Management Challenges in Service Factories, Service Shops, Mass Services and Professional Services

By

JROONGPORN TRITIPSKUL

A Thesis Submitted in Partial Fulfillment
of the Requirements for the Degree of

Master of Business Administration

Graduate School of Business
Assumption University
Bangkok Thailand

August, 2001

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Abstract

The objective of this study is to help the managers understand clearly about the nature of their businesses and encourage the employees to work in their jobs at the most matching challenges.

For the research framework, there are 2 independent variables that are customer contact/customization and labor intensity. These 2 independent variables will vary on the different in service industries. They are service factories (low customer contact/customization and low labor intensity), service shops (low customer contact/customization and high labor intensity), mass services (high customer contact/customization and low labor intensity) and professional services (high customer contact/customization and high labor intensity). These 2 independent variables have some effects on 22 dependent variables that are management challenges. They are marketing, making service "warm", scheduling service delivery, reacting to customer intervention in process, managing advancement of people delivery service, attention to physical surroundings, control of far-flung geographical locations, managing demand to avoid peak and to promote off-peaks, managing fairly rigid hierarchy with need for standard operation procedures, managing flat hierarchy with loose subordinate-superior relationships, training, hiring, technological advances, capital decision, maintaining quality, fighting cost increases, startup new units, managing growth, scheduling workforces, scheduling service delivery, employee welfare and work methods development and control.

The researcher uses survey method. Two hundred and eighty questionnaires were distributed to managers in four different types of service industries (service factories, service shops, mass services and professional services). Each service industries will be distributed 70 questionnaires equally. The data analysis that the researcher uses is multiple regression.

The results indicate that there is a relationship between management challenges across various types of service industries and change in degree of customer contact/customization and labor intensity.

For service industries with low customer contact/customization that are service factories and mass services. Marketing, managing flat hierarchy with loose subordinate-superior relationships, technological advances, training, schedule workforces and managing fairly rigid hierarchy with need for standard operating procedures are the management that challenges for these service industries.

For service industries with high customer contact/customization that are service shops and professional services. Scheduling service delivery, reacting to customer intervention in process, managing advancement of people delivering service, attention to physical surroundings, control of far-flung geographical locations, startup new units, managing growth, gaining employee loyalty, hiring, employee welfare, managing demand to avoid and to promote off-peaks, fighting cost increase, maintaining quality and work methods development and control are the management that challenges for these service industries.

For service businesses with high labor intensity that are mass services and professional services. There is 3 important management involved. The first one is making service warm, attention to physical surrounding and managing advancement of people delivering service.

For businesses that have low labor intensity that are service factories and service shops. The management that challenges to them are managing flat hierarchy with loose subordinate-superior relationships, capital decision, technological advance and fighting cost increase.

For service factories, the researcher recommends they to develop good marketing and pay more attention to technologies because most of their jobs done by machine. For service shops, the researcher recommends they to gain more information from the customers and use it in the process the same as professional services. For mass services, the researcher recommends they to keep standard operating procedures because it can help the customers recognize the business.

Management Challenges in Service Factories, Services Shops, Mass Services and Professional Services

Chapter 1: Introduction

1.1 Background of the Study

1.1.1 Importance of Service Industry

It is generally accepted that the world is challenged by rapid changes in technology, people, environment as well as the economic sector. All these factors also have some effects on service industry. When we think of service, we will think about many businesses such as fast food shop, restaurants, hair salons etc. How many people will know clearly about it? Service is frequently an intrinsic part of the package of benefits offered to the customers. To distinguish its nature from goods, services are characterized as intangible, impermanent, difficult to store, heterogeneous and consumed at the point of production.

Besides, services have also been categorized as producer and consumer services. Producer services would include services which are provided, for example, by transport and communications, while consumer services are those which are purchased and consumed by households and individuals, and there will include, for example, health and educational services. The increase in demand for consumer service is closely associated with the rise in the level of income and is, therefore, income elastic. The growth of producer services tend to be closely associated with the extension of the inter-industry division of labor, giving rise to the growth of such industries as distribution, banking and insurance to service the needs of material producers.

As an economy progresses toward a higher level of development, there is a tendency for the service industry to assume greater importance.

1.1.2 Classification of Service Industry

The service industry has increased its importance from the past till today. Therefore, numerous articles have appeared in both academic and practitioner-based publications, which provide guidelines for effective management in services. Service

research had emphasized on service classification schemes. For example: Judd (1964) classified services according to three categories: rental goods, owned goods and non-goods services.

Moreover, there are many researchers such as Rathmal, Shostack, Sasser, Olsen who had classified services in similar ways. Until the era of Chase (1981), the way to classify services had changed. It had turned to the degree of customer contact. In 1986, Schmenner proposed the service process matrix (SPM), based on three characteristics of service delivery systems: labor intensity (that is a measure of how hard a population is working. It is determined by three factors. The first is the labor force participation rate, which is the percentage of people of working age who are in the labor force. The second is the employment rate, the percent of all participants in the labor force who are employed. The third is average hours worked, or the number of hours the average employed person works in a week), customer contact (that is a process describing the minimum level of contact actually needed to obtain service in each instance.

Normally, there are 3 levels of contact, reflecting actual customer behavior as it related to the core product. The first is high-contact service with which customers visit the service facility in person and are actively involved with the service organization and its personnel throughout service delivery. The second is medium-contact services entailing a lower degree of involvement with service providers. This group is services in which customer visits the service provider's facilities but either do not remain throughout service delivery or else have little contact with service personnel. The third is low-contact services. It involves no physical contact between customers and service providers), and service customization (involving fit and alterability and is based on understanding the commonality and variability across customers. Besides, it also means to build, fit or alter according to individual specifications. The key is to fit to the customer's specification through either "green field" (new) development--by making sure that a packaged solution fits the customer very well and needs only minimal customization--or being able to easily configure a solution from existing customizable assets and components).

By developing this classification, 4 different types of services had developed: service factory (service with both low customer contact/customization and a low degree of labor intensity), service shop (service with low labor intensity but high customer contact/customization), mass service (are characterized by high labor intensity in combination with low customer contact/customization) and professional service (services involving high customer contact/customization as well as a high degree of labor intensity). Then, in year 1990s, service classification frameworks have continued to evolve by using this model. It had started from Mersha and Wemmerlov (1990). Both of them also emphasized on degree of customer contact and developed two-dimensional matrix based on rigid VS fluid service processes. In 1995, Kellogg and Nie proposed a two-dimensional matrix, which connected the characteristics of service-products with service-processes. The single common characteristics of all the cited is that they are primarily conceptual or theoretical in nature. In another series of studies, the research emphasized on managerial practices and performance from a large number of service industries by Chase and Voss (1997).

1.1.3 Importance of Service in Thailand

According to the Commercial Registration Statistics for the entire country's (Thailand) newly established firms, we will see that service has become more important for today's economy as shown in (Table 1).

Table 1.1: The newly established firms in Bangkok and Provincial Areas in 2001

Types of Business	No. of firms	Registered capital (million baht)	Paid capital (million baht)
Major Div. 1 : Agriculture, Hunting, Forestry and Fishing	-	-	-
Major Div. 2 : Mining and Quarrying	99	824,000	447,500
Major Div. 3 : Manufacturing	41	102,000	87,750
Major Div. 4 : Electricity Gas and Water	2,190	30,107,190	17,368,260
Major Div. 5 : Construction	14	17,942,030	1,646,280
Major Div. 6 : Wholesale and Retail Trade and Restaurants	1,426	3,559,930	2,123,930
and Hotel	7,941	36,309,640	15,975,140
Major Div. 7 : Transport, Storage and communication	1,351	7,521,550	3,756,900
Major Div. 8 : Financing, Insurance, Real Estate and	3,533	25,053,330	15,638,280
Business Service	1,454	4,138,880	2,628,460
Major Div. 9 : Community Social and Personal Service	10	22,000	9,250
Major Div. 10: Activities not Adequately Define	-	-	-
Total	18,359	125,580,550	59,681,750

Source: Data Analysis Subsection, Statistical Data Analysis Section, Business Documentation Division, Ministry of Commerce, Data on January 24, 2001

Due to the data in Table 1.1, we will see that the business sector, especially, service is the number one of the newly established firms when compared to the other

businesses. According to the number of the firms, we will see that hotel business is the number one that is 7,941 firms. The second one is financing and the third is electricity, gas and water. By this figure, we can be assured that today Thailand's service sector is really increasing in its importance and has become the market leader for the whole industry.

Table 1.2: Capital Increase Registrations Statistics in Bangkok and Provincial Areas for the year 2000 (January-December)

Types of Business	No. of firms	Previous capital (million baht)	Increase capital (million baht)	Total capital (million baht)
Major Div. 1 : Agriculture, Hunting, Forestry and Fishing	-	-	-	-
Major Div. 2 : Mining and Quarrying	26	1,418,800	1,041,100	2,459,900
Major Div. 3 : Manufacturing	19	290,200	979,300	1,269,500
Major Div. 4 : Electricity Gas and Water	961	95,125,650	11,510,380	139,936,030
Major Div. 5 : Construction	10	7,388,130	20,929,990	28,318,120
Major Div. 6 : Wholesale and Retail Trade and	404	11,595,210	16,833,220	28,428,430
Restaurants and Hotel	2,446	59,642,500	78,284,650	137,927,150
Major Div. 7 : Transport, Storage and communication	280	16,800,980	11,513,890	28,314,870
Major Div. 8 : Financing, Insurance, Real Estate and	1,038	106,401,160	93,227,970	199,629,130
Business service	262	3,548,200	4,998,530	8,546,730
Major Div. 9 : Community Social and Personal Service	508	51,127,730	57,838,060	108,965,810
Major Div. 10: Activities not Adequately Define	-	-	-	-
Total	5,957	353,638,560	330,157,110	683,795,670

Source: Data Analysis Subsection, Statistical Data Analysis Section, Business Documentation Division, Data on January 12, 2001

When we look through the amount of capital increases in Table 1.2, the business in service sector is also the number one. The top three businesses that can increase in its capital are financing, hotels and community social and personal services. As we see these figures, we can conclude that today business depends more on services not manufacturing. Thus, the company that can survive in today' s economy is the company that emphasis not only on quality products but also on service.

1.1.4 Management Challenges in Service

Management challenge is the quality of requiring the very best of one's abilities and efforts. For an enterprise to survive, it must achieve its objectives in an efficient fashion. In this regard, good management is often key to success of an enterprise. The great economist (Joseph A. Schumpeter, 1995) referred to management and entrepreneurs as "the engine of growth". Admittedly, firms can fail because of inadequate funds, improper marketing, incompetent product design, in attention to quality, disregard for customer concerns, and exclusive attention on short-

term financial orientation all threaten to undermine the service sector of the economy. Beside, they often fail because the basic management functions are performed poorly or not at all.

For service management, it is a management approach in which management procedures are geared to the characteristics of services and the nature of service competition. Service management is also very much market-oriented approach. Service management as a phenomenon includes the marketing aspect of business or of any organization's customer relationships.

However, it is important to realize that the service sector could become as vulnerable to foreign competition as has the manufacturing sector. The sound management can be a major competitive advantage to a company or even a society. All enterprises need competent, ethnical managers who will strive to make them more productive. As the nature of competition in services has changed, service managers also need to understand these new competitive dimensions in order to take advantage of opportunities to improve service quality and performance, thereby creating barriers to entry from foreign and domestic competitors.

1.2 Statement of Problems

Today, there are four main types of service businesses that are service factories, service shops, mass services and professional services. Generally, the business owners always overlook these things. They do not realize about these differences among these service classification schemes. Besides, each types of service classification scheme also has different management challenges. Thus, it causes a lot of problems in their companies.

As the business owners do not understand the nature of their businesses more clearly, it is possible that they can use wrong methods to motivate their employees. From this point, it can create a lot of costs to the companies such as higher level of resignation due to the employees do not have enough challenges in their jobs. When they resigned, it has created many costs for the companies such as selecting and

training costs, wasting investment from wrong decisions that should not be of concern in their businesses and others.

Thus, it is important for businesspeople to realize and understand the nature of their businesses and encourage the employees to work in their jobs at the most matching challenges as you can find from this research' s results.

1.3 Research Objectives

In order to solve the problems that occurred in these service sectors, this thesis would examine the directions for improving the operation. At the same time, the study also is to describe, to identify, and to examine the management challenges in different type of services. The specific objectives of the thesis are:

- To investigate how management challenges differ across four types of service industries (service factories, service shops, mass services and professional services) in terms of customer contact/customization and labor intensity.
- To provide directions for improving quality, productivity and operating efficiency.

1.4 Research Scope & Limitation

The scope of this study is limited to the management challenges in service factory, the service shop, the mass service and professional service. This study is based on the existing empirical analysis and some service management theories. This study reveals the limitations of theoretical classification schemes. While theoretical typologies provide an important intuitive model of the basic differences among disparate groups, there are distinct limitations to their ability to capture all (or most) differences among service firms.

This research also emphasizes on SPM framework. SPM is used as a basis for study for several reasons. First, SPM classifies service based on the three dimensions commonly associated with service operations. Second, SPM provides a detailed and

comprehensive list of management challenges (it is activities that we understand and involve these elements that brings coordination or cohesiveness to the activity associated with different types of service operations). Third, the SPM framework expands Chase's customer-contact approach that has received wide citation in both academic and practitioner literature related to service management.

By studying SPM, it can help the managers understand the management challenges associated with different types of services. The result from this study can help the management people understand the real life service operations and use it to improve the service process and design. Besides, it also provides the direction for improving quality, productivity and operation efficiency.

1.5 Significance

This research studies about the significance between management challenges across various types of service with change in customer contact/customization and degree of labor intensity. Besides, the researcher also studies the interaction between both of them too. By this study, it has provided the benefit to many fields.

- **Policy maker**

This research can help the policy makers understand the nature of real life business operation and then get some directions for improvement. This also helps them know deeply about the service and know its importance. By this way, the government can launch the laws and regulations that can support this type of business. On the other hand, it can indirectly help the economic of our country. For example: The government can reduce tax rate for the service industries that emphasis on importing the advanced technology or some materials to use in their businesses.

- **Business**

This research is directly of benefit to the service companies because this research can help the owners, even the service manager, indeed to understand about the way to run business. Besides, they can know the way to motivate their employees. This can help the business owners not only to gain more money but also encourage the workers to work well. At the same time, the workers also feel happy in their

works, as well, the company can reduce the number of resignation. This can save cost for training people and other expenses.

- **Academia**

This research studies about the management challenges differ across four types of service industries (service factories, service shops, mass services and professional services) in terms of customer contact / customization and labor intensity. To get the results from this research, it can be used by other researchers included academic people as a part for supporting their further study about the service management. Moreover, this research also provides some overviews about the nature of service industries.

Chapter 2: Literature Review

Today, the nature of competition in services is changing because the forces of deregulation and new technologies have been restructured in recent years. Therefore, service managers need to improve service quality and performance, thereby creating barriers to entry from foreign and domestic competitors. Competing on the traditional dimensions of quality, price and availability will always be important. Due to these changes in the environment, it is quite challenging for the service managers. There are many issues involved in service operations management that are classification of service industry, effectiveness in service management and management challenges.

2.1 Literature to Support the Framework

2.1.1 Classification of Service Industry

Generally, there are 4 types of service businesses that are service factories, service shops, mass services, and professional services. The characterization of these four types of services can be used for comparing service processes in much the same way that we compared processes across the manufacturing spectrum. This is accomplished in Table 2.1. The various features compared there are placed into various groups: service, process, customer-orientation, labor, and management.

Table 2.1: A service comparison

	Service factory (example: Burger King Restaurant)	Service shop (example: Ogel-Trucker Buick)	Mass service (example: Thalhimers-Cloverleaf)	Professional service (example: Arthur Andersen & Co.)
Service Features:				
- Mix if services	Limited	Diverse	Limited	Diverse
- Primary basis of Competition	Price, speed, perceived warmth or excitement.	Wide choice competence.	Price, choice, perceived warmth or excitement.	Competence, range of expertise.
New or unique services introduced or performed	Infrequent	Routine	Limited experimentation.	Routine
Process features				
- Capital intensity	High	High	Low	Low
- Pattern of process	Rigid	Adaptable	Rigid	Very loose

- Ties to equipment	Integral part of process, little choice applies.	Equipment important to process, but usually several options exist for its use.	Limited ties to equipment, more tied to plant and layout.	No close ties to plant or equipment.
Importance of balance of tasks and any equipment to smooth process functioning	Balance critical.	Balance often not critical	Balance not critical.	Balance can be critical.
Tolerance for excess capacity	Excess capacity abhorred.	Excess capacity often not a problem.	Excess capacity implies workforce adjustment that is fairly easily made.	Excess capacity abhorred.
Ease of scheduling	Sometimes tough to schedule, peak demand can be difficult.	Scheduling more easily done.	Scheduling easily done.	Sometimes tough to schedule, peak demand can be difficult.
Economies of scale	Some	Some-permits better equipment use and thus justification.	Few, if any, except those related to any inventories.	Few, if any, although some specialization can occur.
Notion of capacity	Fairly clear-cut sometimes definable in physical terms.	Fuzzy, very dependent on mix of demands. Only definable in dollar terms.	Not as fuzzy as with service shop. Limited are often due to plant, not processing time.	Fuzzy.
Process features layout	Line flow-like preferred.	Job shop or fixed position.	Typically fixed position, although layout may change frequently, customers move through layout.	Job shop frequently.
Additions to capacity	Can be in variable increments, requires balance of capital and labor.	Can be in variable increments, aspects of balance more murly.	Often takes big changes to plant to enact. Processing can sometimes be sped up by adding some labor.	Means adding primarily to labor in incremental fashion.
Bottlenecks	Occasionally movable, but often predictable.	Movable, frequent.	Typically well-known, predictable.	Can sometimes be forecast, but otherwise are uncertain.
Nature of process change	Sometimes routine (rebalance), sometimes radical (new equipment).	Occasionally radical (new equipment and procedures).	Process change seldom occurs, although it can be radical (such as big change to plant).	Mostly incremental.
Importance of material flow to service provision	Both inventories and flow are important.	Inventories important, flow not as important.	Inventories are often important and must be controlled.	Incidental to most services.
Customer-oriented features:				
Importance of attractive physical surroundings to marketing of service	Can be critical.	Often insignificant.	Critical.	Often insignificant.

Interaction of customer with process	Little, brief.	Can be great.	Some.	Typically, very great.
Customization of service	Scant.	Significant.	Scant.	Significant.
Ease of managing demand for peaks and non-peaks	Can be done through price.	Some promotion of off-peak times can be done, but often difficult.	Same as for service shop.	Often very difficult to manage demand, may not be responsive to price.
Customer-oriented features:				
Process quality control	Can be formal, amenable to standard methods (such as control charts).	Can be formal. Checkpoints can easily be established. Training can be critical to quality.	Mainly informal. Training critical to quality.	Mainly informal. Training critical to quality.
Labor-related features:				
Pay	Typically hourly	Varies, could include individual incentive or commission schemes.	Same as for service shop.	Salary, often with bonus of some type.
Skill levels	Generally lower skills.	High skills.	Variable, but most often lower skill.	Very high skills.
Job content	Small.	Large.	Often medium, but variable.	Very large.
Advancement	With more skills or seniority acquired, greater responsibility given. Seniority can lead to change in department or shift assignment.	Often, worker is an independent operator of sorts and can exert some control on what he or she gives and gets from job; limited hierarchical progression.	Often a hierarchy to progress upward through.	Often a pyramid, up or out. Top of pyramid exerts leverage over bottom of pyramid.
Management features:				
Staff-line needs	Large staff for process redesign, methods, forecasting, capacity planning, and scheduling. Line supervision and troubleshooting still critical.	Limited staff, mostly line operation.	Some staff, often focused on personal issues.	Limited staff, many line managers wear multiple hats.
Means of control	Variable. Can be cost or profit.	Usually a profit center.	Usually a profit center.	Usually a profit center.

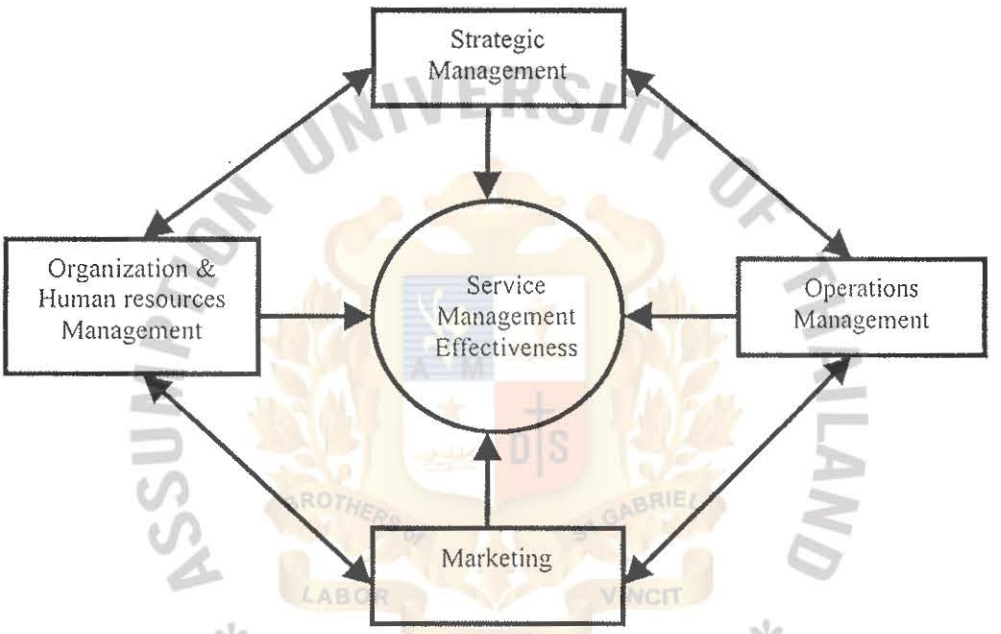
Source: Christian Granroos, "The Service Concept." Service Management and Marketing. Massachusettes: Loxington Books, 1992.

2.1.2 Effective Service Management

The differences between services and goods must be reflected in how service businesses formulate and implement business strategy, organize themselves, manage their operations and human resources, and market their offerings. This part presents

and integrates the work of leading service management experts from a variety of disciplines in order to stimulate theory building and research on service management effectiveness across disciplines. The management models developed for manufacturing cannot be extended to services without substantial modification. Thus, the researcher has used this interdisciplinary perspective for managing service organizations effectively. Figure 1 is provided to highlight this perspective.

Figure 1: Service management effectiveness



*Source:*David E. Bower, Richard B. Chase, Thomas G. Cummings and Associates, "Service Management Effectiveness." The service management effectiveness: Balancing strategy, Organization and Human resource, Operations, and Marketing. San Francisco: Jossey. Bass Publishers, 1990.

Although the researcher is applying this framework to service organizations, functional integration is a desirable feature of manufacturing organizations as well. Service organizations are particularly dependent on functional integration. In turn, marketing service is very much a human resource activity, because the quality of the selection and training of services personnel spills over the affect customer's perceptions of the quality of the service they receive. To manage service industries effectively, it is based on four main elements: strategy management, marketing, operations management, organization and human resource management.

- **Strategy**

Services are inherently multifunctional and consequently manager needs a strategy, as opposed to a functional, orientation for managing and studying service business. Strategic decision making in service organizations need to go beyond concerns about external growth or markets to include strategic issues related to the design of the service, the internal service system, and internal capacity constraints. Making these strategic decisions need to be an interactive process, including personnel from operations, human resource management, marketing and strategic planning.

- **Organization and Human Resource Management**

Writing from an organization-theory perspective, a central focus is on the social, relational aspect of the employees and the differing roles that employees play within the organization. The researcher (Benjamin Schneider, 1995) describes that the organization can become more service oriented and presents selection and training approaches that support a service orientation. Schneider also integrates the issue of changing to a service orientation with the broader, more established literature of organization development and strategic change. The researcher also gives important to unique role of human resource management in service organizations. The organization needs to have skills, knowledge, and abilities required for working with customer in different types of services and the officers need to review the implications for recruitment, selection, training, control and evaluation, rewarding, and development in order to manage the organization effectively.

- **Operations Management**

The new information and communication technologies offer significant benefits for service organizations. These new technologies typically increase the speed and reliability of service transactions and enable service firms to offer a greater range of mass-customized services with enhanced quality and efficiency. Service productivity can be improved through the process of learning and experience typically applied in manufacturing settings.

- **Marketing**

This part emphasizes the need for service businesses to view their exchanges with customers as "relationships" rather than merely "transactions". Managing from this relational perspective involves recognizing the social as well as the economic aspects of exchange. Managing relationships is a means by which firms can strategically differentiate themselves from others; it also results in customers being not only attracted but retained as well.

To underline the necessity for an overall customer service orientation, we can think of the systems design as a "CARE" package with four components: Consistency, Attentiveness, Recoverability and Evaluation.

Consistency. One of the biggest difficulties to overcome in services is the fact that, from the customer's perspective, services are a risky purchase. Given the nature of the service production process, there is little assurance that the quality of the service will be the same from time to time. Standardized service delivery systems, such as fast-food chains, owe much of their success to the fact that the service product is relatively predictable both in the food preparation and in the timing of delivery.

The basic tools of the operations analyst to enhance production efficiency can be used to ensure predictable production procedures. The end result needs to be a service production process that is consistent over time, place, employee, customer, and service product.

Attention must be paid to the development of standard service routines for both back-office and front-office staff, supplemented by training to ensure proper "technical" service quality. In addition, since the decoupling of production and consumption increases the degree of control that management can exercise over the production process, new opportunities for decoupling need to be identified that will allow additional service functions to be moved into the "back office".

For more complex service delivery system, care must be taken to ensure not only clear routines within tasks but also the smooth linking between tasks and/or departments. Such an internal service orientation involves having employees or

departments view each other as "customers" in order to enhance "integrative" service quality.

For front-office staff, there are additional considerations beyond standardization, especially where the degree of divergence is great. Staff members who regularly interact with customers are valuable marketing asset as well as the primarily service providers. In their marketing role, the "emotional labor" content is high, resulting in a potential for feeling a lack of control and in a heightened propensity for "burnout". Thus, the human resource management issues for front-office staff become particularly acute as the need for consistency of interaction with customers must be weighed against the realities of human emotions.

The role played by the customer also needs careful attention. Frustration for both the customer and the employee can result where the behaviors needed from the customer are unclear to the customer. "Boundary-spanning" employees need to have built into their job descriptions the responsibility for "socializing" the customer to required behaviors.

Attentiveness. Basic to any successful service is the quality of the interaction with the customer, of the "functional" quality of the service. While aspects of the interactive style must be specific to the particular competitive strategy, there are basic employee behaviors linked to customer satisfaction across a wide variety of services and business strategies.

Generalized friendliness, especially out of context, may be interpreted by the customer. Attentive behavior needs, rather, to be specific and relevant to the task at hand. Successful service firms, such as Disneyland, have learned the importance of codifying and training employees in such basics as the specific verbal and non-verbal behaviors that denote courtesy, helpfulness, and respect to customers.

One specific dimension worth noting is the importance to customers of the sense of "uninterrupted" service delivery. Once the service process begun, customers value being able to retain the employee's attention until service has been completed.

Recoverability. Crisis management skills are particularly important in services where environmental uncertainty is typically high. Unfortunately, many managers assume that careful system design will result in a problem-free delivery system. In actuality, problem situations provide a service firm with an opportunity to excel-with careful planning. Despite the inconvenience of the problem, customers are likely to feel even more favorably toward a firm that they view as having done everything humanly possible to minimize difficulties from problem situations.

Given the variability of customer input as well as other externalities, it is crucial to devise an "early warning system" that will help spot likely problems before they occur so that preventive measures may be taken. For example, airlines can create alternate plans for passenger transport when labor strikes are threatened or serious weather disturbances are predicted, just as hotels can schedule extra staff or ensure that all preventive maintenance is completed in anticipation of conventions or tour groups.

All staff responsible for customers need problem-solving skill training to help identify both problems that occur and the particular reasons for customer dissatisfaction. In order to offer effective solutions, for example, staff must be able to differentiate between a customer who feels merely annoyed and one who feels victimized. If a flight delay causes missed connections, for example, one passenger might be satisfied with a free ticket for a later direct flight while another would be more satisfied with the inconvenience of a more circuitous routing in order to arrive in time.

