



CUSTOMER SERVICE STRATEGIO FOR AUTO PARTS  
INDUSTRY: A CASE STUDY OF SUMMIT AUTO  
SEATS INDUSTRY CO., LTD.

by

Ms. Vipaporn Pronpruk

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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Project Title                      Customer Service Strategic for Auto Parts Industry: A Case  
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Academic Year                  November 2001


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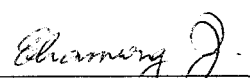
The Graduate School of Assumption University has approved this final report of the three-credit course. CE 6998 PROJECT, submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer and Engineering Management.

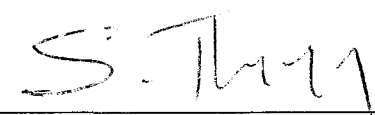
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## ABSTRACT

This project aims at searching the information on Customer Service for Auto Parts Industry. Customer service is a process for providing significant valued-added benefits to the supply chain in a cost-effective way of each organization.

Customer service is important to identify the key elements of the service, which influence the customers' perception of quality. One of the challenging techniques to clarify the way the organization of customer service is to deliver their products and a promise to keep the business relationship with its customers. Delivery system is one of the services that the company can provide to satisfy customers.

This research study is conducted through survey questionnaires for the customers of Summit Auto Seat Company. By using the research methodology, the results show that delivery promptness service is the main key success factor, followed by the product knowledge support and order status information provided by the company.

This research will be useful for the automotive industry, as it would be enhance their understanding towards the customers' needs and provide a strategy toward delivery process to create customer satisfaction in the customer service. This survey will also be beneficial for automotive providers who wish to improve their businesses and service in the automotive industry.

## ACKNOWLEDGMENTS

First of all, I would like to thank my parents who are my hidden drives, pushing me up to this position to achieve my master's degree.

I would like to pay sincere gratitude to my advisor, Asst.Prof.Dr. Boonmark Sirinaovakul, whose guidance, wisdom and perseverance has enabled me to complete this project.

I sincerely thank and appreciate all Summit Auto Seats company members for excellent information and advice without their help, this project could not have been completed. I hope this project will lead to improved practices in this field.

Moreover, I would like to express great appreciation to Mr. Khuntong Chalapati for his support, guidance and encouragement without his help this study may not have been well organized.

Finally, I am grateful to all lecturers of MS-CEM program, who have imparted their knowledge to me and made me prepare to take up this project, as various subjects taught, and various course assignments given by them have a relationship in some way or an other to the project.

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## **I. INTRODUCTION**

### **1.1 Background**

In today's world of global competition and high-speed product development, linkage among Research and Development, manufacturing and marketing is more vital in successful business in competitive market to satisfy the diverse needs of the customers. The key functions for the company to develop the product or service is to satisfy the customer need. Customer is the decision-maker who has high potential to identify, select, and evaluate the product. Some business will change the structure of work and the increase availability of service and goods to satisfy the customers. And as manufacturers compete more on service, there will be less distinction between manufacturing and service business. The central role for service is a key factor behind service quality's rising prominence as an institutional and societal issue. A tool that businessman finds out for take care their customers calls "customer service".

Customer services are very marketing oriented. They provide support for their business. Customer service fulfills many functions within an organization. Some of these are related to marketing, some to manufacturing, and others to order fulfillment. Still others are coordinating functions between departments of an organization. Customer service is important to identify the key elements of the service, which influence the customers' perception of quality. One of the challenging techniques to clarify the way the organization of customer service is to keep the business's relationship with its customers. Customer service can use several tools to help the organization make the transition from service to super service by improving the quality of goods and services, which the organization can fulfilling and enhancing the customer

promise is the essence of customer service. This will increase the number of customers and customer loyalty.

Customer service is an activity, which has been undermanaged in the past but professional service and support management is emerging, the quality of support perceived by customers is generally rising and delivering an appropriate level of customer service. This will be a major business challenge for the organization through production to initial sale and finally to repurchase. Good customer service should ensure that the customer gets maximum value from the company. The company can provide several ways for customer service to meet the customer satisfaction. One method that can satisfy the customer is “delivery system”.

Delivery system is one of the central frameworks of a business as an integrated system entirely oriented around the delivery of a chosen value proposition. A proposition has some customer perceived value, customers select the superior delivery by the combination of resulting experiences that will have the greatest value for them compare to alternatives. By delivering a superior value proposition, an organization wins the customers' preference. Whenever an organization delivers a superior value at a cost below the price, that the business generates wealth. Hence, the organization must create value proposition to deliver the customers as the most important aspects of customer services quality.

The primary delivery system consists of the primary value proposition and all actions by the organization and others in the chain required to delivery it to the primary entity. When other entities in a chain must take actions and use resources in order that an organization's value proposition is delivered, the organization must design the primary delivery system to include these actions and resource. A business is not the

things an organization owns, but it is the delivery of a value proposition through their customer as promise.

Making a primary delivery system successful means motivating actions and resources to play the role required by the primary delivery system. The organization must control all of the delivery process separately superior, and support the value of delivery system to deliver the organization's primary value proposition to satisfy the customer as promise. Therefore, delivery systems can provide a powerful source of competitive advantage for the organization to compete with competitors and their customers.

#### 1.1.1 Company Background

Summit Auto Seats Industry (SAS) was established in 1972 as a manufacturer of automobile and motorcycles seats, interior-trimming parts and other parts that using in vehicles. The company had been granted from the Board of Investment for the promotional privilege, and received the technical assistance from Namba Press Works Co.,Ltd. for the manufacturing of seats and interiors trimming parts. In 1974, SAS expanded their business to manufacture the automobile stamping parts and exhaust system. In 1976, SAS had signed the assistant agreement with Imasen Electric Industrial Company Limited for seat reclining mechanism, and SAS had also increase the registered capital from 5 million Bahts to 10 million Bahts. In 1977, the demand of motorcycle had been increased rapidly, and it affects the company to set up new company of Thai Summit Auto Parts Industry Company Limited. In same year, the company had joint venture with Honda Motors and set up new company of Asian Auto Parts Company Limited for manufacturing of motorcycle parts. In 1979, the company increased the registered capital to 30 million Bahts and the factory site was expanded to about 17,500 square meters. The company had signed the assistant agreement with



Keiper Recaro GmbH from West Germany for seat reclining mechanism in 1980. The company also signed the assistant agreement with GEBR Happich GmbH from West Germany to expand the product range of sunvisors. In 1983, the company expanded the market to supply the body stamping of one-ton truck, and start to supply the body stamping parts to passenger cars in 1984. In 1986, the company signed the technical assistant agreement with Mitsubishi Motors Corporation for stamping dies, and the company established Summit Auto Body Industry Company Limited to manufacturing the body stamping dies and parts. The company established the joint venture companies of Bangkok Eagle Wing Company Limited and Summit Steering Wheel Company Limited in 1989.

Summit Auto Seats Industry (SAS) currently has the registered capital of 250 million Bahts, and the total employees of 1,900 persons. The site area is 18,640 square meters, and the building floor layout area of 15,580 square meters. SAS has total 3 manufacturing sites, which are at Sathupradit, Bangplee, and Kingkaew. As this project would concentrate in Kingkaew site only, so the project would consider about the delivery system of the products that produced at Kingkaew site only. The products manufactured in Kingkaew site are as shown in Table 1.1.

Table 1.1. Products of Summit Auto Seats Industry Co., Ltd.

Summit Auto Seats Part		
1. Door Trim (Seam Board)	10. Trim Rear Pillar	20. Board Trunk Floor
2. Door Trim (Dry Mat)	11. Shield Cover	21. Film Water Proof
3. Headlining PVC	12. Shield Splash	22. Shift boot
4. Headlining Felt	13. Cover Trim Side	23. Cover Shift Hole
5. Floor Mat PVC	14. P/Shelf	24. Cover PKB
6. Insulator Hood	15. Pad Dash Panel	25. Hook Link
7. Insulator Dash	16. Lining	26. Cable Ass'y
8. Trim B/PNL. UPR.	17. Pad Cowl Top	27. DVC. Ass'y PKB.
9. Trim B/PNL. LWR.	18. Pad Roof	28. Seat Ass'y
	19. Sunvisor	29. Seat Belt

Summit Auto Seats products are produced to serve their customers, the car manufacturers in Thailand such as Mitsubishi, Honda, Toyota, and others, as shown in Table 1.2.

Table 1.2. Customers of Summit Auto Seats Industry Co., Ltd.

Potential Customer of Summit Auto Seat	
1. Mitsubishi	8. Benz
2. Isuzu	9. BMW
3. Toyota	10. Volvo
4. Nissan	11. Peugeot
5. Hino	12. Cherokee
6. Honda	13. GM
7. Ford/Mazda	

Delivery system is one of the important customer service for Summit Auto Seats Industry to delivery their product on time to meet the customer satisfaction.

In this project the analysis of the delivery system for Auto Parts Industry will be carried out in order to achieve more competitive in the industrial market. Also find the ways to develop delivery strategy to meet the customer satisfaction with the good quality in service.

Finally, the researcher is interested to study the factors that affect to the delivery system of Summit Auto Seats Industry Company Limited and then it will effect to its customer's satisfactions. And to studying about the problems and threats to the system including to finding out the way to solve the problems and finding out some suggestions to confront the situation. The result of the project will lead to increased to efficiency of the delivery system of Summit Auto Seats Industry Company Limited and the company will apply the results of the project to develop and prevent the problems that will occur in the future, which will increase their customer's satisfaction to Summit Auto Seats Industry's services.

## 1.2 Objectives

- (1) To study the customer services focus on delivery system in the auto part industry business.
- (2) To analyze the result of customers' perception in the delivery system.
- (3) To provide the alternative in the development of delivery system for Summit Auto Seats Industry.

## 1.3 Scope

The project scope aims to study the customer services, focusing on delivery system in the Summit Auto Parts Industry business. The project will analyze and develop delivery system to meet the customer satisfaction.

## 1.4 Deliverables

- (1) To know the present situation of the delivery system in the Auto Parts Industry.
- (2) To analyze and develop the delivery system for a better quality in service.
- (3) To provide a powerful delivery system strategy to meet the customer satisfaction.



## **II. LITERATURE REVIEW**

### **2.1 The Important of Customer Service**

The success of every organization, manufacturing or service, private or public, for profit or nonprofit depends on its ability to attract and retain customers. It does so by providing them with products that satisfy their needs, desires, and expectations (Clutterbuck, Clark and Armistead 1993). Organizations attract and retain customers by providing products that may be either physical goods (cars, shampoo, computers, food and drugs) or services performed (transporting passengers, performing surgery, giving a sermon, providing consultation and entertaining).

In the past decade there has been a clear shift of power away from the manufacturer to the customer. Powerful market forces are demanding that manufacturers transform their way of satisfying customer demand through the production and delivery of goods (Freemantle 1993).

Ever since the development and general acceptance in business of marketing concept a great deal has been said and written about customers. Unfortunately much of the concern with customers has been at a superficial level and often more cosmetic than real. Organizations may talk about “putting the customer at the center of the business” but in reality they have a few strategies or procedures for focusing the business around customer satisfaction (Christopher 1998).

The truth is that the majority of organizations are still focused more on the products or services they manufacture or provide, rather than with the customers that they service. In the traditional business everything from the organization structure to the budgeting and cost control system reinforces the over riding concern with products and resources (Lambert and Stock 1993). Thus we find product managers but not market

managers; or detailed accounting information on product profitability, but none on customer profitability and so on; yet the simple fact is that it is not the product that makes the profits but the customers. Since organizations realize that customer is one of the most important in providing the profitability through their organization, organizations have taken tremendous strides forward in providing incredibly high standards of service to their customers (Freemantle 1994).

