

**THE REPUBLIC OF TURKEY
BAHÇEŞEHİR UNIVERSITY**

**QUALITY MEASUREMENT OF GRADUATE
PROGRAMS**

Master Thesis

GÜLİN BAHÇIVAN

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**THE GRADUATE SCHOOL OF NATURAL AND
APPLIED SCIENCES
INDUSTRIAL ENGINEERING**

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Supervisor: ASSOC. PROF. DR. AHMET BEŞKESE

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Gülin Bahçivan

ABSTRACT

QUALITY MEASUREMENT OF GRADUATE PROGRAMS

Gülin Bahçivan

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Growing economy and competitive situation among companies address strategic development for quality. Especially, service sector increases an importance in national economy. Higher education institutions have an important position in service sector. So this master thesis is motivated from quality of higher education system. Expectation and perception of post-graduate students about their program and their university was used for measurement of service quality. A questionnaire was used to get information and Servqual method, developed by Parasuraman, Zeithaml and Berry was the bases of measurement. A modified Servqual model was used for this master thesis. The information was obtained by questionnaire which was applied to Bahçeşehir University's post-graduate students. Structural equation modelling (SEM) was used. As a consequence of statistical analyses, all dimensions could clarify service quality in higher education, and service quality in higher education could affect satisfaction of students.

Key Words: Quality Measurement, Service Quality, Servqual, Higher Education, SEM

ÖZET

YÜKSEK ÖĞRETİM ENSTİTÜLERİNDE KALİTE ÖLÇÜMÜ

Gülin Bahçivan

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Firmalar, gelişen ve büyüyen ekonomi ile birlikte oluşan rekabet ortamında firma kalitelerine daha fazla önem vererek avantaj sağlamayı hedeflemektedirler. Özellikle hizmet sektörünün milli ekonomi üzerindeki etkisi gün geçtikçe daha fazla önem arz etmektedir. Üniversiteler ise hizmet sektöründe büyük ve hayli önemli bir paya sahip olduğundan, bu yüksek lisans tezi üniversitelerin sağladığı hizmet kalitesi hakkındadır. Yüksek lisans ve doktora öğrencilerinin okudukları bölüm ve üniversiteleri hakkındaki algı ve beklentileri, hizmet kalitesi ölçüm kriteri olarak alınmıştır. Parasuraman, Zeithaml ve Berry tarafından geliştirilen Servqual modelinden faydalanılmış ve bu çalışma için gerekli bilgiler ise Bahçeşehir Üniversitesi yüksek lisans ve doktora öğrencilerine dağıtılan anketler ile sağlanmıştır. Bu tez çalışmasında uyarlanmış bir Servqual modeli kullanılmış olup, öğrencilerden toplanılan bilgilerin analizi için yapısal eşitlik modelinden (SEM) yararlanılmıştır. Analiz sonuçlarına göre, kurulan modelin tüm boyutları yüksek öğretim kurumlarındaki kaliteyi açıklayabilmekte olup, eğitimdeki kalitenin öğrenci memnuniyetini etkilediği gözlenmiştir.

Anahtar Kelimeler: Kalite Ölçümü, Hizmet Kalitesi, Servqual, Yüksek Öğretim, SEM

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SYMBOLS

- k : The Number of Attributes
- P_{ij} : Performance Perception of Stimulus i with Respect to Attribute j
- SQ : Overall Service Quality

ABBREVIATIONS

| | |
|--------|--|
| ABET : | The Accreditation Board for Engineering and Technology |
| AGFI : | Adjusted Goodness of Fit |
| AHP : | Analytic Hierarchy Process |
| CFA : | Confirmatory Factor Analysis |
| CGPA : | Cumulative grade point average |
| ES : | Expected Service |
| GFO : | Goodness of Fit |
| HE : | Higher education |
| PS : | Perceived Service |
| PZB : | Parasuraman, Zeithaml and Berry |
| QFD : | Quality Function Deployment |
| QME : | Quality Management in Education |
| SEM : | Structural Equation Modelling |
| SQ : | Service Quality |
| TQM : | Total Quality Management |

1. INTRODUCTION

Definition of quality is either a perfection's measurement or a state of being free from defects, deficiencies and significant variations, theoretically. And also one of the important Japanese philosophy says that quality is 'zero defects – doing it right the first time.'

The importance of service sector grows up day by day. Globalization and economic growth increase competitive situation among companies. Companies ache to make differences to be chosen by consumers. That's why they attach importance to service quality.

Service quality is only way to increase company value, market share and also return on investment. Quality measurement is easier in manufacturing sector than service sector, because of the characteristics of sectors. Service sector has 3 characteristics which make difficult to measure service quality such as; intangibility, heterogeneity, inseparability.

First of all, intangibility is the most common point of many services. Most of them cannot be counted, measured, inventoried, and tested. So, companies think that it is hard to find out how consumers perceive their services and assess service quality.

Secondly, service sector is based on employee performance and their labour. And this situation can change from producer to producer, from consumer to consumer and from day to day. So services are heterogeneous, this is the other characteristic of service sector to make difficult to measure service quality.

Third and the last one is inseparability. Manufacturing phase and consumption phase of many services are inseparable.

If a company provides satisfaction of their consumers, it succeeds. In other words consumers' satisfaction equals to quality of service.

Consumers gain their own expectation as a consequence of their experience or marketing and advertising works of companies. So, they expect that a company meets or exceeds their expectation with the service. If the company at least meet the consumers' expectation, it means company satisfies consumers.

