP9.2 & PER9.2 | 45 | -.175 | .249 |
| Pair 21 | EXP10.1 & PER10.1 | 45 | -.096 | .530 |
| Pair 22 | EXP10.2 & PER10.2 | 45 | .166 | .275 |

Table 4.23.    Paired Samples Test for Each Sub-attribute.

| | | Paired Differences | | | | | t | df | Sig. |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | (2-tailed) |
| | | | | | Lower | Upper | | | |
| Pair 1 | EXP1.1 - PER1.1 | .20 | 1.100 | .164 | -.13 | .53 | 1.220 | 44 | .229 |
| Pair 2 | EXP1.2 - PER1.2 | .38 | .860 | .128 | .12 | .64 | 2.945 | 44 | .005 |
| Pair 3 | EXP1.3 - PER1.3 | .56 | .586 | .087 | .38 | .73 | 6.359 | 44 | .000 |
| Pair 4 | EXP2.1 - PER2.1 | .49 | .589 | .088 | .31 | .67 | 5.572 | 44 | .000 |
| Pair 5 | EXP2.2 - PER2.2 | .64 | .679 | .101 | .44 | .85 | 6.363 | 44 | .000 |
| Pair 6 | EXP3.1 - PER3.1 | .60 | .720 | .107 | .38 | .82 | 5.591 | 44 | .000 |
| Pair 7 | EXP3.2 - PER3.2 | .71 | .757 | .113 | .48 | .94 | 6.298 | 44 | .000 |
| Pair 8 | EXP4.1 - PER4.1 | .98 | .723 | .108 | .76 | 1.19 | 9.077 | 44 | .000 |
| Pair 9 | EXP4.2 - PER4.2 | 1.02 | .657 | .098 | .82 | 1.22 | 10.441 | 44 | .000 |
| Pair 10 | EXP5.1 - PER5.1 | .27 | .780 | .116 | .03 | .50 | 2.292 | 44 | .027 |
| Pair 11 | EXP5.2 - PER5.2 | .33 | .603 | .090 | .15 | .51 | 3.708 | 44 | .001 |
| Pair 12 | EXP6.1 - PER6.1 | .31 | .468 | .070 | .17 | .45 | 4.458 | 44 | .000 |
| Pair 13 | EXP6.2 - PER6.2 | .60 | .495 | .074 | .45 | .75 | 8.124 | 44 | .000 |
| Pair 14 | EXP7.1 - PER7.1 | .31 | 1.019 | .152 | .01 | .62 | 2.049 | 44 | .046 |
| Pair 15 | EXP7.2 - PER7.2 | .60 | .837 | .125 | .35 | .85 | 4.811 | 44 | .000 |
| Pair 16 | EXP8.1 - PER8.1 | .60 | .495 | .074 | .45 | .75 | 8.124 | 44 | .000 |
| Pair 17 | EXP8.2 - PER8.2 | .36 | .645 | .096 | .16 | .55 | 3.697 | 44 | .001 |
| Pair 18 | EXP8.3 - PER8.3 | .18 | .684 | .102 | -.03 | .38 | 1.744 | 44 | .088 |
| Pair 19 | EXP9.1 - PER9.1 | .33 | .477 | .071 | .19 | .48 | 4.690 | 44 | .000 |
| Pair 20 | EXP9.2 - PER9.2 | .58 | .657 | .098 | .38 | .78 | 5.902 | 44 | .000 |
| Pair 21 | EXP10.1 - PER10.1 | .49 | .757 | .113 | .26 | .72 | 4.330 | 44 | .000 |
| Pair 22 | EXP10.2 - PER10.2 | .84 | .767 | .114 | .61 | 1.07 | 7.382 | 44 | .000 |

# V. STRATEGY FORMULATION

The Studied Company's seamless supply chain service offering is unique among logistics service providers. The Studied Company is able to provide logistical management assistance by air, land and sea to clients who need immediate support and consultation. They possess the high ability to solve logistical support problems associated with the timely resource movement and tracking, on-site management, document control and multi-location coordination.

## 5.1 The Company Background

### 5.1.1 The Company Profile

The Studied Company was established in 1989 and started operation in 1990. It is the fourth logistics company of The Studied Company's family.

The Studied Company started operation for serving factories as forwarding inside their premises. With strong experience now, they are expanding to import & export co-ordination, transportation, customs broker and freight forwarder by sea, ocean, air and trucks. They have a high quality supply chain management and always consider to the environmental preservation. The Studied Company is the first logistics company in Thailand that was successfully certified by ISO 14001 in 1999.

### 5.1.2 Scope of Supply

(1) Import Export Coordination

The Studied Company supports all family's factories in Thailand. They are monitoring inventory for incoming and outgoing domestics and overseas cargo and Customs EDI linkage for customs approval, payment and drawback. Even though,

there are several schemes of privilege, the Studied Company is able to develop effective solutions to meet all needs and requirements

(2) Procurement

The Studied Company can include activities like vendor management inventory (VMI) where the vendor owns, stores and maintains product in its facility. Clients take ownership of product only when you are ready to use.