Customer service is a concept that is applicable to all industries and organizations and all their employees. It is not a concept that should be confined to front line people who have to serve in shops, hotels, restaurants and airline (Armistead and Clark 1994). Customer service is equally applicable to personnel people serving the line, to finance departments serving the organization and also to senior executives who have to service their companies with a high degree of leadership support and direction.

Customer service represents the output of the delivery system and the place component of the firm's marketing mix. It is a measure of the effectiveness of the delivery system in creating time and places utility for a product (Brown 1992). The level of customer service not only determines whether existing customers will remain customers, but how many potential customers will become customers. Thus the customer service level a firm provides has a direct impact on its market share; its total delivery costs; and ultimately, its profitability (Sasser and Schlesinger 1997).

The challenge to customer service management therefore is firstly to identify the real profitability of customers and then secondly to develop strategies for service the will improve the profitability of all customers. For this reason, it is imperative that customer service be an integral part of the design and operation of any delivery system to support customer requirement by using faster modes of transport to deliver product or service.

## 2.2 Theories and Concepts about Customer Service

Clutterbuck, Clark and Armistead (1993: 45) comment about the power of customers as follows “Customers have become far more knowledgeable over recent years. They are able to specify their requirements more carefully and are fully aware of the cost of providing service. A wide choice of providers means that customer power is high.”

“Customer service” is an activity, which has been undermanaged in the past but professional service is emerging, the quality of support perceived by customers is generally rising and delivering an appropriate level of customer service will be a major business challenge for many organizations in the world (Heskett, Sasser and Schlesinger 1997).

“Customer service” is a process for providing significant valued-added benefits to the supply chain in a cost-effective way. This definition illustrates the trend to think of customer service as a process-focused orientation that includes supply chain management concepts (Kuglin 1998).

Customer services serves as an integrating activity in two ways. First, several different functional areas in a firm must work together in order to keep firm are customers happy. Second, developing special supplier-user relationship over a period of time helps integrate relationship within logistics channels.

### 2.2.1 Element of Customer Service

A number of elements are commonly associated with customer service, although the degree of importance attached to any of them varies from company to company depending on customer needs. The element of customer service can be categorized into three groups (As shown in Figure 2.1).

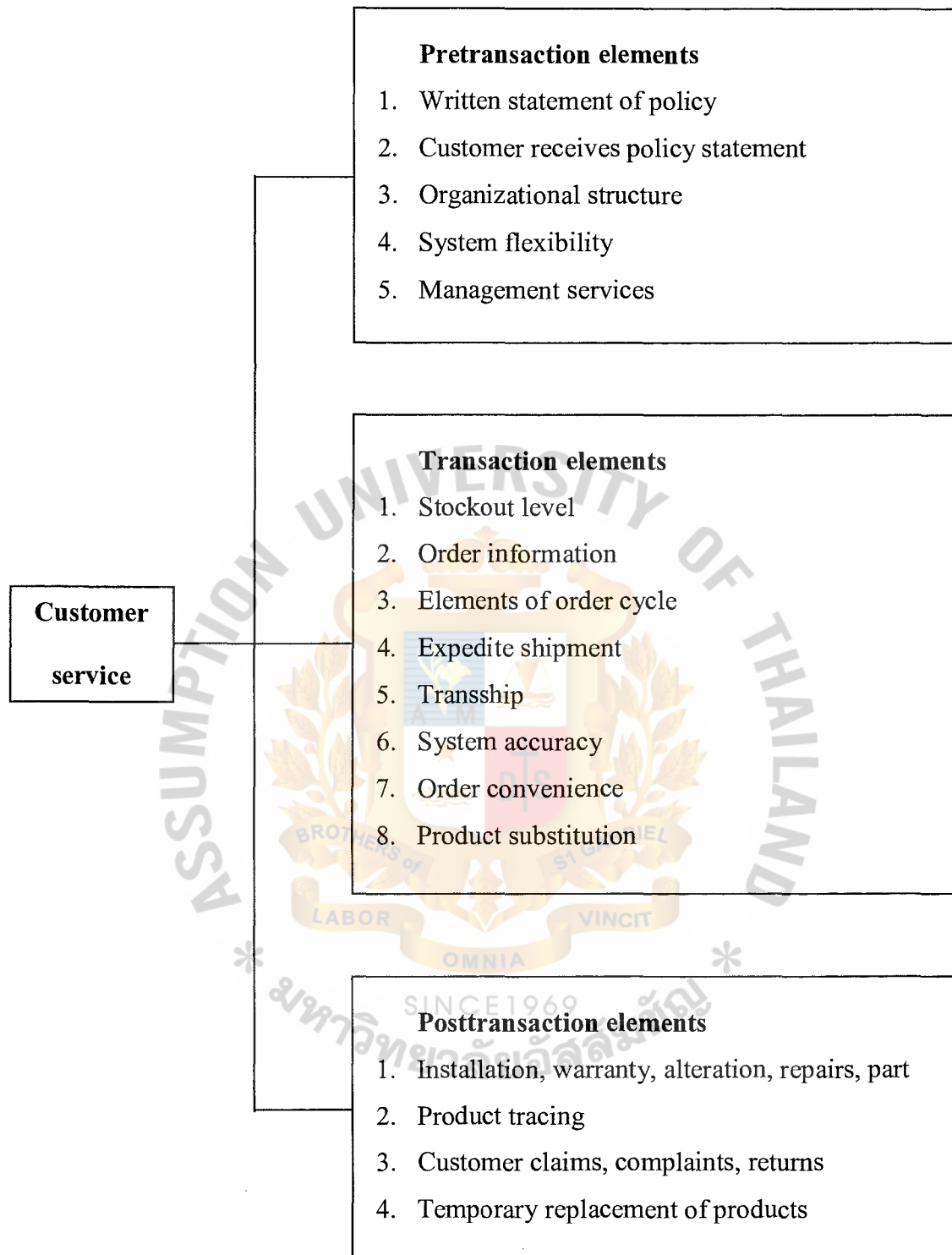


Figure 2.1. Element of Customer Service (Lambert and Stock 1993).



(1) Pretransaction Elements

The pretransaction elements of customer service tend to be nonroutine and policy related, and they require management input. These activities, although not specifically involved with logistics, have a significant impact on product sales (Lambert and Stock 1993). The specific elements of pretransaction customer service include the following:

- (a) A written statement of customer service policy. The customer service policy statement would be based on customer needs, define service standards, determine who reports the performance measurements to whom and with what frequency, and be operational.
- (b) Provide customers with a written statement of service policy. It makes little sense to provide a level of service designed to improve market penetration and then fail to inform the customer of what is being provided. A written statement reduces the likelihood that the customer will have unrealistic expectations of performance. It also provides the customer with information on how to communicate with the firm if specified performance levels are not attained.
- (c) Organization structure. Although there is no organization structure best suited to successful implementation of customer service policy, the structure selected should facilitate communication and cooperation between and among those functions involved in implementing the customer service policy. In addition, the firm should provide customers with the name and phone number of specific individual who can satisfy their need for information. The individuals who manage the customer service components must have the appropriate

responsibility and authority, and must be rewarded in a manner that encourages them to interface with other corporate functions.

- (d) System flexibility. Flexibility is required for the system to effectively respond to unplanned events, such as snowstorms, shortages of raw materials or energy and strikes.
- (e) Management services. Training manuals and seminars designed to help the customer improve inventory management, ordering, or merchandising are elements of customer service.

All of the above pretransaction elements of customer service are essential components of a successful marketing strategy.

## (2) Transaction Elements

Transaction elements are the activities normally associated with customer service, (Lambert and Stock 1993). including the following:

- (a) Stockout level. The stockout level is a measure of product availability. Stockouts should be recorded by product and by customer in order to determine where problems exist. When stockouts occur, customer goodwill can be maintained by arranging for suitable product substitution and/or expediting the shipment when the product is received in stock.
- (b) Order information. Order information is the ability to provide the customer with fast and accurate information about such considerations as inventory status, order status, expected shipping and delivery dates, and back-order status. A back-order capability allows orders that require immediate attention to be identified and expedited. The number of back orders and their associated order cycle times can be

used to measure system performance. The ability to back order is important because the alternative may be to force a stockout. The number of back-orders should be recorded by customer and by product categories to identify and correct poor system performance.

- (c) Elements of the order cycle. The order cycle is the total elapsed time from initiation of the order by the customer until delivery to the customers individual components of the order cycle include order communication, order entry, order processing, order picking and packing, and delivery. Because customers are mainly concerned with total order cycle time, it is important to monitor and manage each of components of the order cycle to determine the cause of variations.
- (d) Expedite shipments. Expedited shipments are those that receive special handling in order to reduce the normal order cycle time. Although expediting costs are considerably more than standard handling, the cost of a lost customer may be even higher. It is important for management to determine which do not. Presumably, such a policy would be based on how much individual customers contribute to the manufacturer's profitability.
- (e) Transshipments. Transshipments are the transporting of product between field locations to avoid stockouts. They are often made in anticipation of customer demand.
- (f) System accuracy. Mistakes in system accuracy-the accuracy of quantities ordered, products ordered, and billing-are costly to both manufacturer and the customer. Errors should be recorded and reported as a percentage of orders handled by the system.

- (g) Order convenience. Order convenience refers to the degree of difficulty that a customer experiences when placing an order. Problems may result from confusing order forms or using nonstandard terminology; both can lead to errors and poor customer relations. An appropriate performance measurement is the number of errors as a percentage of the number of orders. These problems can be identified and reduced or eliminated by conducting field interviews with customers.
- (h) Product substitution. Substitution occurs when the product ordered is replaced by the same item in a different size or with another product that will perform as well or better. In order to develop an appropriate product substitution policy, the manufacturer should work closely with customers to inform them or gain their consent. It should also keep product substitution records to monitor performance. A successful product substitution program requires good communication between the manufacturer and customers.

The transaction elements of customer service are the most visible because of the direct impact they have on sales.

### (3) Posttransaction Elements

The posttransaction elements of customer service support the product after it has been sold (Lambert and Stock 1993). The specific posttransaction elements include:

- (a) Installation, warranty, alterations, repairs, parts. These elements of customer service can be a significant factor in the decision to purchase; they should be evaluated in a manner similar to the



transaction elements. To perform these functions, the following are necessary: (1) assistance in seeing that the product is functioning as expected when the consumer begins using it; (2) availability of parts and/or repairmen; (3) documentation support for the field force to assist in performing their jobs, as well as accessibility to a supply of parts; and (4) administrative function that validates warranties.

- (b) Product tracing. Product tracing is another necessary component of customer service. In order to avoid litigation, firms must be able to recall potentially dangerous products from the marketplace as soon as problems are identified.
- (c) Customer claims, complaints, and returns. Usually, logistics systems are designed to move products in one direction-toward the customer. Nevertheless, almost every manufacturer has some goods returned, and the non-routine handling of these items is expensive. A corporate policy should specify how to handle claims, complaints, and returns in order to provide valuable consumer information to product development, marketing, logistics, and other corporate functions.
- (d) Product replacement. Temporary placement of product with customers waiting for receipt of a purchased item or waiting for a previously purchased product to be repaired is an element of customer service.

It is important that organization adopt a customer service that is based on customer needs, is consistent with overall marketing strategy, and advances the corporation's long-range profit through the organization.

### 2.2.2 Developing Customer Service Standards

Once the important elements of customer service have been determined, it is necessary to develop standards of performance and regularly report results to the appropriate levels of management (McClain, Thomas and Mazzola 1992). The following four steps as requirements for the measurement and control of customer service performance:

- (1) Establish quantitative standards of performance for each service element.
- (2) Measure actual performance for each service element.
- (3) Analyze variance between actual services provided and the standard.
- (4) Take corrective action as needed to bring actual performance into line.

Cooperation of customers is essential if information about the speed, dependability, and condition of the delivery product is to be obtained. To be effective, the customer must be convinced the service measurement/monitoring is valuable as a means of improving future service.