Quality of service can be measured in so many ways and models, there are many literature about measuring methods. Several major models, which belong to service quality, are listed as below;

- a. Technical and functional quality model (1984)
- b. Attribute service quality model (1988)
- c. Synthesized model of service quality (1990)
- d. Performance only model (1992)
- e. Ideal value of service quality (1992)
- f. Model of perceived service quality and satisfaction (1996)
- g. PCP attribute model (1997)
- h. Service quality, customer value and customer satisfaction model (1999)
- i. Servqual model (Gap model) (1985)

Parasuraman, Zeithaml and Berry (PZB) advanced a method to measure service quality which is called Servqual. According to Servqual, gap score is the key part to be able to measure quality of service. If expectations of consumers and consumers' perceptions are not equal to each other, the gap is occurred.

The aim of gap analyses is to determine and measure the disconfirmation process where the perceived service by consumers against expected service by consumers' point of view.

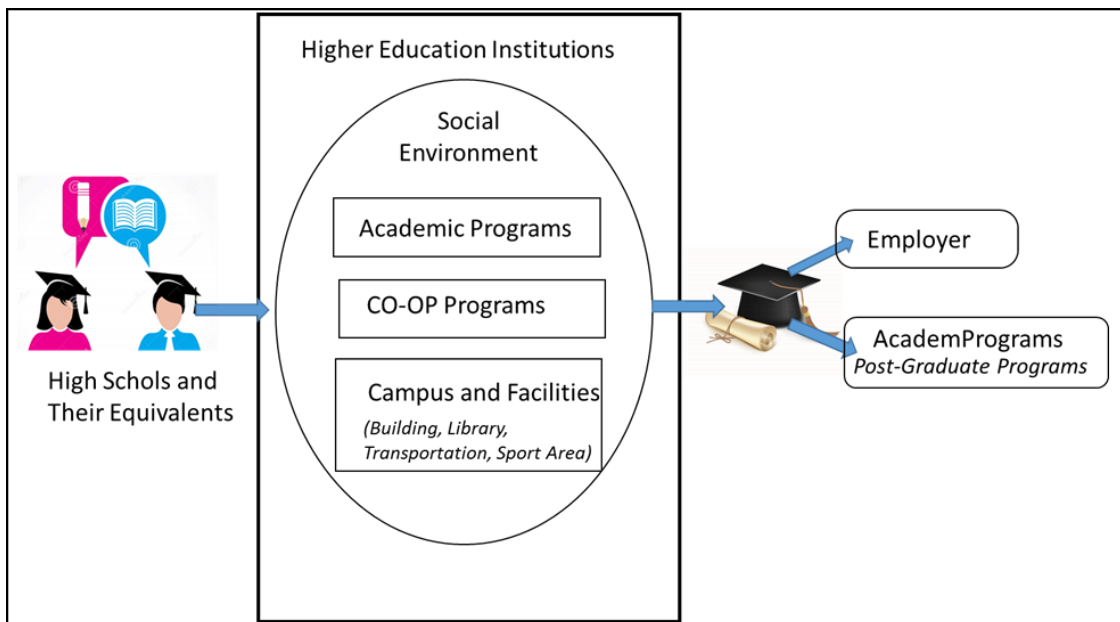
Servqual model has 5 main gaps to measure service quality. In addition, PZB's service quality model has 5 dimensions that are responsiveness, tangibility, assurance, reliability, empathy.

Economic growth plus competitive situation increase the importance of higher education's quality as the other service sector's companies. The number of universities has an increasing tendency, therefore quality is a major and irreplaceable criterion for higher education institutions.

Increasing number of universities means increasing number of under-graduate students, and it may cause to raise rate of unemployment. So graduated students prefer to continue their education life. Post-graduate programs help make differences and improve their skills.

Students, academic and administrative staff, parents and government are stakeholders of higher education institutions. Besides, many former studies took students as main consumers such as Sirvanci et.al (1996) and Köksal et.al (1998). In our study, we also take students as the main stakeholder. According to Sirvanci et.al (1996), consumers' satisfaction equals to quality and also quality equals to consumers' expectations. Figure 1.1. Students' flowchart in higher education is shown below.

Figure 1.1: Student's flowchart in higher education



Source: Şenel and Beşkese (2013)

Post-graduate programs are not compulsory education. Therefore, service quality is a part and parcel of higher education institutions.

The aim of this study was to measure effect of service quality in higher education on students' satisfaction level by dimensions of service quality model. Because of all these reasons, we focused on to measure service quality of post-graduate programs in Bahçeşehir University by a modified Servqual model. Master's students and doctoral students were involved in this study.

First of all, a questionnaire was applied to obtain students' exceptions and perceptions of students. Parallel questions for each exception and perception were asked and 3 more questions were added for overall evaluation, all these questions were asked to post-graduate students including PhD students. The cohort was chosen from 3 different faculties such as graduate school of natural and applied sciences, graduate school of social sciences and graduate school of educational sciences. Surveys were distributed as hard-copy and soft-copy and lasted 3 weeks.

This information, which were collected from post graduate students, were tested by statistical analysis. Structural Equation Modelling (SEM) was constructed. According to results of the analysis, the university met the post graduate students expectations.

This study has 5 main parts. The following parts of the study contains service quality, different service quality models, methodology, results, and discussion and conclusion.

The importance of service quality, and quality of higher education institutions were mentioned. Reasons of graduate students' preferences about to do a master degree or a PhD degree, the number of graduate students and universities in Turkey and literatures which were reviewed are also in the first part. Nine fundamental service quality models and their technicality were considered in service quality models' part. Methodology is about questionnaire and application of questionnaire. This section is about how the data was collected and what the important characteristic of the sample were. All data analyses and results were mentioned, hypothesis of the study was conducted in the results part.