Evaluation. A common issue among service firms is the failure to qualify behavioral expectations in ways that can be measured and rewarded. American Airlines owes some of its success to its attention to measurable objectives, ranging from how quickly the phone should be answered through how quickly the beverage service should begin after flight takeoff to how quickly the plane door should be opened once the plane is parked at the airport gate.

Singapore's Changi Airport is another example of the consequences of specifying performance requirements. To the delight of the weary traveler, it has

imposed strict time limits on the baggage-handling companies that are monitored by computerized conveyor belts. If the companies wish to retain their contract, the first bag must be on the belt within twelve minutes of the plane's parking at the gate, and the last bag must be on the belt within twenty-five minutes.

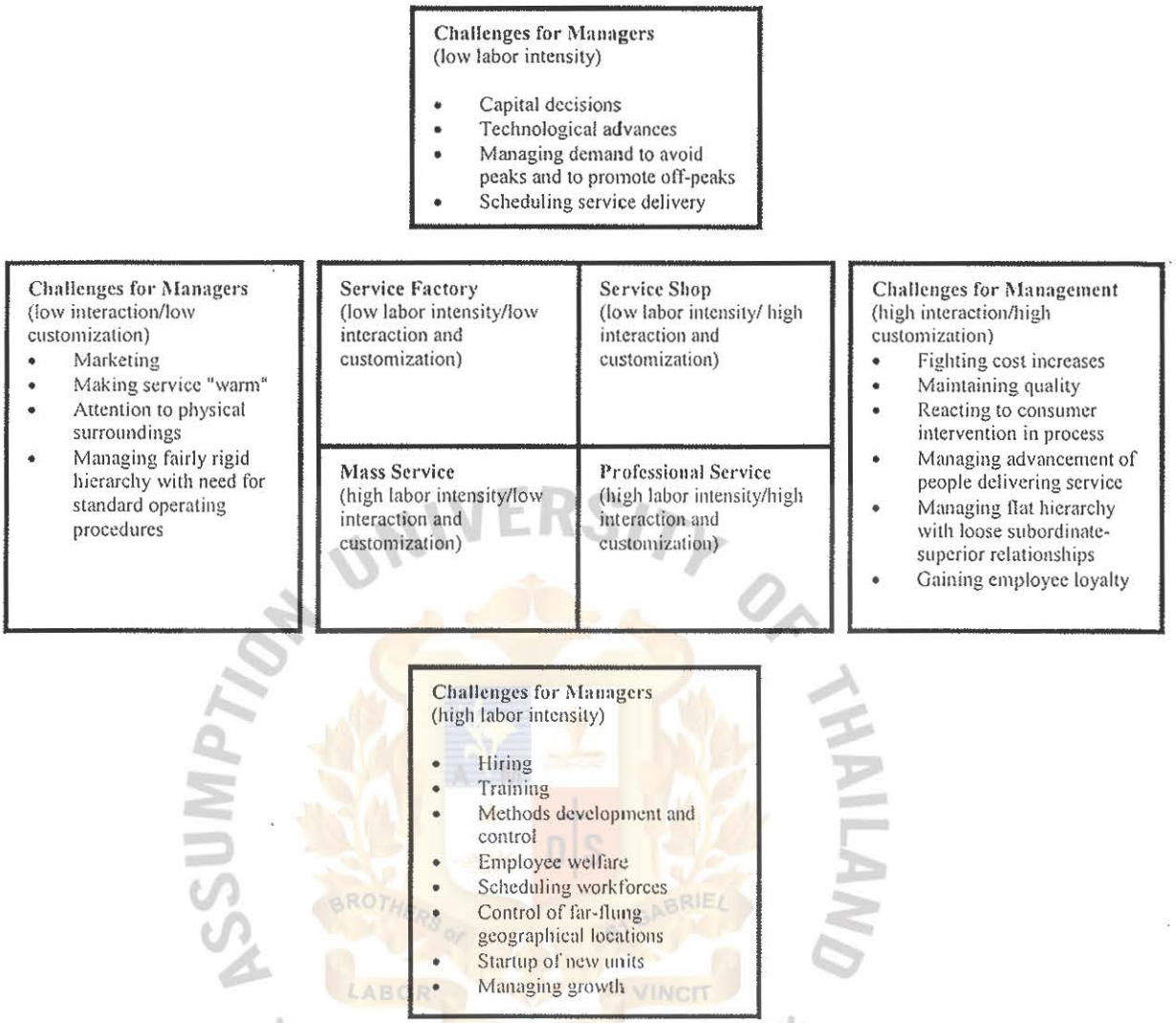
A newer trend among service firms is to create "networks" in which a wide range of services are available without diluting the focus of any one service firm in its arena of expertise. Thus, the property buyer may select a realty firm in which he or she has confidence, which in turn will provide the financing company, the title company, the insurance company, and so on. Or the service firm may choose a "service supermarket" approach in which boutique services are run-an approach adopted by Sears so that its reputation as a retailer was extended to a range of services such as finance, optometry, insurance and so on.

The most important innovation in service crisis management has been the willingness to delegate authority in front-line staff so that they can improvise on the spot. One of the most frustrating experiences for the customer is to battle through corporate red tape simply to get the firm to correct its mistake. One U.S. bank has been very successful, for example, by authorizing bank tellers to accept customers' versions of what should have happened to their accounts, apologize, and promise an immediate correction. Follow-up research has shown that, in the vast majority of instances, the customer was in fact right.

2.1.3 Challenges to Management

Let us look at the challenges to management that are implied by labor intensity and interaction/customization differences (Figure 2). The service operation that is more highly capital-intensive has to look carefully at (1) its capital decisions regarding land, facilities, and equipment; and (2) technological advances that may affect them. Capital-intensive processes often cannot easily augment capacity, so demand must be managed to smooth any demand peaks and to promote the off-peak times. The inflexibility of capacity also implies that scheduling service delivery is more important for these process types.

Figure 2: Challenges for service managers



*Source:*Roger W. Schemenner, "Challenges to Management." Service Operations Management. Prentice-Hall International, Inc., 1995.

For process types with high labor intensity, managing and controlling the workforce become paramount. Hiring, training, methods development and control, employee welfare, scheduling the workforce, and controlling what may be far-flung locations are critical. If new units of operations are contemplated, their startup may become a problem; managing the group of such new units can be difficult.

Service processes that have a low degree of interaction and customization face a stiffer marketing challenge. They must try to make the service "warm" and exciting even though they may not give the personal attention a customer might want. Attention to the physical surroundings and the layout become more important. With a

low degree of interaction and with little customization, standard operating procedures can safely be instituted. The hierarchy of the service organization itself tends to be the classic pyramid, with fairly rigid relationships between levels.

As the service takes on a higher degree of interaction and customization, management must deal with higher costs and more talented labor. Keeping costs down and yet maintaining quality becomes a challenge. Talented employees need to know how they can advance in the organization. The hierarchy of control tends to be flat, with much less rigid relationships between superiors and subordinates. Keeping workers bound to the firm with a high degree of consumer interaction also must react to frequent consumer intervention in the process.

Naturally, there are some gray areas as one passes from low to high on either dimension of this matrix, and this complicates the placement of selected services within the matrix. For example: although fast-food restaurants are probably best seen as service factories, the traditional restaurant is more problematic. Traditional restaurants offer a higher degree of interaction and customization for the consumer, and they are more labor-intensive than fast-food restaurants. They may be best characterized as service shops, but they are fairly low in that quadrant, with al least some gourmet restaurants arguably characterized as professional services.

2.2 Previous empirical research

The empirical research that the researcher study is the analysis of management challenges in service factories, service shops, mass services and professional services.

The research reveals that there is a relationship between management challenges across various types of service industries (service factories, service shops, mass services and professional services) and change in the degree of customer contact/ customization, labor intensity and its interaction.

There are 22 management challenges. The average scores for the 22 management challenges for the four industries are equally important for all the industries. Anyway, there are top 5 management challenges for each types of service industries. For service factories, the most important management challenge is hiring.

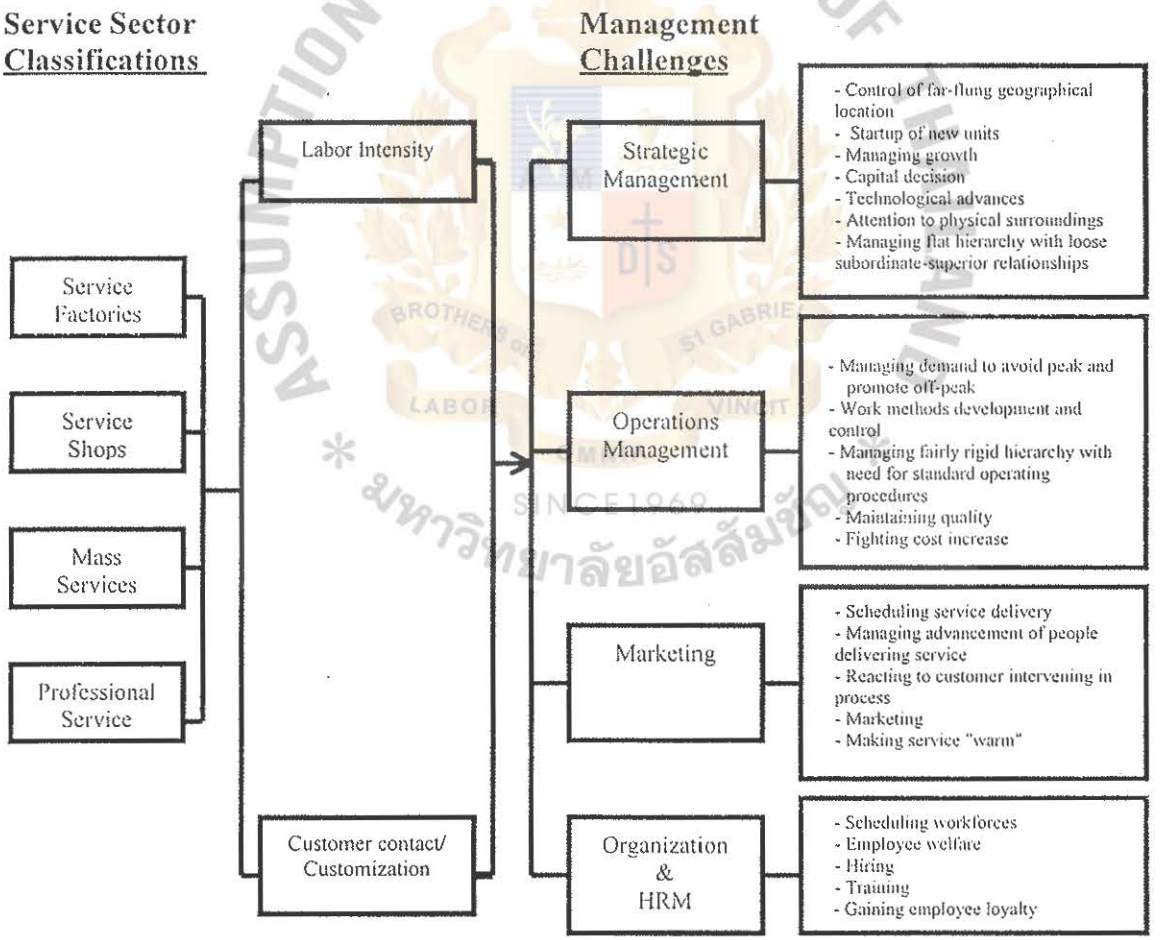
The second one is maintaining quality. Work methods development and control is the third. Making service "warm" and gaining employee loyalty are the fourth and the fifth respectively. For service shops, the most important management challenge is maintaining quality the same as professional service. The second one is technology advance. The third is training the same as mass services. Fighting cost increase is the fourth and the last one is work methods development and control. For mass services, the most important management challenge is hiring. The second one is maintaining quality. The third is training and making service "warm" is the fourth. The last one is gaining employee loyalty. For professional services, the most important management challenge is maintaining quality the same as service shops. Making service "warm" is the second. The third is hiring, work methods development and control is the fourth. The last one is training.

According to the result, the researcher notices that there are some management challenges the important for all service industries. For example: maintaining quality. Due to service is perceived as risky purchase to the customer. Thus, it is quite challenge to the managers to maintain the service quality in order to keep the customers as well as the company's revenue. Hiring and training are also important because the service providers are people who contact directly the customers. To get good and qualified employees, the company has to have a good systematic to select the employees. Making service "warm" is also crucial because it means repeating purchase of the company. To survive in the service industries, the company needs to develop and control the performance of the employee closely in order to sure that the service will be satisfied by the customers.

Chapter 3: Research Framework

This chapter presents the justification and explanation of how research framework of management challenges in different types of service industries in this study emerged. The concepts and theories followed what had been discussed in the earlier chapter portraying establishment of dimensions, aspects and attributes on how management challenges differ across various types of service industries with change in customer contact/customization, labor intensity and their interaction. Later, the support framework, research variables, research hypothesis and expected outcome are presented.

3.1 Diagram of Framework: using Schematic Flow



3.2 Definition of Variables

This study is to find correlation between the management challenges across various types of service industries with change in customer contact/customization and degree of labor. Besides, it also studies the management challenges that are affected by the interaction of customer contact/customization and labor intensity.

The independent variables are labor intensity and customer contact/customization. There are 22 management challenges used as dependent variables. They are marketing, making service "warm", attention to physical surroundings, managing fairly rigid hierarchy with need for standard operating procedures, fighting cost increase, maintaining quality, reacting to customer intervention in process, managing advancement of people delivery service, managing flat hierarchy with loose subordinate-superior relationships, gaining customer loyalty, capital decision, technological advances, managing demand to avoid peak and to promote off-peaks, scheduling service delivery, hiring, training, work methods development and control, employee welfare, scheduling workforces, control of far-flung geographical locations, startup of new units and managing.

Table 3.1: Variables

INDEPENDENT VARIABLES	DEPENDENT VARIABLES	SUB-DEPENDENT VARIABLES
Labor intensity & Customer contact / Customization	Strategic Management	• Control of far-flung geographical location - To locate a place that can lower the basic costs of goods and services provided including access to critical supplies/resources and to customer.
		• Startup of new units - To begin doing something that is quite new or hasn't been done by the company.
		• Managing growth - The development of the physical size, strength, etc. of a company over a period of time.
		• Capital decision - To decide about the long-lasting goods that facilitate developing and managing the finished product.
		• Technological advances - Trends and conditions through which technology is significantly altering the nature of competition. These new technologies place a competitive premium on being able to quickly introduce new goods and services into the marketplace.

INDEPENDENT VARIABLES	DEPENDENT VARIABLES	SUB-DEPENDENT VARIABLES
Labor intensity & Customer contact / Customization	Strategic Management	• Attention to physical surroundings - Paying attention to cope with what are often ambiguous and incomplete environmental data and to increase their understanding of the general environment.
		• Managing flat hierarchy with loose subordinate-superior relationships - The way to organize the employees of the company that is not strictly controlled.
	Operations Management	• Managing demand to avoid peak and promote off-peak - Ways of making service systems more flexible so that production capacity can be quickly increased or reduced as customer demands for products or services vary.
		• Work methods development and control - Production processes must be designed with the customer in mind because it must be totally committed to producing products and services of perfect quality.
		• Managing fairly rigid hierarchy with need for standard operating procedures - To deal with the managerial aspects of business activities standardizing such things as operating practices, procedures, and systems.
		• Maintaining quality - The practice of continuously checking goods as they are produced to make sure that their quality are good enough.
		• Fighting cost increase - When costs account for a large part, companies are challenged to utilize most, if not all, of their productive capacity. It is also an integrated set of actions designed to produce products at lower cost, relative to competitors, with features that are acceptable to customers.
	Marketing	• Scheduling service delivery - To manage the time effectively in order to help employees understand how they spend their time and ways that they might increase their productivity.
		• Managing advancement of people delivering service - To develop and encourage the employees to concentrate on their jobs and have continuous interest in their activities.
		• Reacting to customer intervening in process - Buyers are the key to successful early involvement in the new product development process. These individuals are available to assist design engineers to develop new products.
		• Marketing - is a total system of business activities designed to plan, price, promote and distribute want-satisfying products to target markets to achieve organizational objectives.

INDEPENDENT VARIABLES	DEPENDENT VARIABLES	SUB-DEPENDENT VARIABLES
Labor intensity & Customer contact / Customization	Marketing	• Making service "warm" - To make customers feel pleasure and build long-term satisfying relations with customers.
	Organization & HRM	• Scheduling workforces - It is involved in how the work is allocated in order to make it effective.
		• Employee welfare - Rewards that employees receive for being members of the organization and for their positions in the organization; usually not related to employee performance.
		• Hiring - To employ someone for a period of time to do a job.
		• Training - A learning process that involves the acquisition of skills, concepts, rules or attitudes to enhance employee performance.
		• Gaining employee loyalty - The ways to maintain employees to stay in the companies and pay all their energy and efforts to work for the companies.

3.3 Hypotheses

The proposed research hypothesis following the research objectives are as follows:

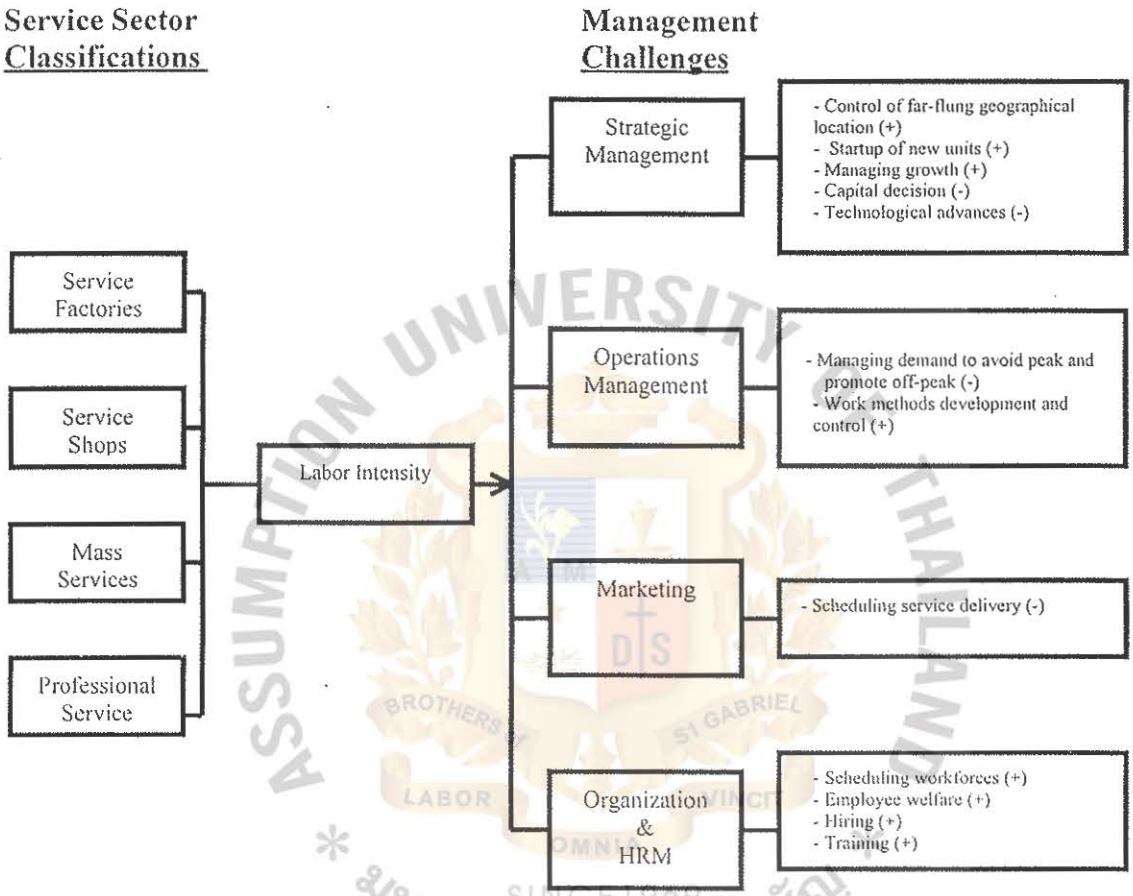
Ho_1: There is no relationship between management challenges across various types of service industries (service factories, service shops, mass services and professional services) and change in the degree of customer contact/customization.

Ha_1: There is relationship between management challenges across various types of service industries (service factories, service shops, mass services and professional services) and change in the degree of customer contact/customization.

Ho_2: There is no relationship between management challenges across various types of service industries (service factories, service shops, mass services and professional services) and change in the degree of labor intensity.

Ha_2: There is relationship between management challenges across various types of service industries (service factories, service shops, mass services and professional services) and change in the degree of labor intensity.

3.4 Expected Outcome



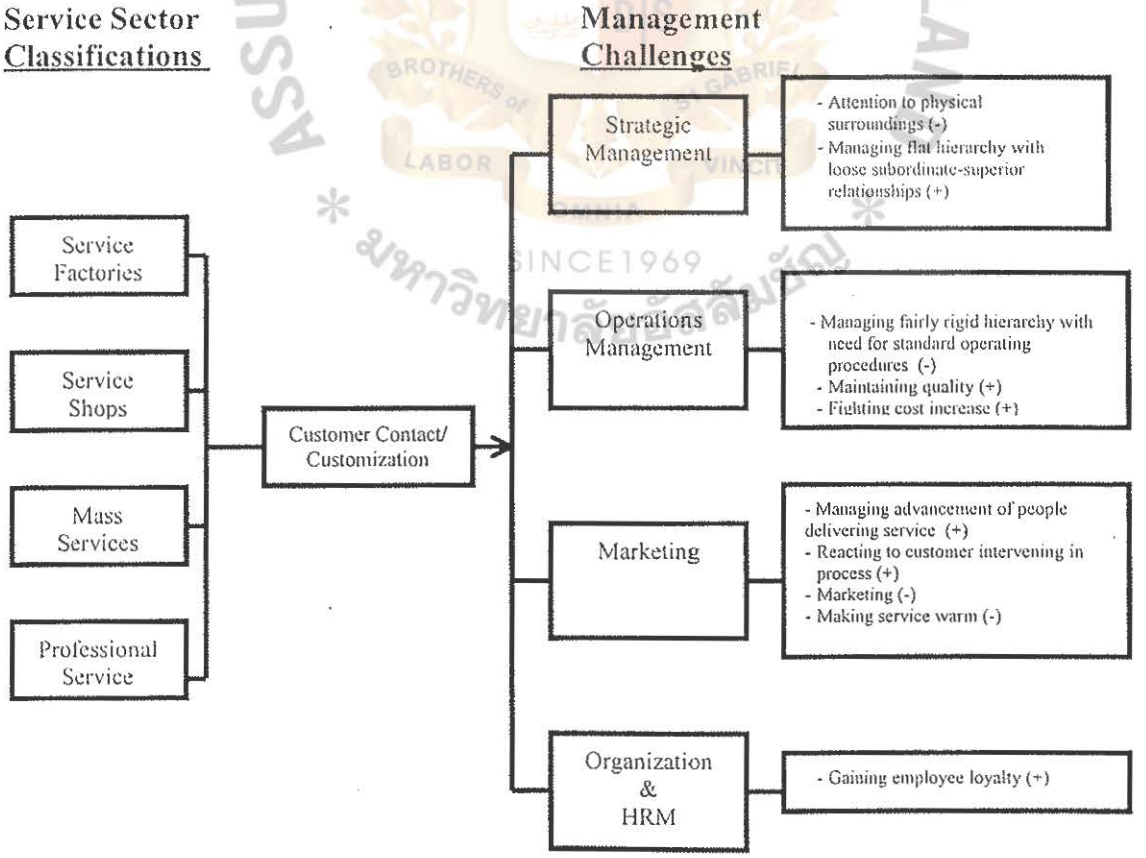
This part will explain the expected outcomes of the relationship between management challenges across various types of service industries (service factories, service shops, mass services and professional services) and change in the degree of labor intensity.

These companies emphasis on labor intensity, normally, the companies will use labor or employee as a basis for operation. Thus, these companies will not pay attention more on the capital decision that involves in land, building, machinery etc.. Moreover, the companies will not interested in the newly technological advances because the companies give more attention to people. When the companies plan to expand the businesses or open of new units even in near or far from the center, people

are the first thing that the companies will concern. There are the management challenges that involve in strategic management.

For the operations management, the companies will not concern much on how to manage demand in peak and off-peak period. The companies use people, thus, it is easy to control and manage during those periods that are opposite to the operation of machine. The machine will produce the products at the same level even in peak or off-peak periods. To run the business more effective, the managers should pay more attention in work methods. At the same time, the managers have to develop the employee's skill and always evaluate their performance.

To set schedule for service industry, this is not concern much because the service normally serves customers by using first-come-first-serve rule. However, the managers also have to arrange the workers to work equally. Eventheless, the managers have to hire qualified employees and train them in order to serve customer well and meet or excess the customer's expectation. To keep these qualified employees, the companies need to set the welfare that satisfies the employees.



This part will explain the expected outcomes of the relationship between management challenges across various types of service industries (service factories, service shops, mass services and professional services) and change in the degree of customer contact / customization.

These service industries emphasis on contacting with the customers and trying to satisfy the customer as much as possible. Thus, the business operations try to gain information directly from the customers. As a result, the managers need not to pay attention closely to the physical surroundings in order to know the customer's performance. To serve the customer well, the managers also have to give some authorize to the employee in order to serve the urgent need of customers as quick as possible and satisfy them.

The companies emphasis on serving the customers as individual. Thus, it is hardly for the companies to escape from the cost that will increase from this serving type. Normally, people perceive service as risky purchase, the managers should try to produce service at the same standard and maintain the quality of the service.

The companies can gain the information about the customers. Thus, marketing is not much important to use as a tool to attract customers to use the service. Moreover, the information that the managers get from the customers should be used in the service process in order to make the customer more satisfy. Besides, the information can help the employee develops some skills to match the need of customers. The development process also has to pay for it. Thus, gaining employee loyalty is important. If the trained-employee resigns, the company has to pay for training cost again for the newcomers.

Chapter 4: Research Methodology

This chapter presents the research methods and procedure used in the study, data source, data collection, data measurement and statistical treatment of data.

4.1 Data Source

Target respondents of this research are managers in four different types of service industries: fast food (service factories), repair shops (service shops), retail sales (mass services) and legal firms or traditional massage shops (professional services).

Figure 3: Research Design Process

Research design is a process consisting of six issues.

Types of investigation:	Causal
Purpose of the study:	Descriptive
Extent of researcher interference: Partial interference to objects	
Study setting:	Non-contrived
Unit of analysis:	Individual
Time horizon of study:	Cross-sectional

The researcher made use of causal because the researcher controls a variable that is the respondents. The respondents have to be the manager in service industry as mentioned above. For the purpose of study, the researcher uses descriptive and non-parametric research. Descriptive statistic is used to describe or summarize information about the perception of population or sample on management challenges variables. The non-parametric statistic is used to test the required research hypothesis

such as test of correlation among the variables. The extent of researcher interference, the researcher uses partial interference to object because the researcher will let the respondents do the questionnaire freely but if they have any confusion, the researcher will help clarifying the question but do not guide them to answer. For study setting, the researcher uses non-contrived because it is difficult to gather the people that have everything the same as one another. The unit of analysis, the researcher uses individual, as researcher will collect the data for one person per time. For the time horizon of study, the researcher uses cross-sectional. As the reason for doing this research is to get the result immediately, thus, longitudinal is not properly used.

4.2 Data Collection

The study examines the management challenges differ across various types of service industries with change in customer contact/customization, labor intensity included their interaction between both of them. The method that the researcher uses to collect data is survey technique. It will be employed in this study to gather primary data from the target population. For the sampling technique, the researcher uses non-probability sampling. It is a technique in which units of sample are selected on the basis of personal judgement or convenience. The researcher applies judgment sampling. It is a method that is often called a purposive sample; the sample elements are handpicked because they are expected to serve the research purpose.

The researcher will start the survey by using the questionnaire during July to August, 2001. The survey will be done around Bangkok areas at the service companies.

4.2.1 Target Population

The target population of this thesis is managers in four different types of service industries that are in Bangkok area. The researcher will collect 70 respondents from service factories that are fast food shops. Another 70 respondents from service shops that are repair shops. For mass services, the researcher collects the respondents from retail shops. For the last group, the researcher collects the information from professional service shops that are legal firms, wedding studio and traditional massage shops.