(3) Customs Clearance

Handling export & import cargo through its licensed Customs Broker (No. 28) with Green Line for import shipment can be processed electronically under EDI system. As a result, customs clearance and shipment delivery are carried out at a faster speed.

(4) Freight Forwarding

The Studied Company has worldwide network which enables it to develop a high distribution network globally to serve second to none to our customers. For Sea, it supplies Door to door service, FCL / LCL Service with weekly departures; worldwide coverage, Consolidation service and Break bulk / Conventional cargo. For Air, The Studied Company is an accredited member of IATA - International Air Transport Association.

(5) Warehousing

The Company provides Inventory management service, Storage, Pick & Pack (FIFO), Control stock by serial number & First in first out system, Stuffing / un-stuffing of container, Computerized inventory control and Electronic data interchange.

(6) Transportation

The Company's own equipment are 50 Trucks, 46 pick-ups, 45 chassis, 18 domestic containers, 16 tractor heads and 15 vans. In addition, it has the Black Box monitoring system & trunk radios are in their trucks, dealer delivery from Bangkok to Up Country & Vice versa, daily delivery to dealers by cross dock operation, delivery within 24 Hours in Bangkok & Greater Bangkok, within 48 Hours in Central, North, North-East Area and within 72 Hours in South area and Milk run & Just in time operation. All of the Cargo delivery are controled by bar code.

5.1.3. Target Market

The Company's target market is mainly electronics products industry including both domestic companies and import-export companies in terms of transportation by sea & air & truck, warehouse and dealer delivery.

5.2 SWOT Analysis

5.2.1 Strengths

The Studied Company is one of the groups in Thailand which has the high Brand image in electronics products. In addition, it is the logistics service provider for the top brand image and handling & distributing to the affiliated companies the family Products to around the world including in the Thailand Market. On account of The Studied Company support and with the aim of reducing logistic cost to all affiliated companies of market place, Consequently, it is one of the successful affiliated companies and push their group to be the brand No.1 in electronics products. In addition, It is the TIFFA & TAFA & Licensed Customs Broker & IATA member.

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5.2.2 Weaknesses

Seeing that the scope of their business is only electronics products, the family companies are the main customers who have to be taken care of as the first priority so that competitors and clients in the same marketplace could not service as well. Another thing is, as the main business in their group is Electronics products, in spite of the studied company being a logistics service provider, it is just a small business and does not have much experience in the logistics field. Because of the condition that they have to use the agents worldwide with an uncontrollable agent fee, the studied company has to control budgeting.

5.2.3 Opportunities

Even though they are the one logistics company in the group who support mainly other companies in their group, the future trend of the Logistics Service Providers (3PLs) industry among logistics and supply chain management booming area is potentially growing rapidly like the European and the United States market growth from 1990s to 2000s. On account of the potential of their group in the electronics industry, synthesis and strategy direction are the key to enhanced competitiveness and improved market positioning. The opportunity includes providing higher level overview, increasing scope of supply and pushing for virtual integration.

5.2.4 Threats

The studied company is an in-house logistics service provider in a group so that the import and export volume is up to the factory group production volume

Although, in the Thailand market this year, the Total Export Volume strongly increased the shipping line's equipment and space is not adequate to support all of the shipped products. Consequently, the freight cost is going up. Meanwhile the

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exporters try to control their cost so as not to increase their selling prices, but it is difficult for the logistics service provider to provide the lower rate & get more spaces.

## 5.3  Market Driven Strategy

Market-driven strategies serve the winner by giving focus and direction to the skills and resources they have acquired. There is a single minded emphasis on creating and recreating positional advantages in customer value. Superior customer value is achieved with some combination of quality and service, faster responsiveness, and closer relationships with channels and customers. The rewards are market share dominance, superior profitability and optimistic growth prospects that are the necessary conditions for the creation of shareholder value.

Attributes of Market-driven behavior are:

(1) Segment by customer applications and economic benefits received by the customer.

(2) Know the factors that influence customer-buying decisions

(3) Invest in market research and systematic collection of sales reports to track market changes and modify strategy

(4) Communicate with the market as a segment

(5) As a result of the research conclusion above, the majority of respondents emphasize on the same attributes as follows:

(6) Factors influencing the selection criteria are Business Experience, Operation, Reputation, Information Technology.

(7) Comparison between the studied company and other competitors indicated the following factors, that the customers feel more satisfied until equal to the other 3PLs they used; Chemistry and compatibility, Growth Potential, Strategic Direction,

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Reputation with other clients, Operation, Information Technology, Cost, Physical Facilities and Equipment, Business experience, Quality Initiatives, Management Depth and Strength, and Financial Stability respectively.

(8) Attributes that are used in the customers' perspective are total Accuracy in the first priority as well as Speed and Service respectively.