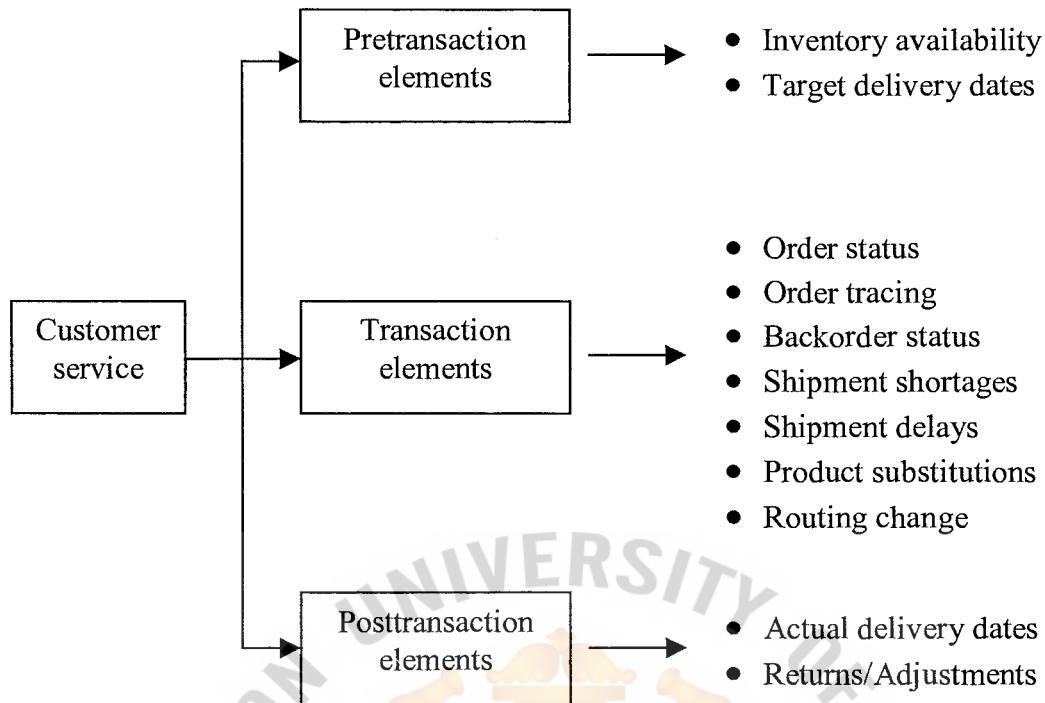


Figure 2.2. Possible Measures of Customer Service Performance (Lambert and Stock 1993).

The emphasis placed on individual elements by any manufacturer must be based on what that manufacturer's customers believe to be important. (As shown in Figure 2.2) Such service elements as inventory availability, delivery dates, order status, order tracing and back order status require good communications between the manufacturer and its customers. Because many companies have not kept pace with technology in order processing, this area offers significant potential for improving customer service. Consider how much communications can be improved by a system where customers telephone their orders to customer service representatives who are equipped with CRTs. Immediate information can be provided on inventory availability and product substitution can be arranged if a stock-out exists. Also, target delivery dates can be communicated to the customers. The performance of customer service should be

measured and compared to the standard and the information should report to the appropriate levels of management on a regular and timely basis.

Therefore, the importance of customer service will vary from company to company; the common elements that are of concern to the most companies were explained. The successful implementation of the integrated customer service concept is dependent upon knowledge of the costs associated with different delivery system designs and the relationship between the system design and customer service levels.

### **2.3 Theories and Concepts about Delivery System**

Delivery system is a vital component of customer service. Each activity of delivery system contributes to the level of service an organization provides to its customers, although transportation's impact on customer service is one of the most significant (Johnson and Wood 1996). The most important delivery system characteristics affecting customer service levels are dependability (consistency of service); time in transit; market coverage (the ability to provide door to door service); flexibility (with respect to the variety of products that can handle and meet the special needs of shippers); loss and damage performance; and the ability of the carrier to provide more than just basic delivery service.

The effective delivery system can provide a major source of competitive advantage-in other words a position of enduring superiority over competitors in the term of customer preference may be achieved through delivery.

Delivery system is the process of planning, implementing, and controlling the efficient, cost-effective flow and storage of raw materials, in-process inventory, finished goods and related information from point of origin to point of consumption for the purpose of conforming to customer requirements (Ballou 1992).

Delivery system includes the process of delivering the product to the customer. Customer service is increasingly important in most business. Holding inventory transporting the product to the customer and carrying spare parts for maintenance are three delivery functions directly affecting customer service (Taff 1984).

Customer service is the most important marketing variable in the automobile industry and it ranked third of four behind “product” (quality, breadth of line, etc.) and “price” and ahead of “promotion”, on the average. Then the trend of delivery system is toward customer service being more important (Lambert and Stock 1993).

Profitable business development requires that management allocate scarce resources to delivery system and the other elements of the marketing mix. This is because the total moneys spent on the various components of the marketing mix influence the company’s market share and profitability. The company objectives to allocate resources to the price, product, promotion, and place components of the marketing mix in a manner that will lead to the greatest delivery system.

The basis for success in the market place is numerous, but a simple model is based around the triangular linkage of the company, its customers and its competitors. (As shown in Figure 2.3)



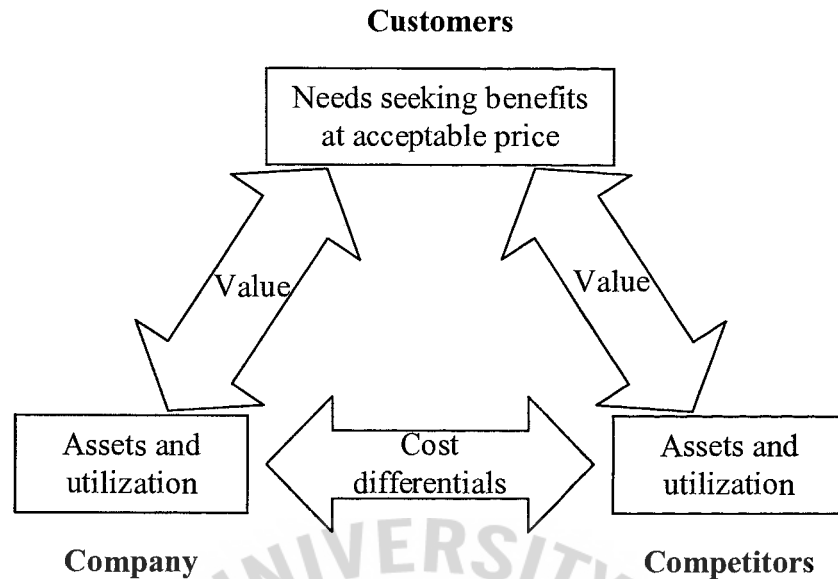


Figure 2.3. Competitive Advantage and the “Three C’s” (Armistead and Clark 1994).

The source of competitive advantage is found firstly in the ability of an organization to differentiate itself, in the eyes of the customer, from its competition and secondly by operating at a lower cost and hence at a greater profit.

Seeking a sustainable and defensible competitive advantage has become the concern of every manager who is alert to the realities of the market place. It is no longer acceptable to assume that good products will sell themselves, neither is it advisable to imagine that success today will carry forward into tomorrow.

Thus, the mission of delivery system is to plan and co-ordinate all those activities necessary to achieve desired levels of delivered service and quality at lowest possible cost. Delivery system must therefore be seen as the link between the market place and the operating activity of the business. There is a direct analogy between quality management in manufacturing and quality management in customer service.

### 2.3.1 Delivery System Components

Five components combine to form the delivery system: (1) facility location structure, (2) transportation, (3) inventory, (4) communication and (5) handling and storage (Muhlemann, Oakland and Lockyer 1994).

#### (1) Facility Structure

Classical economic analysis had been deficient in that it neglected the importance of facility location to operating performance. When economists studied supply-and demand relationships within a variety of market structures, location advantages and transportation cost differentials were often assumed to be either nonexistent or equal among competitive firms. Business, in contrast, cannot neglect the impact of location structure upon its ability to realize an adequate return on investment. The network of facilities selected by an enterprise's management is fundamental to ultimate logistical results. The number, size, and geographical management of facilities operated or used bear a direct relationship to the enterprise's customer service capabilities and corresponding delivery cost outlay (Muhlemann, Oakland and Lockyer 1994).

#### (2) Transportation

Given a facility network, transportation provides the connecting link. Transportation and traffic management have received considerable attention over the years. Almost every enterprise of any size has a traffic manager responsible for administration of its transportation program (Muhlemann, Oakland and Lockyer 1994).

Generally, an enterprise has three alternatives in establishing transportation capability. First, a private fleet of equipment may be

purchased or leased. Second, specific contracts may be arranged with transport specialists to provide contract movement service. Third, an enterprise may engage the services of any legally authorized transport company that offers point-to-point transfer at specified charges. These three forms of transport are known as private, contract, and common carriage. From the delivery system viewpoint, three factors are of primary importance in establishment of transport service capability: (1) cost, (2) speed and (3) consistency.

The cost of transport accrues from the actual payment for movement between two points, plus the expenses related to owning in-transit inventory. Delivery systems should be designed to minimize the transport cost in relation to the total system cost.

Speed of transportation service is the time required completing a movement between two locations.

Consistency of transportation service refers to the measured time performance of number of movements between two locations.

In the design of a delivery system, a delicate balance must be established between transportation cost and quality of service. In some circumstances low-cost slow transfers will be preferred. Other conditions may require faster methods. Finding the proper transportation balance is one of primary objectives of delivery system analysis.

### (3) Inventory

The requirement for transport between facilities is based on the inventory policy followed by an enterprise. Theoretically, an enterprise could stock each and every item carried in inventory in the same quantity at

every facility. Few enterprises, however, would follow such a luxurious inventory program, since the total cost would be prohibitive. The objective of inventory integration into the delivery system is to maintain the lowest quantity of items consistent with customer service goals. Inventory policies should be designed to protect core customers by providing rapid and consistent delivery service (Muhlemann, Oakland and Lockyer 1994).

(4) Communication

Two managerial tasks are directly associated with delivery communication. The first is customer order processing. An order is a critical information flow, which represents the prime input to the delivery system. The second task is order control: administration of an order until it is correctly received by a customer in undamaged condition. On time shipment of a customer order is not sufficient delivery performance. The order must also be acceptable in quality and in the quantity promised. The more efficient the design of a firm's delivery system, the more sensitive it is to disturbances in information flow (Muhlemann, Oakland and Lockyer 1994).

(5) Handling and Storage

Four of the components of a basic delivery system-facility location, transportation capacity, inventory allocation, and communication network-are subject to a variety of alternative design arrangement, each of which has a degree of potential effectiveness and a limit in attainable efficiency. In essence, these four activity centers provide a system structure for integrated product flow. The final area of design handling and storage also represents an integral part of the delivery system but does not fit the neat structural scheme of the other components. Handling and storage permeates the

system and directly relates to all aspects of operation. It involves the flow of inventory through and between facilities with such flow initiated only in response to a product or material need (Muhlemann, Oakland and Lockyer 1994).

### 2.3.2 The Significance of Delivery System

The organization must be given to “Quality” and “Customer Service”. These terms are often considered crystal clear when in fact the organizations are amorphous and vague. Quality is describes how well made a product or service is, while customer service most often refers to process the business performs.