Population element and sampling unit in this research is the same because it consists of service managers in four different types of service industries.

4.2.2 Sampling Frame

A sampling frame is the list of sampling units from which a sample will be drawn; the list could consist of geographic areas, institutions, individuals or other units (Gilbert A. Churchill, JR., 1996). In this study, sampling frame is not available because the researcher cannot obtain the name lists of all service firms in service industries.

4.2.3 Sampling Size

Since this research applies non-probability sampling, there is no sampling frame. Thus, the researcher has no need to calculate for sample size. The researcher has 280 respondents that are divided into groups of 70 respondents for each service classification schemes: service factories (fast food shops), service shops (repair shops), mass services (retail sales) and professional services (legal firms, wedding studio and traditional massage shops).

4.3 Data Measurement

In this research, the researcher wants to test the attitude of the respondents (service managers) towards the management challenges with changes in degree of labor intensity and customer contact/customization including its interaction.

4.3.1 Scale

This research is to measure the attitude of the respondents. Thus, the researcher decides to use Likert scale to collect the information from the respondents. By using this method, it allows the respondents to express the intensity of their feelings correctly. Each item in the questionnaire will ask about the management challenges that the service managers need to use in their normal working lives.

4.3.2 Operationalization with questions

The questionnaire consists of 22 management challenges items. It is used for gathering data in relation to the topic of study. The type of questionnaire in the

research is structured-undisguised questionnaire in which questions are presented in the same wording and in exactly the same order to all respondents when collecting data. The reason for standardizing the wording is to ensure that all respondents are replying to the same questions. The Likert scale is used to collect the information. It is one of the most widely used attitude-scaling techniques in marketing research. It is particularly useful since it allows respondents to express the intensity of their feelings.

The questionnaire will be pre-tested with 10 people to test whether the respondents understand the wording and sequencing of the questions. English jargons will be translated into Thai words in order to make the respondents understand the question easily.

The table below illustrates the structure of the questionnaire used for collecting the information from the respondents.

Table 4.1: The structure of the questionnaire

Independent variables	Dependent variables	Question no.
• Labor intensity • Customer contact/ Customization	*Marketing:*	
	- Marketing	Question 1
	- Making service "warm"	Question 2
	- Scheduling service delivery	Question 3
	- Reacting to customer intervening in process	Question 4
	- Managing advancement of people delivering service	Question 5
	Strategic management:	
	- Attention to physical surroundings	Question 6
	- Managing flat hierarchy with loose subordinate-superior relationships	Question 7
	- Capital decision	Question 8
	- Technological advances	Question 9
	- Control far-flung geographical location	Question 10
	- Startup of new units	Question 11
	- Managing growth	Question 12
	Organization & HRM:	
	- Gaining employee loyalty	Question 13
	- Hiring	Question 14
	- Training	Question 15
	- Employee welfare	Question 16
	- Scheduling workforce	Question 17
	Operations Management:	
	- Managing demand to avoid peak and promote off-peak	Question 18
	- Managing fairly rigid hierarchy with need for standard operating procedures	Question 19
	- Fighting cost increase	Question 20
	- Maintaining quality	Question 21
	- Work methods development and control	Question 22

This table illustrates the questionnaire used for collecting the information from the respondents.

Table 4.2: Questionnaire used in the survey

No.	Management challenge	Strongly not challenge (1)	Not challenge (2)	Neutral (3)	Challenge (4)	Strongly challenge (5)
Q1	Marketing					
Q2	Making service "warm"					
Q3	Scheduling service delivery					
Q4	Reacting to customer intervention in process					
Q5	Managing advancement of people delivering service					
Q6	Attention to physical surroundings					
Q7	Managing flat hierarchy with loose subordinate-superior relationships					
Q8	Capital decision					
Q9	Technological advances					
Q10	Control of far-flung geographical locations					
Q11	Startup of new units					
Q12	Managing growth					
Q13	Gaining employee loyalty					
Q14	Hiring					
Q15	Training					
Q16	Employee welfare					
Q17	Scheduling workforces					
Q18	Managing demand to avoid peak and to promote off-peaks					
Q19	Managing fairly rigid hierarchy with need for standard operating procedures					
Q20	Fighting cost increases					
Q21	Maintaining quality					
Q22	Work methods development and control					

Source: Rohit Verma, "An Empirical Analysis of Management Challenges in Service Factories, Service Shops, Mass Services and Professional Services." Illinois: De Paul University, 1998.

4.4 Data Analysis

4.4.1 Statistics used

For the study on management challenges management challenges differ across four types of service industries (service factories, service shops, mass services and professional services) in terms of customer contact/customization and labor intensity. The researcher conducts ordinary least square linear regressions. It is a statistical technique used to derive an equation that relates the criterion variable to one or more

predictor variables. The main purpose of regression is to predict the value that a dependent variable will take when the independent variables have particular value. It also expresses the relation between the management challenges as dependent variable and independent variables representing the four types of service industries. The researcher applies the following formulas:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

where Y = the management challenges
X_1 = the level of labor intensity
X_2 = the level of customer contact/ customization
ε = the error associated with the observation
α = the intercept parameter in the regression equation
β_1 = the coefficient of X_1
β_2 = the coefficient of X_2

This study has more variables, thus, multiple regression is the most widely used method for conducting multivariate analysis. The researcher also makes use of stepwise method with the help of statistical computer software - SPSS to find out the solution. As the researcher uses the ordinary least square in this study, the following tests will be performed.

- **Coefficient of determination : Adjusted R- square (R^2)**

For the multiple regression model, the statistical significance can also be analyzed by considering the value of R- square (R^2) and Adjusted R - square (R^2a).

The coefficient of determination, R^2, indicates the possible values of the measure range from "+1" to "0". At the one extreme, when $R^2 = 1$, the independent variable completely accounts for variable in the dependent variable. All observations fall on the regression line, so knowing X enables the prediction of Y with the error. At the other extreme, where $R^2 = 0$, the independent variable accounts for no variation in the dependent variable. The knowing of X is no help predicting Y, for the two variables are totally independent of each other. Generally, R^2 falls between these two

extremes. Then, the closer R^2 is to 1, the better the fit of the regression line to the points, and the more variation in Y is explained by X.

Adjusted R - square, on the other hand, is a value adjusted for the degree of freedom and it will always be less than the value of R - square. Adjust R - square is designed to compensate for the optimistic bias of R^2. It is a function of R^2 adjusted by the number of variables in the model and sample size. The test will be compensated in SPSS program.

- **T - test**

T - test will be conducted for all independent variables, subject 95% confidence level. The relationships will be tested in a single model, which includes the following null and alternate hypotheses.

Ho_1: There is no relationship between management challenges across various types of service industries (service factories, service shops, mass services and professional services) and change in the degree of customer contact/customization.

Ha_1: There is relationship between management challenges across various types of service industries (service factories, service shops, mass services and professional services) and change in the degree of customer contact/customization.

Ho_2: There is no relationship between management challenges across various types of service industries (service factories, service shops, mass services and professional services) and change in the degree of labor intensity.

Ha_2: There is relationship between management challenges across various types of service industries (service factories, service shops, mass services and professional services) and change in the degree of labor intensity.

The null hypotheses state that management challenges have no relationship with the independent variables. To reject null hypotheses mean the management challenges have relationship with the independent variables.

- **F - test**

To test the validity of model for the relationship of management challenges and independent variables, F- test is very important, indicating that the simultaneous test that each coefficient is 0, it is rejected. It is conducted to test whether the regression equation is valid statistically. The 95% confidence level is used.

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true.

- **Assumption of Ordinary Least Square (OLS)**

Table 4.3: Assumption of Ordinary Least Square

What can go wrong?	What are the consequences?	How can it be detected?	How can it be corrected?
Multicollinearity: Some of the independent variables are imperfectly correlated.	No bias βs, but estimates of the separate effects of the Xs are not reliable.	No universally accepted rule or test is available. Use t - test or the VIF test.	Drop redundant variables, but to drop others might introduce bias. A combination variable may be useful, but often doing nothing is best.
Autocorrelation: The error terms for different observations are correlated.	No bias βs, but the variances of the βs increase (and t - scores fall) in a way not captured by OLS.	Use Durbin-Watson d test; if significantly less than 2.5, positive autocorrelation exist.	If impure, add the omitted variable or change the functional form. Otherwise consider generalized least squares.
Heteroskedasticity: The variance of the error term is not constant for all observations.	Same as for autocorrelation.	Put the spread or contraction of the residuals or use the Park or Goldfeld - Quandt tests.	If impure, add the omitted variable. Otherwise, redefine the variables or apply a weighted least square correlation.

Source: using econometrics. A.H. Studenmund (1992)

Chapter 5: Results of the Study

This chapter represents the empirical results of the model presented in chapter 3. This part involves in research findings and analysis of the study. This chapter is divided into 5 parts. The first part is the top 5 management challenges for each type of service industries. The second part is the regression equation. The third part is the result of the T-test, F-test, R^2 and adjusted R^2. The fourth part is the validity of ordinary least square (OLS). The last part is the interpretation of the result.

5.1 Average Management Challenge Scores for Various Service Industries

Table 5.1: Average management challenge scores for various service industries

Management challenges	All	SF	SS	MS	PS
1. Marketing	3.35	4.33	2.26	4.24	2.59
2. Making service "warm"	3.60	2.83	2.77	4.26	[illegible]
3. Scheduling service delivery	3.60	2.60	4.34	2.90	[illegible]
4. Reacting to customer intervention in process	3.50	4.33	2.57	[illegible]	2.60
5. Managing advancement of people delivering service	3.49	[illegible]	4.30	2.57	2.64
6. Attention to physical surroundings	[illegible]	[illegible]	3.07	[illegible]	2.50
7. Managing flat hierarchy with loose subordinate-superior relationships	3.59	2.89	4.23	2.83	4.40
8.Capital decision	3.54	2.56	[illegible]	2.46	[illegible]
9. Technological advance	3.60	[illegible]	[illegible]	2.57	2.59
10. Control far-flung geographical location	3.60	4.29	2.77	[illegible]	2.76
11. Startup new units	[illegible]	2.61	[illegible]	2.69	[illegible]
12. Managing growth	3.55	2.77	4.24	2.70	[illegible]
13. Gaining employee loyalty	3.56	[illegible]	2.79	[illegible]	2.56
14. Hiring	[illegible]	2.77	[illegible]	2.87	[illegible]
15. Training	[illegible]	3.09	4.43	2.79	[illegible]
16. Employee welfare	3.48	4.26	2.79	4.39	2.50
17. Scheduling workforce	3.50	[illegible]	2.40	[illegible]	2.54
18. Managing demand to avoid peak and promote off-peaks	3.48	2.57	4.37	2.60	4.39
19. Managing flat rigid hierarchy with need for standard operating procedures	3.47	4.39	2.50	[illegible]	2.60
20. Fighting cost increases	3.37	2.51	4.10	2.67	4.20
21. Maintaining quality	3.57	2.64	4.43	2.64	[illegible]
22. Work methods development and control	[illegible]	2.76	[illegible]	2.80	4.37

Source: Data file

From the table of average management scores for various service industries, the researcher noticed that there are top 5 management challenges for each service industries. For service factories, the most important management challenges is attention to physical surroundings. The second one is scheduling workforces. The third is gaining employee loyalty. The fourth and the fifth are technological advance and managing advancement of people delivering services. From the result, it could be interpreted that the service factories pay more attention to physical surroundings because this is a way to let mangers know the information about the customers. When the environment changes, the behavior of the customers also changes. This service industry uses machines to do most of works, thus scheduling workforces should plan carefully. The managers have to tell the employees clearly what should they do, otherwise, it will make the companies have lower productivity. Although the companies use few employees, gaining loyalty from the employees is so important. Nobody comes in the companies with no costs, thus, keeping them as long as possible can help the companies save costs for hiring, training etc. Technological advance is also crucial for this service industry because most of the works will be done by the machines. If the managers gain more information about the technological advance, it will benefit for the companies to use those technologies to develop in their works. Managing advancement of people delivering service is important. Sometimes, the machines are out of order, thus, the employees should develop themselves in order to serve the customers the same as machine's operation.

For service shops, the top 5 management challenges are technological advances, startup new units, capital decision, work methods development and control and hiring. From this result, the researcher can interpret that the companies in this service type, repair shops, they normally use more tools and equipment for the operation. Thus, making capital decision and technological advanced are directly have some effects on the companies. The managers should find more information about the technologies and consider which technologies can provide more benefits to the companies. Making wrong decision about this, it will generate a lot of costs to the companies in long run. Thus, these 2 management are challenges to the managers. This service industry has high level of customer contact/customization, thus, hiring people who provide services to the customers is important. The companies need to hire the people that are good and have enough experiences to operate this job.

Nevertheless, getting good people is hard to know. This has some effects on the growth period because the companies need to hire the new employees to work for them. This service industry also needs high development and control. Whatever the employees serve the customers, it has some effects directly on the customers. If the result is good, the customers will come and use the service again. If not, the company will lose them forever.

For mass services, the top 5 management challenges are control of far-flung geographical locations, reacting to customer intervention in process, scheduling workforces, attention to physical surroundings, gaining employee loyalty and managing flat rigid hierarchy with need for standard operating procedures. For example of business that is in this type of service industry is retail store such as 7-eleven. Thus, operating at the same standard are very important because the store has to manage and create the same image to the customers and make their stores easy to recognize. For employees, the managers have to set schedule for them. By setting the schedule, it will make the managers easy to evaluate the performance of the employees. At the same time, the employees will know clearly about their works. Due to this business has low level of customer contact/customization, the companies try to gain the information about the customers through the changing environment. After the companies got the information, the companies have to use it to develop the business to match to the customer's expectation. Although, this service has low customer contact/customization, gaining employee loyalty is crucial because high level of resignation means high costs such as hiring, training etc.

There also have top 5 management challenges for professional services that are startup new units, making service "warm", managing quality, scheduling service delivery, capital decision, scheduling service delivery, hiring, training, and managing growth. To expand or open the new units for professional service is very hard because the employee who work in this business, need to have high skills. Thus, hiring and training process are very important in order to maintain the quality of service that serves to the customers. Moreover, this business has high level of customer contact/customization, thus, the employee should serve the customers with good warmth manner. At the same time, scheduling service delivery is crucial because all customers need service unequally. For example: legal firms, some

customers have urgent case but some have not. Thus, the employees should make good schedule in order to meet customer's satisfaction. Although, the companies have high labor intensity, capital decision also involves. From the example of legal firms, the employees need to find some information about the case that they do or need some suggestions, they may find these information through the use of internet or video conference in case the they are in different places. Thus, the managers have to think carefully whether it is worth.

From these top 5 management challenges of each type of service industries, there is some management challenges that are overlapped. Those management challenges are training, hiring, attention to physical surroundings, startup new units and work methods development and control. The service industries need to have good service providers. To help them serve the customer well, the companies need to train them in the way that most of customers like or want. Nevertheless, the companies should have good methods to select the employees first, otherwise, the companies will waste the money for training disqualified people. After the companies got qualified employees and trained them, the companies should have good method to develop and control them in order to assure that they will generate good service to the customers. To make effective work development and control, the managers need to pay attention to physical surroundings in order to know what is change and develop them to match the customers. The service businesses need people to perform tasks, thus to startup new units, the companies need to assure that the employees are good enough and controllable, otherwise, the businesses may fail.

5.2 Regression Equation

To choose the variables to enter in the models, the researcher uses stepwise method. By using stepwise method, there are 22 models can be applied for this study:

Model 1: Marketing

$$Y = \alpha + \beta_2 X_2 + \varepsilon$$

$$= 6.150 - 1.864 X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 2: Making service "warm"

$$Y = \alpha + \beta_1 X_1 + \varepsilon$$

$$= 1.193 + 1.607X_1$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_1 = the parameters to be estimated

X_1 = the level of labor intensity

ε = the error associated with the equation

Model 3: Scheduling service delivery

$$Y = \alpha + \beta_2 X_2 + \varepsilon$$

$$= .436 + 2.071X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 4: Reacting to customer intervention in process

$$Y = \alpha + \beta_2 X_2 + \varepsilon$$

$$= 0.686 + 1.964X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 5: Managing advancement of people delivering service

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

$$= 1.05 + 0.229X_1 + 1.486X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_1 = the parameters to be estimated

X_1 = the level of labor intensity

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 6: Attention to physical surroundings

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

$$= 0.682 + 0.250X_1 + 1.693X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_1 = the parameters to be estimated

X_1 = the level of labor intensity

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 7: Managing flat hierarchy with loose subordinate-superior relationships

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

$$= 6.450 - 0.157X_1 - 0.1771X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_1 = the parameters to be estimated

X_1 = the level of labor intensity

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 8: Capital decision

$$Y = \alpha + \beta_1 X_1 + \varepsilon$$

$$= 6.136 - 1.784X_1$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_1 = the parameters to be estimated

X_1 = the level of labor intensity

ε = the error associated with the equation

Model 9: Technological advance

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

$$= 6.896 - 0.407X_1 - 1.750X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_1 = the parameters to be estimated

X_1 = the level of labor intensity

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 10: Control of far-flung geographical location

$$Y = \alpha + \beta_2 X_2 + \varepsilon$$

$$= 1.036 + 1.557X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 11: Startup new units

$$Y = \alpha + \beta_2 X_2 + \varepsilon$$

$$= 0.793 + 1.850X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 12: Managing growth

$$Y = \alpha + \beta_2 X_2 + \varepsilon$$

$$= 1.107 + 1.671 X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 13: Gaining employee loyalty

$$Y = \alpha + \beta_2 X_2 + \varepsilon$$

$$= 1.107 + 1.714 X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 14: Hiring

$$Y = \alpha + \beta_2 X_2 + \varepsilon$$

$$= 1.543 + 1.393 X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 15: Training

$$Y = \alpha + \beta_2 X_2 + \varepsilon$$

$$= 6.000 - 1.679 X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 16: Employee welfare

$$Y = \alpha + \beta_2 X_2 + \varepsilon$$

$$= 0.793 + 1.793 X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 17: Scheduling workforces

$$Y = \alpha + \beta_2 X_2 + \varepsilon$$

$$= 6.236 - 1.843 X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 18: Managing demand to avoid peak and to promote off-peak

$$Y = \alpha + \beta_2 X_2 + \varepsilon$$

$$= 1.4 + 1.457 X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 19: Managing fairly rigid hierarchy with need for standard operating procedure

$$Y = \alpha + \beta_2 X_2 + \varepsilon$$
$$= 6.257 - 1.836 X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 20: Fighting cost increases

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$
$$= 6.425 + 0.150 X_1 - 2.036 X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_1 = the parameters to be estimated

X_1 = the level of labor intensity

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 21: Maintaining quality

$$Y = \alpha + \beta_2 X_2 + \varepsilon$$
$$= 6.121 + 1.679 X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

Model 22: Work methods development and control

$$Y = \alpha + \beta_2 X_2 + \varepsilon$$
$$= 6.571 + 2.050 X_2$$

Significance at 95% confidence interval. Number of observations is 280.

Where α = a constant

β_2 = the parameters to be estimated

X_2 = the level of customer contact/customization

ε = the error associated with the equation

5.3 F-test, T-test, R, R square and adjusted R-square

5.3.1 F-test

Table 5.2: F-test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	243.289	1	243.289	525.491	.000
	Residual	128.707	278	.463		
	Total	371.996	279			

a Predictors: (Constant), customer contact
b Dependent Variable: marketing

Under model 1, the F-test is 525.491 or P(F>525.491) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there is at least one independent variable that has a relationship with the dependent variable (marketing). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	180.804	1	180.804	363.719	.000
	Residual	138.193	278	.497		
	Total	318.996	279			

a Predictors: (Constant), labor intensity
b Dependent Variable: making service "warm"

Under model 2, the F-test is 363.719 or P(F>363.719) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there is at least one independent variable that has a relationship with the dependent variable (making service "warm"). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	300.357	1	300.357	712.886	.000
	Residual	117.129	278	.421		
	Total	417.486	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Scheduling service delivery

Under model 3, the F-test is 712.886 or P(F>712.886) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there is at least one independent variable that has a relationship with the dependent variable (scheduling service delivery). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	270.089	1	270.089	790.188	.000
	Residual	95.021	278	.342		
	Total	365.111	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Reacting to customer intervention in process

Under model 4, the F-test is 790.188 or P(F>790.188) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there is at least one independent variable that has a relationship with the dependent variable (reacting to customer intervention in process). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	154.514	1	154.514	359.886	.000
	Residual	119.357	278	.429		
	Total	273.871	279			
2	Regression	158.171	2	79.086	189.341	.000
	Residual	115.700	277	.418		
	Total	273.871	279			

a Predictors: (Constant), customer contact
b Predictors: (Constant), customer contact, labor intensity
c Dependent Variable: Managing advancement of people delivering service

Under model 5, the F-test are 359.886 and 189.341 or P(F>359.886), P(F>189.341) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there are two independent variables that have relationship with the dependent variable (managing advancement of people delivering service). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	200.604	1	200.604	401.806	.000
	Residual	138.793	278	.499		
	Total	339.396	279			
2	Regression	204.979	2	102.489	211.204	.000
	Residual	134.418	277	.485		
	Total	339.396	279			

a Predictors: (Constant), customer contact
b Predictors: (Constant), customer contact, labor intensity
c Dependent Variable: Attention to physical surroundings

Under model 6, the F-test are 401.806 and 211.204 or P(F>401.806), P(F>211.204) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there are two independent variables that have relationship with the dependent variable (attention to physical surroundings). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	219.657	1	219.657	538.354	.000
	Residual	113.429	278	.408		
	Total	333.086	279			
2	Regression	221.386	2	110.693	274.502	.000
	Residual	111.700	277	.403		
	Total	333.086	279			

a Predictors: (Constant), customer contact
b Predictors: (Constant), customer contact, labor intensity
c Dependent Variable: Managing flat hierarchy with loose subordinate-superior relationships

Under model 7, the F-test are 538.354 and 274.502 or P(F>538.354), P(F>274.502) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there are two independent variables that have relationship with the dependent variable (managing flat hierarchy with loose subordinate-superior relationships). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	217.889	1	217.889	488.184	.000
	Residual	124.079	278	.446		
	Total	341.968	279			

a Predictors: (Constant), labor intensity
b Dependent Variable: Capital decision

Under model 8, the F-test is 488.184 or P(F>488.184) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there is at least one independent variable that has a relationship with the dependent variable (capital decision). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	214.375	1	214.375	412.737	.000
	Residual	144.393	278	.519		
	Total	358.768	279			
2	Regression	225.979	2	112.989	235.697	.000
	Residual	132.789	277	.479		
	Total	358.768	279			

a Predictors: (Constant), customer contact
b Predictors: (Constant), customer contact, labor intensity
c Dependent Variable: Technological advances

Under model 9, the F-test are 412.737 and 235.697 or P(F>412.737), P(F>235.697) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there are two independent variables that have relationship with the dependent (technological advance). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	169.729	1	169.729	363.958	.000
	Residual	129.643	278	.466		
	Total	299.371	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Control of far-flung geographical location

Under model 10, the F-test is 363.958 or P(F>363.958) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there is at least one independent variable that has a relationship with the dependent variable (control of far-flung geographical location). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	239.575	1	239.575	645.769	.000
	Residual	103.136	278	.371		
	Total	342.711	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Startup new units

Under model 11, the F-test is 645.769 or P(F>645.769) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there is at least one independent variable that has a relationship with the dependent variable (startup new units). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	195.557	1	195.557	428.793	.000
	Residual	126.786	278	.456		
	Total	322.343	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Managing growth

Under model 12, the F-test is 428.793 or P(F>428.793) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there is at least one independent variable that has a relationship with the dependent variable (managing growth). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	205.714	1	205.714	669.992	.000
	Residual	85.357	278	.307		
	Total	291.071	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Gaining employee loyalty

Under model 13, the F-test is 669.992 or P(F>669.992) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there is at least one independent variable that has a relationship with the dependent variable (gaining employee loyalty). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	166.629	1	166.629	439.673	.000
	Residual	105.357	278	.379		
	Total	271.986	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Hiring

Under model 14, the F-test is 439.673 or P(F>439.673) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there is at least one independent variable that has a relationship with the dependent variable (hiring). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	197.232	1	197.232	513.979	.000
	Residual	106.679	278	.384		
	Total	303.911	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Training

Under model 15, the F-test is 513.979 or P(F>513.979) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there is at least one independent variable that has a relationship with the dependent variable (training). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	225.004	1	225.004	554.004	.000
	Residual	112.907	278	.406		
	Total	337.911	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Employee welfare

Under model 16, the F-test is 554.004 or P(F>554.004) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there is at least one independent variable that has a relationship with the dependent variable (employee welfare). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	237.729	1	237.729	569.518	.000
	Residual	116.043	278	.417		
	Total	353.771	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Scheduling workforces

Under model 17, the F-test is 569.518 or P(F>569.518) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there is at least one independent variable that has a relationship with the dependent variable (scheduling workforces). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	148.629	1	148.629	340.593	.000
	Residual	121.314	278	.436		
	Total	269.943	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Managing demand to avoid peak and to promote off-peaks

Under model 18, the F-test is 340.593 or P(F>340.593) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there is at least one independent variable that has a relationship with the dependent variable (managing demand to avoid peak and to promote off-peaks). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	235.889	1	235.889	618.028	.000
	Residual	106.107	278	.382		
	Total	341.996	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Managing fairly rigid hierarchy with need for standard operating procedures

Under model 19, the F-test is 618.028 or P(F>618.028) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there is at least one independent variable that has a relationship with the dependent variable (managing fairly rigid hierarchy with need for standard operating procedures). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	290.089	1	290.089	883.226	.000
	Residual	91.307	278	.328		
	Total	381.396	279			
2	Regression	291.664	2	145.832	450.179	.000
	Residual	89.732	277	.324		
	Total	381.396	279			

a Predictors: (Constant), labor intensity
b Predictors: (Constant), labor intensity, customer contact
c Dependent Variable: Fighting cost increases

Under model 20, the F-test are 883.226 and 450.179 or P(F>883.226), P(F>450.179) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there are two independent variables that have relationship with the dependent (fighting cost increase). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	197.232	1	197.232	429.154	.000
	Residual	127.764	278	.460		
	Total	324.996	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Maintaining quality

Under model 21, the F-test is 429.154 or P(F>429.154) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there is at least one independent variable that has a relationship with the dependent variable (maintaining quality). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	294.175	1	294.175	682.521	.000
	Residual	119.821	278	.431		
	Total	413.996	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Work methods development and control

Under model 22, the F-test 682.521 or P(F>682.521) = 0.000. Ho is rejected and accept Ha because Significance = 0.000 < 0.05.