Referring to the hypothesis that measured the customer satisfaction on each attribute, it shown that there is a significant difference between expectation and perception in each attribute that is valued by respondents: Service, Speed, Accuracy, Procedure, Communication, Relationship, Facility Possibility, Information Technology and Security. The critical attributes scrutinized by the t-test, which the customers are dissatisfied with area: Cost, Security, and Accuracy respectively. The customers are dissatisfied with Discount more than with Service cost in Cost attribute, with shortage prevention more than with damage prevention in Security attribute and with both the shipment and document accuracy in terms of Accuracy attribute.

To establish the strategy for the studied company, the customers need influencing attributes from this research to help them to evaluate roughly the structure of strategy, refining the attributes and measuring customer satisfaction. Strategy direction should focus on the following:

(1) Cost reduction

In an effort to maximize profitability, the logistics service provider has been working with retailers and suppliers to control the negative costs. The studied company is not providing the lowest prices, thus they will have problems in the economies of scale. A proper agreement includes an effective incentive for continual cost reduction and improvement of performance across all aspects of the operation,

not only responsibility of a specific department but also accountability for the whole company. Additionally, they should focus on paying the real cost of the logistics activities, eliminating the unnecessary processes and expenses. For example, speed up communications and replace slow-moving paper documents.

(2) Performance Improvement.

Customer complaints occur for various reasons, some are real, some are contrived, some can be prevented, but they all have to be controlled, understood and kept to acceptable, understandable and reconcilable levels. Accepting loss and damage claims as a cost and part of doing business, demands they must be very careful when establishing standards to measure carrier performance, packaging, receipt of freight and the ability of the freight to withstand the normal hazards of transportation.

To measure performance, **Key Performance Indicators (KPI)** is a tool to measure performance and control accuracy within the organization -from order entry, picking accuracy, pricing accuracy, delivery accuracy and damage. The meaningful reporting must be based on accurate measurement in order to demonstrate added value. The KPI established responsibilities for meeting and exceeding customer expectations and client satisfaction by incorporating metrics that involved all parties in the process.

The **Score Card** is the most comprehensive performance monitoring and benchmarking tool for comparison driven performance and continuous improvement. For instance, compare performance against best performers, capture the impact of resource drivers, compare by sector and region, and/or multi-sector and/or multi

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region. Costs, resources, time, drivers and practices are compared against Score and process classifications.

Another blooming practice is **Six Sigma** that is utilized to control quality in terms of increasing customer satisfaction by reducing wastes in process. Moreover, Six Sigma is used as a tool to urge the management level to realize to improve and restructure in the fast-changing market as well as a method to scrutinize the bottom neck in processes. The heart of the Six Sigma is DMAIC, derived from Define, Measure, Analyze, Improve, Control.

**Internet-enabled supply chain utility** transforms the cost-hungry process of reverse logistics into superior customer service as it substantially reduces cost and exposure to a company's ROI.

Additionally, there are many systems to support such as Order Management (OMS), Transportation Management System (TMS), Warehouse Management System (WMS), Inventory Planning, Supply chain event management and visibility (SCEM), Enterprise Resources Planning (ERP)

(3) Responsiveness Enhancing.

Time becomes an important quality as a strategic weapon to offer superior customer value. The possibility of response time will be the next basis of competitive advantage in their market. Today has seen that rapid introduction of flexible manufacturing system (**FMS**), materials requirements planning (**MRP**) and Just-in-time (**JIT**) was transformed by rapid response system with zero inventory concept. Actually, JIT system is the joint result of quality programs because only the perfect quality parts can be used if the customer's production process is to continue to run

uninterrupted. And rapid response logistics is based on frequent and reliable delivery of small orders.

Although the studied company complied with the JIT system and provided Vender Management Inventory (VMI), the continued improvement should be recognized that the impact of rapid changes for instance, reducing cycle time from processes, information and decision making. As well as in terms of facility and equipment utilization, the studied company has subcontract network to support in case of inadequate facility and equipment problems. Thus the vital part to respond to the whole customers' requirements, is how to manage logistics and supply chain processes. Not only do customers want shorter lead times, they are also looking for flexibility. The current trend providers, 4PL has greater functional operation, which helps a number of 3PLs that may be involved with a company's operations. Apart from 3PLs managing a number of 3PL operations, 4PL is for provision of competencies relating to knowledge Availability, Information technology, and skills in forming and sustaining successful relationship.

(4) Healthy Relationship

Establishing closer relationship with key accounts, the strategy will be vertical to do more for fewer customers. The studied company is doing well because the key account customers are companies in groups, however, to do competitive business they should create closer relationship with others. The effective relationship creates a process with a win-win solution based upon mutual trust to share information between 3PLs and the customers. The studied company might lose an opportunity to gain increased understanding of other customers. Hence the best way to start a business

relationship, both parties have to learn activities and issues that will impact cost, service, quality and inventory accuracy, etc.

Nonetheless, the proper scope of work with enough flexibility built into contracting process is the key to maintaining a long-time healthy relationship.