The key to success in quality improvement is not to rely on inspection of the output of the process but rather to control the process itself. Imagine that this process is a “pipeline” that begins with suppliers, runs through our own business (whether it involves manufacturing or any form of value-adding activity) through intermediaries and on to customers. To ensure that customer satisfaction is achieved at the end of the pipeline requires that everything that happens in the pipeline must be carefully monitored and controlled. (As shown in Figure 2.4)



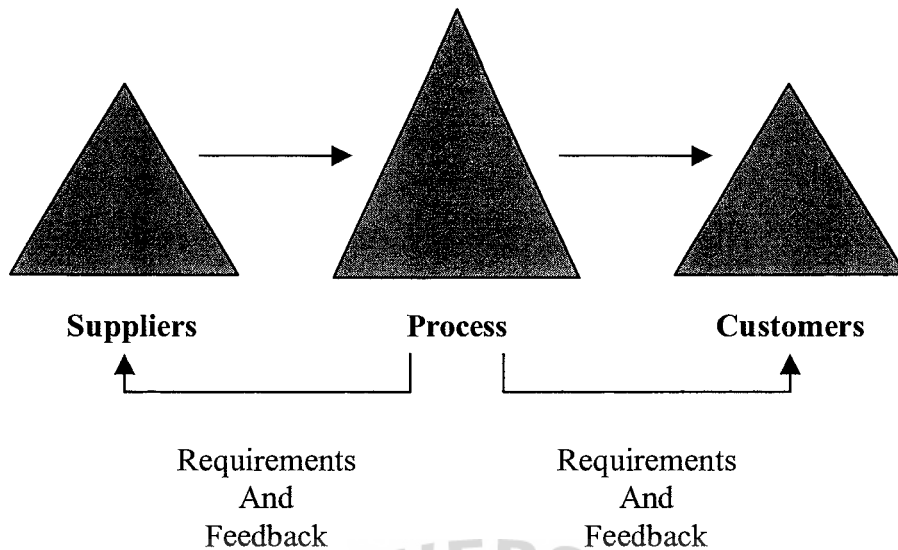


Figure 2.4. The Pipeline from Suppliers to Customers (Christopher 1992).

One powerful way of highlighting the impact that customer service and delivery system can have on marketing effectiveness is outlined in Figure 2.5. The customer service impacts not only on the ultimate end user but also on intermediate customers such as distributors. Traditionally marketing has focused on the end customer or consumer seeking to promote brand values and to generate a 'demand pull' on the market place for the company's products. More recently we have come to recognize that this by itself is not sufficient. Because of the swing in power in many marketing channels away from manufacturers and towards the distributor (e.g., the large concentrated retailers) it is now vital to develop the strongest possible relations with such intermediaries.

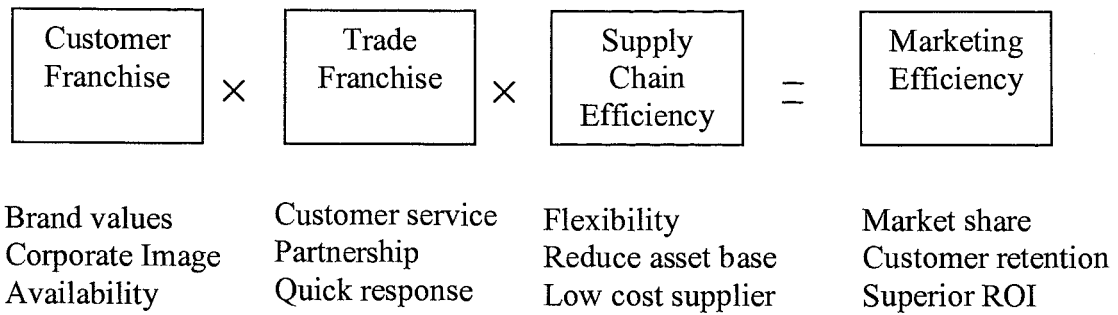


Figure 2.5. The Impact of Delivery System and Customer Service (Christopher 1992).

The impact of both a strong consumer franchise and a trade franchise can be enhanced or diminished by the efficiency of the suppliers' delivery system. It is only when all three components are working optimally that marketing effectiveness is maximized. To stress the interdependence of three components of competitive performance it is suggested that the relationship is multiplicative. In other words the combined impact depends upon the product of all three.

### 2.3.3 Quality of Customer Deliveries

One way to think about the quality of customer deliveries is in terms of the "seven R's of customer satisfaction," which consist of the traditional six R's plus a critical seventh R:

- (1) The right product
- (2) Delivered to the right place
- (3) At the right time
- (4) In the right condition and packaging
- (5) In the right quantity
- (6) At the right cost
- (7) To the right customer

At the heart of the seven R's of customer satisfaction is the delivery of what was ordered when the customer needed the order. The standard measurements for the quantity of customer deliveries are order-fill rates and on time deliveries (Kuglin 1998).

#### **2.4 Overview of Summit Auto Seat Delivery System**

To determine the delivery system of Summit Auto Seats (SAS) depends on the officers' decisions, which need to have skill and knowledge in order to allocate scheduling effectively and efficiently. The company divides type of delivery into four types as follows:

- (1) Delivery schedule. The way to deliver the model or part that customer order to destination before the start of business the next day.
- (2) Kanban card. A simple parts-movement system that depends on cards and boxes/containers to take parts from one workstation to another on a production line. The essence of the Kanban concept is that a supplier or the warehouse should only deliver components to the production line as and when they are needed, so that there is no storage in the production area.
- (3) Time delivery. Customer will send fax two days above to SAS in order to arrange model or part and send to the manufacturer on time.
- (4) Synchronize. A complete listing including screens shots and descriptions of Synchronize's high productivity features for every enterprise desktop. The best usability-engineered information can help sell more products, improve customer loyalty, and reduce the ongoing support costs that quickly eat into your bottom line. Each customer has different type and time horizon in order to deliver the product to customers each day. As shown in Table 2.1.

Table 2.1. Delivery Schedule (Summit Auto Seat Industry 2000).

Item	Company	Type of delivery				Frequency	Time delivery
		Delivery Schedule	Kanban Card	Time Delivery	Synchrone		
1.	Mitsubishi (Pick up)	Yes	-	-	Yes	Very 2 hours	8.00 – 5.00
2.	Mitsubishi (Passenger)	Yes	-	-	-	Once a day	8.00-16.00
3.	Mitsubishi (Truck)	Yes	-	-	-	Once a day	8.00-16.00
4.	Isuzu	-	-	Yes	-	Once a day	9.00-10.00
5.	Toyota (Pick up)	-	Yes	-	-	Three time/day	9, 11, 15
6.	Toyota (Passenger)	-	Yes	-	-	Once a day	15.00
7.	Nissan	Yes	Yes	-	-	Twice a day	8.30-14.30
8.	Nissan (Truck)	Yes	-	-	-	Once a day	8.00-16.00
9.	Hino (Truck)	-	-	Yes	-	Once a day	10.00-11.00
10.	Honda (Passenger)	Yes	-	-	-	Once a day	9.00-15.00
11.	Ford (Pick up)	-	Yes	-	-	Once a day	9.00-16.00
12.	Benz (Passenger)	Yes	-	-	-	Not specific	8.00-16.00
13.	BMW (Passenger)	Yes	-	-	-	Not specific	8.00-16.00
14.	Volvo (Passenger)	Yes	-	-	-	Not specific	8.00-16.00
15.	Peugeot (Passenger)	Yes	-	-	-	Not specific	8.00-16.00
16.	Cherokee	Yes	-	-	-	Not specific	8.00-16.00
17.	GM	-	Yes	-	-	Not specific	8.00-16.00

The transportation routes that SAS uses for delivery of their products to customers who are located both in Bangkok and in the upcountry.

The SAS is using six-wheelers to distribute the product as much as possible to customer. The region and distance from Bangkok depot to each manufacturer is a factor that has to be considered in order to estimate the time of running the product to each customer. The data is obtained from SAS that can be shown in Table 2.2.

Table 2.2. Routed Delivery Service.

Region	Company	Distance (km)
North region	1) Honda	126
	2) Cherokee	31
	3) BMW	22
	4) Mitsubishi (Truck)	29
East region	1) Ford/Mazda	150
	2) Mitsubishi	100
	3) Toyota (gateway)	103
	4) Toyota	59
	5) Volvo	22
	6) Nissan	19
West region	1) Isuzu	25
	2) Benz	21
	3) Hino	22
	4) Peugeot	62

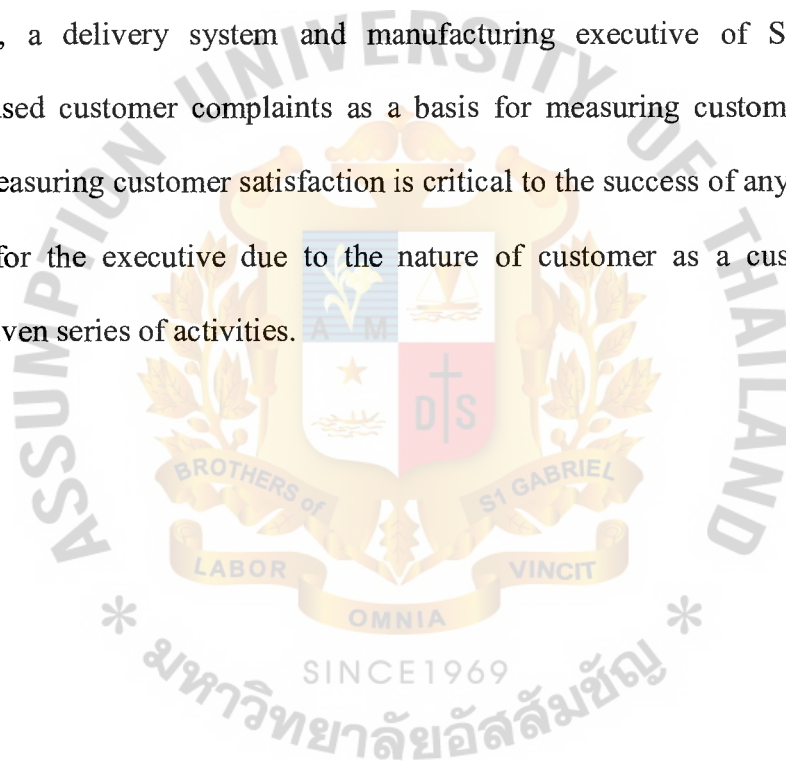
Looking at the present system, SAS is operating to deliver the part to customers in their areas. SAS must control the entire delivery process separate, superior, and support



the value of delivery system to deliver the organization's primary value proposition to satisfy the customer as promise.

Therefore, a good way to check customer feedback of SAS on the delivery system is by a questionnaire to start measuring customer satisfaction. A questionnaire can be transaction based and relatively simple. The question also appears on every rental return form and is incorporated into company. The answer, a simple yes or no, is incorporated into company's database to measure customer satisfaction.

Hence, a delivery system and manufacturing executive of SAS will have frequently used customer complaints as a basis for measuring customer satisfaction. Although measuring customer satisfaction is critical to the success of any company, it is mandatory for the executive due to the nature of customer as a customer contact, customer driven series of activities.



### III. RESEARCH METHODOLOGY

Research is defined as the systematic and objective process of generating information to aid in decision making. This process includes specifying what information is required, designing the method for collecting information, managing and implementing the collection of data, analyzing the result, and communicating the findings and their implications. The research can reduce uncertainty of a decision and thereby decrease the risk of making the wrong decision. Hence, Summit Auto Seats (SAS) use research to obtain information that identifies consumer's needs and also improve their service to reach their customer's requirement.

#### 3.1 Population and Sample Size

The ways to determine SAS is using Exploratory Research. This research is conducted to clarify the nature of ambiguous problems. Usually exploratory research is conducted with the expectation that subsequent research will be required to provide such conclusion evidence (Zikmund 2000).

The sample population used in this research is the company who has contract with SAS, Those 13 companies that are classified as following:

- (1) Mitsubishi
- (2) Isuzu
- (3) Toyota
- (4) Nissan
- (5) Hino
- (6) Honda
- (7) Ford/Mazda
- (8) Benz

- (9) BMW
- (10) Volvo
- (11) Peugeot
- (12) Cherokee
- (13) GM

The alternative sampling method used is “Convenience Sampling” which refers to the sampling procedure of obtaining the people or units that are most conveniently available. Researcher generally uses convenience samples to obtain a large number of completed questionnaires quickly (Uma Sekaran 2000).