Thus, this figure shows that there is at least one independent variable that has a relationship with the dependent variable (work methods development and control). From the hypothesis,

Ho: $\beta_1 = \beta_2 = 0$

Ha: Ho is not true

5.3.2 T - test

Table 5.3: The estimation result by OLS estimation

Variables	Coefficient	T-statistic	Significance
Constant	6.150	47.827	.000
Customer contact	-1.864	-22.924	.000
Dependent variable: Marketing			
Variables	**Coefficient**	**T-statistic**	**Significance**
Constant	1.193	8.953	.000
Labor intensity	1.607	19.071	.000
Dependent variable: Making service "warm"			
Variables	**Coefficient**	**T-statistic**	**Significance**
Constant	0.436	3.552	.000
Customer contact	2.071	26.700	.000
Dependent variable: Scheduling service delivery			
Variables	**Coefficient**	**T-statistic**	**Significance**
Constant	0.686	6.206	.000
Customer contact	1.964	28.110	.000
Dependent variable: Reacting to customer intervention in process			
Variables	**Coefficient**	**T-statistic**	**Significance**
Constant	1.050	6.237	.000
Customer contact	1.486	19.233	.000
Labor intensity	0.229	2.959	.000
Dependent variable: Managing advancement of people delivering service			
Variables	**Coefficient**	**T-statistic**	**Significance**
Constant	0.682	3.759	.000
Customer contact	1.693	20.332	.000
Labor intensity	0.250	3.003	.000
Dependent variable: Attention to physical surroundings			
Variables	**Coefficient**	**T-statistic**	**Significance**
Constant	6.450	38.992	.000
Customer contact	-1.771	-23.339	.000
Labor intensity	-0.157	-2.070	.000
Dependent variable: Managing flat hierarchy with loose subordinate-superior relationship			

Variables	Coefficient	T-statistic	Significance
Constant	6.136	48.598	.000
Labor intensity	-1.784	-22.095	.000

Dependent variable: Capital decision

Variables	Coefficient	T-statistic	Significance
Constant	6.896	38.237	.000
Customer contact	-1.750	-21.147	.000
Labor intensity	-0.407	-4.920	.000

Dependent variable: Technological advance

Variables	Coefficient	T-statistic	Significance
Constant	1.036	8.025	.000
Customer contact	1.557	19.078	.000

Dependent variable: Control of far-flung geographical location

Variables	Coefficient	T-statistic	Significance
Constant	0.793	6.888	.000
Customer contact	1.850	25.412	.000

Dependent variable: Startup new units

Variables	Coefficient	T-statistic	Significance
Constant	1.107	8.675	.000
Customer contact	1.671	20.707	.000

Dependent variable: Managing growth

Variables	Coefficient	T-statistic	Significance
Constant	1.107	10.573	.000
Customer contact	1.714	25.884	.000

Dependent variable: Gaining employee loyalty

Variables	Coefficient	T-statistic	Significance
Constant	1.393	11.972	.000
Customer contact	1.543	20.968	.000

Dependent variable: Hiring

Variables	Coefficient	T-statistic	Significance
Constant	6.000	51.252	.000
Customer contact	-1.679	-22.671	.000

Dependent variable: Training

Variables	Coefficient	T-statistic	Significance
Constant	0.793	6.583	.000
Customer contact	1.793	23.537	.000

Dependent variable: Employee welfare

Variables	Coefficient	T-statistic	Significance
Constant	6.236	51.071	.000
Customer contact	-1.843	-23.865	.000

Dependent variable: Scheduling workforces

Variables	Coefficient	T-statistic	Significance
Constant	1.400	11.214	.000
Customer contact	1.457	18.455	.000

Dependent variable: Managing demand to avoid peaks and to promote off-peaks

Variables	Coefficient	T-statistic	Significance
Constant	6.257	53.593	.000
Customer contact	-1.836	-24.860	.000

Dependent variable: Managing fairly rigid hierarchy with need for standard operating procedures

Variables	Coefficient	T-statistic	Significance
Constant	6.425	43.335	.000
Labor intensity	-2.036	-29.925	.000
Customer contact	0.150	2.205	.000

Dependent variable: Fighting cost increases

Variables	Coefficient	T-statistic	Significance
Constant	6.121	47.780	.000
Customer contact	1.679	20.716	.000

Dependent variable: Managing quality

Variables	Coefficient	T-statistic	Significance
Constant	6.571	52.966	.000
Customer contact	2.050	26.125	.000

Dependent variable: Work methods development and control

5.3.3 R, R-square and Adjusted R-square

Table 5.4: R, R square and adjusted R-square

R	R^2	Adjusted R^2
0.809	0.654	0.653

a. Predictors: (Constant) customer contact
b. Dependent Variable: marketing

R	R^2	Adjusted R^2
0.753	0.567	0.565

a. Predictors: (Constant) labor intensity
b. Dependent Variable: making service "warm"

R	R^2	Adjusted R^2
0.848	0.719	0.718

a. Predictors: (Constant) customer contact
b. Dependent Variable: scheduling service delivery

R	R^2	Adjusted R^2
0.860	0.740	0.739

a. Predictors: (Constant) customer contact
b. Dependent Variable: reacting to customer intervention in process

R	R^2	Adjusted R^2
0.751	0.564	0.563
0.760	0.578	0.574

a. Predictors: (Constant) customer contact
b. Predictors: (Constant) customer contact, labor intensity
c. Dependent Variable: managing advancement of people delivering service

R	R^2	Adjusted R^2
0.769	0.591	0.590
0.777	0.604	0.601

a. Predictors: (Constant) customer contact
b. Predictors: (Constant) customer contact, labor intensity
c. Dependent Variable: attention to physical surroundings

R	R^2	Adjusted R^2
0.812	0.659	0.658
0.815	0.665	0.662

a. Predictors: (Constant) customer contact
b. Predictors: (Constant) customer contact, labor intensity
c. Dependent Variable: managing flat hierarchy with loose subordinate-superior relationships

R	R^2	Adjusted R^2
0.798	0.637	0.636

a. Predictors: (Constant) labor intensity
b. Dependent Variable: capital decision

R	R^2	Adjusted R^2
0.773	0.598	0.596
0.794	0.630	0.627

a. Predictors: (Constant) customer contact
b. Predictors: (Constant) customer contact, labor intensity
c. Dependent Variable: technological advance

R	R^2	Adjusted R^2
0.753	0.567	0.565

a. Predictors: (Constant) customer contact
b. Dependent Variable: control of far-flung geographical location

R	R^2	Adjusted R^2
0.836	0.699	0.698

a. Predictors: (Constant) customer contact
b. Dependent Variable: startup new units

R	R^2	Adjusted R^2
0.779	0.607	0.605

a. Predictors: (Constant) customer contact
b. Dependent Variable: managing growth

R	R^2	Adjusted R^2
0.841	0.707	0.706

a. Predictors: (Constant) customer contact
b. Dependent Variable: gaining employee loyalty

R	R^2	Adjusted R^2
0.783	0.613	0.611

a. Predictors: (Constant) customer contact
b. Dependent Variable: hiring

R	R^2	Adjusted R^2
0.806	0.649	0.648

a. Predictors: (Constant) customer contact
b. Dependent Variable: training

R	R^2	Adjusted R^2
0.816	0.666	0.665

a. Predictors: (Constant) customer contact
b. Dependent Variable: employee welfare

R	R^2	Adjusted R^2
0.820	0.672	0.671

a. Predictors: (Constant) customer contact
b. Dependent Variable: scheduling workforces

R	R^2	Adjusted R^2
0.742	0.551	0.549

a. Predictors: (Constant) customer contact
b. Dependent Variable: managing demand to avoid peak and to promote off-peaks

R	R^2	Adjusted R^2
0.831	0.690	0.689

a. Predictors: (Constant) customer contact
b. Dependent Variable: managing fairly rigid hierarchy with need for standard operating procedures

R	R^2	Adjusted R^2
0.872	0.761	0.760
0.874	0.765	0.763

a. Predictors: (Constant) labor intensity
b. Predictors: (Constant) labor intensity, customer contact
c. Dependent Variable: fighting cost increases

R	R^2	Adjusted R^2
0.779	.0607	0.605

a. Predictors: (Constant) customer contact
b. Dependent Variable: maintaining quality

R	R^2	Adjusted R^2
0.843	0.711	0.710

a. Predictors: (Constant) customer contact
b. Dependent Variable: work methods development and control

5.4 Validity of Ordinary Least Square (OLS) Assumption

The results of assumptions of the ordinary least square are as follow:

Table 5.5: Validity of ordinary least square (OLS)

Durbin – Watson	Variance Inflation Factor (VIF)	Plot spread
2.117	1.000	Good form

a. Predictors: (Constant) customer contact
b. Dependent Variable: marketing

Durbin – Watson	Variance Inflation Factor (VIF)	Plot spread
2.245	1.000	Good form

a. Predictors: (Constant) labor intensity
b. Dependent Variable: making service "warm"

Durbin – Watson	Variance Inflation Factor (VIF)	Plot spread
2.150	1.000	Good form

a. Predictors: (Constant) customer contact
b. Dependent Variable: scheduling service delivery

Durbin – Watson	Variance Inflation Factor (VIF)	Plot spread
2.105	1.000	Good form

a. Predictors: (Constant) customer contact
b. Dependent Variable: reacting to customer intervention in process

Durbin – Watson	Variance Inflation Factor (VIF)	Plot spread
2.020	1.000	Good form

a. Predictors: (Constant) customer contact
b. Predictors: (Constant) customer contact, labor intensity
c. Dependent Variable: managing advancement of people delivering service

Durbin – Watson	Variance Inflation Factor (VIF)	Plot spread
1.884	1.000	Good form

a. Predictors: (Constant) customer contact
b. Predictors: (Constant) customer contact, labor intensity
c. Dependent Variable: attention to physical surroundings

Durbin – Watson	Variance Inflation Factor (VIF)	Plot spread
1.976	1.000	Good form

a. Predictors: (Constant) customer contact
b. Predictors: (Constant) customer contact, labor intensity
c. Dependent Variable: managing flat hierarchy with loose subordinate-superior relationships

Durbin – Watson	Variance Inflation Factor (VIF)	Plot spread
2.029	1.000	Good form

a. Predictors: (Constant) labor intensity
b. Dependent Variable: capital decision

Durbin – Watson	Variance Inflation Factor (VIF)	Plot spread
1.773	1.000	Good form

a. Predictors: (Constant) customer contact
b. Predictors: (Constant) customer contact, labor intensity
c. Dependent Variable: technological advance

Durbin - Watson	Variance Inflation Factor (VIF)	Plot spread
2.216	1.000	Good form

a. Predictors: (Constant) customer contact
b. Dependent Variable: control of far-flung geographical location

Durbin - Watson	Variance Inflation Factor (VIF)	Plot spread
2.405	1.000	Good form

a. Predictors: (Constant) customer contact
b. Dependent Variable: startup new units

Durbin - Watson	Variance Inflation Factor (VIF)	Plot spread
2.284	1.000	Good form

a. Predictors: (Constant) customer contact
b. Dependent Variable: managing growth

Durbin - Watson	Variance Inflation Factor (VIF)	Plot spread
2.087	1.000	Good form

a. Predictors: (Constant) customer contact
b. Dependent Variable: gaining employee loyalty

Durbin - Watson	Variance Inflation Factor (VIF)	Plot spread
2.281	1.000	Good form

a. Predictors: (Constant) customer contact
b. Dependent Variable: hiring

Durbin - Watson	Variance Inflation Factor (VIF)	Plot spread
1.946	1.000	Good form

a. Predictors: (Constant) customer contact
b. Dependent Variable: training

Durbin - Watson	Variance Inflation Factor (VIF)	Plot spread
2.335	1.000	Good form

a. Predictors: (Constant) customer contact
b. Dependent Variable: employee welfare

Durbin - Watson	Variance Inflation Factor (VIF)	Plot spread
2.316	1.000	Good form

a. Predictors: (Constant) customer contact
b. Dependent Variable: scheduling workforces

Durbin - Watson	Variance Inflation Factor (VIF)	Plot spread
2.328	1.000	Good form

a. Predictors: (Constant) customer contact
b. Dependent Variable: managing demand to avoid peak and to promote off-peaks

Durbin - Watson	Variance Inflation Factor (VIF)	Plot spread
2.036	1.000	Good form

a. Predictors: (Constant) customer contact
b. Dependent Variable: managing fairly rigid hierarchy with need for standard operating procedures

Durbin - Watson	Variance Inflation Factor (VIF)	Plot spread
2.310	1.000	Good form

a. Predictors: (Constant) labor intensity
b. Predictors: (Constant) labor intensity, customer contact
c. Dependent Variable: fighting cost increases

Durbin - Watson	Variance Inflation Factor (VIF)	Plot spread
1.980	1.000	Good form

a. Predictors: (Constant) customer contact
b. Dependent Variable: maintaining quality

Durbin - Watson	Variance Inflation Factor (VIF)	Plot spread
1.968	1.000	Good form

a. Predictors: (Constant) customer contact
b. Dependent Variable: work methods development and control

5.5 Interpretation of Result

Marketing: The result of the F-test shows that the F value = 525.491 and the significance level equal to 0.000. This means that there is at least one independent variable in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variable that will be included in the equation by using the stepwise method (Table 5.3). There is one variable included in the model. It is customer contact. The variable is negative.

The coefficient of the variable, aims to measure the relationship of the customer contact and management challenge (marketing) variable, is negative and significance at the five percent. From the result of the coefficient, it reveals that as the level of customer contact increases, the management challenge in marketing will be decreased vice versa.

The variables included in the equation, model 1, have the correlation (R) between them 0.809 (Table 5.4). This figure means there is a relationship between independent and dependent variables because it is closer to 1. The overall goodness of fit of the model measured by R^2 is 65.4%. This means that the independent variable can explain the changing of the dependent variable (marketing) 65.4%. Another 34.6% are explained by other factors, which are not included in this model. The adjusted R^2 is 65.3% is used to avoid bias that may occur from the optimistic.

From the result, it can be explained that management in marketing has the relationship with the level of customer contact. The coefficient of customer contact is significantly negative. This implies that while the level of customer contact increases, the management in marketing will decrease in its challenge to the managers who work for service companies vice versa. From this result, it is the same as expected outcome.

Due to businesses that have high customer contact, it will gain more information about the customer, thus, it is quite easy for them to learn what customer likes and gives service exactly to the customer's preference. Thus, the customer will come to use service again and again. As a result, the marketing will not challenge much to the business that has high customer contact/customization.

Making service "warm": The result of the F-test shows that the F value = 363.719 and the significance level equal to 0.000. This means that there is at least one independent variable in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variable that will be included in the equation by using the stepwise method (Table 5.3). There is one variable included in the model. It is labor intensity. The variable is positive.

The coefficient of the variable, aims to measure the relationship of the labor intensity and management challenge (making service "warm") variable, is positive and significance at the five percent. From the result of the coefficient, it reveals that as the level of labor intensity increases, the management challenge in making service "warm" will be increased vice versa.

The variables included in the equation, model 2, have the correlation (R) between them 0.753 (Table 5.4). This figure means there is a relationship between independent and dependent variables because it is closer to 1. The overall goodness of fit of the model measured by R^2 is 56.7%. This means that the independent variable can explain the changing of the dependent variable (making service "warm") 56.7%. Another 43.3% are explained by other factors, which are not included in this model. The adjusted R^2 is 56.5% is used to avoid bias that may occur from the optimistic.

From the result, it can be explained that management in making service "warm" has the relationship with the level of labor intensity. The coefficient of labor intensity is significantly positive. This implies that while the level of labor intensity increases, the management in making service "warm" will increase in its challenge to

the managers who work for service companies vice versa. From this result, it is not the same as expected outcome. For example: retail store, Lotus, it has high level of labor intensity. Although these employees do not contact with the customer directly, sometimes, the customers may ask for goods with them. Thus, these employees also needed to provide service for them with a good warm manner. This can be a way to increase customer satisfaction and repeat purchasing for the future. Therefore, making service "warm" is also challenge for the firms that has high level of labor intensity regardless the level of customer contact.

Scheduling service delivery: The result of the F-test shows that the F value = 712.886 and the significance level equal to 0.000. This means that there is at least one independent variable in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variable that will be included in the equation by using the stepwise method (Table 5.3). There is one variable included in the model. It is customer contact. The variable is positive.

The coefficient of the variable, aims to measure the relationship of customer contact and management challenge (scheduling service delivery) variable, is positive and significance at the five percent. From the result of the coefficient, it reveals that as the level of customer contact increases, the management challenge in scheduling service delivery will be increased vice versa.

The variables included in the equation, model 3, have the correlation (R) between them 0.848 (Table 5.4). This figure means there is a relationship between independent and dependent variables because it is closer to 1. The overall goodness of fit of the model measured by R^2 is 71.9%. This means that the independent variable can explain the changing of the dependent variable (scheduling service delivery) 71.9%. Another 28.1% are explained by other factors, which are not included in this model. The adjusted R^2 is 71.8% is used to avoid bias that may occur from the optimistic.

From the result, it can be explained that management in scheduling service delivery has the relationship with the level of customer contact. The coefficient of customer contact is significantly positive. This implies that while the level of customer contact increases, the management in scheduling service delivery will increase in its challenge to the managers who work for service companies vice versa. From this result, it is not the same as expected outcome.

As the employees have high contact with the customers, it means employees gain more information about the customer. For example: Post office, the officer has to know that what is the date that the customer wants the letter to be received by the receiver. Thus, gaining information from the customer means the officer has to set the good schedule of service delivery in order to sure that the letter will be sent at the exact date the customer wants.

Reacting to customer intervention in process: The result of the F-test shows that the F value = 790.188 and the significance level equal to 0.000. This means that there is at least one independent variable in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variable that will be included in the equation by using the stepwise method (Table 5.3). There is one variable included in the model. It is customer contact. The variable is positive.

The coefficient of the variable, aims to measure the relationship of customer contact and management challenge (reacting to customer intervention in process) variable, is positive and significance at the five percent. From the result of the coefficient, it reveals that as the level of customer contact increases, the management challenge in reacting to customer intervention in process will be increased vice versa.

The variables included in the equation, model 4, have the correlation (R) between them 0.860 (Table 5.4). This figure means there is a relationship between independent and dependent variables because it is closer to 1. The overall goodness of fit of the model measured by R^2 is 74.0%. This means that the independent variable can explain the changing of the dependent variable (reacting to customer

intervention in process) 74.0%. Another 26.0% are explained by other factors, which are not included in this model. The adjusted R^2 is 73.9% is used to avoid bias that may occur from the optimistic.

From the result, it can be explained that management in reacting to customer intervention in process has the relationship with the level of customer contact. The coefficient of customer contact is significantly positive. This implies that while the level of customer contact increases, the management in reacting to customer intervention in process will increase in its challenge to the managers who work for service companies vice versa. From this result, it is the same as expected outcome.

When the employees have high contact with the customers, they will get more information about the customers. The information is very important for the firms to improve the service and make customer more satisfy. Thus, reacting to customer intervention in process is challenge to the manager.

Managing advancement of people delivering service: The result of the F-test shows that the F value = 359.886 for customer contact and 189.341 for labor intensity, the significance level equal to 0.000 for both variables. This means that there are both two independent variables in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variables that will be included in the equation by using the stepwise method (Table 5.3). There are two variables included in the model. It is customer contact and labor intensity. The variables are positive.

The coefficients of the variables, aim to measure the relationship of customer contact and labor intensity with management challenge (managing advancement of people delivering service) variable, are positive and significance at the five percent. From the result of the coefficients, they reveal that as the level of customer contact and labor intensity increase, the management challenge in managing advancement of people delivering service will be increased vice versa.

The variables included in the equation, model 5, have the correlation (R) between customer contact and managing advancement of people delivering service equals to 0.751, for labor intensity and managing advancement of people delivering service is 0.760 (Table 5.4). These figures mean there are relationship between independents and dependent variables because they are closer to 1. The overall goodness of fit of the model measured by R^2 is 56.4% for customer contact and 57.8% for labor intensity. These mean that the customer contact can explain the changing of the dependent variable (managing advancement of people delivering service) 56.4% and labor intensity can explain 57.4%. Another 34.6% are explained by other factors for customer contact and 32.6% cannot explain by labor intensity. The adjusted R^2 are 56.3% and 57.4% for customer contact and labor intensity respectively are used to avoid bias that may occur from the optimistic.

From the result, it can be explained that managing advancement of people delivering service has the relationship with the level of customer contact/customization and labor intensity. The coefficients of customer contact and labor intensity are significantly positive. These imply that while the level of customer contact/customization and labor intensity increases, the managing advancement of people delivering service will increase in its challenge to the managers who work for service companies vice versa. From this result, it is the same as expected outcome for customer contact but it is not the same for labor intensity.

Managing advancement of people delivering service is also important for businesses. The business that has high contact with the customer is necessary to have qualified employees. The employee should be trained and improved continuously in order to serve every customer at the satisfactory level. To improve the employees is very difficult. Thus, improving a large number of employees is not an easy job. That is why the managing advancement of people delivering service is so challenge to the manager.

Attention to physical surroundings: The result of the F-test shows that the F value = 401.806 for customer contact and 211.204 for labor intensity, the significance level equal to 0.000 for both variables. This means that there are both two independent variables in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variables that will be included in the equation by using the stepwise method (Table 5.3). There are two variables included in the model. It is customer contact and labor intensity. The variables are positive.

The coefficients of the variables, aim to measure the relationship of customer contact and labor intensity with management challenge (attention to physical surroundings) variable, are positive and significance at the five percent. From the result of the coefficients, they reveal that as the level of customer contact and labor intensity increase, the management challenge in attention to physical surroundings will be increased vice versa.

The variables included in the equation, model 6, have the correlation (R) between customer contact and attention to physical surroundings equal to 0.769, for labor intensity and managing advancement of people delivering service is 0.777 (Table 5.4). These figures mean there are relationship between independents and dependent variables because they are closer to 1. The overall goodness of fit of the model measured by R^2 is 59.1% for customer contact and 60.4% for labor intensity. These mean that the customer contact can explain the changing of the dependent variable (attention to physical surroundings) 59.1% and labor intensity can explain 60.4%. Another 40.9% are explained by other factors for customer contact and 39.6% cannot explain by labor intensity. The adjusted R^2 are 59.0% and 60.1% for customer contact and labor intensity respectively are used to avoid bias that may occur from the optimistic.

From the result, it can be explained that paying attention to physical surroundings has the relationship with the level of customer contact/customization and labor intensity. The coefficients of customer contact and labor intensity are significantly positive. These imply that while the level of customer contact/customization and labor intensity increases, the attention to physical surroundings will increase in its challenge to the managers who work for service companies vice versa. From this result, it is not the same as expected outcome for both customer contact and labor intensity.

Paying attention to physical surroundings is important for businesses even high or low in customer contact and labor intensity but it differs in degrees of its importance. For business that is high customer contact will have more important because customers always change in their preferences. Sometimes, the employees have not observed about these changes. Thus, paying attention to physical surroundings can help the mangers know what is the trend of customers to be changed and apply it to the business in order to make the business more success. Besides, paying attention to physical surroundings is necessary for businesses that have high labor intensity. For example: during high material costs, the managers should tell their employees and cultivate saving habits to them. If the managers do not pay attention to physical surroundings, they will not notice about this higher cost that can reduce their profit margins. . To make the employees recognize about the higher costs, it is hard, especially, a large group of people. Thus, it is quite challenge for the managers to do this and always have to observe the changes around themselves.

Managing flat hierarchy with loose subordinate-superior relationships: The result of the F-test shows that the F value = 538.354 for customer contact and 274.502 for labor intensity, the significance level equal to 0.000 for both variables. This means that there are both two independent variables in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variables that will be included in the equation by using the stepwise method (Table 5.3). There are two variables included in the model. It is customer contact and labor intensity. The variables are negative.

The coefficients of the variables, aim to measure the relationship of customer contact and labor intensity with management challenge (managing flat hierarchy with loose subordinate-superior relationships) variable, are negative and significance at the five percent. From the result of the coefficients, they reveal that as the level of customer contact and labor intensity increase, the management challenge in managing flat hierarchy with loose subordinate-superior relationships will be decreased vice versa.

The variables included in the equation, model 7, have the correlation (R) between customer contact and managing flat hierarchy with loose subordinate-superior relationships equal to 0.812, for labor intensity and managing flat hierarchy with loose subordinate-superior relationships is 0.815 (Table 5.4). These figures mean there are relationship between independents and dependent variables because they are closer to 1. The overall goodness of fit of the model measured by R^2 is 65.9% for customer contact and 66.5% for labor intensity. These mean that the customer contact can explain the changing of the dependent variable (managing flat hierarchy with loose subordinate-superior relationships) 65.9% and labor intensity can explain 66.5%. Another 34.1% are explained by other factors for customer contact and 33.5% cannot explain by labor intensity. The adjusted R^2 are 65.8% and 66.2% for customer contact and labor intensity respectively are used to avoid bias that may occur from the optimistic.

From the result, it can be explained that managing flat hierarchy with loose subordinate-superior relationships has the relationship with the level of customer contact/customization and labor intensity. The coefficients of customer contact and labor intensity are significantly negative. These imply that while the level of customer contact/customization and labor intensity increases, the managing flat hierarchy with loose subordinate-superior relationships will decrease in its challenge to the managers who work for service companies vice versa. From this result, they are not the same as expected outcome for both customer contact and labor intensity.

Managing flat hierarchy with loose subordinate-superior relationships will decrease in its challenge for the businesses that have high level in both customer contact and labor intensity because the managers feel that it is risk for the companies to let the employees have more authorize and make all decision by themselves. To have high contact with the customers, making wrong decision may make the companies loose the customers. For high labor intensity, the managers will not give more authority to them because more people means more conflicts between groups. Thus, the manager will set rules and regulations for all employees in order to manage the organization easily.

Capital decision: The result of the F-test shows that the F value = 488.184 and the significance level equal to 0.000. This means that there is at least one independent variable in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variable that will be included in the equation by using the stepwise method (Table 5.3). There is one variable included in the model. It is labor intensity. The variable is negative.

The coefficient of the variable, aims to measure the relationship labor intensity and management challenge (capital decision) variable, is negative and significance at the five percent. From the result of the coefficient, it reveals that as the level of labor intensity increases, the management challenge in capital decision will be decreased vice versa.

The variables included in the equation, model 8, have the correlation (R) between them 0.798 (Table 5.4). This figure means there is a relationship between independent and dependent variables because it is closer to 1. The overall goodness of fit of the model measured by R^2 is 63.7%. This means that the independent variable can explain the changing of the dependent variable (capital decision) 63.7%. Another 36.3% are explained by other factors, which are not included in this model. The adjusted R^2 is 63.6% is used to avoid bias that may occur from the optimistic.

From the result, it can be explained that capital decision has the relationship with the level of labor intensity. The coefficient of labor intensity is significantly negative. This implies that while the level of labor intensity increases, the capital decision will decrease in its challenge to the managers who work for service companies vice versa. From this result, it is the same as expected outcome.

High labor intensity means people do the most of the company's work. Thus, capital decision is not much concern for the managers who operate by using more labor.

Technological advance: The result of the F-test shows that the F value = 412.737 for customer contact and 235.989 for labor intensity, the significance level

equal to 0.000 for both variables. This means that there are both two independent variables in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variables that will be included in the equation by using the stepwise method (Table 5.3). There are two variables included in the model. It is customer contact and labor intensity. The variables are negative.

The coefficients of the variable, aim to measure the relationship of customer contact and labor intensity with management (technological advances) variable, are negative and significance at the five percent. From the result of the coefficients, they reveal that as the level of customer contact and labor intensity increase, the management challenge in technological advance will be decreased vice versa.

The variables included in the equation, model 9, have the correlation (R) between customer contact and technological advance equal to 0.773, for labor intensity and technological advance is 0.794 (Table 5.4). These figures mean there are relationship between independents and dependent variables because they are closer to 1. The overall goodness of fit of the model measured by R^2 is 59.8% for customer contact and 63.0% for labor intensity. These mean that the customer contact can explain the changing of the dependent variable (technological advance) 59.8% and labor intensity can explain 63.0%. Another 40.2% are explained by other factors for customer contact and 37.0% cannot explain by labor intensity. The adjusted R^2 are 59.6% and 62.7% for customer contact and labor intensity respectively are used to avoid bias that may occur from the optimistic.

From the result, it can be explained that technological advance has the relationship with the level of customer contact/customization and labor intensity. The coefficients of customer contact and labor intensity are significantly negative. These imply that while the level of customer contact/customization and labor intensity increases, the technological advance will decrease in its challenge to the managers who work for service companies vice versa. From this result, they are not the same as expected outcome for customer contact but the same for labor intensity.

For the businesses that people do most of their works, technological advance is not much important for them the same as high customer contact/customization businesses. Due to this business type, it has to serve the customer as individual. By using technology for operation, it may cost a lot to company because the company has to adjust the machine so often in order to produce service to each customer. Each time to set up the machine, it means the company has to pay for set up cost and also waste time. Thus, this management challenge, technological advance, is not challenge for the managers.

Control of far-flung geographical location: The result of the F-test shows that the F value = 363.958 and the significance level equal to 0.000. This means that there is at least one independent variable in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variable that will be included in the equation by using the stepwise method (Table 5.3). There is one variable included in the model. It is customer contact. The variable is positive.

The coefficient of the variable, aims to measure the relationship customer contact and management challenge (control of far-flung geographical location) variable, is positive and significance at the five percent. From the result of the coefficient, it reveals that as the level of customer contact increases, the management challenge in control of far-flung geographical location will be increased vice versa.