(5) Competitive Advantage

The success over competitors derives from the ability of the organization to differentiate itself in the customers' perspective and operating at a lower cost. There are two parts; productivity advantage (a lower cost) and value advantage (offering a differential over competitive offering)

Productivity advantage logistics leverage opportunities are Capacity utilization, Asset turn, Co-makership or schedule integration.

Value advantage logistics leverage opportunities are Tailored service, Reliability and Responsiveness.

Eventually, to enhance customer satisfaction, there are various strategies depending on the managerial vision in the studied company. Nevertheless, 3 key issues that must be considered are Responsiveness, Reliability, and Relationship.

## 5.4 Developing a Global Logistics Strategy

One key concern is the question of the appropriate degree of **centralized direction** as against local autonomy. Traditionally many companies have preferred to devolve decision-making to a local level. On the other hand, the attractions of local autonomy are clear, in termss of responsiveness to the market and the ability to stay close to the customer.

Second, **Synergy** can be released by global co-ordination, and this is compatible with local decision-making in sourcing, production and distribution. Many global

companies have sought to establish centers of excellence, whereby resources and /or technologies are concentrated for greater focus.

Market trends, 3PL user characteristics, 3PL services offerings and capability, management and relationship issues, customer value and strategic directions for the future were all examined in depth to provide a better understanding for the marketplace for Logistic Service Providers (3PLs) around the world. It showed that Logistic Service Providers (3PLs) will increasingly be at the focal points of strategy formulation, operational excellence and information technology to make the maximum contribution in value creation for their customers.

## 5.5 Management and Relationship Issues

The need for competency as it is related to the formation and continuation of successful relationship has become critical in today's Logistic Service Provider (3PL) industry. Although both providers and users of 3PL services have been improving in their ability to create more productive, effective and satisfying business relationships, the media is replete with examples of failed relationships.

Looking specifically at the task of implementing a Logistic Service Provider (3PL) relationship, information systems executives are becoming increasingly involved. In a number of areas, attempting to provide insight into the elements of the relationships between Logistic Service Providers (3PLs) and their customers, the "Collaborative" relationship with their Logistic Service Providers (3PLs) is concerned with developing and benefiting from improved relationships with their Logistic Service Providers (3PLs).

Successful Logistic Service Provider (3PL) relationships establish appropriate roles and responsibilities for both Logistic Service Providers (3PLs)s and client firms.

While sometimes the use of a Logistic Service Provider (3PL) is interpreted simply as "turning over all logistics activities" to an outsourced provider, a hybrid management structure represents a highly effective way to manage Logistic Service Provider (3PL) relationships. Essentially, this reflects a desire on the part of the client firm to have sufficient power over operations for a track record of performance or trust factor to be built up. Although most client firms retain control over strategy formulation and direction setting for the logistics areas of responsibility, this hybrid approach to the management of operations is an innovative response to the challenge of successfully managing Logistic Service Provider (3PL)-Client relationship.

# VI. CONCLUSION AND RECOMMENDATION

## 6.1 Conclusion

Not surprisingly, the conclusion is connected to relative cost/performance "Cost Reduction" and relative service/cost "Service improvement" which are the best differentiation variables for describing the logistics service providers. This research gives guidelines for the logistics strategy that makes it more appetizing for customers to outsource their logistics and understand how the customers are responding to your service.

Referring to the research objectives, this research met all of the objectives as follows:

(1) To determine the level of important factors of selection criteria for a Logistic Service Provider

*(a) Factors influencing the selection criteria are Business Experience, Operation, Reputation and Information Technology respectively.*

(2) To compare factors of selection criteria between the selected company and competitors.

*(a) The customers compare that the studied company feels more satisfied equal to other 3PLs they used according to the following factors; Chemistry and compatibility, Growth Potential, Strategic Direction, Reputation with other clients, Operation, Information Technology, Cost, Physical Facilities and Equipment, Business experience, Quality Initiatives, Management Depth and Strength, and Financial Stability respectively.*

(3) To identify the level of importance of the attributes that are valued by the customers of the selected Logistics Service Providers.

*(a) From the t-test result, the customers are dissatisfied in 10 attributes; Service, Speed, Accuracy, Procedure, Communication, Relationship, Facility Possibility, Information Technology and Security. In terms of comparison the mean difference between the customers' expectation and perception and attributes that customers are highly dissatisfied are total Accuracy in the first priority and Speed and Service respectively*

(4) To establish a guideline for developing a market-driven logistics strategy of Logistics Service Business

*(a) The strategy direction should be emphasizing Cost reduction, Performance improvement, Responsiveness enhancing, Healthy relationship and Competitive advantage increasing as described in chapter 5 strategy formulation.*

## 6.2 Recommendation

As the result of the consequence of this research, the researcher noticed some points according to the analysis of this research as follows:

(1) Key account customers, 90 % of sales volume, are companies in the same group and if the emphasis is on their satisfaction, the result is highly satisfactory whereas the other clients are dissatisfied. Owing to the first priority service given to the key account customers it is the main reason that other customers feel dissatisfied. Moreover, it is the risk in the future to expand or do global business so that the company should realize this issue as well.