Final chapter is discussion and conclusion. How the managerial staff could make a decision about service quality of the university according to results and some advices about future studies were mentioned in the final chapter.

2. SERVICE QUALITY

2.1 SERVICE AND SERVICE QUALITY CONCEPT

Quality is an important term that it is considered about customer satisfaction and cost minimization. In other words, quality means to minimize customer surprise. Quality can be varied by society, their habits and liking. Satisfactory of customers plays an important role to be successful in business life. Customer demands and awareness, people's living standards and also competitiveness in the market have increased, so service quality and production quality gain an important role.

The importance of service sector has an increasing tendency. Correspondingly, the quality of service sector increases in importance. Since variety of service sector, measuring quality of service is harder than to measure production quality. And on the other side, service sector has intangible nature and direct participation of client, production and consumption simultaneously, inconcealable, non-reusable. These specialties are causes of insufficient measurement. Total Quality Management (TQM) and Quality Function Deployment methodologies (QFD) are proper for measuring product quality. Thus, production sector can enhanced the quality of product efficiently, however implementation of these methodologies in service sector is not fixed enough to measure service quality.

2.1.1 Quality of Higher Education

Quality in education services can be identified both students' needs and expectations. Customer definition in higher education institutes differs from other service and production sector. Students have different kind of roles in higher education but they are the major customer group. Besides that, faculty member were deemed as designers of education system.

Students, academic and administrative staff, parents and government are all different customer groups of education system. Students, who form main group of client, cannot

return the service even if they are satisfied. This is another hardness reason to determine quality level in higher education (HE). In addition, satisfied customer does not mean to make each customer are pleased. Most common and substantial ideas should be taken account by service providers. Therefore, service providers also check their performance whether it meets customers' expectations.

One of the significant factor for development a country is higher education. So, quality of higher education is important for the development. Current students as well as customers are future managers, professional employees, doctors or teachers. And they will lead new generations, manage resources, and masses of people. Hence, service providers should reach a standard of service quality which is arranged according to clients' needs and expectations.

Competitive environment makes universities improve themselves and focus on their efforts. For instance, reputation, career opportunities, new curriculum, location contribute of skeleton structure of universities. New graduate program and evening graduate classes are opened by universities. They develop their e-learning system, and accessibility of academic websites. They modernize the laboratories and classrooms. Libraries also have up and coming editions. The academicians update their knowledge and integrate their lectures with current information. To sum up, higher education providers aim to reach or exceed the expectation of students because of developing and changing world. All these reasons make more important quality in universities.

Students choose their higher education institutions and pay for it, select appropriate academic programs, courses and lecturers. These roles of postsecondary students' can make them customers of service. In education services, outcomes should satisfy students to reach higher quality. So it is communicable that students are essential customers for education institutions. Students' satisfaction is a fundamental theme to be able to avoid customer churn. Because if current students are not absolute satisfied, even they have to graduate from their department, they will not be quite likely to prefer a program at the same higher education institution and they will not recommend it to others.

As well as, research into SQ in a higher educational subject is limited, number of research about post-graduate programs in a higher education institutions fewer than it. The subject about quality in master's program and PhD programs should be worked on, intensively. Because demand of the enrolment in a post-graduate program have been raising, recently.

2.1.2 Quality of Post-graduate Education

After getting an undergraduate academic degree, the percentage of students who enrol a post-graduate programs is increasing day by day. Both academic reason, and definite job opportunities are fundamental reasons to continue educational life as post-graduate students.

Nowadays, so many universities are established and it causes rising number of unemployed bachelor. On that account, graduate students should make difference to be able to chosen as an employee by companies. So, post-graduate programs should provide them to specialize in their subject.

The post-graduate programs are necessary to build an academic career. Being an academician cannot take into consideration as white collar job opportunities. Scientific improving, researching a new topic or improving a scientific subject, teaching to young people make it as a demanding job. In addition to that, having post-graduate and PhD degrees are obligation for an academic career. So, for these two reasons, quality in higher education institutions can increase the number of demand for university

According to statistical data of TUIK (<https://istatistik.yok.gov.tr/>), there is 3,768,212 students in higher education throughout the educational period from 2010 and 2011. These number of students contains all enrolled students such as associate degree students, graduate students and post-graduate students including PhD degree. Furthermore, 4.48 per cent of total number of students are post-graduate students.

There is 6,689,185 enrolment students between the educational year of 2015 and 2016. In addition to this number only 7.52 per cent of total students are post-graduate students.

Within the 5 years period, total rate of students in higher education have increased just over a half (56.3%). All of these rates are a sort of quantitative evaluation of the importance of post-graduate programs. Even if the number of enrolled students are too many, the post-graduate students cannot reach at 10 per cent of total student number. And it shows that having a post-graduate degree plays an important role for a definite and satisfied job opportunity.

Post-graduate programs are not compulsory education. Thus, students examine all university and the programs offered, inclusively to receive good education. Universities should provide quality in their higher education program to get new students and either establish or protect their reputation. And also, post-graduate students and university students have different kind of expectations from their universities. So managerial staff should take these differences into the consideration. Their strategic decision should be shaped according to that.

There are some dimensions to build quality in higher education. According to these dimensions, universities should develop strategies. Mostly, dimensions such as safety environment of university, image and prestige of the higher education institutions, technologic tools and facilities at university, accommodation opportunities, teaching systems such as lecturers, accessibility of information, social facilities and social life around the higher education, good location of the university's building may make attractive and eligible of the higher education institution for candidate of students.