The variables included in the equation, model 10, have the correlation (R) between them 0.753 (Table 5.4). This figure means there is a relationship between independent and dependent variables because it is closer to 1. The overall goodness of fit of the model measured by R^2 is 56.7%. This means that the independent variable can explain the changing of the dependent variable (control of far-flung geographical location) 56.7%. Another 43.3% are explained by other factors, which are not included in this model. The adjusted R^2 is 56.5% is used to avoid bias that may occur from the optimistic.

From the result, it can be explained that control of far-flung geographical location has the relationship with the level of customer contact/customization. The coefficient of labor intensity is significantly positive. This implies that while the level of customer contact/customization increases, the control of far-flung geographical location will increase in its challenge to the managers who work for service companies vice versa. From this result, it is not the same as expected outcome.

As everyone knows, more people mean more conflicts and problems. Thus, the managers have to pay more attention to the performance of the employees and set some supervisors to take care all these people. In case that the employees work far from the office, the manager will try to find some ways to control them for example: assigning some people to take care them closely, checking often the employee's performance etc. If the employees know that they stay freely not much control, they will do what they want to do. Thus, some events will occur such as strike, mob etc. This is why managers feel challenge towards this aspect.

Startup new units: The result of the F-test shows that the F value = 645.769 and the significance level equal to 0.000. This means that there is at least one independent variable in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variable that will be included in the equation by using the stepwise method (Table 5.3). There is one variable included in the model. It is customer contact. The variable is positive.

The coefficient of the variable, aims to measure the relationship customer contact and management challenge (startup new units) variable, is positive and significance at the five percent. From the result of the coefficient, it reveals that as the level of customer contact increases, the management challenge in startup new units will be increased vice versa.

The variables included in the equation, model 11, have the correlation (R) between them 0.836 (Table 5.4). This figure means there is a relationship between independent and dependent variables because it is closer to 1. The overall goodness of fit of the model measured by R^2 is 69.9%. This means that the independent

variable can explain the changing of the dependent variable (startup new units) 69.9%. Another 30.1% are explained by other factors, which are not included in this model. The adjusted R^2 is 69.8% is used to avoid bias that may occur from the optimistic.

From the result, it can be explained that startup new units have the relationship with the level of customer contact/customization. The coefficient of customer contact/customization is significantly positive. This implies that while the level of customer contact/customization increases, the startup new units will increase in its challenge to the managers who work for service companies vice versa. From this result, it is not the same as expected outcome.

When the businesses, that have high level of customer contact/customization, plan to open a new branch. It is a heavy burden for the manager to think about this because this service type needs to pay attention closely. Making something wrongs, it will have an effect on the customer directly. Thus, it is quite challenge to the manager to decide about this.

Managing growth: The result of the F-test shows that the F value = 428.793 and the significance level equal to 0.000. This means that there is at least one independent variable in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variable that will be included in the equation by using the stepwise method (Table 5.3). There is one variable included in the model. It is customer contact. The variable is positive.

The coefficient of the variable, aims to measure the relationship customer contact and management challenge (managing growth) variable, is positive and significance at the five percent. From the result of the coefficient, it reveals that as the level of customer contact increases, the management challenge in managing growth will be increased vice versa.

The variables included in the equation, model 12, have the correlation (R) between them 0.779 (Table 5.4). This figure means there is a relationship between

independent and dependent variables because it is closer to 1. The overall goodness of fit of the model measured by R^2 is 60.7%. This means that the independent variable can explain the changing of the dependent variable (managing growth) 60.7%. Another 39.3% are explained by other factors, which are not included in this model. The adjusted R^2 is 60.5% is used to avoid bias that may occur from the optimistic.

From the result, it can be explained that managing growth has the relationship with the level of customer contact/customization. The coefficient of customer contact/customization is significantly positive. This implies that while the level of customer contact/customization increases, the managing growth will increase in its challenge to the managers who work for service companies vice versa. From this result, it is not the same as expected outcome.

Having high contact with the customers, it means what the employees do with the customers, the customers will get the result directly. In the period of growth, there are many people come to use the service. It is crucial for the companies to serve all customers at the same standard level, not too much hurry. Otherwise, the companies will lose its customers.

Gaining employee loyalty: The result of the F-test shows that the F value = 669.992 and the significance level equal to 0.000. This means that there is at least one independent variable in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variable that will be included in the equation by using the stepwise method (Table 5.3). There is one variable included in the model. It is customer contact. The variable is positive.

The coefficient of the variable, aims to measure the relationship customer contact and management challenge (gaining employee loyalty) variable, is positive and significance at the five percent. From the result of the coefficient, it reveals that as the level of customer contact increases, the management challenge in gaining employee loyalty will be increased vice versa.

The variables included in the equation, model 13, have the correlation (R) between them 0.841 (Table 5.4). This figure means there is a relationship between independent and dependent variables because it is closer to 1. The overall goodness of fit of the model measured by R^2 is 70.7%. This means that the independent variable can explain the changing of the dependent variable (gaining employee loyalty) 70.7%. Another 29.3% are explained by other factors, which are not included in this model. The adjusted R^2 is 70.6% is used to avoid bias that may occur from the optimistic.

From the result, it can be explained that gaining employee loyalty has the relationship with the level of customer contact/customization. The coefficient of customer contact/customization is significantly positive. This implies that while the level of customer contact/customization increases, the gaining employee loyalty will increase in its challenge to the managers who work for service companies vice versa. From this result, it is the same as expected outcome.

The ability to retain the customers depends on the quality that the employees serve the customers. Thus, people who serve the customers should be the one who is well - trained, good manner, service - hearted etc. For training these employees, the companies have to pay for it. Therefore, it is important for the firms to keep these employees and gain loyalty from them because their resignation means cost for the companies.

Hiring: The result of the F-test shows that the F value = 439.673 and the significance level equal to 0.000. This means that there is at least one independent variable in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variable that will be included in the equation by using the stepwise method (Table 5.3). There is one variable included in the model. It is customer contact. The variable is positive.

The coefficient of the variable, aims to measure the relationship customer contact and management challenge (hiring) variable, is positive and significance at the

five percent. From the result of the coefficient, it reveals that as the level of customer contact increases, the management challenge in hiring will be increased vice versa.

The variables included in the equation, model 14, have the correlation (R) between them 0.783 (Table 5.4). This figure means there is a relationship between independent and dependent variables because it is closer to 1. The overall goodness of fit of the model measured by R^2 is 61.3%. This means that the independent variable can explain the changing of the dependent variable (hiring) 61.3%. Another 38.7% are explained by other factors, which are not included in this model. The adjusted R^2 is 61.1% is used to avoid bias that may occur from the optimistic.

From the result, it can be explained that hiring has the relationship with the level of customer contact/customization. The coefficient of customer contact/customization is significantly positive. This implies that while the level of customer contact/customization increases, the hiring will increase in its challenge to the managers who work for service companies vice versa. From this result, it is not the same as expected outcome.

This is quite similar to other management challenges that hiring is also important to the higher level of customer contact/customization because whatever the employee performs, it will effect on the customer. Thus, the companies will have some procedures to screen the acquired employees in order to get the qualified one.

Training: The result of the F-test shows that the F value = 513.979 and the significance level equal to 0.000. This means that there is at least one independent variable in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variable that will be included in the equation by using the stepwise method (Table 5.3). There is one variable included in the model. It is customer contact. The variable is negative.

The coefficient of the variable, aims to measure the relationship customer contact and management challenge (training) variable, is negative and significance at the five percent. From the result of the coefficient, it reveals that as the level of

customer contact increases, the management challenge in training will be decreased vice versa.

The variables included in the equation, model 15, have the correlation (R) between them 0.806 (Table 5.4). This figure means there is a relationship between independent and dependent variables because it is closer to 1. The overall goodness of fit of the model measured by R^2 is 64.9%. This means that the independent variable can explain the changing of the dependent variable (training) 64.9%. Another 35.1% are explained by other factors, which are not included in this model. The adjusted R^2 is 64.8% is used to avoid bias that may occur from the optimistic.

From the result, it can be explained that training has the relationship with the level of customer contact/customization. The coefficient of customer contact/customization is significantly negative. This implies that while the level of customer contact/customization increases, the training will decrease in its challenge to the managers who work for service companies vice versa. From this result, it is not the same as expected outcome.

This result comes from the hiring process that is so complicate in order to get the qualified employees, thus, training has declined in its importance even in the service industries with high customer contact/customization. On the other hand, if the companies that have lower level of customer contact/customization, they will not pay more attention to the hiring process. Thus, training will become important for the new jobs.

Employee welfare: The result of the F-test shows that the F value = 554.004 and the significance level equal to 0.000. This means that there is at least one independent variable in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variable that will be included in the equation by using the stepwise method (Table 5.3). There is one variable included in the model. It is customer contact. The variable is positive.

The coefficient of the variable, aims to measure the relationship customer contact and management challenge (employee welfare) variable, is positive and significance at the five percent. From the result of the coefficient, it reveals that as the level of customer contact increases, the management challenge in employee welfare will be increased vice versa.

The variables included in the equation, model 16, have the correlation (R) between them 0.816 (Table 5.4). This figure means there is a relationship between independent and dependent variables because it is closer to 1. The overall goodness of fit of the model measured by R^2 is 66.6%. This means that the independent variable can explain the changing of the dependent variable (employee welfare) 66.6%. Another 33.4% are explained by other factors, which are not included in this model. The adjusted R^2 is 66.5% is used to avoid bias that may occur from the optimistic.

From the result, it can be explained that employee welfare has the relationship with the level of customer contact/customization. The coefficient of customer contact/customization is significantly positive. This implies that while the level of customer contact/customization increases, the employee welfare will increase in its challenge to the managers who work for service companies vice versa. From this result, it is not the same as expected outcome.

To select qualified employees to serve in high level of customer contact/customization businesses, the companies have to pay more attention and cost in order to get them. To keep these good qualified employees with the companies as long as possible, the companies need to set an attractive welfare for them.

Scheduling workforces: The result of the F-test shows that the F value = 569.518 and the significance level equal to 0.000. This means that there is at least one independent variable in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variable that will be included in the equation by using the stepwise method (Table 5.3). There is one variable included in the model. It is customer contact. The variable is negative.

The coefficient of the variable, aims to measure the relationship customer contact and management challenges (scheduling workforces) variable, is negative and significance at the five percent. From the result of the coefficient, it reveals that as the level of customer contact increases, the management challenge in scheduling workforces will be decreased vice versa.

The variables included in the equation, model 17, have the correlation (R) between them 0.820(Table 5.4). This figure means there is a relationship between independent and dependent variables because it is closer to 1. The overall goodness of fit of the model measured by R^2 is 67.2%. This means that the independent variable can explain the changing of the dependent variable (scheduling workforces) 67.2%. Another 32.8% are explained by other factors, which are not included in this model. The adjusted R^2 is 67.1% is used to avoid bias that may occur from the optimistic.

From the result, it can be explained that scheduling workforces has the relationship with the level of customer contact/customization. The coefficient of customer contact/customization is significantly negative. This implies that while the level of customer contact/customization increases, the scheduling workforces will decrease in its challenge to the managers who work for service companies vice versa. From this result, it is not the same as expected outcome.

The service with high level of customer contact/customization aims to serve customer as individual. When the employees serve one customer finished, the next customer will come. It uses the method of first come, first serve. Thus, the manager will not pay more attention to the scheduling workforces. While low customer contact businesses, the employees will have more time that does not contact with the customers. Thus, they will try to escape from work. As a result, scheduling workforces is necessary to the business that has low level of customer contact.

Managing demand to avoid peak and to promote off-peaks: The result of the F-test shows that the F value = 340.593 and the significance level equal to 0.000. This means that there is at least one independent variable in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variable that will be included in the equation by using the stepwise method (Table 5.3). There is one variable included in the model. It is customer contact. The variable is positive.

The coefficient of the variable, aims to measure the relationship customer contact and management challenge (managing demand to avoid peak and to promote off-peaks) variable, is positive and significance at the five percent. From the result of the coefficient, it reveals that as the level of customer contact increases, the management challenge in managing demand to avoid peak and to promote off-peaks will be increased vice versa.

The variables included in the equation, model 18, have the correlation (R) between them 0.742(Table 5.4). This figure means there is a relationship between independent and dependent variables because it is closer to 1. The overall goodness of fit of the model measured by R^2 is 55.1%. This means that the independent variable can explain the changing of the dependent variable (managing demand to avoid peak and to promote off-peaks) 55.1%. Another 44.9% are explained by other factors, which are not included in this model. The adjusted R^2 is 54.9% is used to avoid bias that may occur from the optimistic.

From the result, it can be explained that managing demand to avoid peak and to promote off-peak has the relationship with the level of customer contact/customization. The coefficient of customer contact/customization is significantly positive. This implies that while the level of customer contact/customization increases, the managing demand to avoid peak and to promote off-peak will increase in its challenge to the managers who work for service companies vice versa. From this result, it is not the same as expected outcome.

High customer contact means serving the customer as individual. When the demand is too high, it is difficult for the employees to take care customers at the same level. Thus, managing demand is important.

Managing fairly rigid hierarchy with need for standard operating procedures: The result of the F-test shows that the F value = 618.028 and the significance level equal to 0.000. This means that there is at least one independent variable in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variable that will be included in the equation by using the stepwise method (Table 5.3). There is one variable included in the model. It is customer contact. The variable is negative.

The coefficient of the variable, aims to measure the relationship customer contact and management challenge (managing fairly rigid hierarchy with need for standard operating procedures) variable, is negative and significance at the five percent. From the result of the coefficient, it reveals that as the level of customer contact increases, the management challenge in managing fairly rigid hierarchy with need for standard operating procedures will be decreased vice versa.

The variables included in the equation, model 19, have the correlation (R) between them 0.831(Table 5.4). This figure means there is a relationship between independent and dependent variables because it is closer to 1. The overall goodness of fit of the model measured by R^2 is 69.0%. This means that the independent variable can explain the changing of the dependent variable (managing fairly rigid hierarchy with need for standard operating procedures) 69.0%. Another 31.0% are explained by other factors, which are not included in this model. The adjusted R^2 is 68.9% is used to avoid bias that may occur from the optimistic.

From the result, it can be explained that managing fairly rigid hierarchy with the need for standard operating procedure has the relationship with the level of customer contact/customization. The coefficient of customer contact/customization is significantly negative. This implies that while the level of customer contact/customization increases, the managing fairly rigid hierarchy with the need for

standard operating procedure will decrease in its challenge to the managers who work for service companies vice versa. From this result, it is the same as expected outcome.

To retain customers, it is important for the companies that have standard operating procedure, especially, high customer contact business. For example: facial massage, if the employees cannot keep their standard for operation, the customer may not satisfy. Therefore, this point is very challenge for the managers.

Fighting cost increases: The result of the F-test shows that the F value = 883.226 for labor intensity and 450.179 for customer contact, the significance level equal to 0.000 for both variables. This means that there are both two independent variables in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variables that will be included in the equation by using the stepwise method (Table 5.3). There are two variables included in the model. They are labor intensity and customer contact. The variables are negative for labor intensity and positive for customer contact.

The coefficients of the variables, aim to measure the relationship of labor intensity and customer contact with management challenge (fighting cost increase) variable, are negative for labor intensity and positive for customer contact. The significance is at the five percent. From the result of the coefficients, they reveal that as the level of labor intensity increases, the management challenge in fighting cost increases will be decreased. For customer contact, as the level of customer contact increases, the management challenge in fighting cost increases will be increased vice versa.

The variables included in the equation, model 20, have the correlation (R) between labor intensity and fighting cost increases equal to 0.872, for customer contact and fighting cost increase is 0.874(Table 5.4). These figures mean there are relationship between independents and dependent variables because they are closer to 1. The overall goodness of fit of the model measured by R^2 is 76.1% for labor intensity and 76.5% for customer contact. These mean that the labor intensity can

explain the changing of the dependent variable (fighting cost increases) 76.1% and customer contact can explain 76.5%. Another 23.9% are explained by other factors for labor intensity and 23.5% cannot explain by customer contact. The adjusted R^2 are 76.0% and 76.3% for labor intensity and customer contact respectively are used to avoid bias that may occur from the optimistic.

From the result, it can be explained that fighting cost increase has the relationship with the level of customer contact/customization and labor intensity. The coefficient of customer contact is positive while the coefficient of labor intensity is significantly negative. These imply that while the level of customer contact/customization increases, fighting cost increase becomes more challenge. For labor intensity, as its level is increase, fighting cost increase will decrease in its challenge to the managers who work for service companies vice versa. From this result, they are not the same as expected outcome for labor intensity but the same for customer contact.

For the companies that serve the customer as individual, it will create more cost to the companies. Thus, managers try to reduce the cost as much as possible. On the other hand, high labor intensity will not pay more attention to cost increase instead the managers pay more attention to controlling process.

Maintaining quality: The result of the F-test shows that the F value = 429.154 and the significance level equal to 0.000. This means that there is at least one independent variable in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variable that will be included in the equation by using the stepwise method (Table 5.3). There is one variable included in the model. It is customer contact. The variable is negative.

The coefficient of the variable, aims to measure the relationship customer contact and management challenges (maintaining quality) variable, is negative and significance at the five percent. From the result of the coefficient, it reveals that as the level of customer contact increases, the management challenge maintaining quality will be decreased vice versa.

The variables included in the equation, model 21, have the correlation (R) between them 0.779(Table 5.4). This figure means there is a relationship between independent and dependent variables because it is closer to 1. The overall goodness of fit of the model measured by R^2 is 60.7%. This means that the independent variable can explain the changing of the dependent variable (maintaining quality) 60.7%. Another 39.3% are explained by other factors, which are not included in this model. The adjusted R^2 is 60.5% is used to avoid bias that may occur from the optimistic

From the result, it can be explained that maintaining quality has the relationship with the level of customer contact/customization. The coefficient of customer contact/customization is significantly positive. This implies that while the level of customer contact/customization increase, the maintaining quality will increase in its challenge to the managers who work for service companies vice versa. From this result, it is not the same as expected outcome.

For high customer contact, it is important for every people to maintain the quality because it is a way to retain the companies' employees.

Work methods development and control: The result of the F-test shows that the F value = 682.521 and the significance level equal to 0.000. This means that there is at least one independent variable in the model that can explain the dependent variable (Table 5.2)

By analysis of the T-test, the researcher can get the variable that will be included in the equation by using the stepwise method (Table 5.3). There is one variable included in the model. It is customer contact. The variable is negative.

The coefficient of the variable, aims to measure the relationship customer contact and management challenge (work methods development and control) variable, is negative and significance at the five percent. From the result of the coefficient, it reveals that as the level of customer contact increases, the management challenge in work methods development and control will be decreased vice versa.

The variables included in the equation, model 21, have the correlation (R) between them 0.843(Table 5.4). This figure means there is a relationship between independent and dependent variables because it is closer to 1. The overall goodness of fit of the model measured by R^2 is 71.1%. This means that the independent variable can explain the changing of the dependent variable (work methods development and control) 71.1%. Another 28.9% are explained by other factors, which are not included in this model. The adjusted R^2 is 71.0% is used to avoid bias that may occur from the optimistic.

From the result, it can be explained that work methods development and control has the relationship with the level of customer contact/customization. The coefficient of customer contact/customization is significantly positive. This implies that while the level of customer contact/customization increases, the work methods development and control will increase in its challenge to the managers who work for service companies vice versa. From this result, it is not the same as expected outcome.

For business that has high contact with the customers, it is crucial for the company to develop the service in order to make it better. If the level of customer contact is low, this challenge will not much challenge.

The validity of ordinary least squares (OLS)

Durbin -Watson

Durbin-Watson is used to test the autocorrelation. If Durbin-Watson has value near to 2 or in range from 1.50 - 2.50, it can conclude that ei and ej are independent from each other where e_i is random error of i and e_j is the random error of j. If the value of Durbin-Watson is less than 1.50, it means there is a positive relation between ei and ej. If the value is closer to zero, it means there is more relationship. At the same time, if Durbin-Watson has value greater than 2.50 but not more than 4. It means ei and ej has a relationship with each other but in a negative way (Dr.Kanlaya W., 2544).

Thus, the researcher can conclude the results for all 22 models that these models have no relationship between ei and ej because the value of Durbin-Watson are in range 1.50-2.50.

Variance Inflation Factor (VIF)

Variance Inflation Factor is used to the multicollinearity. This is used to test whether there is a relationship among independent variables. If VIF is greater than 5, it means there is high relationship among independent variables (Studenmund, 1996).

From the research's results, VIF of each variable in the study is 1. Thus, it can be concluded that there is no relationship among independent variables in these models.

Plotting Spread Area

Plot the spreading area is used to test the Heteroskedasticity. Thus, the researcher has plotted the graph. After the observation, the researcher noticed that all graphs are normally drawn in classical model (Appendices).

Chapter 6: Conclusions and Recommendations

This chapter consists of 2 parts. The first part is summary of the research findings. The second part is the recommendation.

6.1 Summary of Findings

Table 6.1: Relationships between management challenges and service classification dimensions

	Management challenges	Labor Intensity	Customer Contact/
1.	Marketing	-	Negative
2.	Making service "warm"	Positive	-
3.	Scheduling service delivery	-	Positive
4.	Reacting to customer intervention in process	-	Positive
5.	Managing advancement of people delivering service	Positive	Positive
6.	Attention to physical surroundings	Positive	Positive
7.	Managing flat hierarchy with loose subordinate-superior relationships	Negative	Negative
8.	Capital decision	Negative	-
9.	Technological advances	Negative	Negative
10.	Control of far-flung geographical locations	-	Positive
11.	Startup new units	-	Positive
12.	Managing growth	-	Positive
13.	Gaining employee loyalty	-	Positive
14.	Hiring	-	Positive
15.	Training	-	Negative
16.	Employee welfare	-	Positive
17.	Scheduling workforces	-	Negative
18.	Managing demand to avoid peak and to promote off- peaks	-	Positive
19.	Managing fairly rigid hierarchy with need for standard operating procedures	-	Negative
20.	Fighting cost increase	Negative	Positive
21.	Maintaining quality	-	Positive
22.	Work methods development and control	-	Positive

From table 6, the researcher can make some conclusions that there is relationship between management challenges across various types of service

industries and change in the degree of customer contact/customization and labor intensity. There are 2 types of relationship. One is positive relationship that is changing at the same direction. Another one is negative relationship that is changing at the opposite direction.

For the relationship between management challenges across various types of service industries and change in the degree of customer contact/customization, there is some management that quit challenges to the managers. These are scheduling service delivery, reacting to customer intervention in process, managing advancement of people delivering service, startup new units, and work methods development are top of management challenges with an increase in customer contact/customization. While managing growth, gaining employee loyalty, hiring, employee welfare, managing demand to avoid peak and to promote off-peaks, fighting cost increases, attention to physical surroundings, control of far-flung geographical locations and maintaining quality are average challenges to the managers. Thus, these management are expected to be more important for service shops and professional service than service factories and mass services.

A number of other management challenges, marketing, managing flat hierarchy with loose subordinate-superior relationships, technological advances, training, scheduling workforces and managing fairly rigid hierarchy with need for standard operating procedures, become less important for customer contact/customization increase. These management aspects can be expected to be more important for service factories and mass services.

When the researcher looks through the relationship between management challenges across various types of service industries and change in degree of labor intensity; making service "warm", managing advancement of people delivering service and attention to physical surroundings are increase in their challenges as the labor intensity increase. Thus, these management challenges can be expected to be more important for service shops and professional services.

On the other hand, managing flat hierarchy with loose subordinate-superior relationships, capital decision, technological advances, control of far-flung

geographical locations and fighting cost increase are increase in their challenges as the labor intensity decrease. Thus, the managers can expect that these management challenges are important for service factories and mass services.

All statement above describes the relationship between management challenges across various types of service industries and changes in degree of customer contact/customization and labor intensity. For the next part, the researcher will make some conclusion about the test hypotheses.

From this research study, all alternative hypotheses are accepted because the significance of the F-test equals to 0.000. These significance values are less than 0.05. The R - values are in the range between 0.74 - 0.87 approximately. This means there are relationship between independent and dependent variables. For R^2, the range is approximately between 55% - 76%. These values mean there is high level for independent variables to explain dependent variables. Moreover, there is no violation of the assumption of ordinary least square (OLS). The Durbin-Watson values are in range between 1.50 - 2.50. VIF are all about 1.000. The plot spread is in good form (Appendices).

6.2 Recommendation

After this study completed, researcher hopes that it will generate some benefits to some groups of people. In this study, the researcher pays more attention to service businesses that differ in the degree of customer contact/customization and labor intensity. There are service factories (low customer contact/customization and low labor intensity), service shops (high customer contact/customization and low labor intensity), mass services (low customer contact/customization and high labor intensity) and professional services (high customer contact/customization and high labor intensity).

- **Service Factories** (low customer contact/customization and low labor intensity)

The service factories have both low in the level of customer contact/customization and labor intensity. Thus, marketing is very important for the firms. The companies have few chances to collect the information from the customers

directly. The companies will not know what is customer like. The better way for the company to attract customers to come and use the services is marketing. Marketing is involving in product, price, place and promotion. Thus, serving the customer with good quality products, selling at lower price, having more branches or giving free sample may be the way to attract them.

Managing flat hierarchy with loose subordinate-superior relationships is also crucial to the managers. The companies that run the businesses without knowing information much about the customers, it is quite risk. The companies will not know whether the services that the companies provide to the customers meet their expectations. To let the employees make all decisions by themselves can make the companies lose the customers. Due to this business has low labor intensity, giving some authorities to the employee is important. Sometimes, the employees have to make decision that is not much important. If they have to ask the managers for every decision making, it may be too late for serving the customers and the customers will not satisfy.

The business in this service industry mostly operates by using machines and equipment. Thus, making decision about the technological advances is important. The managers have to think hard about this because each machine is so expensive. When the managers have already bought it, the managers have to use it for a long time. Thus, making wrong decision, it may cause a lot of costs to the companies for many years. Before buying new machine, it is crucial for the managers to study more closely about their works. Sometimes, brainstorming between the managers and the employees can generate wider views to the managers. This can help the managers make decision better.

Although most of works for this service industry are mainly done by machine, the machine also has to operate according to the program that set by the workers. Nevertheless, training the employees is much important. When the machine is out of order, the one who operates the service is employee. Training can be done once a month or more than this because it can help the employees familiar to their works and can work well even there is no machine.

Sometimes, the employees have some confusion about their jobs because they think those jobs are done by the machines. Thus, they will have more free time. To set schedule for workforces, the managers will know how many employees they need. At the same time, it can help the employees work more efficient.

The machine uses to do most of their jobs for this service industry because this business gives more important for standard and fast operation. Thus, the managers will pay attention to the work in order to assure that the service will provide at the same standard. Maintaining the machine is also important because the managers will not know when the machine is out of order. Some errors have effect on the quality of the service. Thus, checking the status of the machine can help reduce this risky event.

Although, this business will have few employees, making employee realize about the saving costs for the companies is important. This can help the company gains more profits and can survive. At the same time, the employees can get more bonuses. To help employees recognize about the cost savings, the companies may set some saving campaign and tell the employees about the benefits that they will get from this campaign. This can motivate them to save costs.

- **Service Shops** (high customer contact/customization and low labor intensity)

As the companies have more information about he customers, thus, the companies will know exactly when the customers want the service. For example: auto mobile repair shops, when the customers bring the car to repair, the service provider has to appoint for the date to pick the car back. If the companies have to well planned about the schedule for service delivery, it can make customers feel bad towards the companies.

For the information that the service provider gets from the customers, it is important to make use of it for improving the service of the companies. Thus, managers have given more important to this aspect. After the managers have improved the service, it is also challenge to the manager to select the employees and encouraged them to serve the customers better. The company may send the employees to learn more about the job they work etc.

This business has high customer contact, it means the companies have to serve all customers need as much as possible. For example: repair shop, the shop needs to have materials for repairing the products. When some materials have high costs, the companies need to find some substituted material. If the companies have not paid attention to the physical surroundings, it may cost a lot to the companies.

Control of far-flung geographical locations is very important and challenge to the managers, especially the business with high customer contact. Due to the companies get more information from the customers, the service should be excellent to the customers. If the managers do not stay at the same place as service occurred, it is quite challenge to managers on how to manage that service to meet customer's expectation, as well starting new units. Due to the world is advanced in technology, Internet can help manager solving this problem or even the videoconference. If the employees have some problems that cannot be solved, they can use these advanced technologies to help them.