(2) To complete independently in the domestic market and to be global 3PL or 4PL especially for import-export. The regulations of each country and region vary.

The studied company should be improved seamlessly to be competitive with high technology applied in this industry.

(3) Due to the respondents from the various departments, mainly from the Logistics department, the respondents might evaluate with different perspectives which made this research have some bias in measuring satisfaction between business to business (B2B).

(4) Hard to compare the Logistics Service Providers (3PLs) because of all the offerings of a broad range of activities, geographic coverage and clients' distribution.

# APPENDIX   A

## QUESTIONNAIRE IN ENGLISH

# Questionnaire

Dear Sir/Madam,

      This questionnaire is designed to study " Customer Value by comparing between customer expectations and customer perceptions toward a Third-party Logistics Service Provider" As part of the data collection for Computer and Engineering Mangement (CEM) project, Assumption University.

      Please kindly take a few moments to complete this questionnaire based on your experience. Your participatio is very much appreciated.

**Questionaire : Please mark the box that represents your status, with the figure "X".**      | X |

**PART 1: General**

1     In your opinion, what is (are) the important factor(s) used to select the  third-party logistics service provider(3PLs).  Please kindly rank the 1st, 2nd, and 3rd priorities in the boxes below.

|  | Priority 1 | Priority 2 | Priority 3 |
|---|---|---|---|
| example | 12 | 11 | 10 |

|  | Priority 1 | Priority 2 | Priority 3 |
|---|---|---|---|
| Your opinion |  |  |  |

1 Financial Stability
2 Business experience
3 Management Depth and Strength
4 Reputation with Other clients
5 Strategic Direction
6 Physical Facilities and Equipment
7 Operations
8 Information Technology
9 Quality Initiatives
10 Growth Potential
11 Chemistry and compatibility
12 Cost

2  How many third-party logistics service providers(3PLs) has your company used recently?

| | |
|---|---|
| only one | |
| 2-5 companies | |
| 6-10 companies | |
| more than 10 companies | |

3  If your company uses more than one third-party logistics service providers(3PLs) in question 2, please kindly compare our company with others.

| | much better | somewh-at better | equal | somewh-at worse | much worse |
|---|---|---|---|---|---|
| 1 Financial Stability | | | | | |
| 2 Business experience | | | | | |
| 3 Management Depth and Strength | | | | | |
| 4 Reputation with Other clients | | | | | |
| 5 Strategic Direction | | | | | |
| 6 Physical Facilities and Equipment | | | | | |
| 7 Operations | | | | | |
| 8 Information Technology | | | | | |
| 9 Quality Initiatives | | | | | |
| 10 Growth Potential | | | | | |
| 11 Chemistry and compatibility | | | | | |
| 12 Cost | | | | | |

4  What is (are) the customer value in your perspective?
Please kindly rank the 1st, 2nd, and 3rd priorities in the boxes below.

| | Priority 1 | Priority 2 | Priority 3 |
|---|---|---|---|
| example | 12 | 11 | 10 |

| | Priority 1 | Priority 2 | Priority 3 |
|---|---|---|---|
| your opinion | | | |

1 Service
2 Speed
3 Accuracy
4 Cost
5 Procedure
6 Communication
7 Relationship
8 Facility Possibility
9 Technology information
10 Security

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**PART 2: Customer Satisfaction**

**2.1 Expectation**

5    Please indicate your expectation levels for each factor below.

| | Highly Expected | Expected | Neutral | Unexpected | Highly Unexpected |
|---|---|---|---|---|---|
| **1 Services** | | | | | |
| Transportation Services | | | | | |
| Inventory control services | | | | | |
| Import/Export services | | | | | |
| **2 Speed** | | | | | |
| On-time delivery | | | | | |
| Length of time to respond to urgent requests | | | | | |
| **3 Accuracy** | | | | | |
| Shipment accuracy | | | | | |
| Document accuracy | | | | | |
| **4 Cost** | | | | | |
| Service prices | | | | | |
| Discount | | | | | |
| **5 Procedure** | | | | | |
| Ease of understanding operation procedure | | | | | |
| Convenience of process procedure | | | | | |
| **6 Communication** | | | | | |
| Staffs/sales cooperation | | | | | |
| Responsiveness to customer requests | | | | | |
| **7 Relationship** | | | | | |
| Sales/personnal relationship | | | | | |
| Company relationship | | | | | |
| **8 Facility Possibility** | | | | | |
| Availability of trucks, tailers.,etc | | | | | |
| Availability of manpower | | | | | |
| Availability of storage area | | | | | |
| **9 Technology information** | | | | | |
| Ability to provide information | | | | | |
| Ability to integrate client's software and systems with that of other supply chain partners | | | | | |
| **10 Security** | | | | | |
| Damage prevention | | | | | |
| Shortage prevention | | | | | |

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## 2.2 Perceived Performance