These dimensions should be tested and analysed by an appropriate method about providing strategies or presenting a higher quality in the post-graduate programs at universities. Students are the main stakeholders of the university. They are both the service providers and they get service from the university. That's why, quality of the higher education is measured by students' expectation and perception of students. What they actually expect and what they receive in reality.

There are so many methods to measure service quality. Each of these models have different approaches and unique structures. The dimensions of the model and importance

level of these dimensions are different from each other. However main and common characteristic of this methodologies are service quality measurement. No outputs or goods are produced which is the difficulty of evaluating service quality. So different kind of approaches and methods are mentioned briefly in the next section.

2.2 SERVICE QUALITY MODELS

In 1980's quality was an important consumer trend. Because quality could benefit market share and return on investment. However, there were not fixable methods to measure service quality because knowledge about merchandise quality was not enough to understand and measure the SQ.

The main difficulties of service industries are intangibility, heterogeneity and inseparability. Owing to the significant rising on service quality, some researchers have focused on these area. The most common service quality models, which are listed below, are investigated and mentioned briefly.

- a. Technical and functional quality model
- b. Attribute service quality model
- c. Synthesized model of service quality
- d. Performance only model
- e. Ideal value of service quality
- f. Model of perceived service quality and satisfaction
- g. PCP attribute model
- h. Service quality, customer value and customer satisfaction model
- i. Servqual model (Gap model)

2.2.1 Technical and Functional Quality Model (Grönroos, 1984)

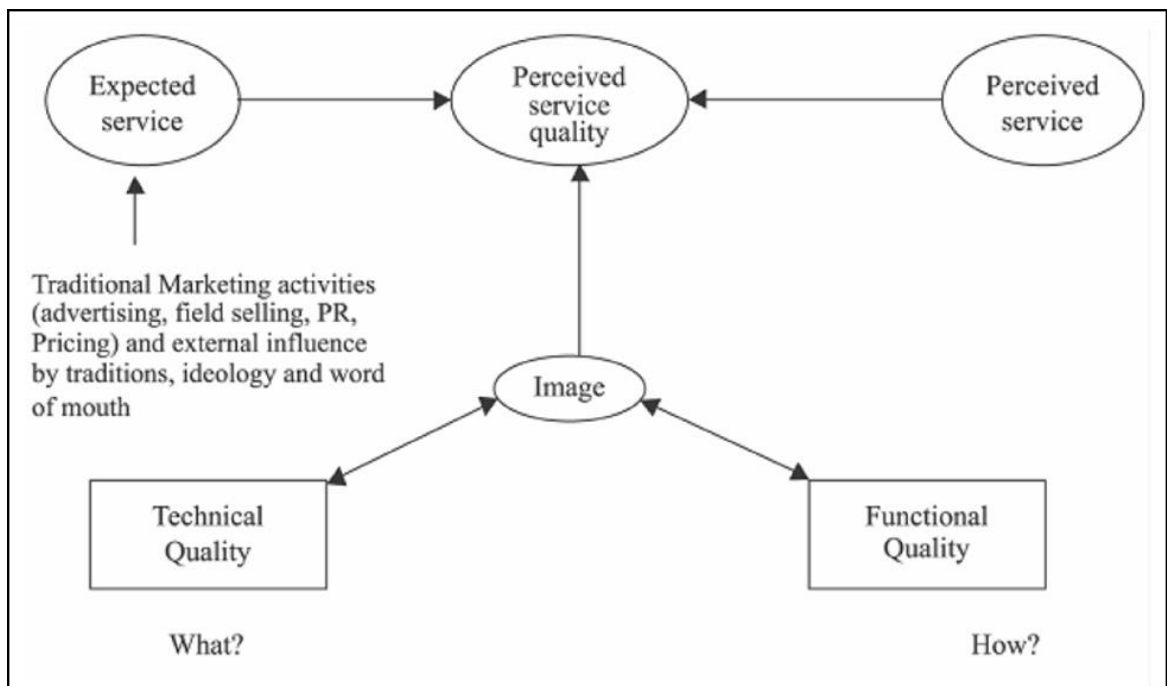
This model is based on a relation of customers' service expectations and perceived service by customers. Main target of this relation is to match both perceived service and expected

service to each other. Grönroos (1984) identified three dimensions for SQ as technical quality, functional quality and image, respectively. The model is shown in Figure 2.1.

Primarily, technical quality is the quality of what customers actually receive from their interaction with the service company. It is important for customers' evaluative judgement of service quality.

Secondarily, functional quality is how customers get the technical outcomes. Lastly, image is that a company builds up by functional and technical quality of service including the other factors as word of mouth, public relations, pricing and so on.