For people who serve the customers should be qualified employees. The process to choose the employee is quite hard and expensive. Then, keeping the qualified employees also important. Thus, the manager will try to find out as many ways as possible to keep them. One of them is setting attractive employee welfare. The qualified employees come with costs. Nevertheless, the qualified employees also assets of the companies because they are people who contact with the customer directly. To know what employee likes, the companies may let the employees express the ideas and send it at suggestion box. After the managers get the results, they will summarize them and choose what most employees mostly want.

As the companies get information from the customer directly, thus, the companies can expect which period has high or low demand. During high demand, the companies may hire more employees. For low demand, the companies may reduce a number of employee etc. Although, most of works for this service industry are mainly done by machine. Nevertheless, the quality of service has still important. To assure that the service will be in the same standard, the managers always have to develop the service and control the people who provide service. To make the

development more efficient, the managers have to keep high contact with the customers as much as possible in order to gain the valuable information.

When the employees have more information about the customers, during high material costs, the employee will know what material can be used instead and can the customers will accept it. Due to the companies have few employees to serve the customers, thus, some of them may have close relationship with the customers. As a result, fighting cost increase becomes difficult to control. For example: when the employees have close relationship with the customers, the employees know what material customers always use. One day that material has high cost and the owner tells them not using this material with the customers. When the close customers come, they will use that material without concerning about the cost that increases. The managers can solve this problem by finding good substitute products and tell the employees about this. When the employees know that this substitute product is good, they will tell this to the customers and customers may use that substitute product.

As the business has few employees to serve the customer, thus, some technologies are needed to support them. Anyway, making capital decision should be carefully done because it has directly effect to the workers and the work they do. For example: repair shop, the managers have to buy the machine that can release the work of employees as much as possible because the companies have few employees. If the machine is not good, the employee will feel bad because they also have to workload the same as former. Careful reviewing about the pros and cons of the machine is necessary. More comparing is also better to get the good one.

The employees who work in this service industry is quite good at jobs they do, especially, for companies with few employees. These employees have more experiences toward their jobs. Thus, using loose subordinate-superior relationship may help them feel good. At the same time, both managers and employees can learn some experiences from each other and used in their works.

- **Mass Services** (low customer contact/customization and high labor intensity)

As the business has low contact with the customer, marketing is an important tool for attracting the customers to use this service. If the managers can set the

marketing campaign that is very attractive, sometimes it can offset something that the customers did not satisfy after using the service. Thus, setting marketing campaign is so challenge to the managers.

Although the service provider has low contact with the customers, sometimes, they have more valuable information. If there is high gap between subordinate-superior relationship, it is impossible for the managers to get the valuable information from the employees. Thus, the managers should try to keep contact with the employees as much as possible and keep the door open for all level of employees.

Although the employees have low contact with the customers, sometimes, technology can help the companies get some information about the customers. For example: Internet, when the customer often orders some goods from the company through the Internet, the company can gain some information through their ordering. The company will know what the customer likes and tries to serve them. Thus, paying attention to technological advance is also crucial to the firms. After getting the information, the manager needs to teach and train their employees to make use of the information get from the Internet. If the managers do not train them to make use of this information, the acquired information will useless.

Sometimes, having low customer contact may make the employees do not know what customers want. Thus, the employees will do nothing because the employees do not interested in the customers. Setting schedule workforces can help the managers in evaluating process. For example: When the customers come and use service at the shop, they do not get any respond from the employees. The customers can write some comments and specific time and date of using service. This can help the managers know who is the employee that should be improved.

One of the businesses in this service industry is retail shop such as 7-eleven. Although the employees have low contact with the customers, the companies also try to make the service more standard. For example: when the customers enter to the shop, the employees will say greeting words to the customers. Moreover, the shop will decorate at the same pattern in order to tell the customers that they can get the

same service wherever they buy. This can help the customer recognizes the shop and rebuy at the shop again of they satisfy.

Having high labor intensity, making service warm becomes more important. As many people know, having more people is hard to control and manage. Thus, to make a large group of people behaves with good warmth manner becomes more challenge to the managers, as well managing advancement of people delivering service. The managers have to select which one should be encouraged or dismissed from a pool of employees. For example: the companies can set some campaign such as employee of the month. The employee of the month is the person who has good manner, hard working etc. The colleagues will select the employee of the month. When the companies get who is the employee of the month, this person will get some gifts and some compliments from the companies. This method may help the employees eager to behave good warmth manner.

When the companies have high labor intensity, it means the companies have to pay high costs. Thus, the companies also have to pay more attention to physical surroundings. For example: as the economic crisis, many companies try to reduce costs. If the companies have not pay attention to this situation, the companies may fail. Therefore, the managers should let the employees know about this situation and give them a chance to propose the ideas of saving costs. Giving them a chance can help them feel as a member of the companies and they will eager to cooperate.

- **Professional Services** (high customer contact/customization and labor intensity)

One of the businesses in this service industry is legal firm. To serve the customers well, the companies need to have more information from the customers and use it in the process. For example: when the customers hire the attorney for their cases, the attorney needs to know all information about the cases from the customers. Then, the attorney will use the information as a guideline for solving the problems. Thus, reacting to customer intervention in process becomes more important.

As the business is in professional service industry, it means every thing should be done as professional. Thus, setting schedule for service delivery is so crucial. From the above example, when the attorney has to go to the court for the customers.

The attorney needs to plan carefully because the attorney cannot miss it. Giving some good equipment to the employees such as palm computer can help them do their jobs better.

The world and the environment have always changed, as well, the laws and regulations. Thus, the service provider needs to interest in the changes around themselves. For example: when the laws have changed, the attorney needs to study about it. As a result, managing advancement of people delivering service gains more important. Otherwise, the attorney cannot work successfully because the old law may not be properly used for the new environment. Thus, managers may set some meetings and tell the employees about what has changed. This will make employees know what is change. By helping them know about the things that have changed, it is a way to encourage the employee to advance in their jobs.

Business with high customer contact needs to operate carefully. The service has effect on the customer directly. If the customers do not get the proper service, they may not come and use the service provider. Thus, it is hard for the managers to control this kind of business that quite far from the central location. This problem is the same as starting up new units. If the managers cannot sure that they can control the new branch, they will not take this risk. Nevertheless, new technology can help solving this problem. Even the managers will not stay at the place to the use of advance technology.

During the growth period, the professional service may not serve the customers as first comes, first serves. The service provider needs to consider about the time and the importance of the work. Otherwise, some cases that have few times left cannot be solved in time.

Due to this service industry needs to have employees that are good and have enough skills and knowledge for their works. Thus, hiring is important. If the companies get the right and good people to work for them, they should keep them with the companies as long as possible. Thus, gaining employee loyalty is so important. The companies have to find what the employees like and want. If it is not too much, the companies should give it to them. This can be in the form of employee

welfare or others. When the employees satisfy, they can stay with the companies for long.

To work closely with the customers, the companies will know the trend of the customers to come and use the services. Thus, managing demand during peak and off-peak is challenge. For example: wedding studio, the companies will know which month has more customers and which month has not. Thus, the shops will set some campaign that can attract customers to use service during that period. On the other hand, if there are many customers, the shops can hire more employees to help them. Although there are some fluctuates of the demand, maintaining quality has still important and challenge to the managers.

Whatever the companies want to satisfy the customers, it may generate higher costs for the companies. Thus, it is better for the companies to study about the need of customers and choose what are the important services that the customers often use. This can help the companies save more cost for service that is not popular and use this cost for doing others that is better. Anyway, making decision about this thing is crucial, the managers need to have a good method to develop and control closely in order to know whether it is good.

The professional service has high labor intensity. To make all of them serve the customer with warmth manner is very difficult. Thus, it is challenge to the managers to make this happen. Sometimes, positive reinforcement can be used that is giving gifts or others for the one who works well.

The researcher hopes that this recommendation can generate some guidelines to the managers and business owners to use for their improvement.

APPENDIX A

Assumption University

This questionnaire is a part of a thesis in Master Degree Program of Assumption University. This study involves the relationship between management challenges and four different types of services (service factories, service shops, mass services and professional services). The data obtained could benefit many organizations. Thus, your kind provision of the data would be very much appreciated.

Please ✓in the blank (only one ✓ for each question)

No.	Management challenge	Strongly not challenging (1)	Not challenging (2)	Neutral (3)	Challenging (4)	Strongly challenging (5)
Q1	Marketing					
Q2	Making service "warm"					
Q3	Scheduling service delivery					
Q4	Reacting to customer intervention in process					
Q5	Managing advancement of people delivering service					
Q6	Attention to physical surroundings					
Q7	Managing flat hierarchy with loose subordinate-superior relationships					
Q8	Capital decision					
Q9	Technological advances					
Q10	Control of far-flung geographical locations					
Q11	Startup of new units					
Q12	Managing growth					
Q13	Gaining employee loyalty					
Q14	Hiring					
Q15	Training					
Q16	Employee welfare					
Q17	Scheduling workforces					
Q18	Managing demand to avoid peak and to promote off-peaks					
Q19	Managing fairly rigid hierarchy with need for standard operating procedures					

Q20	Fighting cost increases	_____	_____	_____	_____	_____
Q21	Maintaining quality	_____	_____	_____	_____	_____
Q22	Work methods development and control	_____	_____	_____	_____	_____

Thank you for your cooperation

มหาวิทยาลัยอัสสัมชัญ

แบบสอบถามนี้เป็นส่วนหนึ่งของการทำวิทยานิพนธ์ของนักศึกษาปริญญาโท มหาวิทยาลัยอัสสัมชัญ ซึ่งใช้ในการศึกษาถึงความสัมพันธ์ระหว่างธุรกิจการบริการ และความท้าทายในการทำงานด้านบริการ ข้อมูลที่ได้รับนี้จะมีส่วนช่วยอย่างมากในการบริหารงานด้านการบริการให้เกิดประสิทธิภาพมากยิ่งขึ้น ดังนั้นทางผู้จัดทำจึงได้จัดทำแบบสอบถามนี้ขึ้น และขอขอบคุณทุกท่านที่ให้ข้อมูลที่เป็นประโยชน์นี้

กรุณาใส่เครื่องหมาย ✓ ในช่องว่างที่ท่านต้องการแสดงความคิดเห็น (ใส่เครื่องหมาย ✓ เพียง 1 อัน เท่านั้น ต่อคำถาม 1 ข้อ)

ข้อ	งานที่ท้าทายในการบริหาร	ไม่ท้าทายอย่างมาก (1)	ไม่ท้าทาย (2)	เฉย ๆ (3)	ท้าทาย (4)	ท้าทายอย่างมาก (5)
ข้อ 1	การบริหารด้านการตลาด					
ข้อ 2	การทำให้การบริการเป็นการบริการที่อบอุ่น					
ข้อ 3	การจัดตารางการให้บริการ					
ข้อ 4	ขบวนการจัดการกับความคิดเห็นต่าง ๆ จากลูกค้า					
ข้อ 5	การพัฒนาคนที่ให้บริการกับลูกค้า					
ข้อ 6	การให้ความสนใจกับสิ่งรอบข้าง					
ข้อ 7	การบริหารความสัมพันธ์ระหว่างเจ้านาย-ลูกจ้างแบบอิสระ					
ข้อ 8	การตัดสินใจด้านการลงทุน					
ข้อ 9	ความก้าวหน้าทางเทคโนโลยี					
ข้อ 10	การควบคุมหน่วยงานแม้จะอยู่ในที่ที่ห่างไกล					
ข้อ 11	การเริ่มต้นหน่วยงานใหม่					
ข้อ 12	การจัดการในช่วงธุรกิจเจริญเติบโต					
ข้อ 13	การทำให้บริษัทได้รับความจงรักภักดีจากพนักงาน					
ข้อ 14	การจ้างพนักงาน					
ข้อ 15	การฝึกหัดพนักงาน					
ข้อ 16	การจัดสวัสดิการสำหรับพนักงาน					
ข้อ 17	การจัดตารางงานสำหรับพนักงาน					
ข้อ 18	การบริหารงานในช่วงที่มีความต้องการที่มากไปหรือน้อยไปของลูกค้า					

ข้อ 19	การทำให้การบริการเป็นมาตรฐานเดียวกัน	_____	_____	_____	_____	_____
ข้อ 20	การจัดการกับต้นทุนที่สูงขึ้น	_____	_____	_____	_____	_____
ข้อ 21	การรักษาคุณภาพของการบริการ	_____	_____	_____	_____	_____
ข้อ 22	การพัฒนาและควบคุมวิธีการทำงาน	_____	_____	_____	_____	_____

□□□□□□□□□□□□□□□

ข้อมูลส่วนตัว

ห้าง/ร้าน/บริษัท.....

สาขา.....เบอร์โทรศัพท์.....ต่อ.....

ชื่อ-นามสกุล.....

ตำแหน่ง.....

APPENDIX B

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	customer contact		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: marketing

Model	Variables Entered	Variables Removed	Method
1	labor intensity		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: making service "warm"

Model	Variables Entered	Variables Removed	Method
1	customer contact		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Scheduling service delivery

Model	Variables Entered	Variables Removed	Method
1	customer contact		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Reacting to customer intervention in process

Model	Variables Entered	Variables Removed	Method
1	customer contact		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	labor intensity		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Managing advancement of people delivering service

Model	Variables Entered	Variables Removed	Method
1	customer contact		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	labor intensity		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Attention to physical surroundings

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	customer contact		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	labor intensity		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Managing flat hierarchy with loose subordinate-superior relationships

Model	Variables Entered	Variables Removed	Method
1	labor intensity		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Capital decision

Model	Variables Entered	Variables Removed	Method
1	customer contact		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	labor intensity		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Technological advances

Model	Variables Entered	Variables Removed	Method
1	customer contact		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Control of far-flung geographical location

Model	Variables Entered	Variables Removed	Method
1	customer contact		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Startup new units

Model	Variables Entered	Variables Removed	Method
1	customer contact		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Managing growth

Model	Variables Entered	Variables Removed	Method
1	customer contact		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Gaining employee loyalty

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	customer contact	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Hiring

Model	Variables Entered	Variables Removed	Method
1	customer contact	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Training

Model	Variables Entered	Variables Removed	Method
1	customer contact	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Employee welfare

Model	Variables Entered	Variables Removed	Method
1	customer contact	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Scheduling workforces

Model	Variables Entered	Variables Removed	Method
1	customer contact	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Managing demand to avoid peak and to promote off-peaks

Model	Variables Entered	Variables Removed	Method
1	customer contact	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Managing fairly rigid hierarchy with need for standard operating procedures

Model	Variables Entered	Variables Removed	Method
1	labor intensity	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	customer contact	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Fighting cost increases

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	customer contact		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Maintaining quality

Model	Variables Entered	Variables Removed	Method
1	customer contact		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a Dependent Variable: Work methods development and control

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.809	.654	.653	.68	.654	525.491	1	278	.000	2.117

a Predictors: (Constant), customer contact
b Dependent Variable: marketing

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.753	.567	.565	.71	.567	363.719	1	278	.000	2.245

a Predictors: (Constant), labor intensity
b Dependent Variable: making service "warm"

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.848	.719	.718	.65	.719	712.886	1	278	.000	2.150

a Predictors: (Constant), customer contact
b Dependent Variable: Scheduling service delivery

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
	.860	.740	.739	.58	.740	790.188	1	278	.000	2.105

a Predictors: (Constant), customer contact
b Dependent Variable: Reacting to customer intervention in process

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.751	.564	.563	.66	.564	359.886	1	278	.000	
2	.760	.578	.574	.65	.013	8.756	1	277	.003	2.020

a Predictors: (Constant), customer contact
b Predictors: (Constant), customer contact, labor intensity
c Dependent Variable: Managing advancement of people delivering service

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.769	.591	.590	.71	.591	401.806	1	278	.000	
2	.777	.604	.601	.70	.013	9.016	1	277	.003	1.884

a Predictors: (Constant), customer contact
b Predictors: (Constant), customer contact, labor intensity
c Dependent Variable: Attention to physical surroundings

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.812	.659	.658	.64	.659	538.354	1	278	.000	
2	.815	.665	.662	.64	.005	4.287	1	277	.039	1.976

a Predictors: (Constant), customer contact
b Predictors: (Constant), customer contact, labor intensity
c Dependent Variable: Managing flat hierarchy with loose subordinate-superior relationships

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.798	.637	.636	.67	.637	488.184	1	278	.000	2.029

a Predictors: (Constant), labor intensity
b Dependent Variable: Capital decision

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.773	.598	.596	.72	.598	412.737	1	278	.000	
2	.794	.630	.627	.69	.032	24.205	1	277	.000	1.773

a Predictors: (Constant), customer contact
b Predictors: (Constant), customer contact, labor intensity
c Dependent Variable: Technological advances

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.753	.567	.565	.68	.567	363.958	1	278	.000	2.216

a Predictors: (Constant), customer contact
b Dependent Variable: Control of far-flung geographical location

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.836	.699	.698	.61	.699	645.769	1	278	.000	2.405

a Predictors: (Constant), customer contact
b Dependent Variable: Startup new units

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.779	.607	.605	.68	.607	428.793	1	278	.000	2.284

a Predictors: (Constant), customer contact
b Dependent Variable: Managing growth

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.841	.707	.706	.55	.707	669.992	1	278	.000	2.087

a Predictors: (Constant), customer contact
b Dependent Variable: Gaining employee loyalty

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin - Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.783	.613	.611	.62	.613	439.673	1	278	.000	2.281

a Predictors: (Constant), customer contact
b Dependent Variable: Hiring

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.806	.649	.648	.62	.649	513.979	1	278	.000	1.946

a Predictors: (Constant), customer contact
b Dependent Variable: Training

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.816	.666	.665	.64	.666	554.004	1	278	.000	2.335

a Predictors: (Constant), customer contact
b Dependent Variable: Employee welfare

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.820	.672	.671	.65	.672	569.518	1	278	.000	2.316

a Predictors: (Constant), customer contact
b Dependent Variable: Scheduling workforces

Model	R	R'Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.742	.551	.549	.66	.551	340.593	1	278	.000	2.328

a Predictors: (Constant), customer contact
b Dependent Variable: Managing demand to avoid peak and to promote off-peaks

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.831	.690	.689	.62	.690	618.028	1	278	.000	2.036

a Predictors: (Constant), customer contact
b Dependent Variable: Managing fairly rigid hierarchy with need for standard operating procedures

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.872	.761	.760	.57	.761	883.226	1	278	.000	
2	.874	.765	.763	.57	.004	4.862	1	277	.028	2.310

a Predictors: (Constant), labor intensity
b Predictors: (Constant), labor intensity, customer contact
c Dependent Variable: Fighting cost increases

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.779	.607	.605	.68	.607	429.154	1	278	.000	1.980

a Predictors: (Constant), customer contact
b Dependent Variable: Maintaining quality

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.843	.711	.710	.66	.711	682.521	1	278	.000	1.968

a Predictors: (Constant), customer contact
b Dependent Variable: Work methods development and control

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	243.289	1	243.289	525.491	.000
	Residual	128.707	278	.463		
	Total	371.996	279			

a Predictors: (Constant), customer contact
b Dependent Variable: marketing

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	180.804	1	180.804	363.719	.000
	Residual	138.193	278	.497		
	Total	318.996	279			

a Predictors: (Constant), labor intensity
b Dependent Variable: making service "warm"

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	300.357	1	300.357	712.886	.000
	Residual	117.129	278	.421		
	Total	417.486	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Scheduling service delivery

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	270.089	1	270.089	790.188	.000
	Residual	95.021	278	.342		
	Total	365.111	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Reacting to customer intervention in process

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	154.514	1	154.514	359.886	.000
	Residual	119.357	278	.429		
	Total	273.871	279			
2	Regression	158.171	2	79.086	189.341	.000
	Residual	115.700	277	.418		
	Total	273.871	279			

a Predictors: (Constant), customer contact
b Predictors: (Constant), customer contact, labor intensity
c Dependent Variable: Managing advancement of people delivering service

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	200.604	1	200.604	401.806	.000
	Residual	138.793	278	.499		
	Total	339.396	279			
2	Regression	204.979	2	102.489	211.204	.000
	Residual	134.418	277	.485		
	Total	339.396	279			

a Predictors: (Constant), customer contact
b Predictors: (Constant), customer contact, labor intensity
c Dependent Variable: Attention to physical surroundings

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	219.657	1	219.657	538.354	.000
	Residual	113.429	278	.408		
	Total	333.086	279			
2	Regression	221.386	2	110.693	274.502	.000
	Residual	111.700	277	.403		
	Total	333.086	279			

a Predictors: (Constant), customer contact
b Predictors: (Constant), customer contact, labor intensity
c Dependent Variable: Managing flat hierarchy with loose subordinate-superior relationships

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	217.889	1	217.889	488.184	.000
	Residual	124.079	278	.446		
	Total	341.968	279			

a Predictors: (Constant), labor intensity
b Dependent Variable: Capital decision

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	214.375	1	214.375	412.737	.000
	Residual	144.393	278	.519		
	Total	358.768	279			
2	Regression	225.979	2	112.989	235.697	.000
	Residual	132.789	277	.479		
	Total	358.768	279			

a Predictors: (Constant), customer contact
b Predictors: (Constant), customer contact, labor intensity
c Dependent Variable: Technological advances

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	169.729	1	169.729	363.958	.000
	Residual	129.643	278	.466		
	Total	299.371	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Control of far-flung geographical location

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	239.575	1	239.575	645.769	.000
	Residual	103.136	278	.371		
	Total	342.711	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Startup new units

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	195.557	1	195.557	428.793	.000
	Residual	126.786	278	.456		
	Total	322.343	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Managing growth

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	205.714	1	205.714	669.992	.000
1	Residual	85.357	278	.307		
	Total	291.071	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Gaining employee loyalty

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	166.629	1	166.629	439.673	.000
	Residual	105.357	278	.379		
	Total	271.986	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Hiring

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	197.232	1	197.232	513.979	.000
	Residual	106.679	278	.384		
	Total	303.911	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Training

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	225.004	1	225.004	554.004	.000
	Residual	112.907	278	.406		
	Total	337.911	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Employee welfare

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	237.729	1	237.729	569.518	.000
	Residual	116.043	278	.417		
	Total	353.771	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Scheduling workforces

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	148.629	1	148.629	340.593	.000
	Residual	121.314	278	.436		
	Total	269.943	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Managing demand to avoid peak and to promote off-peaks

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	235.889	1	235.889	618.028	.000
	Residual	106.107	278	.382		
	Total	341.996	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Managing fairly rigid hierarchy with need for standard operating procedures

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	290.089	1	290.089	883.226	.000
	Residual	91.307	278	.328		
	Total	381.396	279			
2	Regression	291.664	2	145.832	450.179	.000
	Residual	89.732	277	.324		
	Total	381.396	279			

a Predictors: (Constant), labor intensity
b Predictors: (Constant), labor intensity, customer contact
c Dependent Variable: Fighting cost increases

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	197.232	1	197.232	429.154	.000
	Residual	127.764	278	.460		
	Total	324.996	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Maintaining quality

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	294.175	1	294.175	682.521	.000
	Residual	119.821	278	.431		
	Total	413.996	279			

a Predictors: (Constant), customer contact
b Dependent Variable: Work methods development and control

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	6.150	.129		47.827	.000	5.897	6.403		
	customer contact	-1.864	.081	-.809	-22.924	.000	-2.024	-1.704	1.000	1.000

a Dependent Variable: Marketing

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	1.193	.133		8.953	.000	.931	1.455		
	Labor intensity	1.607	.084	.753	19.071	.000	1.441	1.773	1.000	1.000

a Dependent Variable: Making service "warm"

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	.436	.123		3.552	.000	.194	.677		
	customer contact	2.071	.078	.848	26.700	.000	1.919	2.224	1.000	1.000

a Dependent Variable: Scheduling service delivery

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	.686	.110		6.206	.000	.468	.903		
	customer contact	1.964	.070	.860	28.110	.000	1.827	2.102	1.000	1.000

a Dependent Variable: Reacting to customer intervention in process

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	1.393	.124		11.243	.000	1.149	1.637		
	Customer contact	1.486	.078	.751	18.971	.000	1.332	1.640	1.000	1.000
2	(Constant)	1.050	.168		6.237	.000	.719	1.381		
	Customer contact	1.486	.077	.751	19.233	.000	1.334	1.638	1.000	1.000
	labor intensity	.229	.077	.116	2.959	.000	.077	.381	1.000	1.000

a Dependent Variable: Managing advancement of people delivering service

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	1.057	.134		7.917	.000	.794	1.320		
	Customer contact	1.693	.084	.769	20.045	.000	1.527	1.859	1.000	1.000
2	(Constant)	.682	.181		3.759	.000	.325	1.039		
	Customer contact	1.693	.083	.769	20.332	.000	1.529	1.857	1.000	1.000
	labor intensity	.250	.083	.114	3.003	.000	.086	.414	1.000	1.000

a Dependent Variable: Attention to physical surroundings

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	6.214	.121		51.479	.000	5.977	6.452		
	Customer contact	-1.771	.076	-.812	-23.202	.000	-1.922	-1.621	1.000	1.000
2	(Constant)	6.450	.165		38.992	.000	6.124	6.776		
	Customer contact	-1.771	.076	-.812	-23.339	.000	-1.921	-1.622	1.000	1.000
	labor intensity	-.157	.076	-.072	-2.070	.000	-.307	-.006	1.000	1.000

a Dependent Variable: Managing flat hierarchy with loose subordinate-superior relationships

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	6.136	.126		48.598	.000	5.887	6.384		
	Labor intensity	-1.784	.080	-.798	-22.095	.000	-1.921	-1.307	1.000	1.000

a Dependent Variable: Capital decision

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	6.286	.136		46.151	.000	6.018	6.554		
	Customer contact	-1.750	.086	-.733	-20.316	.000	-1.920	-1.580	1.000	1.000
2	(Constant)	6.896	.180		38.237	.000	6.541	7.251		
	Customer contact	-1.750	.083	-.773	-21.147	.000	-1.913	-1.587	1.000	1.000
	labor intensity	-.407	.083	-.180	-4.920	.000	-.570	-.244	1.000	1.000

a Dependent Variable: Technological advances

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	1.036	.129		8.025	.000	.782	1.290		
	customer contact	1.557	.082	.753	19.078	.000	1.396	1.718	1.000	1.000

a Dependent Variable: Control of far-flung geographical location

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	.793	.115		6.888	.000	.566	1.019		
	customer contact	1.850	.073	.836	25.412	.000	1.707	1.993	1.000	1.000

a Dependent Variable: Startup new units

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	1.107	.128		8.675	.000	.856	1.358		
	customer contact	1.671	.081	.779	20.707	.000	1.513	1.830	1.000	1.000

a Dependent Variable: Managing growth

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	1.107	.105		10.573	.000	.901	1.313		
	customer contact	1.714	.066	.841	25.884	.000	1.584	1.845	1.000	1.000

a Dependent Variable: Gaining employee loyalty

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	1.393	.116		11.972	.000	1.164	1.162		
	customer contact	1.543	.074	.783	20.968	.000	1.398	1.688	1.000	1.000

a Dependent Variable: Hiring

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	6.000	.117		51.252	.000	5.770	6.230		
	customer contact	-1.679	.074	-.806	-22.671	.000	-1.824	-1.533	1.000	1.000

a Dependent Variable: Training

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	.793	.120		6.583	.000	.556	1.030		
	Customer contact	1.793	.076	.816	23.537	.000	1.643	1.943	1.000	1.000

a Dependent Variable: Employee welfare

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	6.236	.122		51.071	.000	5.995	6.476		
	customer contact	-1.843	.077	-.820	-23.865	.000	-1.995	-1.691	1.000	1.000

a Dependent Variable: Scheduling workforces

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	1.400	.125		11.214	.000	1.154	1.646		
	customer contact	1.457	.079	.742	18.455	.000	1.302	1.613	1.000	1.000

a Dependent Variable: Managing demand to avoid peak and to promote off-peaks

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	6.257	.117		53.593	.000	6.027	6.487		
	customer contact	-1.836	.074	-.831	-24.860	.000	-1.981	-1.690	1.000	1.000

a Dependent Variable: Managing fairly rigid hierarchy with need for standard operating procedures