6   Please indicate your perception levels for each factor below.

| | Strongly satisfied | Satisfied | Neutral | Dissatisfied | Strongly Dissatisfied |
|---|---|---|---|---|---|
| **1 Services** | | | | | |
| Transportation Services | | | | | |
| Inventory control services | | | | | |
| Import/Export services | | | | | |
| **2 Speed** | | | | | |
| On-time delivery | | | | | |
| Length of time to respond to urgent requests | | | | | |
| **3 Accuracy** | | | | | |
| Shipment accuracy | | | | | |
| Document accuracy | | | | | |
| **4 Cost** | | | | | |
| Service prices | | | | | |
| Discount | | | | | |
| **5 Procedure** | | | | | |
| Ease of understanding operation procedure | | | | | |
| Convenience of process procedure | | | | | |
| **6 Communication** | | | | | |
| Staffs/sales cooperation | | | | | |
| Responsiveness to customer requests | | | | | |
| **7 Relationship** | | | | | |
| Sales/personnal relationship | | | | | |
| Company relationship | | | | | |
| **8 Facility Possibility** | | | | | |
| Availability of trucks, tailers.,etc | | | | | |
| Availability of manpower | | | | | |
| Availability of storage area | | | | | |
| **9 Technology information** | | | | | |
| Ability to provide information | | | | | |
| Ability to integrate client's software and systems with that of other supply chain partners | | | | | |
| **10 Security** | | | | | |
| Damage prevention | | | | | |
| Shortage prevention | | | | | |

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**PART 3: Demographic Profile**

7      Department

| | |
|---|---|
| General Management | |
| Sales and Marketing | |
| Customer Service | |
| Logistics | |
| Import/Export | |
| Others (please indicated) | |

8      Type of Business

| | |
|---|---|
| Electronics | |
| Computer | |
| Electric appliance | |
| Others (please indicated) | |
| .................................... | |

9      Annual Sales Volume

| | |
|---|---|
| Less than or equal to 1,000,000 THB | |
| 1,000,001-5,000,000 THB | |
| 5,000,001-10,000,000 THB | |
| 10,000,001-20,000,000 THB | |
| more than 20 millions THB | |

10     Relationship: How long has your company used our services?

| | |
|---|---|
| less than 1 year | |
| 1-5 years | |
| >5 - 10 years | |
| more than 10 years | |

11     Recommendations:.................................................................................................
.........................................................................................................................
.........................................................................................................................
.........................................................................................................................

Thank you for your time

**APPENDIX   B**

QUESTIONNAIRE IN THAI

# แบบสอบถาม

เรียน ท่านผู้ตอบแบบสอบถาม

        แบบสอบถามชุดนี้จัดทำขึ้นเพื่อใช้เป็นส่วนประกอบในการศึกษาและทำวิทยานิพนธ์ของนักศึกษาปริญญาโท มหาวิทยาลัยอัสสัมชัญ ผู้จัดทำขอความกรุณาท่านผู้ตอบแบบสอบถามทุกท่าน โปรดตอบแบบสอบถามนี้ทุกข้อเพื่อ ให้วิทยานิพนธ์ฉบับนี้สมบูรณ์ และเพื่อนำข้อมูลที่ได้ไปใช้ประโยชน์ต่อการศึกษาและผู้ที่ต้องการจะใช้ประโยชน์

        ผู้จัดทำขอขอบคุณท่านผู้ตอบคำถามทุกท่านที่สละเวลาของท่าน และให้ความร่วมมือเป็นอย่างดีในการทำ แบบสอบถามชุดนี้มาณ ที่นี้ด้วย


แบบสอบถาม: กรุณาใส่หมายเลข "X" ในช่องว่าง ดังตัวอย่าง

| X |
|---|

## ส่วนที่ 1: ทั่วไป

1.    ในความคิดของท่าน อะไรคือปัจจัยที่มีผลต่อการเลือกบริษัทที่ให้บริการด้านลอจิสติก กรุณาเรียงลำดับความสำคัญ 3 อันดับแรก โดยใส่ตัวเลขลำดับในช่องว่างด้านล่าง

|  | ลำดับที่ 1 | ลำดับที่ 2 | ลำดับที่ 3 |
|---|---|---|---|
| *ตัวอย่าง* | 12 | 11 | 10 |

|  | ลำดับที่ 1 | ลำดับที่ 2 | ลำดับที่ 3 |
|---|---|---|---|
| **ความคิดเห็นของท่าน** |  |  |  |

1  ความมั่นคงด้านการเงิน
2  ประสบการณ์ในด้านลอจิสติก
3  การจัดการในแนวลึกและจุดแข็ง
4  การมีชื่อเสียงในวงการ
5  แนวทางการวางกลยุทธ์
6  เครื่องมือและอุปกรณ์อำนวยความสะดวก
7  การดำเนินงาน
8  เทคโนโลยีสารสนเทศ
9  การพัฒนาด้านคุณภาพเช่น ISO
10  ศักยภาพในการเจริญเติบโต
11  การร่วมมือและเข้ากันได้ดีกับบริษัท
12  ราคา