Figure 2.1: Technical and functional quality model



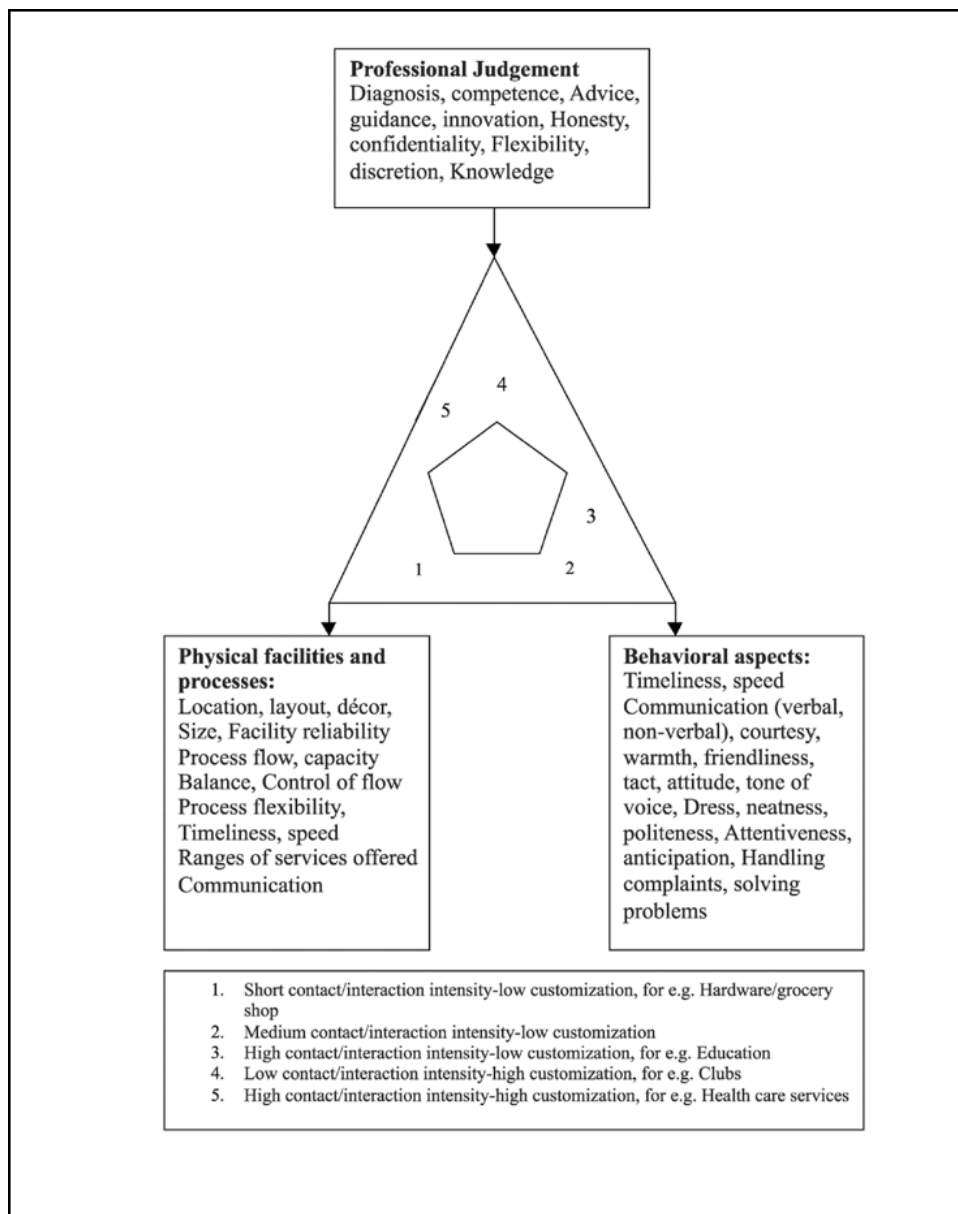
Source: Grönroos (1984)

2.2.2 Attribute Service Quality Model (Haywood-Farmer, 1988)

In this model, service quality attributes are separated in three main groups. These groups are physical facilities and processes, people's behaviour and lastly professional judgement. All groups have set of attributes as presented in Figure 2.2.

Haywood-Farmer stated that if a firm meets preferences and expectations of customers, they gain high quality. The author tried to map differently according to type of services, service settings, degree of contact and interaction etc. For instance if the firm is an education institution, it is closer to behavioural aspects or if the firm is a courier company, it is closer to physical facilities and processes.

Figure 2.2: Attribute service quality model



Source: Haywood – Farmer (1988)

2.2.3 Synthesized Model of Service Quality (Brogowicz, 1990)

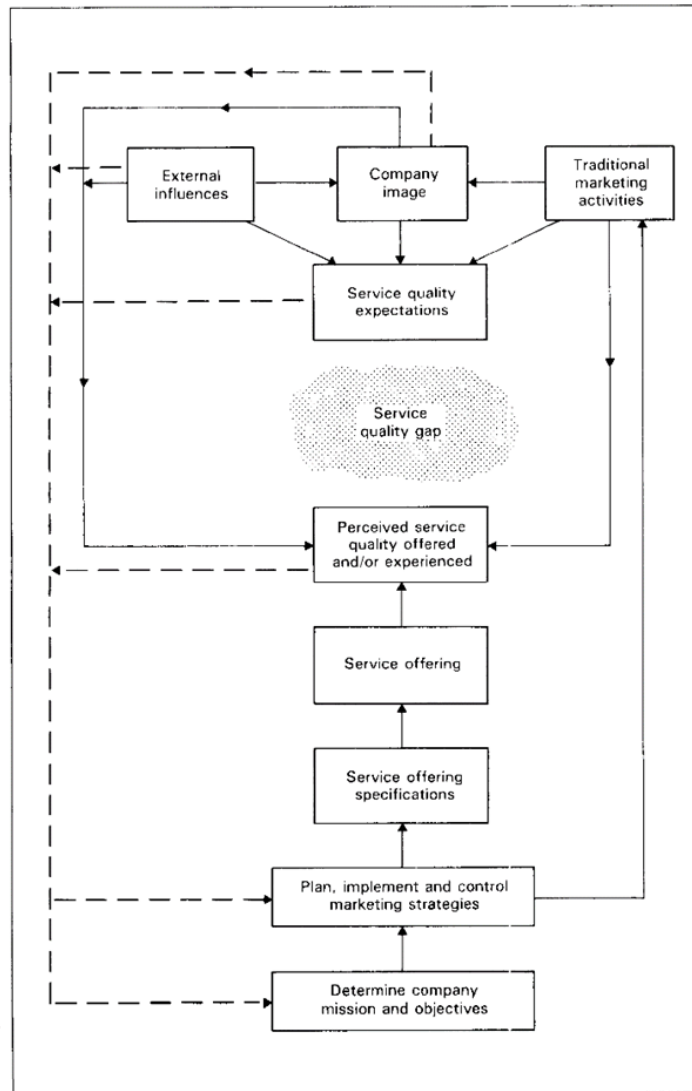
When the customers' perception meets or exceeds customers' expectation, the firm achieves service quality. Otherwise, a service quality gap can be existed.