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	6.650	.108		61.400	.000	6.437	6.863		
	Labor intensity	-2.036	.068	-.872	-29.719	.000	-2.171	-1.901	1.000	1.000
2	(Constant)	6.425	.148		43.335	.000	6.133	6.717		
	Labor intensity	-2.036	.068	-.872	-29.925	.000	-2.170	-1.902	1.000	1.000
	Customer contact	.150	.068	.064	2.205	.000	.016	.284	1.000	1.000

a Dependent Variable: Fighting cost increases

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	6.121	.128		47.730	.000	5.869	6.374		
	customer contact	1.679	.081	.779	20.716	.000	1.838	1.519	1.000	1.000

a Dependent Variable: Maintaining quality

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	6.571	.124		52.966	.000	6.327	6.816		
	customer contact	2.050	.078	.843	26.125	.000	2.204	1.396	1.000	1.000

a Dependent Variable: Work methods development and control

Excluded Variables

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	.053	1.496	.136	.090	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact
b Dependent Variable: Marketing

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. customer contact	.057	1.444	.150	.085	1.000	1.000	1.000

a Predictors in the Model: (Constant), labor intensity
b Dependent Variable: making service "warm"

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	-.035	-1.105	.270	-.066	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact
b Dependent Variable: Scheduling service delivery

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	.009	.306	.760	.018	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact
b Dependent Variable: Reacting to customer intervention in process

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	.116	2.959	.003	.175	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact
b Dependent Variable: Managing advancement of people delivering service

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	.114	3.003	.003	.178	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact
b Dependent Variable: Attention to physical surroundings

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	-.072	-2.070	.039	-.123	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact
b Dependent Variable: Managing flat hierarchy with loose subordinate-superior relationships

Excluded Variables

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. customer contact	-.016	-.447	.665	-.027	1.000	1.000	1.000

a Predictors in the Model: (Constant), labor intensity
b Dependent Variable: Capital decision

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	-.180	-4.920	.000	-.283	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact
b Dependent Variable: Technological advances

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	.062	1.579	.115	.094	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact
b Dependent Variable: Control of far-flung geographical location

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	.029	.883	.378	.053	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact
b Dependent Variable: Startup new units

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	-.053	-1.418	.157	-.085	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact
b Dependent Variable: Managing growth

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	.021	.646	.519	.039	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact
b Dependent Variable: Gaining employee loyalty

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	-.051	-1.361	.175	-.082	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact
b Dependent Variable: Hiring

Excluded Variables

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	-.038	-1.061	.289	-.064	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact
b Dependent Variable: Training

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	.010	.281	.779	.017	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact
b Dependent Variable: Employee welfare

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	.025	.739	.460	.044	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact
b Dependent Variable: Scheduling workforces

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	.029	.723	.470	.043	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact
b Dependent Variable: Managing demand to avoid peak and to promote off-peaks

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	.042	1.259	.209	.075	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact
b Dependent Variable: Managing fairly rigid hierarchy with need for standard operating procedures

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. customer contact	.064	2.205	.028	.131	1.000	1.000	1.000

a Predictors in the Model: (Constant), labor intensity
b Dependent Variable: Fighting cost increases

Excluded Variables

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	.070	1.859	.064	.111	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact

b Dependent Variable: Maintaining quality

Model	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
1. labor intensity	.009	.273	.785	.016	1.000	1.000	1.000

a Predictors in the Model: (Constant), customer contact

b Dependent Variable: Work methods development and control

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.42	4.29	3.35	.93	280
Residual	-1.42	1.58	-3.05E-16	.68	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Residual	-2.089	2.320	.000	.998	280

a Dependent Variable: marketing

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.80	4.41	3.60	.81	280
Residual	-2.41	1.20	-7.61E-17	.70	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Residual	-3.414	1.702	.000	.998	280

a Dependent Variable: making service "warm"

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.51	4.58	3.54	1.04	280
Residual	-1.58	1.49	2.92E-16	.65	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Residual	-2.432	2.300	.000	.998	280

a Dependent Variable: Scheduling service delivery

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.65	4.61	3.63	.98	280
Residual	-.65	2.35	2.54E-17	.58	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Residual	-1.112	4.020	.000	.998	280

a Dependent Variable: Reacting to customer intervention in process

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.76	4.48	3.62	.75	280
Residual	-1.99	1.24	-7.77E-17	.64	280
Std. Predicted Value	-1.138	1.138	.000	1.000	280
Std. Residual	-3.084	1.912	.000	.996	280

a Dependent Variable: Managing advancement of people delivering service

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.63	4.57	3.60	.86	280
Residual	-2.57	2.13	-1.59E-17	.69	280
Std. Predicted Value	-1.133	1.133	.000	1.000	280
Std. Residual	-3.686	3.050	.000	.996	280

a Dependent Variable: Attention to physical surroundings

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.59	4.52	3.56	.89	280
Residual	-1.52	1.41	-1.65E-16	.63	280
Std. Predicted Value	-1.083	1.083	.000	1.000	280
Std. Residual	-2.396	2.216	.000	.996	280

a Dependent Variable: Managing flat hierarchy with loose subordinate-superior relationships

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.61	4.37	3.49	.88	280
Residual	-3.37	1.39	-1.40E-16	.67	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Residual	-5.046	2.085	.000	.998	280

a Dependent Variable: Capital decision

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.58	4.74	3.66	.90	280
Residual	-1.74	2.01	-5.39E-16	.69	280
Std. Predicted Value	-1.198	1.198	.000	1.000	280
Std. Residual	-2.512	2.904	.000	.996	280

a Dependent Variable: Technological advances

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.59	4.15	3.37	.78	280
Residual	-2.15	1.41	-1.27E-17	.68	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Residual	-3.148	2.061	.000	.998	280

a Dependent Variable: Control of far-flung geographical location

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.64	4.49	3.57	.93	280
Residual	-1.49	1.36	-2.03E-16	.61	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Residual	-2.451	2.228	.000	.998	280

a Dependent Variable: Startup new units

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.78	4.45	3.61	.84	280
Residual	-1.45	2.22	1.17E-16	.67	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Residual	-2.147	3.289	.000	.998	280

a Dependent Variable: Managing growth

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.82	4.54	3.68	.86	280
Residual	-.82	1.18	1.90E-16	.55	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Residual	-1.482	2.127	.000	.998	280

a Dependent Variable: Gaining employee loyalty

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.94	4.48	3.71	.77	280
Residual	-1.94	1.06	-7.17E-16	.61	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Residual	-3.144	1.729	.000	.998	280

a Dependent Variable: Hiring

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.64	4.32	3.48	.84	280
Residual	-1.32	1.36	3.81E-16	.62	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Residual	-2.133	2.191	.000	.998	280

a Dependent Variable: Training

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.59	4.38	3.48	.90	280
Predicted Value	2.59	4.38	3.48	.90	280
Residual	-1.38	1.41	1.59E-16	.64	280
Residual	-1.38	1.41	1.59E-16	.64	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Residual	-2.163	2.219	.000	.998	280
Std. Residual	-2.163	2.219	.000	.998	280

a Dependent Variable: Employee welfare

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value'	2.55	4.39	3.47	.92	280
Residual	-1.39	1.45	-3.25E-16	.64	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Residual	-2.156	2.244	.000	.998	280

a Dependent Variable: Scheduling workforces

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.86	4.31	3.59	.73	280
Residual	-1.31	2.14	-4.44E-17	.66	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Residual	-1.990	3.244	.000	.998	280

a Dependent Variable: Managing demand to avoid peak and to promote off-peaks

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.59	4.42	3.50	.92	280
Residual	-1.42	1.41	4.57E-16	.62	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Residual	-2.301	2.289	.000	.998	280

a Dependent Variable: Managing fairly rigid hierarchy with need for standard operating procedures

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.50	4.69	3.60	1.02	280
Residual	-1.54	1.50	-3.24E-16	.57	280
Std. Predicted Value	-1.069	1.069	.000	1.000	280
Std. Residual	-2.704	2.629	.000	.996	280

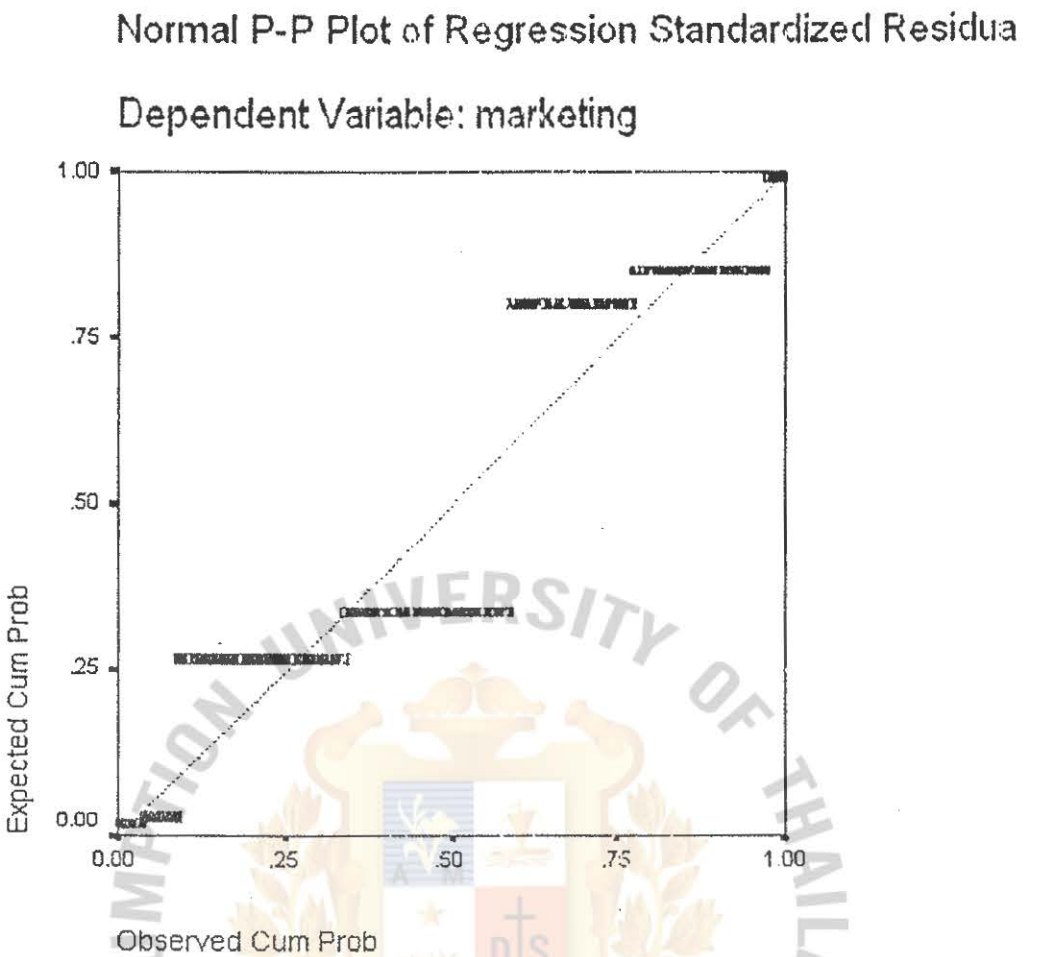
a Dependent Variable: Fighting cost increases

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.76	4.44	3.60	.84	280
Residual	-1.76	2.24	2.47E-16	.68	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Residual	-2.602	3.298	.000	.993	280

a Dependent Variable: Maintaining quality

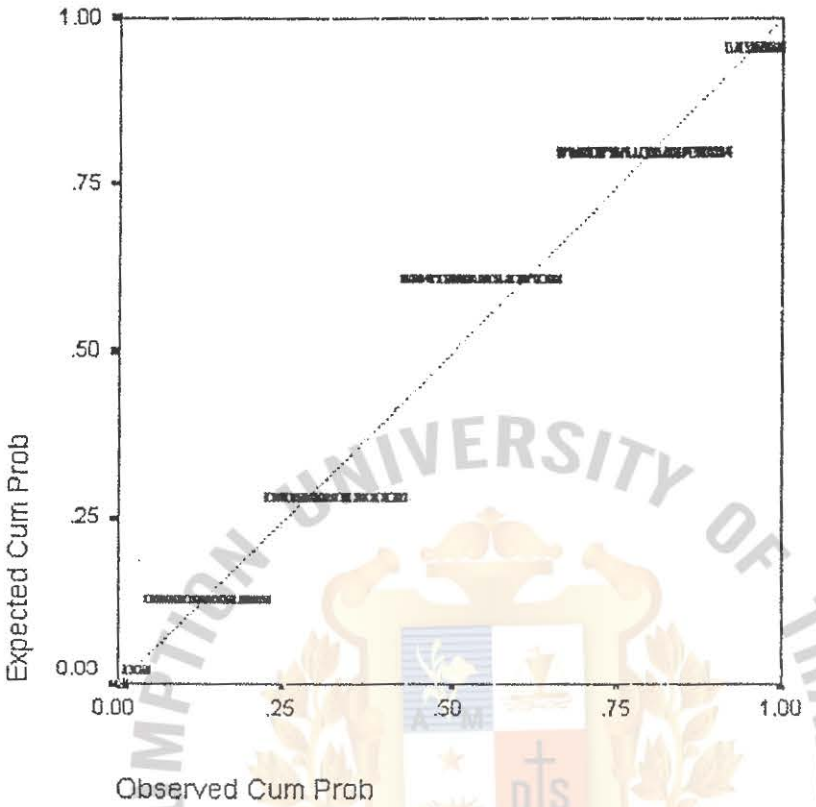
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.47	4.52	3.50	1.03	280
Residual	-1.52	1.53	-4.57E-16	.66	280
Std. Predicted Value	-.998	.998	.000	1.000	280
Std. Residual	-2.317	2.328	.000	.998	280

a Dependent Variable: Work methods development and control



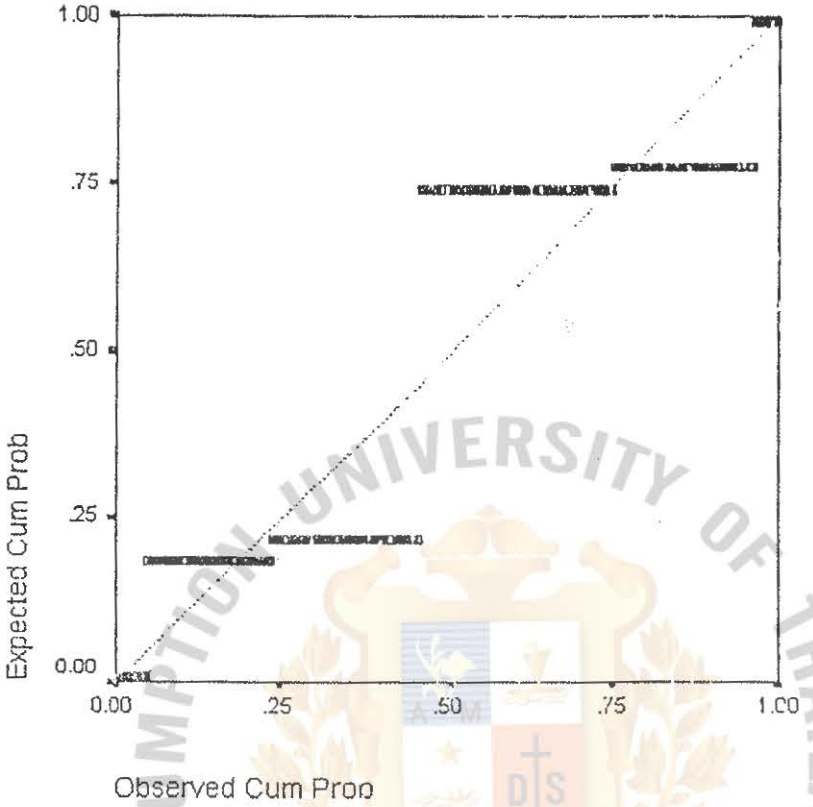
Normal P-P Plot of Regression Standardized Residua

Dependent Variable: making service "warm"



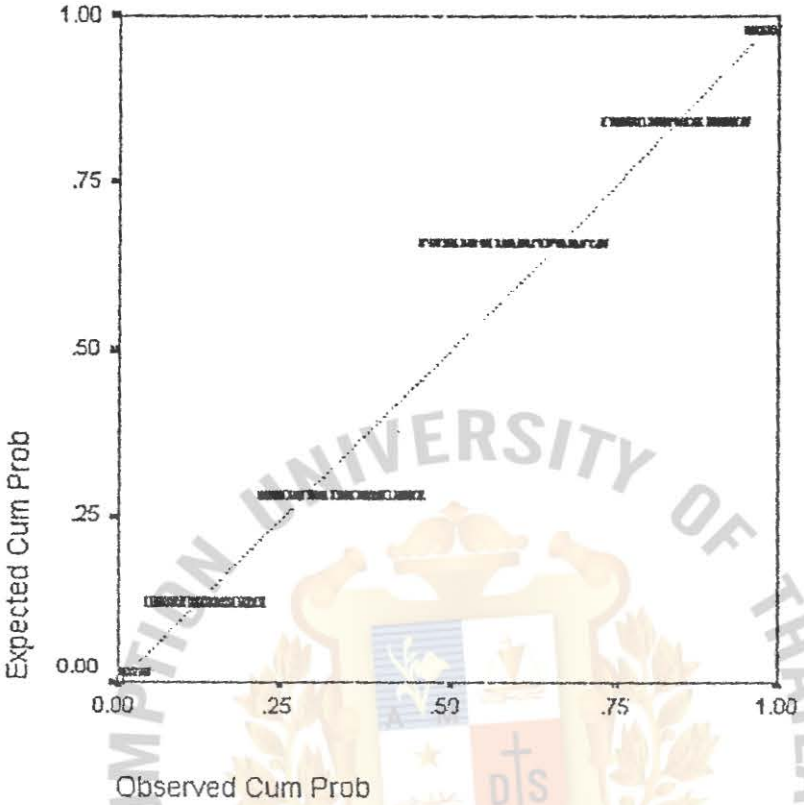
Normal P-P Plot of Regression Standardized Residua

Dependent Variable: Scheduling service delivery



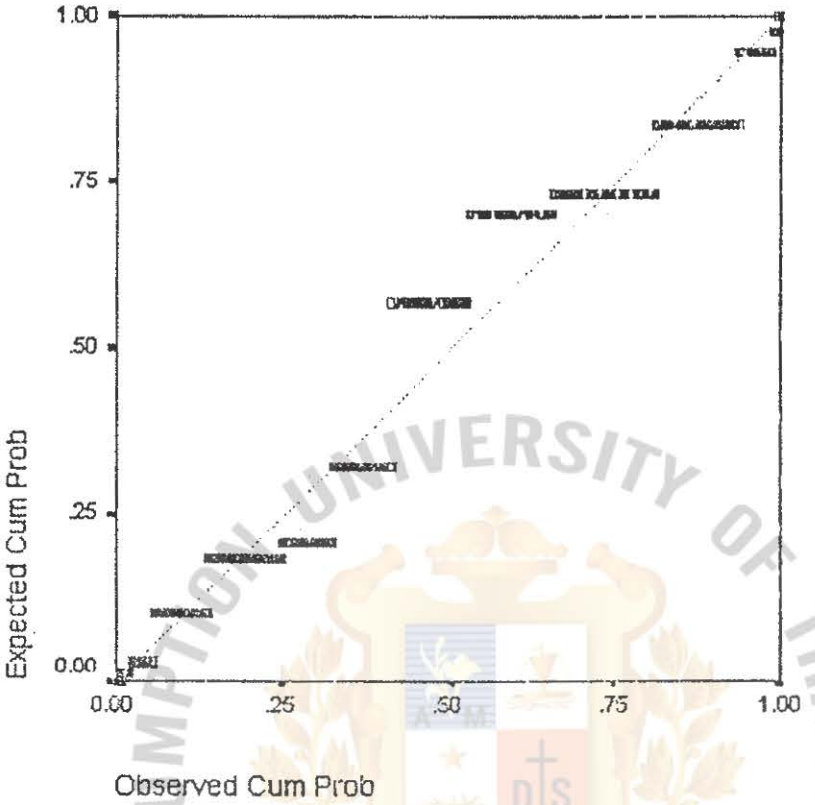
Normal P-P Plot of Regression Standardized Residua

Dependent Variable: Managing advancement of peopl



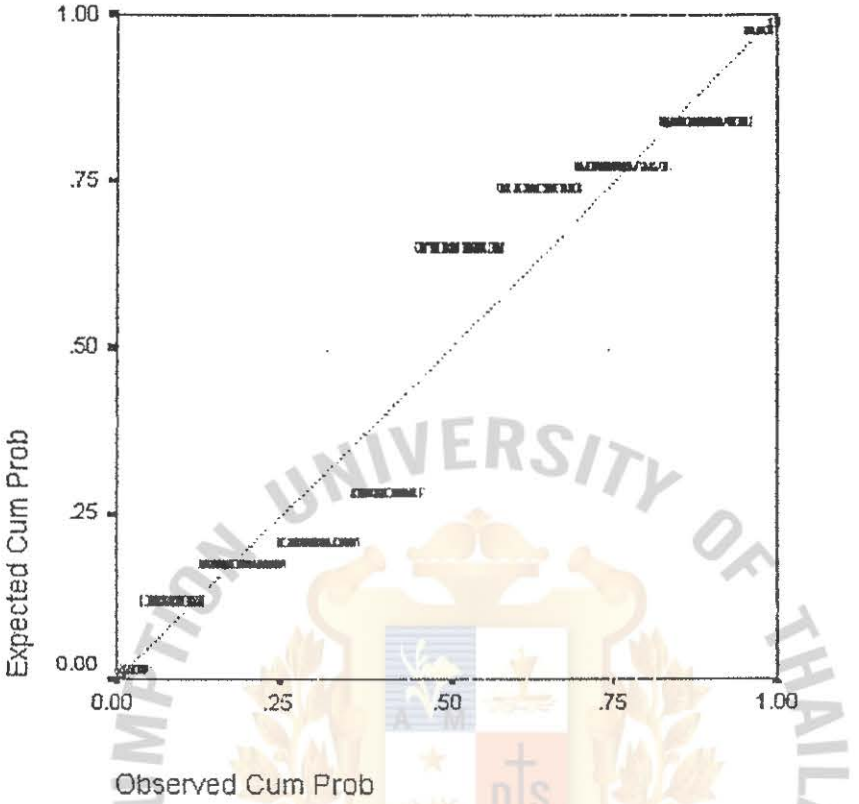
Normal P-P Plot of Regression Standardized Residual

Attention to physical surroundings



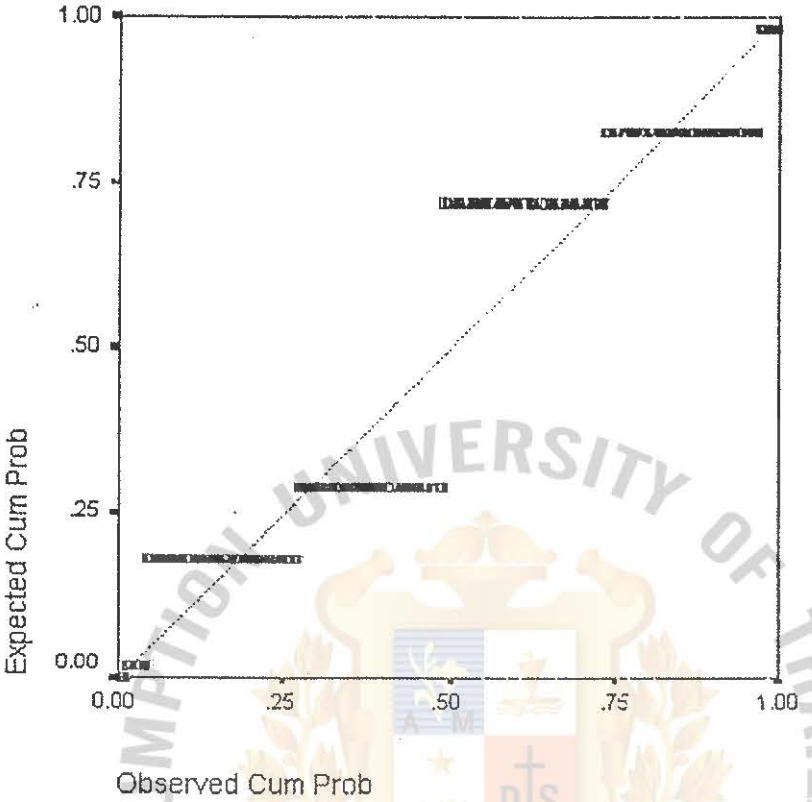
Normal P-P Plot of Regression Standardized Residua

Dependent Variable: Managing flat hierarchy with loos



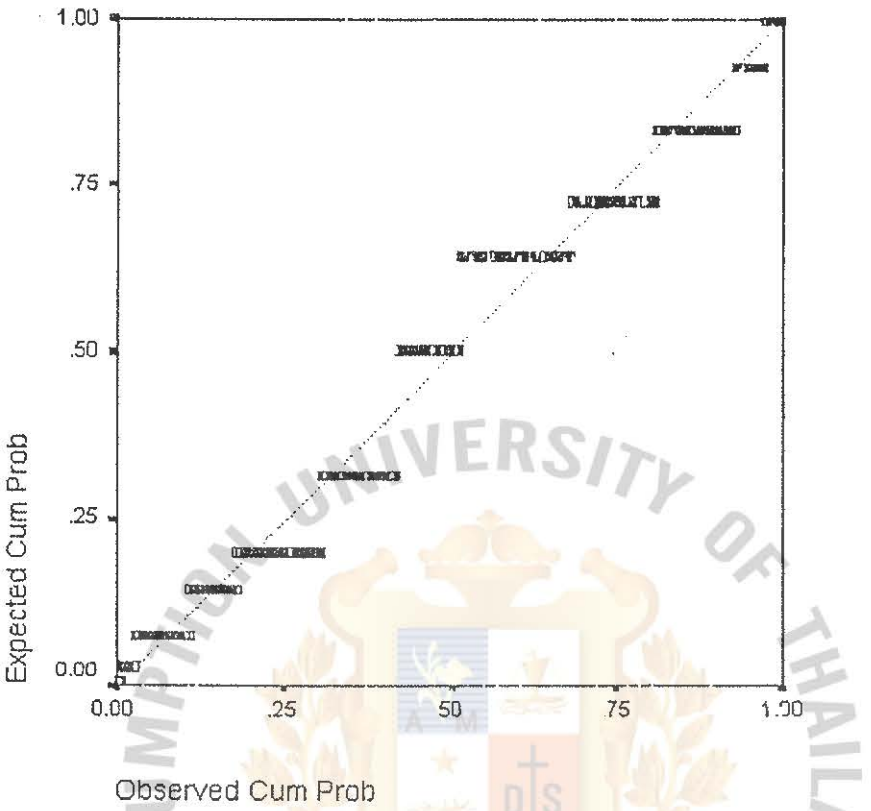
Normal P-P Plot of Regression Standardized Residua

Dependent Variable: Capital decision



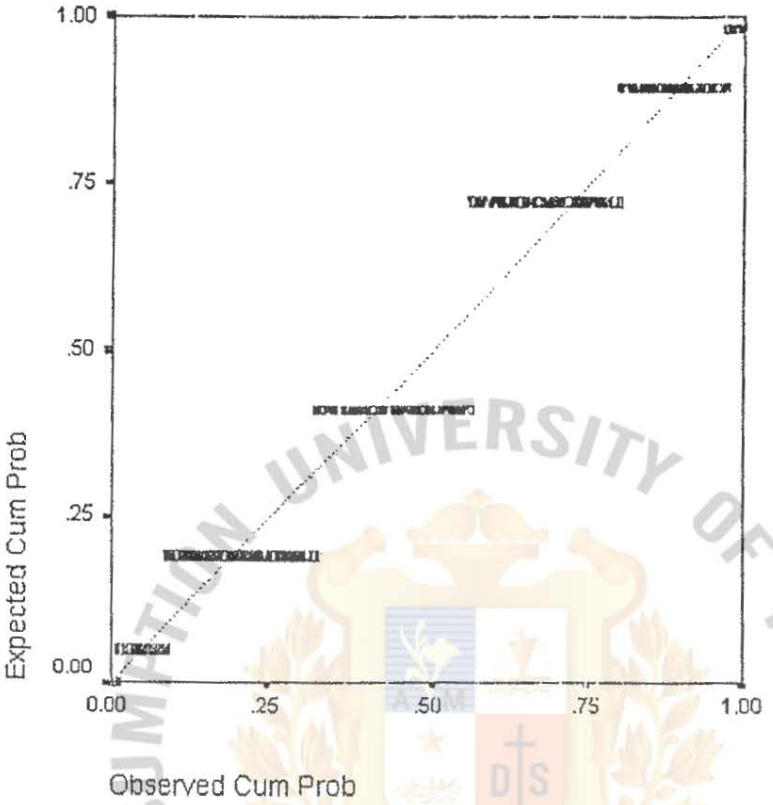
Normal P-P Plot of Regression Standardized Residua