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2    ในปัจจุบัน ท่านใช้บริการบริษัทที่ให้บริการด้านลอจิสติกกับบริษัท

| | |
|---|---|
| บริษัทเดียว | |
| 2-5 บริษัท | |
| 6-10 บริษัท | |
| มากกว่า 10 บริษัท | |

3    หากท่านใช้บริการบริษัทที่ให้บริการด้านลอจิสติกมากกว่าหนึ่งบริษัทในคำถามที่ 4 กรุณาเปรียบเทียบ
     ความพึงพอใจของท่านที่มีต่อบริษัทของเรา กับบริษัทอื่นที่ท่านใช้บริการตามปัจจัยต่างๆต่อไปนี้

| | พอใจกว่ามาก | พอใจกว่า | เท่ากัน | ไม่พอใจกว่า | ไม่พอใจกว่ามาก |
|---|---|---|---|---|---|
| 1 ความมั่นคงด้านการเงิน | | | | | |
| 2 ประสบการณ์ในด้านลอจิสติก | | | | | |
| 3 การจัดการในแนวลึกและจุดแข็ง | | | | | |
| 4 การมีชื่อเสียงในวงการ | | | | | |
| 5 แนวทางการวางกลยุทธ์ | | | | | |
| 6 เครื่องมือและอุปกรณ์อำนวยความสะดวก | | | | | |
| 7 การดำเนินงาน | | | | | |
| 8 เทคโนโลยีสาระสนเทศ | | | | | |
| 9 การพัฒนาด้านคุณภาพเช่น ISO | | | | | |
| 10 ศักยภาพในการเจริญเติบโต | | | | | |
| 11 การร่วมมือและเข้ากันได้ดีกับบริษัท | | | | | |
| 12 ราคา | | | | | |

4    อะไรคือคุณค่าของลูกค้าที่พึงได้รับในความคิดของท่าน กรุณาเรียงลำดับความสำคัญ 3 อันดับแรก
     โดยใส่ตัวเลขลำดับในช่องว่างด้านล่าง

*ตัวอย่าง*

| *ลำดับที่1* | *ลำดับที่2* | *ลำดับที่3* |
|---|---|---|
| *12* | *11* | *10* |

| *ลำดับที่1* | *ลำดับที่2* | *ลำดับที่3* |
|---|---|---|
| **ความคิดเห็นของท่าน** | | |

1 การบริการ
2 ความเร็วในการดำเนินงาน
3 ความเที่ยงตรงถูกต้อง
4 ราคา
5 ขั้นตอนการดำเนินงาน
6 การติดต่อสื่อสาร
7 ความสัมพันธ์
8 ความสามารถในการอำนวยความสะดวก
9 เทคโนโลยีสาระสนเทศ
10 ความปลอดภัย

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**ส่วนที่ 2: ความพึงพอใจของลูกค้า**

    **2.1 ความคาดหวัง**

5    ท่านคาดหวังในแต่ละปัจจัยต่อไปนี้ในระดับใด

| | คาดหวังมาก | คาดหวัง | เฉยๆ | ไม่คาดหวัง | ไม่คาดหวังมาก |
|---|---|---|---|---|---|
| **1 การบริการ** | | | | | |
| ด้านการขนถ่ายลำเลียง | | | | | |
| ด้านการควบคุมสินค้าคงคลัง | | | | | |
| ด้านงานนำเข้า/ส่งออก | | | | | |
| **2 ความเร็วในการดำเนินงาน** | | | | | |
| การส่งของทันกำหนดเวลา | | | | | |
| ความเร็วในการตอบสนองความ | | | | | |
| ต้องการของลูกค้ากรณีเร่งด่วน | | | | | |
| **3 ความเที่ยงตรงถูกต้อง** | | | | | |
| ความเที่ยงตรงถูกต้องในการส่งของ | | | | | |
| ความเที่ยงตรงถูกต้องด้านเอกสาร | | | | | |
| **4 ราคา** | | | | | |
| ราคาค่าบริการ | | | | | |
| ส่วนลด | | | | | |
| **5 ขั้นตอนการดำเนินงาน** | | | | | |
| ความง่ายในการเข้าใจขั้นตอนการดำเนินงาน | | | | | |
| ความสะดวกขั้นตอนการดำเนินงาน | | | | | |
| เช่น ขั้นตอนไม่ซ้ำซ้อน | | | | | |
| **6 การติดต่อประสานงาน** | | | | | |
| การติดต่อประสานงานของพนักงานและตัวแทน | | | | | |
| การตอบสนองความต้องการกรณีเร่งด่วน | | | | | |
| **7 ความสัมพันธ์** | | | | | |
| ความสัมพันธ์ระหว่างพนักงานและตัวแทน | | | | | |
| ความสัมพันธ์ระหว่างบริษัท | | | | | |
| **8 ความสามารถในการอำนวยความสะดวก** | | | | | |
| ความสามารถในการรองรับของรถขนส่ง | | | | | |
| ความสามารถในการรองรับของแรงงาน | | | | | |
| ความสามารถในการรองรับของพื้นที่จัดเก็บ | | | | | |
| **9 เทคโนโลยีสาระสนเทศ** | | | | | |
| ความสามารถในการให้ข้อมูล | | | | | |
| ความสามารถในการประสาน | | | | | |
| ระหว่าง softwareและ systemsของ | | | | | |
| ลูกค้ากับpartners | | | | | |
| **10 ความปลอดภัย** | | | | | |
| การป้องกันความเสียหายของสินค้า | | | | | |
| การป้องกันความเสียหายจากการขาดแคลนสินค้า | | | | | |