Most of authors emphasize the perception of customers occurs through customers' experience. Sometimes, customers have an expectation as a result of marketing activities as word-of-mouth, advertising, or other media communications. Even customers have not tried the service, yet. Thus, potential customers' perceptions of service quality should be taken into consideration as well as actual perception of consumers which is obtained from their own experiences about service quality.

This model attempts to integrate traditional managerial framework, service design, and operations and marketing activities. The aim of the model is to clarify SQ dimensions in a traditional managerial framework of planning, implementation and control.

This SQ model has three factors such as external influences, company image and traditional activities about marketing. These are influencing factors of technical and functional quality expectations. The model is shown in Figure 2.3.

Figure 2.3: Synthesized model of service quality



Source: Brogowicz et.al (1990)

2.2.4 Performance Only Model (Cronin and Taylor, 1992)

The authors examined service quality measurement and service quality conceptualization. They also examined its relationship with customer satisfaction. And they compared computed different scores with perception of customers. Finally customers' perception is found as the best predictor for service quality measurement. Thereby, they have

developed a service quality measurement called Serperf. It is based on performance. And service quality is measured by perceptions only according to formula:

$$SQ = \sum_{j=1}^k P_{ij}$$

where:

SQ = overall service quality;

k = the number of attributes;

P_{ij} = performance perception of stimulus i with respect to attribute j.

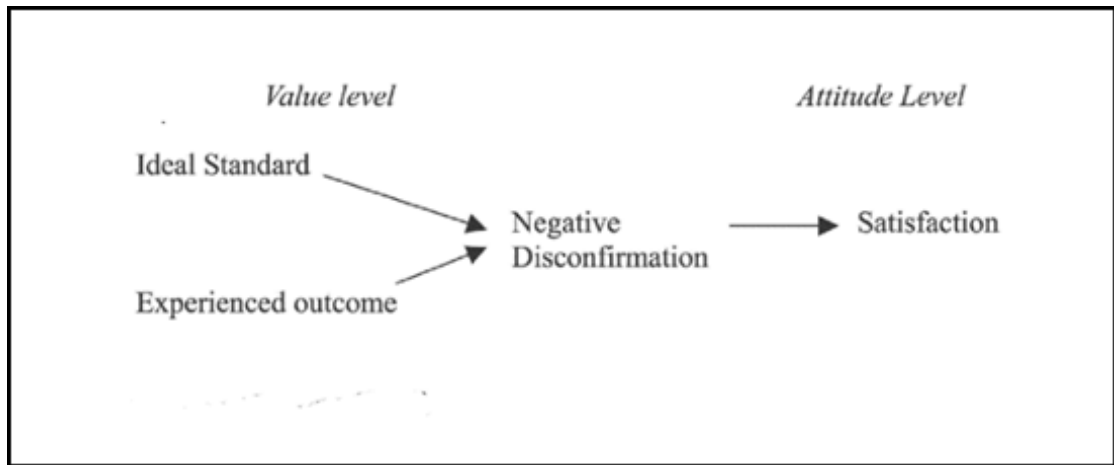
HEdPERF (Higher Education PERFORMANCE Only) is a new measuring instrument for service quality and developed by Firdaus Abdullah et.al (2006). This new measurement is based on performance only model and designed for higher education system. This model includes quantitative and qualitative measurements.

2.2.5 Ideal Value of Service Quality (Mattsson, 1992)

In every study about SQ, expectation is taken into consideration as a main evaluation standard. However, Mattsson suggests that other types of standards like experienced based on ideal, minimum-tolerable, and desirable standards should be taken as evaluation standards. Therefore, this SQ model reflects all these components. In addition, the model recommends the use of a perceived ideal standard against which the experience is compared. Then, a hypothesis is structured for negative disconfirmation effect on pre-conscious value level to decide satisfaction on a 'higher' attitude level as represented in Figure 2.4.

In conclusion, this value approach service quality model examines the relation between negative disconfirmation and satisfaction level of customers.

Figure 2.4: Value and attitude in negative disconfirmation

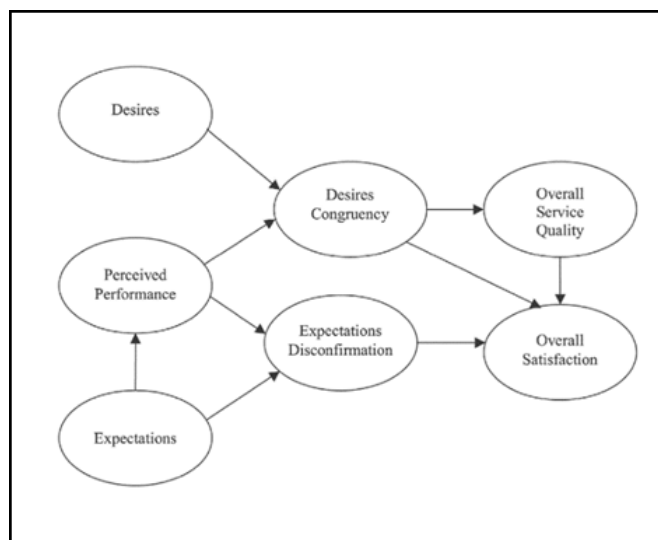


Source: Mattsoon (1992)

2.2.6 Model of Percieved Service Quality and Satisfaction (Spreng and Mackoy, 1996)

This model aims to develop the comprehension of constructs perceived service quality and customers' satisfaction. The model emphasizes the effect of expectations, perceived performance desires, desired congruency, and expectation on overall service quality and customer satisfaction as shown Figure 2.5.