From the exploration of population (Sample size), we use the method of one-on-one personal interview. This method, we can interact with the sample group to know the behavior and the attitude toward the questionnaire.

### **3.2 Research Tool**

The main tool used in this research is the questionnaire that is designed in conjunction with documents, theories about customer service and delivery system, and related research concerning with manufacturing service. The questionnaire is constructed in one set, which could be divided into four parts as follows:

Part I is about customers profile. It is concern about company background and the products that customer's order to SAS.

Part II is concerned about the factors that the customers concentrate. It is concerned on the factors that related to delivery system including general marketing support, information availability, and physical distribution to the customers. The range of scale from 1 (poor) to 6 (excellent) for rating the importance that the customer's need.

Part III is concerned about value- added services that the customers want SAS to improve their delivery service. The range of scale from 1 to 5 respectively

Part IV is the Summit Auto Seat 's customer comment about the service that they want and suggestions that they want the Summit Auto Part should improve their delivery service. That is the open-ended questions.

This research is conducted by structured a questionnaire to gather the information. The answers from these closed-ended questions are easier to code and analyze and they are easier to answer but this research is also added with some open-ended questions in order to allow respondents to give their opinions too.

### **3.3 Development of Questionnaire**

The researcher writes a questionnaire by means of the study of textbooks, theory, document, and related research concerning with customer service and delivery system, which are used as a guideline for the development of the questionnaire.

- (1) Questionnaire is submitted to the advisor for inspection and approval.
- (2) Questionnaire must be inspected in terms of clarity, conciseness and content of the questionnaire. The suggestions could be derived from the advisor, for the corrective action upon those suggestions.
- (3) The researcher amends the questionnaire accordingly and then once more presents it to the advisor so that the researcher could hone a more effective research tool.
- (4) The completed questionnaire is sent out to the sample group.

### **3.4 Data Collection**

- (1) Primary data derived from questionnaires of a sample group of 13 users, the survey was conducted during June 11, 2001 to June 20, 2001.
- (2) Secondary data derived from research from journals, quick source of background information is trade literature in the ABAC library, database of

SCB Research Institute, and information from Summit Auto Seats Industry Co., Ltd. Using secondary data may be equally important in the research.

### 3.5 Data Analysis

The collected questionnaires are analyzed using the following steps:

- (1) Editing: Researcher will check the completeness of the questionnaires and sort out incomplete questionnaires separately. Those incomplete questionnaires will be re-surveyed until the total complete questionnaires will equal to 13 copies.
- (2) Coding: Total complete questionnaires will be coded according to a predetermined set of criteria.
- (3) Compiling: The questionnaires that already coded will be compiled by using SPSS/PC (Statistic Package for the Social Sciences) program as a tool in the enumeration of frequency and the calculation of standard deviation and mean.
- (4) Analyzing: Data analysis uses the following methodology.

(a) Rating Scale Determination

Measuring Level of Importance

1 point	=	Poor
2 point	=	Fairly poor
3 point	=	Fairly
4 point	=	Fairly good
5 point	=	Good
6 point	=	Excellent

Researcher determines the criteria in order to use as a basis for comparison between the criteria and the computed result. The outcome



indicates the level of importance of each factor. Width of each level is calculated as follows.

$$\begin{aligned}\text{Width} &= (\text{Maximum score} - \text{Minimum score}) / \text{Number of Level} \\ &= (6 - 1) / 6 \\ &= 0.83\end{aligned}$$

Criteria for Level of Importance

Poor	=	Range 1.00 - 1.83
Fairly poor	=	Range 1.84 - 2.67
Fairly	=	Range 2.68 - 3.50
Fairly good	=	Range 3.51 - 4.33
Good	=	Range 4.34 - 5.16
Excellent	=	Range 5.17 - 6.00

### 3.6 Hypothesis

- (1) In the delivery system, the most important factor of customer's attention to is the on-time delivery.
- (2) In the General marketing support, the result of market research should be a greatest tool for help SAS to get order from their customer.
- (3) In the information availability about order status is the most important that the customer prefers before ordering the product.
- (4) In the physical distribution, customers concerned about the order filling accuracy.

## IV. DATA ANALYSIS

An analysis is an important part of the project. It intends to summarize the data, give indications about the association between variables, as well as to test the differences of outcomes variables of the sample. There are many ways for data analysis depending on the questions being asked and the data summary. After the data was gathered by the questionnaire, which were returned in full (13 copies) and it was analyzed with the Statistic Package for the Social Sciences Program (SPSS). Percentage and average rating scale showed the results.

### 4.1 Delivery Service

#### (1) Delivery system

The first outcome was the delivery system that SAS provided for their customers. The questions were asked for rating how much they were satisfied in each service that SAS provided for their customers, which are important factors to the company. The result found that fairly good (Mean between 3.51 to 4.33) of delivery system are availability and on time deliveries. Fairly (Mean between 2.86 to 3.50) of delivery system are defect correction, defect rate, transport service, delivery security, maintenance and technical skill of service staff. Fairly poor (Mean between 1.84 to 2.67) of delivery system are service orientation of service staff, handling of new request, quality of drivers and friendliness/cooperation of service staff. Poor (Mean between 1.00 to 1.83) of delivery system is prompt action on complaint related to carrier's service (As shown in Figure 4.1).

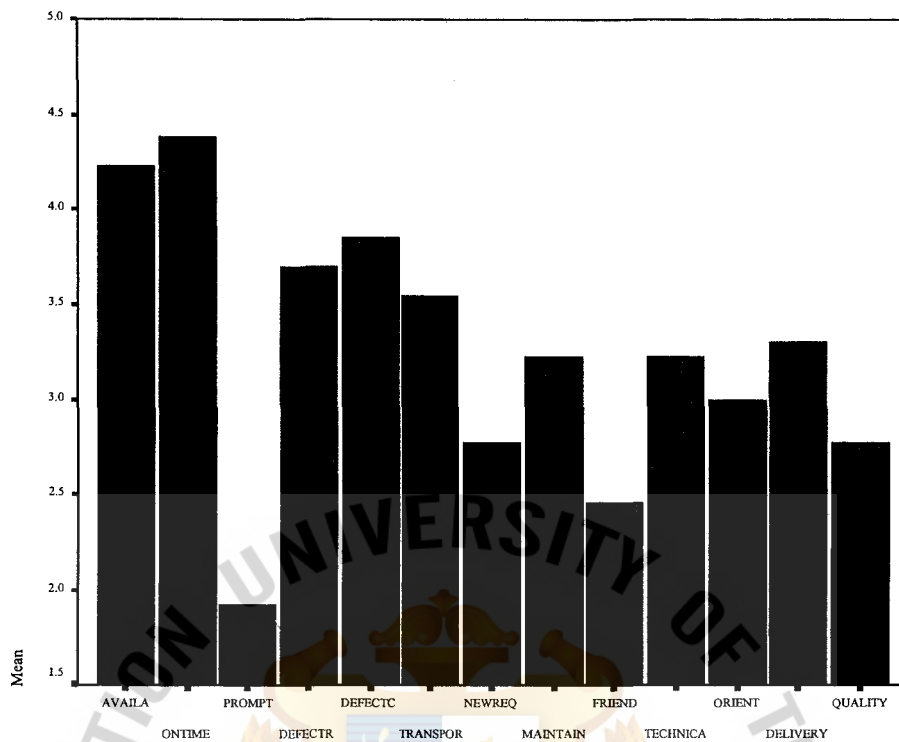


Figure 4.1. Delivery system results.

From the result, the most important delivery system that customers select are on time delivery (46.2% select “Good” in on-time delivery, see Appendix A, Page 51) and availability (23.1% select “Good” in availability, see Appendix A, Page 51). In the competitive world, every business needs to compete with each other to create customer satisfaction as much as possible especially automobile industry, hence, SAS customers must arrange their schedule to deliver their product on time and they want to launch their products to meet customer requirements, therefore, SAS is always concerned that their product should be on time and available for creating reliability and satisfaction to customers.

The less important part of the delivery system is the prompt action on complaints related to carrier's service because the SAS have the strong action on this process that why the customer thought it is not important for them to bother.

(2) General marketing support

The second outcome was the general marketing support that SAS provided for their customers. The questions were asked for rating how much they were satisfied in each service that SAS provided for their customers, which are important factors to the company. The result found that "fairly good" (Mean between 3.51 to 4.33) of general marketing support is the knowledge of sales representatives. "Fairly" (Mean between 2.86 to 3.50) of general marketing support are adequate pre-testing of new product before introduction and marketing assistance. "Fairly poor" (Mean between 1.84 to 2.67) of general marketing support is results of marketing research available as a marketing tool (As shown in Figure 4.2).

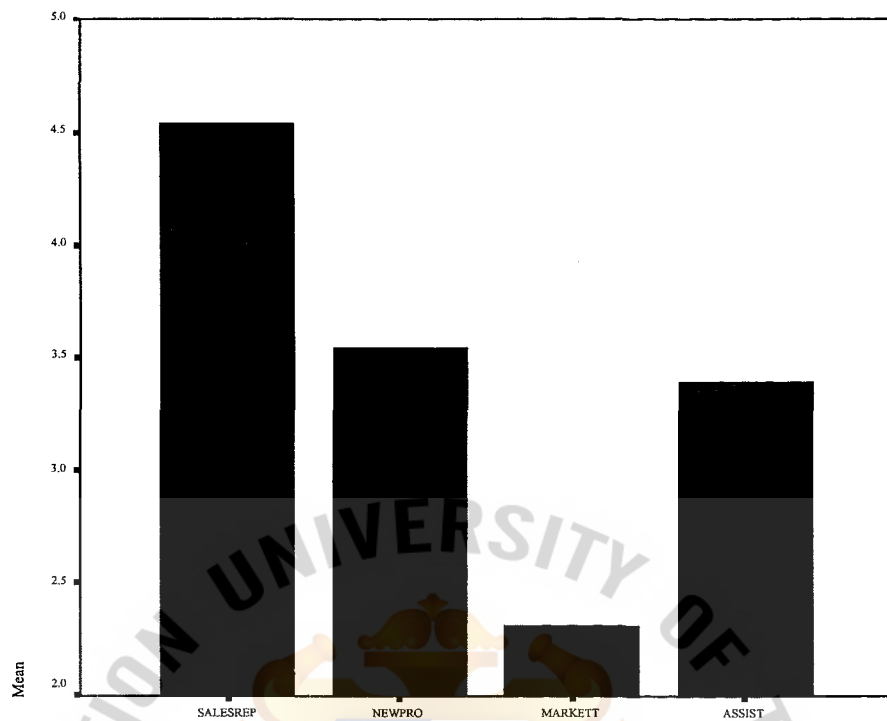


Figure 4.2. General Marketing Support.

From the result, 53.8% of the sample group (See Appendix A, Page 52) select the knowledge of sales representative is the key point to create customer awareness of each product because the sales representative can represent all the information that customer require for their product. And also they act, as the counselor to give some advice and suggestion throughout their customer that would be helpful for the customer when they order the product from SAS to meet the specification of the customer requirement.

The result of market research available as a marketing tool (See Appendix A, Page 52) is not important for the SAS customer because in this industry the most important that the customer rely is the honest and accuracy in service. And each customer must have different purpose on his



or her research, which depend on what each company want to research during that time.

(3) Information availability

The third outcome was information availability that SAS provided for their customers. The questions were asked for rating how much they were satisfied with each service that SAS provided for their customers, which are important factors to the company. The results found that “fairly good” (Mean between 3.51 to 4.33) of information availability is order status. “Fairly” (Mean between 2.86 to 3.50) of information availability are advance information on price change, advance information on order deletions and substitutions and advance information on new product introduction. “Fairly poor” (Mean between 1.84 to 2.67) of information availability is availability of inventory status (As shown in Figure 4.3).