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2.2 สิ่งที่ลูกค้าได้รับจริง

6    ท่านคิดว่าสิ่งที่ท่านได้รับในแต่ละปัจจัยต่อไปนี้อยู่ในระดับใด

| | พอใจมาก | พอใจ | เฉยๆ | ไม่พอใจ | ไม่พอใจมาก |
|---|---|---|---|---|---|
| **1 การบริการ** | | | | | |
| ด้านการขนถ่ายลำเลียง | | | | | |
| ด้านการควบคุมสินค้าคงคลัง | | | | | |
| ด้านงานนำเข้า/ส่งออก | | | | | |
| **2 ความเร็วในการดำเนินงาน** | | | | | |
| การส่งของทันกำหนดเวลา | | | | | |
| ความเร็วในการตอบสนองความ ต้องการของลูกค้ากรณีเร่งด่วน | | | | | |
| **3 ความเที่ยงตรงถูกต้อง** | | | | | |
| ความเที่ยงตรงถูกต้องในการส่งของ | | | | | |
| ความเที่ยงตรงถูกต้องด้านเอกสาร | | | | | |
| **4 ราคา** | | | | | |
| ราคาค่าบริการ | | | | | |
| ส่วนลด | | | | | |
| **5 ขั้นตอนการดำเนินงาน** | | | | | |
| ความง่ายในการเข้าใจขั้นตอนการดำเนินงาน | | | | | |
| ความสะดวกขั้นตอนการดำเนินงาน เช่น ขั้นตอนไม่ซ้ำซ้อน | | | | | |
| **6 การติดต่อประสานงาน** | | | | | |
| การติดต่อประสานงานของพนักงานและตัวแทน | | | | | |
| การตอบสนองความต้องการกรณีเร่งด่วน | | | | | |
| **7 ความสัมพันธ์** | | | | | |
| ความสัมพันธ์ระหว่างพนักงานและตัวแทน | | | | | |
| ความสัมพันธ์ระหว่างบริษัท | | | | | |
| **8 ความสามารถในการอำนวยความสะดวก** | | | | | |
| ความสามารถในการรองรับของรถขนส่ง | | | | | |
| ความสามารถในการรองรับของแรงงาน | | | | | |
| ความสามารถในการรองรับของพื้นที่จัดเก็บ | | | | | |
| **9 เทคโนโลยีสาระสนเทศ** | | | | | |
| ความสามารถในการให้ข้อมูล | | | | | |
| ความสามารถในการเชื่อมโยง ระหว่าง software และ systems ของ ลูกค้ากับ partners | | | | | |
| **10 ความปลอดภัย** | | | | | |
| การป้องกันความเสียหายของสินค้า | | | | | |
| การป้องกันความเสียหายจากการขาดแคลนสินค้า | | | | | |

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**ส่วนที่ 3: ข้อมูลส่วนตัว**

7    แผนก/ฝ่าย

| | |
|---|---|
| ทั่วไป | |
| ฝ่ายขาย/การตลาด | |
| ฝ่ายดูแลลูกค้า | |
| ฝ่ายลอจิสติก | |
| ฝ่ายนำเข้าส่งออก | |
| อื่นๆ (โปรดระบุ).................... | |

8    ประเภทธุรกิจ

| | |
|---|---|
| อิเลกทรอนิค | |
| คอมพิวเตอร์ | |
| เครื่องใช้ไฟฟ้า | |
| สินค้าอุปโภคบริโภค | |
| อื่นๆ(โปรดระบุ) | |
| ............................... | |

9    ปริมาณการใช้บริการต่อปี (บาท)

| | |
|---|---|
| น้อยกว่าหรือเท่ากับ 1,000,000 บาท | |
| 1,000,001-5,000,000 บาท | |
| 5,000,001-10,000,000 บาท | |
| 10,000,001-20,000,000 บาท | |
| มากกว่า 20 ล้านบาท | |

10   ระยะเวลาที่ใช้บริการลอจิสติกกับทางบริษัท

| | |
|---|---|
| น้อยกว่า 1 ปี | |
| 1-5 ปี | |
| >5-10 ปี | |
| มากกว่า 10 ปี | |

11   ข้อเสนอแนะ:...................................................................................
...................................................................................................
...................................................................................................
...................................................................................................

**ขอบคุณที่สละเวลาในการทำแบบสอบถาม**

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