Dependent Variable: Technological advances



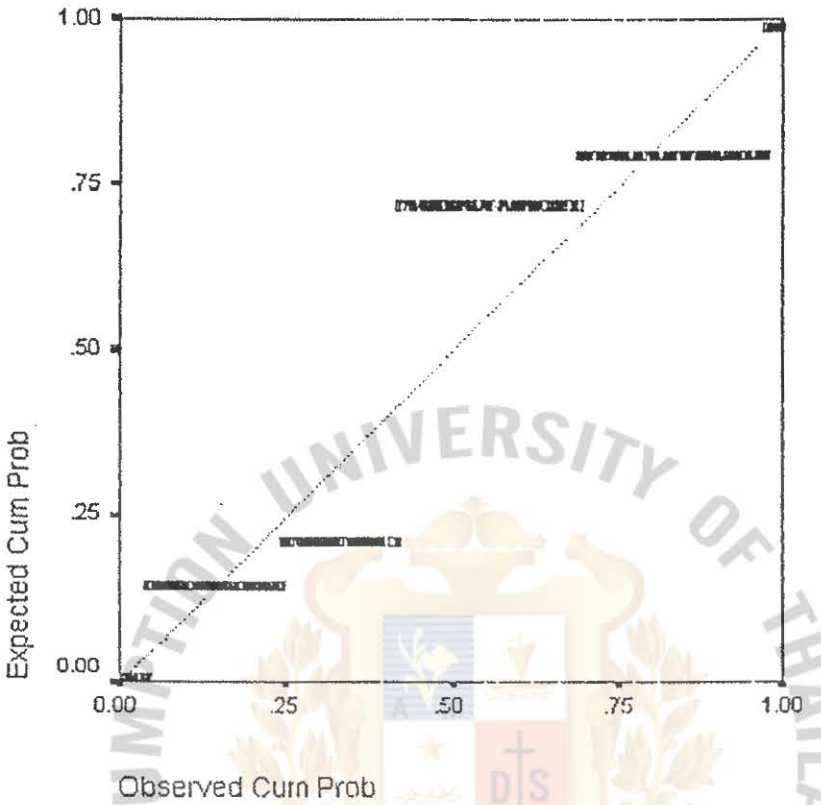
Normal P-P Plot of Regression Standardized Residua

Dependent Variable: Control of far-flung geographical



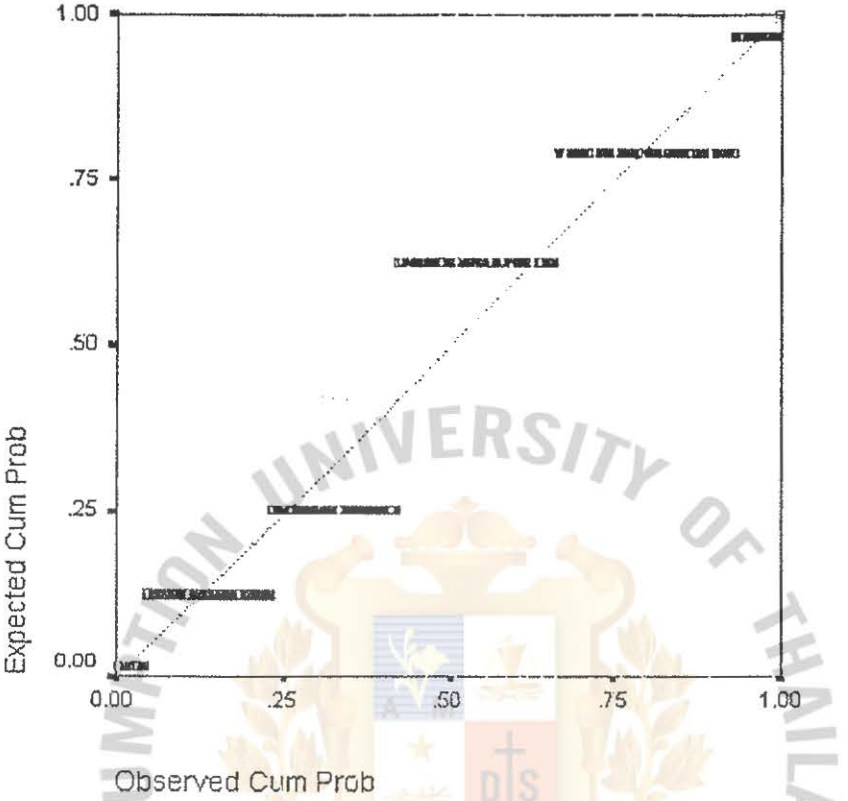
Normal P-P Plot of Regression Standardized Residua

Dependent Variable: Startup new units



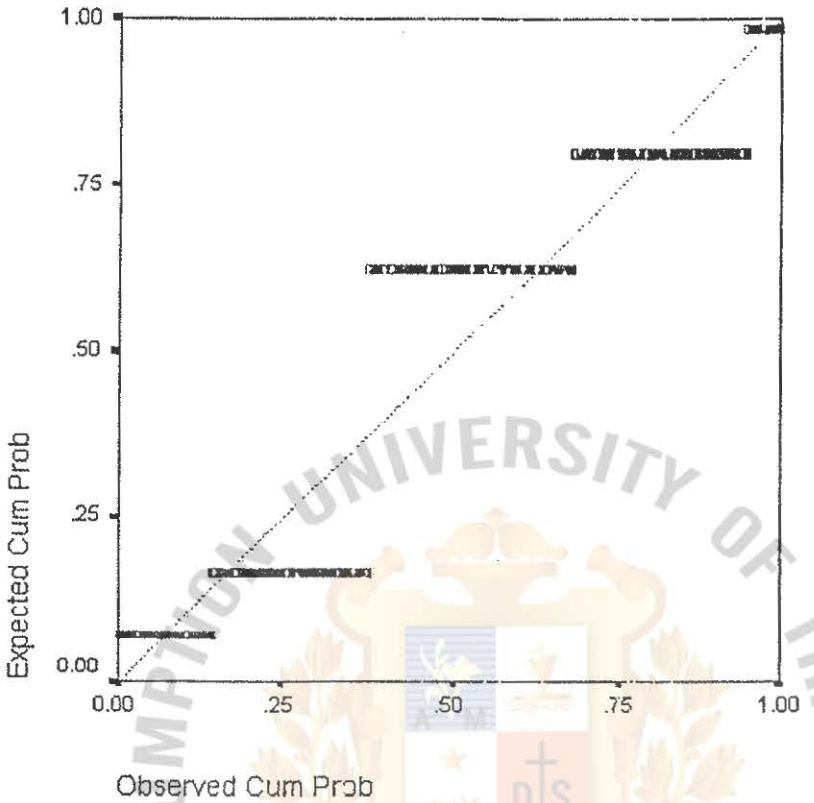
Normal P-P Plot of Regression Standardized Residua

Dependent Variable: Managing growth



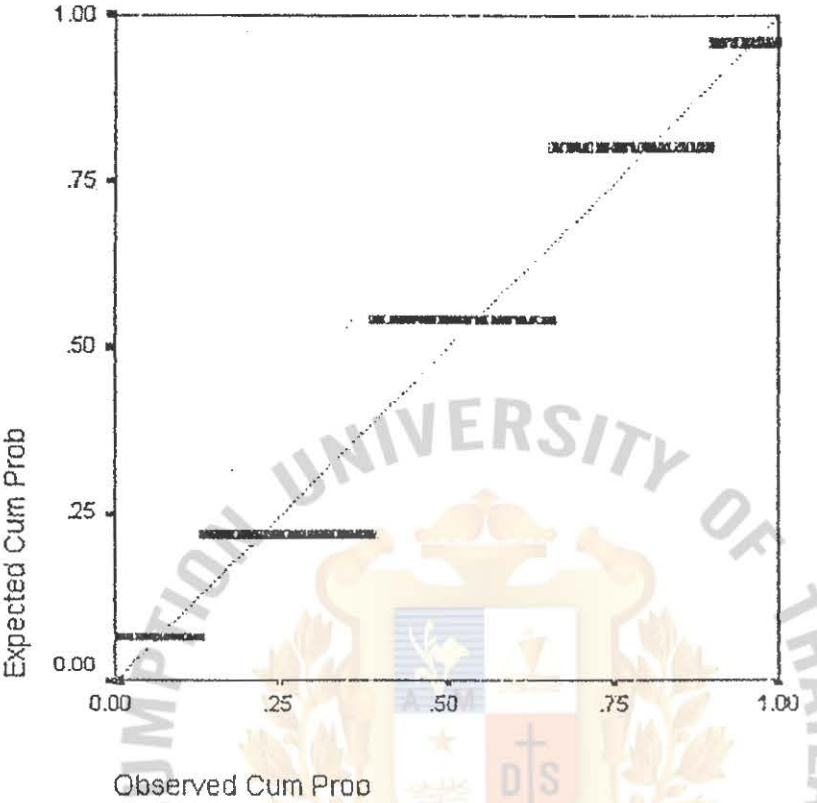
Normal P-P Plot of Regression Standardized Residua

Dependent Variable: Gaining employee loyalty



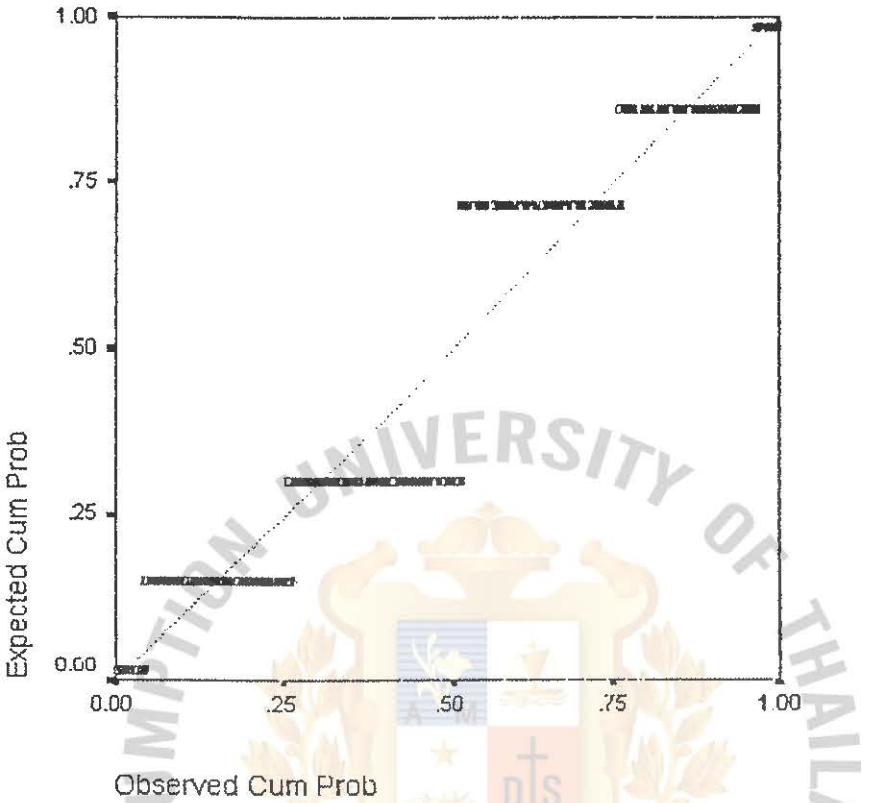
Normal P-P Plot of Regression Standardized Residua

Dependent Variable: Hiring



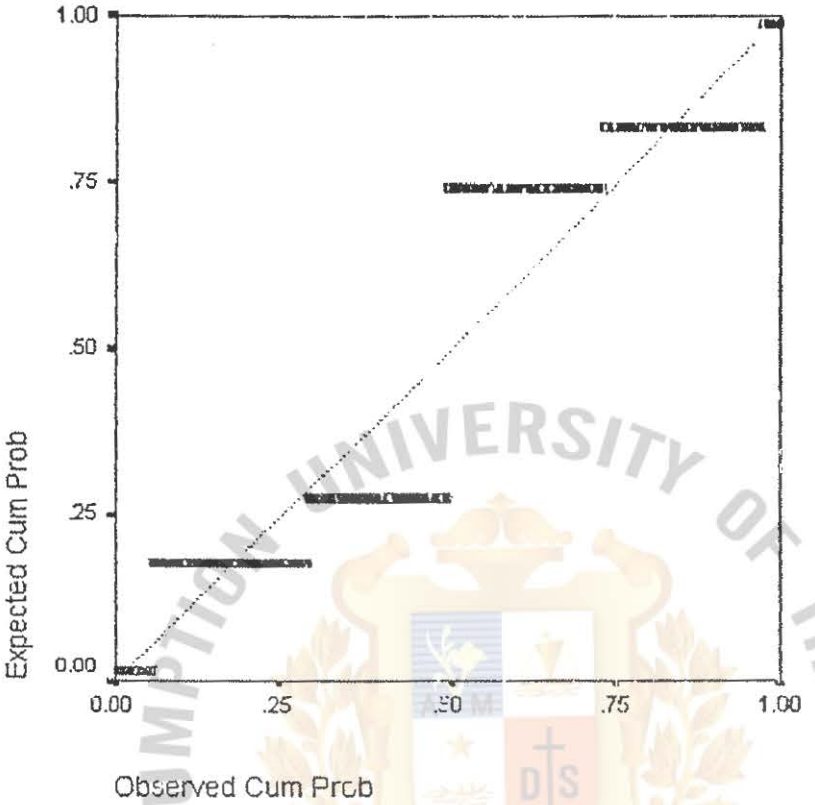
Normal P-P Plot of Regression Standardized Residua

Dependent Variable: Training



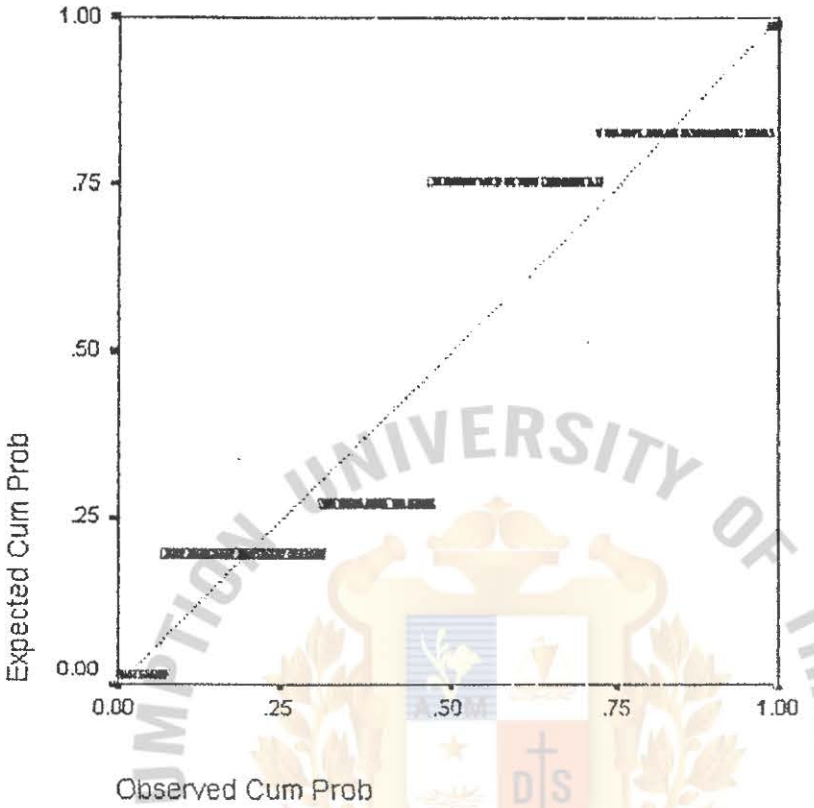
Normal P-P Plot of Regression Standardized Residua

Dependent Variable: Employee welfare



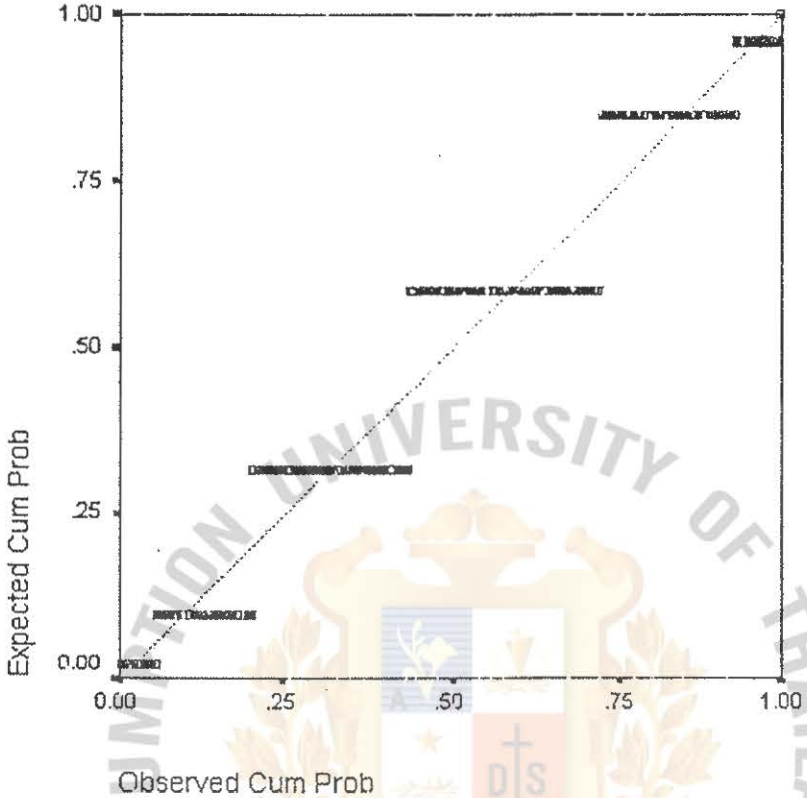
Normal P-P Plot of Regression Standardized Residua

Dependent Variable: Scheduling workforces



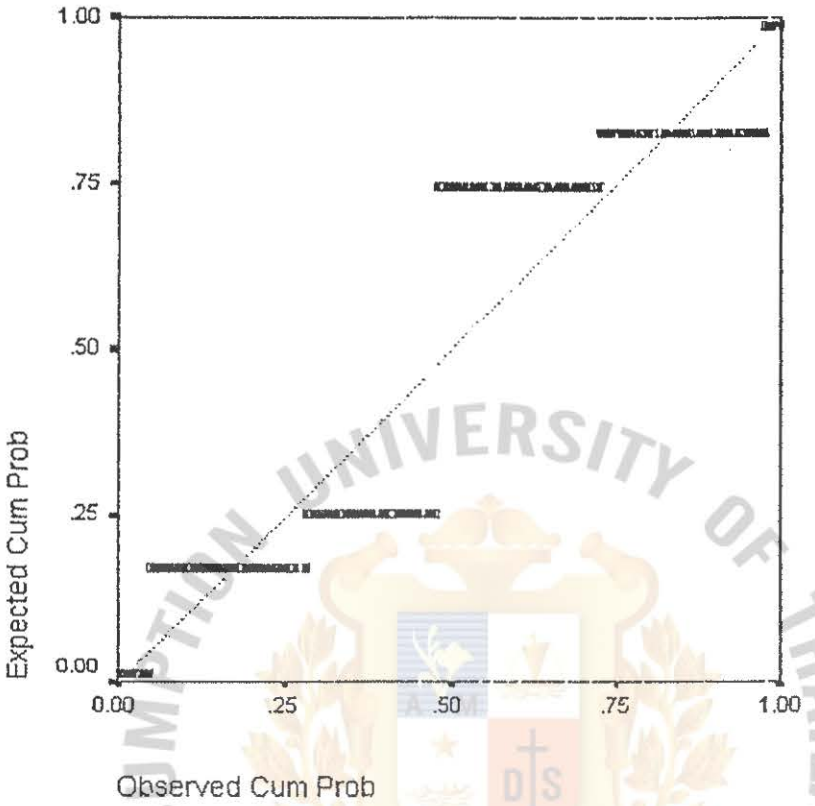
Normal P-P Plot of Regression Standardized Residua

Dependent Variable: Managing demand to avoid peak



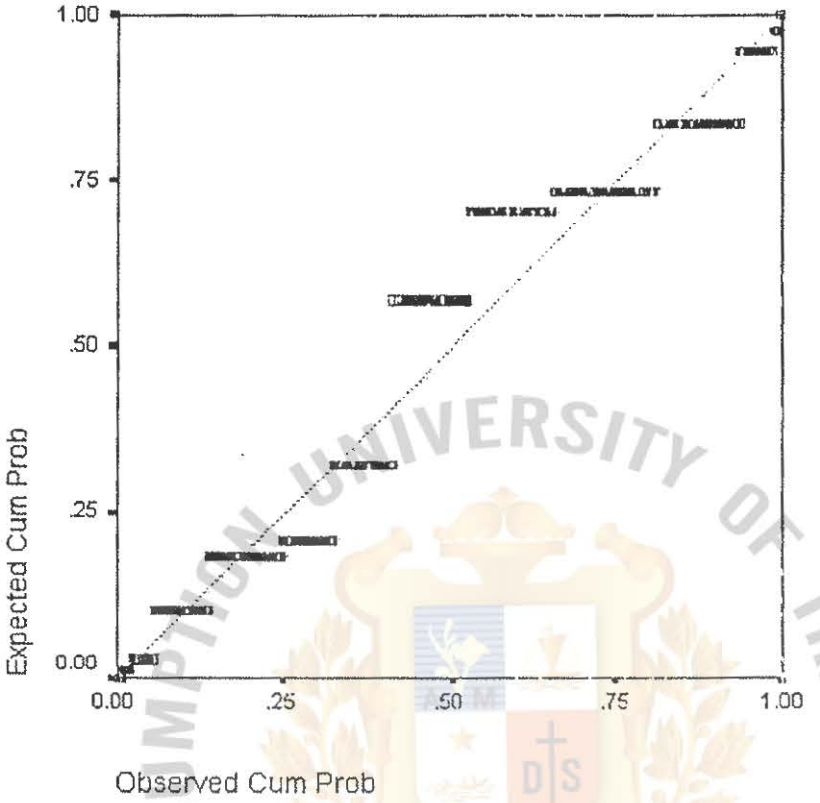
Normal P-P Plot of Regression Standardized Residua

Dependent Variable: Managing fairly rigid hierarchy wit



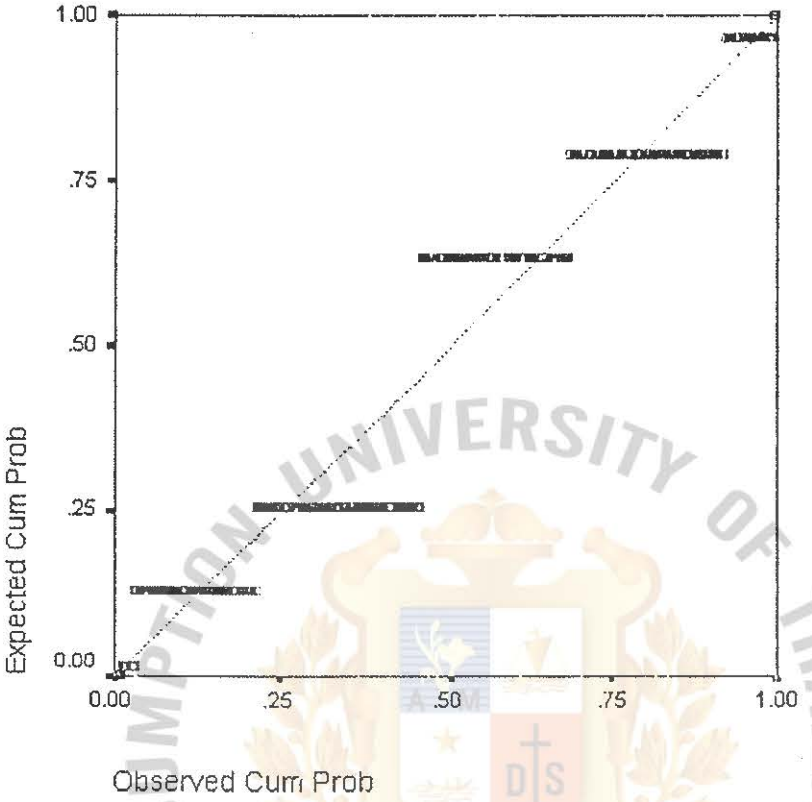
Normal P-P Plot of Regression Standardized Residual

fighting cost increases



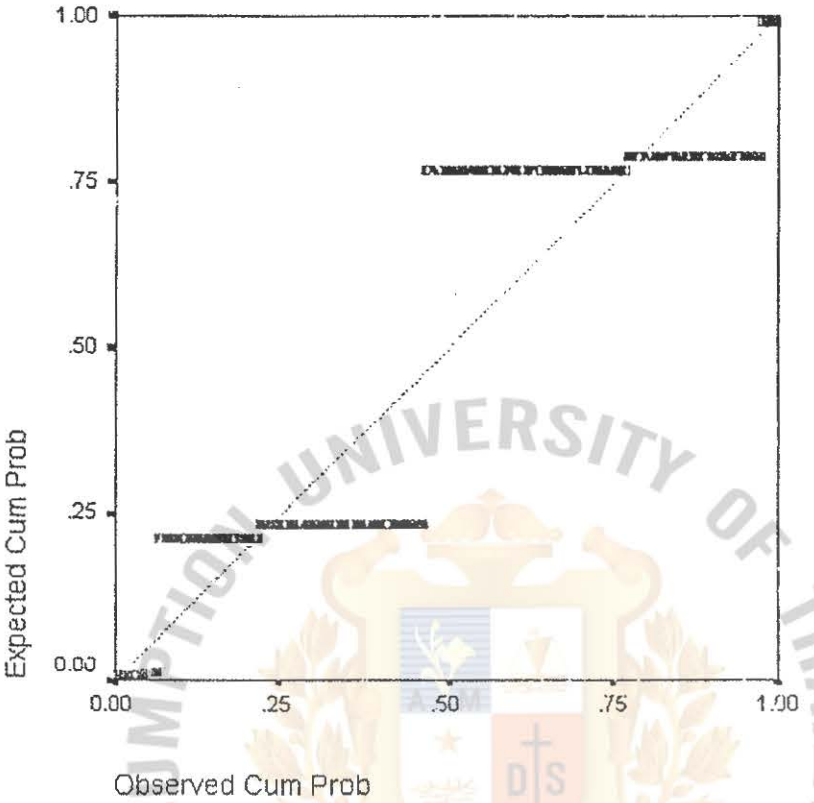
Normal P-P Plot of Regression Standardized Residua

Dependent Variable: Maintaining quality



Normal P-P Plot of Regression Standardized Residua

Dependent Variable: Work methods development and



APPENDIX C

Glossary

Vocabulary	Definition
Average hours worked	- The number of hours the average employed person works in a week.
Customer contact	- Is a process describing the minimum level of contact actually needed to obtain service in each instance.
Employment rate	- The percent of all participants in the labor force who are employed.
Labor intensity	- Is a measure of how hard a population is working. It is determined by 3 factors that are labor force participation rate, employment rate and average hours worked.
Labor force participation	- Is the percentage of people of working age who are in the labor force.
Management challenges	- Is the quality requiring the very best of one's abilities and efforts. It involves an element that brings coordination or cohesiveness to the activity.
Mass service	- Are characterized by high labor intensity in combination with low customer contact/customization.
Professional service	- Service involving high customer contact/customization as well as a high degree of labor intensity.
Service	- Is frequently an intrinsic part of the package of benefits offered to the customers.
Service customization	- Involves fit and alterability and is based on understanding the commonality and variablility across customers.
Service factory	- Service with both low customer contact/customization and a low degree of labor intensity.
Service shop	- Service with low labor intensity but high customer contact/ customization.

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