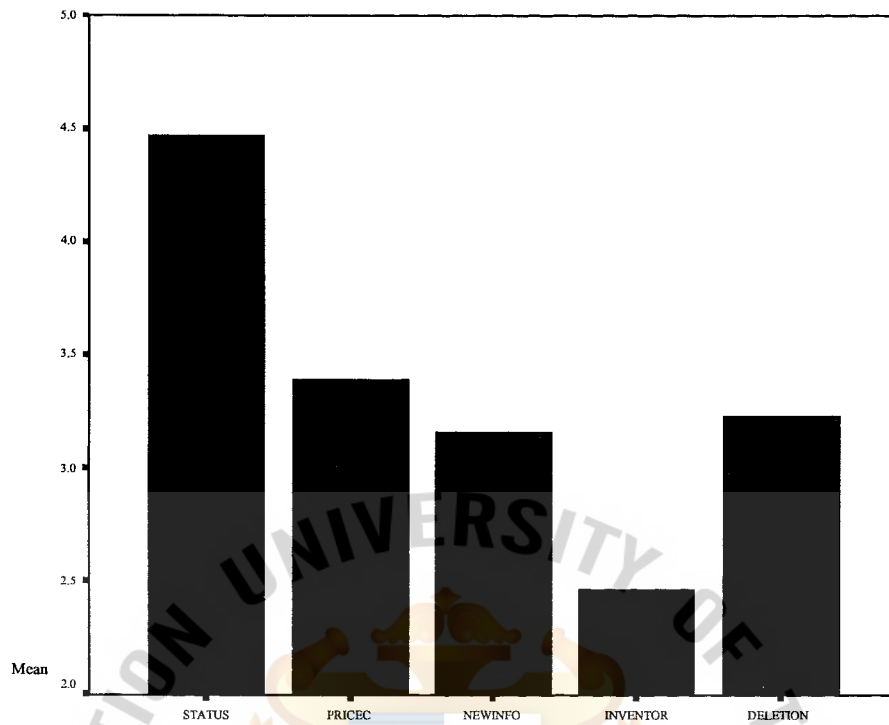


Figure 4.3. Information Availability.

From the result, the order status (46.2% select “Good” in order status, see Appendix A, Page 53) is important because the customers want to know about it then they can estimate and forecast the production plan. In the automobile industry the production plan is very important because the each car model will have the production plan separately in order to meet the trend and market place on time. The order status will help them to estimate and forecast easily.

#### (4) Physical distribution

The fourth outcome was information availability that SAS provided for their customers. The questions were asked for rating how much their satisfied in each service that SAS provided for their customers, which are

important factors to the company. The results found that “fairly good” (Mean between 3.51 to 4.33) of physical distribution are order filling accuracy and adequate carton identification. “Fairly” (Mean between 2.86 to 3.50) of physical distribution are advance notice of change in packaging quantities, unitized or palletized shipments where possible, reasonably small shelf package quantities and procedures for damaged merchandise (As shown in Figure 4.4).

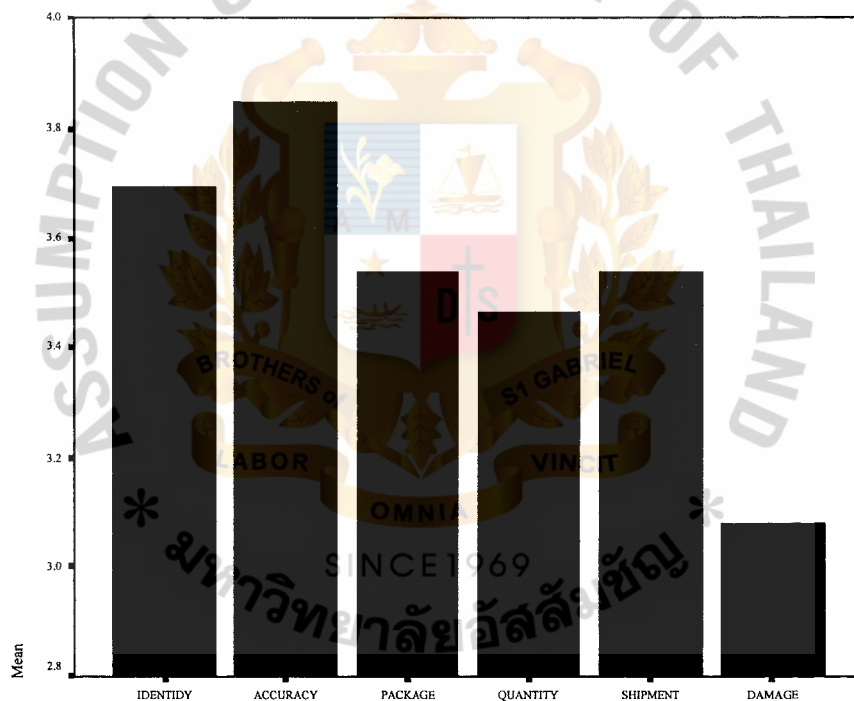


Figure 4.4. Physical distribution.

From the result, the procedure for damaged merchandise (See Appendix A, Page 53) has the lowest point because the SAS has create delivery process the suitable for their product to distribute the product to their customers without any damage. And the percentage of damage product

is very low. Then the customers think it is not important to them because they got good quality of product and delivery service from SAS.

#### 4.2 Value-Added Service

The outcome was added service that SAS should provided for their customers in the future. The questions were asked for rating the most important thing that they want SAS to provide in the future. The result shown that most of their customers want SAS to provide for them is Electronic Data Interchange (EDI) (As shown in Table 4.1).

Table 4.1. Value-Added Service.

Frequency	Not Select	Least Important	Less Important	Neutral	More Important	Most Important	Total
Consultancy Service	-	0.0%	15.4%	<b>53.8%</b>	30.8%	0.0%	100.0%
Business Analysis Service	-	-	-	-	-	-	
Design Service	84.6%	15.0%	-	-	-	-	
Delivery to Budget	15.4%	-	-	30.8%	<b>38.5%</b>	15.4%	100.0%
Help Facilities	15.4%	7.7%	<b>61.5%</b>	15.4%	-	-	100.0%
One Stop Service	23.1%	<b>38.5%</b>	23.1%	-	15.4%	-	100.0%
News and Information	76.9%	23.1%	-	-	-	-	100.0%
Customer Training	84.6%	15.4%	-	-	-	-	100.0%
EDI Service	-	-	-	-	30.8%	<b>69.2%</b>	100.0%

The result shows that 69.2% of customers select EDI service for SAS to provide for them in the future. EDI is an application service that allows the customers to import, export, send and receive EDI document. It can link to almost any accounting package

from small, inexpensive packages to large installations. It is also platform independent, which means it can link to software running on any version of windows. EDI was devised as a way for SAS to exchange business documents automatically and electronically with customers in a standard way, so that those documents could be processed by computers without people typing them into their system. The advantages for SAS and their customers are receiving documents that were entered into a company's information system without human effort resulted in expanding the standards to many other documents beyond simply purchasing and shipping, hence, SAS customers can request information such as price, sales catalog, stock transfer, inventory levels in warehouses, order status, send funds electronically along with automatic notification that an invoice was paid, and many other types of automated transactions. Therefore EDI should be an effective tool for SAS to provide for their customers.

#### **4.3 Result from Hypothesis**

The results of the analysis will be described in detail to answer the statement of hypothesis one by one in the following:

Hypothesis 1: In the delivery system, the most important factor of customer's attention to is on-time delivery.

From the result, SPSS show that on-time delivery (See Appendix A, Page 52 and Page 56) is the most important thing that SAS provide to their customers because customers favor the company that can deliver their products on time, then we accept the hypothesis. Hence, we conclude that the delivery system that SAS provide for their customers to delivery products to be on time is creating the reliability to the customers.

The result that shows us to be concerned with the availability of the service that is the second thing, which the customers consider when they choose the delivery service.



SAS can use the result of delivery system survey to create the SAS standard on delivery system to keep their performance level to meet with their customer, and also it will create the customer awareness and customer satisfaction on the company performance.

Hypothesis 2: In the General marketing support, the result of market research should be a greatest tool for helps SAS to get order from their customer.

This hypothesis can be not accepted because the results of the survey shown that in the general marketing support indicate that the most important thing in this part are sales representatives (See Appendix A, Page 53 and Page 57). Sales representatives are playing one of the important roles of the marketing because sales representatives can generate ideas, focus on the right customers and create good relationships between production and customers to meet the requirement of their product and to increase sales volume for the company. The market research is the least important thing in this topic because each company must have their own market research or hire some research company to analyze their own market which will be more specific and effective rather than using market research that SAS provide for them.

From the result, SAS should pay attention to their sales representative as much as they can because the sales representative can create the customer demand directly. Sales representatives can identify and focus on the “right” customers to get the best information of the customer requirement. They can improve products or services performance through accurate and meaningful customer feedback, and also they can increase the sales volume of the company.

Hypothesis 3: In the information availability about order status is the most important that the customer prefers before ordering the product.

We can accept the hypothesis because the order status (See Appendix A, Page 54 and Page 58) is the first thing that customers consider when they think about the

information availability. Because the customers want to know about the order status to prepare themselves in order to plan the production schedule for their production period. This is good for SAS too, because SAS will know their production status and they can create the production plan in order to meet the minimum requirement of the company that would be helpful for the company to generate work for their employees and production period in the future.

Hypothesis 4: In the physical distribution, customers concerned about the order filling accuracy.

This hypothesis can be accepted. The order filling accuracy (See Appendix A, Page 55 and Page 59) is the most important thing when the customers are concerned with the physical distribution. And the procedures for damaged merchandise are the least thing that customers are concerned. SAS should pay attention as much as they can for the order filling accuracy, because it shows that SAS always pays attention to deliver their product accurately to their customers.

The adequate carton identification is also one of the thing that SAS should not pay less attention than order filling accuracy because it comes as the second one in this topic which customers always pay attention to.

## **V. CONCLUSIONS AND RECOMMENDATIONS**

In this chapter we will discuss about the results of “Customer Services Strategic for Auto Parts Industry”. This project uses 13 samples all of whom are customers of the SAS who is the biggest car seat producer in Thailand. The objectives of this project was to establish the intention to bring knowledge that we get from the project to improve the service of SAS and increase the customer satisfaction to SAS services; especially on the delivery system.

### **5.1 Conclusions**

The survey indicates that from the hypothesis of this research three hypotheses can be accepted and one hypothesis cannot be accepted.

The hypothesizes that can be accepted are;

First hypothesis is “In the delivery system, the most important factor of customer’s attention to is the on-time delivery.” Most of SAS’s customers pay attention to timely delivery, as the result 12 customers rate the “on time delivery” on good and fairly good scales. There is just one customer who rates it as “fairly”. It shows that in this business the on time delivery is a key factor which can create customer satisfaction.

The second one is “In the information availability about order status is the most important that the customer prefers before ordering the product.” The survey indicates that the information that customer require from SAS such as price list, detail of the product, term of payment, production schedule, quality guarantee, etc. SAS should provide the information that customers need to create the sales volume because the information effects the customer decisions to order the product form SAS.

The third hypothesis that can be accepted is “In the physical distribution, customer should concerned about the order filling accuracy.” The deliver system cannot accept the physical distribution. From the result of the project, the order filling accuracy is the most important thing which customers want. Nine out of thirteen of SAS’s customers had rated the factor on “fairly good scale” and one of the customers rated it on the “good scale”.

The hypothesis that cannot be accepted is;

“In the General marketing support, the result of market research should be a greatest tool for helps SAS to get order from their customer.” But the most important thing in this topic is “sales representatives”. Why, because the sales representatives is a tool whom the customers meet directly, the sales team is the image of the company. They can create the customer satisfaction, increase sales volume, etc but the marketing research is only a tool that helps SAS to predict customer behavior.