Figure 2.5: Satisfaction-service quality model



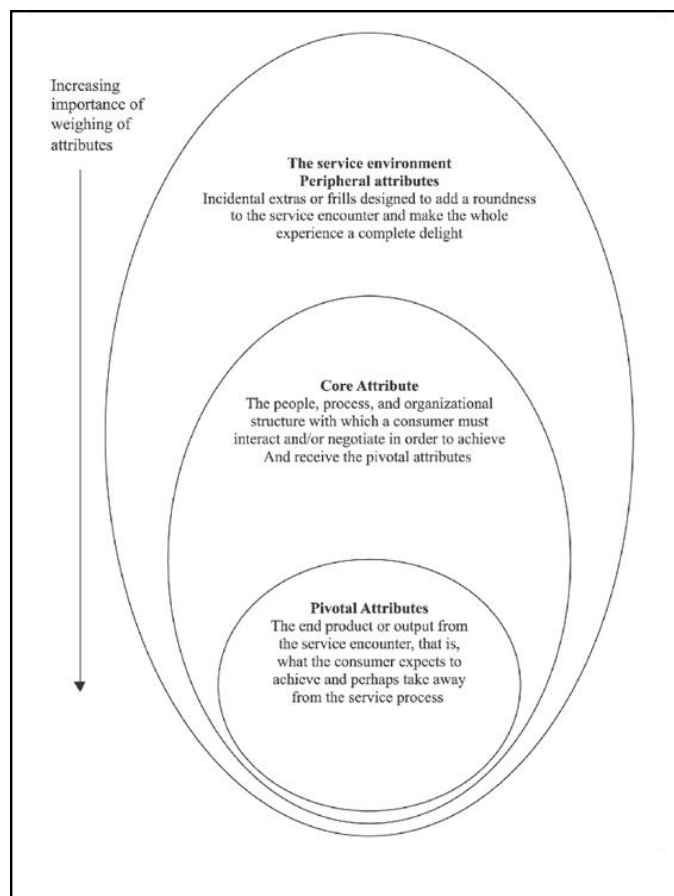
Source: Spreng and Mackoy (1996)

2.2.7 PCP Attribute Model (Philip and Hazlett, 1997)

This model is structured the hierarchical form. It is based on three fundamental levels of attributes which are called pivotal, core and peripheral from the inside out. These three levels are overlapping and all of these dimensions are defined service quality, according to represented as Figure 2.6.

The pivotal attributes are considered what the costumer expects to achieve and receive form the service and located at core. Core attributes centre around the pivotal attributes. The mixture of people, process and the service organizational structure is the best definition of this level. Core attributes are where the consumers interact and negotiate in order to get the pivotal attributes. Lastly, third level of the attribute model is peripheral attributes.

Figure 2.6: PCP attribute model



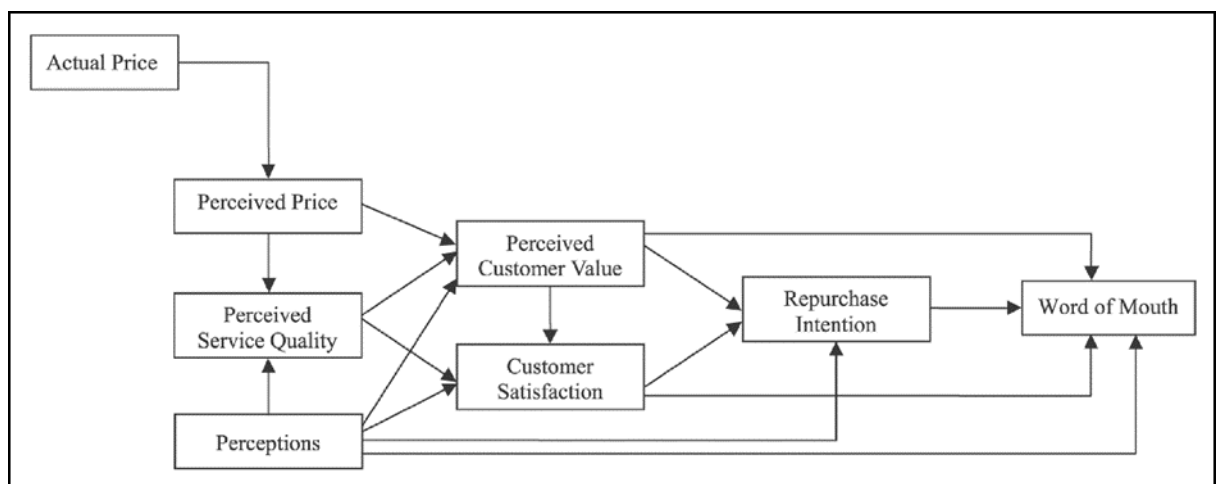
Source: Philip and Hazlett (1997)

2.2.8 Service Quality, Customer Value and Customer Satisfaction Model (Oh, 1999)

Oh et.al (1999) presented and tested a complementary model of service quality, customer equity and satisfaction of customers. This model focuses on primarily post purchase decision making process of customers and it is presented in Figure 2.7. Causal directions are indicated by arrows in the model. The proposed model incorporates the key variables such as perceptions, service quality, customer satisfaction and customer equity. And also the model contains intentions of repurchase and recommendation others which are the real effects of actual and perceived prices. Word-of-mouth (WOM) communication intention is conceptualized as a direct, combined function of perceptions, value, satisfaction, and repurchase intention.