## **5.2 Recommendations**

All of the above present the good points and the bad points that SAS provides to their customers. As a researcher I would like to recommend the ways that SAS should create for their customer.

As the survey represents SAS can use the result to create delivery standard for the company to keep their performance level and create customer’s awareness on the company performance. The delivery standard must include on time delivery, right product, right time, right condition, right quantity, right cost and right customers. After that SAS should evaluate their delivery performance of their employees every six months to keep the level of standard. This will make their customers trust the company performance and it will create customer perception through the service that SAS provides for them.

The further study that SAS should undertake is Electronic Data Interchange (EDI) to provide this service in the future for their customers. In the automotive industry, EDI has reached the point of being a “must”. All of the automakers have announced that they expect their suppliers to be able to communicate electronically, and that the capability to do so will become a factor in vendor selection. Therefore, EDI has become a requirement in the automotive industry. Its use is being strongly encouraged by all of the major manufacturers. EDI is seen as a tool to combat rising costs and decreasing productivity and to increase competitiveness of the automotive industry.

The basic EDI tools that SAS should be considering before using EDI are:

- (1) EDI standards, standards are the agreements among EDI users as to what is an acceptable EDI communication. There are two types of EDI standards: formatting standards and communication standards.
- (2) EDI Software, the EDI standards provide a common language, in terms of formatting and syntax, for the development of electronic communication. While the standards are flexible enough to accommodate numerous needs and requirements of different companies, it would be highly unusual for a company to have its internal database set up in the same format as the standard, just as every company has its own paper form on which information is placed, every company has its own unique format and structure for its database. Therefore, some methods must be used to take the information from the company-specific database and translate it to EDI standard format for transmission.
- (3) EDI Networks, EDI documents are transmitted electronically through phone or data lines from one computer to another. In a direct EDI network the



computers of the trading partners are linked directly, usually through dial-up modems.

Hence, SAS should study and provide this type of service to their customers because EDI is one of the fast becoming standard ways of exchanging business documents among SAS, customers and their suppliers. EDI provides a faster, more accurate, less costly method of communication than do traditional methods of business communications such mail, telephone, and personal delivery.





APPENDIX A

RESULT OF HYPOTHESIS

### Frequency Table from Statistic Package for the Social Sciences

Table A.1. Frequency of Delivery System.

	Poor	Fairly Poor	Fairly	Fairly Good	Good	Excellent	Total
Availability	-	-	-	76.9%	23.1%	-	100.0%
On-time deliveries	-	-	7.7%	46.2%	46.2%	-	100.0%
Prompt action on complaint related to carrier's service	30.8%	46.2%	23.1%	-	-	-	100.0%
Defect rate	-	-	30.8%	69.2%	-	-	100.0%
Defect correction	-	-	23.1%	69.2%	7.7%	-	100.0%
Transport service	-	-	46.2%	53.8%	-	-	100.0%
Handling of new request	-	30.8%	61.5%	7.7%	-	-	100.0%
Maintainance (if appropriate)	-	-	76.9%	23.1%	-	-	100.0%
Friendliness/ cooperation of service staff	-	53.8%	46.2%	-	-	-	100.0%
Technical skill of service staff	-	7.7%	61.5%	30.8%	-	-	100.0%
Service orientation of service staff	-	7.7%	84.6%	7.7%	-	-	100.0%
Delivery security	-	7.7%	53.8%	38.5%	-	-	100.0%
Quality of drivers	-	46.2%	30.8%	23.1%	-	-	100.0%

### Frequency Table from Statistic Package for the Social Sciences

Table A.2. Frequency of General Marketing Support.

	Poor	Fairly Poor	Fairly	Fairly Good	Good	Excellent	Total
Knowledge of sales representation	-	-	-	46.2%	53.8%	-	100.0%
Adequate pretesting of new product before introduction	-	-	46.2%	53.8%	-	-	100.0%
Results of market research available as a marketing tool	7.7%	53.8%	38.5%	-	-	-	100.0%
Marketing assistance	-	-	61.5%	38.5%	-	-	100.0%

### Frequency Table from Statistic Package for the Social Sciences

Table A.3. Frequency of Information Availability.

	Poor	Fairly Poor	Fairly	Fairly Good	Good	Excellent	Total
Order status	-	-	-	53.8%	46.2%	-	100.0%
Advance information on price change	-	-	61.5%	38.5%	-	-	100.0%
Advance information on new product	7.7%	53.8%	38.5%	-	-	-	100.0%
Availability of inventory status	-	53.8%	46.2%	-	-	-	100.0%
Advance information on order deletions and substitutions	-	-	76.9%	23.1%	-	-	100.0%



### Frequency Table from Statistic Package for the Social Sciences

Table A.4. Frequency of Physical Distribution.

	Poor	Fairly Poor	Fairly	Fairly Good	Good	Excellent	Total
Adequate carton identification	-	-	38.5%	53.8%	7.7%	-	100.0%
Order filling accuracy	-	-	23.1%	69.2%	7.7%	-	100.0%
Advance notice of change in packaging quantity	-	-	46.2%	53.8%	-	-	100.0%
Reasonably small shelf package quantity	-	-	61.5%	30.8%	7.7%	-	100.0%
Unitized or palletized shipments where possible	-	7.7%	30.8%	61.5%	-	-	100.0%
Procedures for damaged merchandise	-	7.7%	76.9%	15.4%	-	-	100.0%

**T-Test**

**One-Sample Statistics from Statistic Package for the Social Sciences**

Table A.5. T-Test of Delivery System.

	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error Deviation</b>
Availability	13	4.23	.44	.12
On-time deliveries	13	4.38	.65	.18
Prompt action on complaint related to carrier's service	13	1.92	.76	.21
Defect rate	13	3.69	.48	.13
Defect correction	13	3.85	.55	.15
Transport service	13	3.54	.52	.14
Handling of new request	13	2.77	.60	.17
Maintainance (if appropriate)	13	3.23	.44	.12
Friendliness/ cooperation of service staff	13	2.46	.52	.14
Technical skill of service staff	13	3.23	.60	.17
Service orientation of service staff	13	3.00	.41	.11
Delivery security	13	3.31	.63	.17
Quality of drivers	13	2.77	.83	.23

## T-Test

### One-Sample Statistics from Statistic Package for the Social Sciences

Table A.6. T-Test of General Marketing Support.

	N	Mean	Std. Deviation	Std. Error Deviation
Knowledge of sales representation	13	4.54	.52	.14
Adequate pretesting of new product before introduction	13	3.54	.52	.14
Results of market research available as a marketing tool	13	2.31	.63	.17
Marketing assistance	13	3.38	.51	.14



## T-Test

### One-Sample Statistics from Statistic Package for the Social Sciences

Table A.7. T-Test of Information Availability.

	N	Mean	Std. Deviation	Std. Error Deviation
Order status	13	4.46	.52	.14
Advance information on price change	13	3.38	.51	.14
Advance information on new product	13	3.15	.69	.19
Availability of inventory status	13	2.46	.52	.14
Advance information on order deletions and substitutions	13	3.23	.44	.12



**T-Test**

**One-Sample Statistics form Statistic Package for the Social Sciences**

Table A.8. T-Test of Physical Distribution.

	N	Mean	Std. Deviation	Std. Error Deviation
Adequate carton identification	13	3.69	.63	.17
Order filling accuracy	13	3.85	.55	.15
Advance notice of change in packaging quantity	13	3.54	.52	.14
Reasonably small shelf package quantity	13	3.46	.66	.18
Unitized or palletized shipments where possible	13	3.54	.66	.18
Procedures for damaged merchandise	13	3.08	.49	.14



## Descriptive

### Descriptive Statistics from Statistic Package for the Social Sciences

Table A.9. Descriptive of Delivery System.

	N	Mean	Minimum	Maximum
Availability	13	4.23	4	5
On-time deliveries	13	4.38	3	5
Prompt action on complaint related to carrier's service	13	1.92	1	3
Defect rate	13	3.69	3	4
Defect correction	13	3.85	3	5
Transport service	13	3.54	3	4
Handling of new request	13	2.77	2	4
Maintainance (if appropriate)	13	3.23	3	4
Friendliness/ cooperation of service staff	13	2.46	2	3
Technical skill of service staff	13	3.23	2	4
Service orientation of service staff	13	3.00	2	4
Delivery security	13	3.31	2	4
Quality of drivers	13	2.77	2	4

## Descriptive

### Descriptive Statistics from Statistic Package for the Social Sciences

Table A.10. Descriptive of General Marketing Support.

	N	Mean	Minimum	Maximum
Knowledge of sales representation	13	4.54	4	5
Adequate pretesting of new product before introduction	13	3.54	3	4
Results of market research available as a marketing tool	13	2.31	1	3
Marketing assistance	13	3.38	3	4



## Descriptive

### Descriptive Statistics from Statistic Package for the Social Sciences

Table A.11. Descriptive of Information Availability.

	N	Mean	Minimum	Maximum
Order status	13	4.46	4	5
Advance information on price change	13	3.38	3	4
Advance information on new product	13	3.15	2	4
Availability of inventory status	13	2.46	2	3
Advance information on order deletions and substitutions	13	3.23	3	4



**Descriptive**

**Descriptive Statistics form Statistic Package for the Social Sciences**

Table A.12. Descriptive of Physical Distribution.

	N	Mean	Minimum	Maximum
Adequate carton identification	13	3.69	3	5
Order filling accuracy	13	3.85	3	5
Advance notice of change in packaging quantity	13	3.54	3	4
Reasonably small shelf package quantity	13	3.46	3	5
Unitized or palletized shipments where possible	13	3.54	2	4
Procedures for damaged merchandise	13	3.08	2	4





**Survey of Customer Satisfaction on the Delivery System, which provided by the Summit Auto Seats Industry Co., Ltd.**

Department of Computer and Engineering Management MS(CEM) Assumption University.

Instructions:

Listed on the following pages are factored often provided by Summit Auto Seats Industry Co., Ltd. to their customers. This section involves three parts. Each part will explain separately:

Part I: This part is explained about the customer's profile.

Part II: Which involved about the factors that Summit Auto Seats' customers concentrate. The range of scale from 1 (poor) to 6 (excellent) for rating the importance that customer's need.

Part III: This part concerns about value-added service that the customers want Summit Auto Seats to improve their delivery system. The range of scale from 1 to 5 respectively.

Part IV: That are Summit Auto Seats' customers comment about the service that they want and suggestions that they want Summit Auto Seats should improve their delivery service. The questions are opened-questions.

**Part I: Customer Profile**

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Position: \_\_\_\_\_

Number of Summit Auto Seats products: \_\_\_\_\_

**Part II:** Please rate about delivery service on a range of scale from 1 (poor) to 6 (excellent)

**A. Delivery System**

Availability 1 2 3 4 5 6

On-time Delivery 1 2 3 4 5 6

Prompt action on complaint related to carrier's

Service 1 2 3 4 5 6

Defect rate 1 2 3 4 5 6

Defect correction 1 2 3 4 5 6

Transport service 1 2 3 4 5 6

Handling of new request 1 2 3 4 5 6

Maintenance (if appropriate) 1 2 3 4 5 6

Friendliness/cooperation of service staff 1 2 3 4 5 6

Technical skill of service staff 1 2 3 4 5 6

Delivery security 1 2 3 4 5 6

Quality of drivers 1 2 3 4 5 6

Advance notice of shipping delays 1 2 3 4 5 6

**B. General Marketing Support**

Knowledge sales representative 1 2 3 4 5 6

Adequate pre-testing of new product 1 2 3 4 5 6

Results of Market research available as a

market tool 1 2 3 4 5 6

Marketing assistance 1 2 3 4 5 6

C. Information Availability

Order status	1	2	3	4	5	6
Advance information on price changes	1	2	3	4	5	6
Advance information on new product introduction	1	2	3	4	5	6
Availability on inventory status	1	2	3	4	5	6
Advance information on order deletions and Substitutions	1	2	3	4	5	6

D. Physical Distribution

Adequate carton identification	1	2	3	4	5	6
Order filling accuracy	1	2	3	4	5	6
Advance notice of change in packaging quantities	1	2	3	4	5	6
Reasonably small shelf package quantities	1	2	3	4	5	6
Unitized or palletized shipments where possible	1	2	3	4	5	6
Procedures for damaged merchandise	1	2*	3	4	5	6



## APPENDIX C

### INFORMATION OF SUMMIT AUTO SEATS COMPANY





บริษัท ชัมมิท โอโตซีที อินดัสตรี จำกัด ( กิ่งแก้ว )

หน้า

1 / 1

เรื่อง

สรุป ระบบการสั่งซื้อและวิธีการส่งมอบ ของ บริษัทลูกค้า SAS GROUP

วันที่

เลขที่เอกสาร

Item	บริษัท ลูกค้า	ลักษณะการสั่งซื้อ		วิธีการส่งมอบชิ้นงานให้ลูกค้า				เวลาที่ลูกค้า		ความถี่การ ส่งชิ้นงานให้ ลูกค้า / วัน	กำหนดเวลา การส่งมอบ ชิ้นงาน
		Model	Part By Part	Delivery	Kan Ban	Time	Synchro-	ทำงาน			
				Schedule	Card	Delivery	nize	1 กะ	2 กะ		
1	Mitsubishi ( Pick Up )									ทุก 2 ชม.	8.00 - 05.00
2	Mitsubishi ( Passenger )									1 ครั้ง / วัน	8.00 - 16.00
3	Mitsubishi ( Truck )									1 ครั้ง / วัน	8.00 - 16.00
4	Isuzu ( Pick Up )									1 ครั้ง / วัน	9.00 - 10.00
5	Toyota ( Pick Up )									3 ครั้ง / วัน	9.00,11.00,15.00
6	Toyota ( Passenger )									1 ครั้ง / วัน	15.00
7	Siam Nissan									2 ครั้ง / วัน	8.30 - 14.30
8	Nissan Desel ( Truck )									1 ครั้ง / วัน	8.00 - 16.00
9	Hino ( Truck )									1 ครั้ง / วัน	10.00 - 11.00
10	Honda ( Passenger )									1 ครั้ง / วัน	9.00 - 15.00
11	Ford ( Pick Up )									1 ครั้ง / วัน	9.00 - 16.00
12	Benz ( Passenger )									ไม่กำหนด	8.00 - 16.00
13	BMW ( Passenger )									ไม่กำหนด	8.00 - 16.00
14	Volvo ( Passenger )									ไม่กำหนด	8.00 - 11.00
15	Peugeot ( Passenger )									ไม่กำหนด	8.00 - 16.00
16	Cherokee									ไม่กำหนด	8.00 - 16.00
17	General Motors									ไม่กำหนด	8.00 - 16.00
18	Johnson									ไม่กำหนด	8.00 - 16.00
19	NHK									ไม่กำหนด	8.00 - 16.00
20	TG									1 ครั้ง / วัน	10.00 - 12.00

หมายเหตุ

- บริษัท Ford ส่งสัปดาห์ละ 1 ครั้ง ในวันศุกร์
- บริษัท Mitsubishi และ Siam Nissan มีวิธีการส่งมอบชิ้นงาน 2 แบบ

Figure C.2. สรุประบบการสั่งซื้อและวิธีการส่งมอบสินค้า

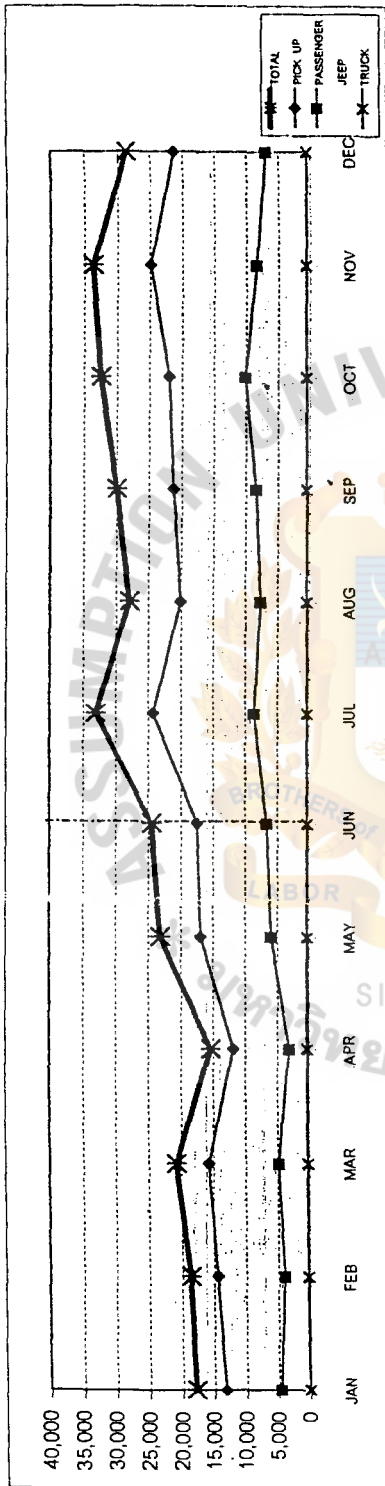


บริษัท ชัมมิท โอโตซีท อินดัสตรี จำกัด ( กิ่งแก้ว )										หน้า		1 / 1			
เรื่อง	สรุป กลุ่มชิ้นงานที่ SAS GROUP ทำการผลิตและส่งมอบให้ลูกค้า										วันที่				
											เลขที่เอกสาร				
Item	กลุ่มชิ้นงาน	ลักษณะชิ้นงาน	MITSUBISHI	ISUZU	TOYOTA	NISSAN	HINO	HONDA	FORD	BENZ	BMW	VOLVO	PEUGEOT	CHEROKEE	GM
1	Door Trim แผ่นเรียบ	Seam Board ไม้	1	1	1	1	-	-	-	-	-	-	1	-	-
2	Door Trim ขึ้นรูป	Dry Mat ขึ้นรูป	1	1	1	1	-	1	-	1	1	1	-	-	-
3	Headlining ตัดเย็บ	PVC ตัดเย็บ	1	1	1	1	-	-	-	-	-	-	-	-	-
4	Headlining ขึ้นรูป	Felt ขึ้นรูป	1	1	1	1	-	1	-	1	-	-	1	-	-
5	Floor Mat ตัดเย็บ	PVC ตัดเย็บ	1	1	1	1	1	-	-	-	-	-	-	-	-
6	Floor Mat ขึ้นรูป	PVC ขึ้นรูป	1	1	1	1	1	-	-	-	-	1	-	-	-
7	Insulator Hood	Felt ขึ้นรูป	1	1	1	1	-	1	-	-	-	-	-	-	1
8	Insulator Dash	Felt ขึ้นรูป	1	-	1	1	1	1	-	-	-	-	-	-	1
9	Trim B/PNL. UPR.	PP Vacuum ขึ้นรูป	1	-	1	-	1	-	-	-	-	-	-	-	-
10	Trim B/PNL. LWR.	PP Vacuum ขึ้นรูป	1	-	1	-	-	-	-	-	-	-	-	-	-
11	Trim Rear Pillar	PP Vacuum ขึ้นรูป	1	-	-	-	-	-	-	-	-	1	-	-	-
12	Shield Cover	PP Injection ขึ้นรูป	1	-	-	1	-	-	-	-	-	-	-	-	-
13	Shield Splash	PE Vacuum ขึ้นรูป	1	-	1	1	1	-	-	-	-	-	-	-	-
14	Cover Trim Side	PP Vacuum ขึ้นรูป	1	1	-	-	1	-	-	-	-	-	-	-	-
15	P/Shelf	Felt ขึ้นรูป	1	-	1	1	-	-	-	1	-	1	-	-	-
16	Pad Dash Panel	PVC ตัด Felt	1	-	-	-	-	-	-	-	-	-	-	-	-
17	Pad Cowl Top	PVC ตัด Felt	1	-	-	-	-	-	-	-	-	-	-	-	-
18	Pad Roof	Felt Cut Size	1	-	-	-	-	1	-	-	-	-	-	-	-
19	Survivor	Seam PVC	1	1	1	1	1	1	-	1	1	1	-	-	-
20	Board Trunk Floor	Board ไม้ ขึ้นรูป	1	1	-	-	-	1	-	-	-	-	-	-	-
21	Film Water Proof	Plastic Cut Size	1	-	-	-	-	-	-	-	-	-	-	-	-
22	Shift Boot	PVC ตัดเย็บ	1	-	1	-	-	1	1	-	-	-	-	-	-
23	Cover Shift Hole	PVC ตัดเย็บ	-	-	1	-	-	-	-	-	-	-	-	-	-
24	Cover PKB.	PVC ตัดเย็บ	-	-	1	-	-	-	-	-	-	-	-	-	-
25	Cable Ass'y	ร้อยลวดขึ้นรูป	-	1	-	1	-	-	-	-	-	-	-	-	-
26	Hook Link	Press Part	1	-	-	-	-	-	-	-	-	-	-	-	-
27	DVC. Ass'y PKB.		1	1	1	1	1	-	-	-	-	1	-	-	-
28	Seat Ass'y		1	1	1	1	1	-	-	1	1	1	-	1	1
29	Seat Belt		-	-	-	-	-	-	-	1	1	1	1	-	-
30	Lining		-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL			25	13	18	15	9	8	1	6	4	8	3	1	4

Figure C.3. สรุป กลุ่มชิ้นงานที่ SAS ทำการผลิตและส่งมอบให้ลูกค้า



**SUMMIT AUTO SEATS INDUSTRY CO.,LTD**  
**SUMMARY ORDER CUSTOMER JAN - DEC 1999**  
 (CUSTOMER ALL)



FRIME ORDER														จำนวนเป็นพัน				
MONTH	JAN	FEB	MAR	APR	MAY	JUN	ค่าเฉลี่ย JAN-JUN	JUL	AUG	SEP	OCT	NOV	DEC	ค่าเฉลี่ย JUL-DEC	เพิ่ม, (ลด) %	รวมยอดทั้งปี		
																จำนวน	SHARE	
PICK UP	13,166	14,371	15,681	11,798	16,819	17,420	14,876	24,178	19,966	21,156	21,864	24,737	21,185	22,181	49.11	222,341	18,528	72.99
PASSENGER	4,520	3,884	4,764	3,046	5,866	6,572	4,775	8,560	7,513	8,280	10,038	8,290	6,840	8,254	72.84	78,173	6,514	25.66
JEEP	36	72	36	180	144	72	90	36	36	36	36	72	72	48	(46.67)	828	69	0.30
TRUCK	6	176	183	219	214	252	175	236	310	374	393	507	417	373	113.05	3,287	274	1.08
TOTAL	17,728	18,503	20,664	15,243	23,043	24,316	19,916	33,010	27,825	29,846	32,331	33,606	28,514	30,855	54.93	304,629	25,386	100.03

ผู้รายงาน  
 นายธนชัย คงดี  
 เจ้าหน้าที่ฝ่ายวางแผนฯ

ผู้ตรวจสอบ  
 นายสุรชัย อังนกร  
 ผู้ช่วยผู้จัดการฝ่ายวางแผนฯ

- หมายเหตุ
1. ช่วง % หมายถึง การเปรียบเทียบยอดการเพิ่ม (ลด) 6 เดือนแรก และ 6 เดือนหลัง
  2. ข้อมูลที่แสดงรวมยอดการประกอบรถยนต์ EXPORT ด้วย

Figure C.4. Customer Order From January – December 1999

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