This proposed model is useful to be able to understand customers' decision as well as evaluating company performance. Customer value is a major construct for service quality and customer satisfaction. However, perceived price has a negative impact on customer value and has not any relation with perceived service quality.

Figure 2.7: Model of service quality, customer value, and customer satisfaction



Source: Oh (1999)

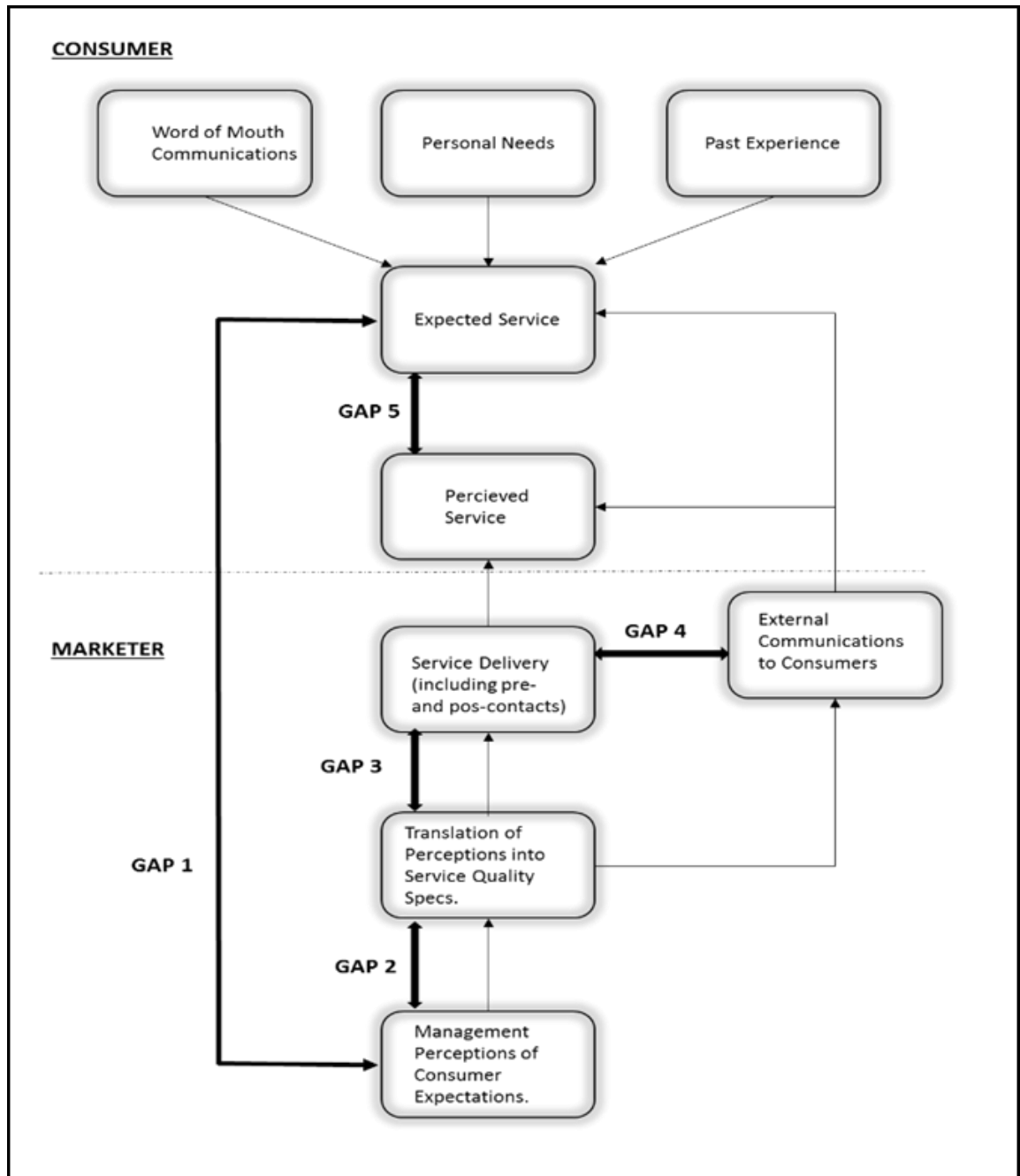
2.2.9 Servqual Model (Gap Model) (Parasuraman, 1985)

Parasuraman et.al (1985) retrospective researched all service quality studies, then he and his friends investigated and reported all insights obtained in four sectors. According to the investigation, they have modelled a service quality measurement. We use Parasuraman model, which is called Servqual, in our research.

According to Parasuraman, SQ is comparison of between expectation and performance. In that case, quality of higher education is comparison of between students' expectation and perception.

Parasuraman et.al (1985) uses gaps for SQ. Servqual model is based on gaps analysis and it contains 5 gaps. 4 of them on the marketer's side, one of them is on the consumer's side as shown at Figure 2.8.

Figure 2.8: Adapted gap analyses model



Source: Parasuraman (1985)

GAP 1 Consumer expectation-management perception gap: This gap is the difference between the consumer's expectation and the management's perceptions about what consumers' expected. The marketers may not understand the consumers' expectations, precisely. Thus, it might be unclear.

GAP 2 Management perception-service quality specification gap: This gap is discrepancy between management's perceptions of consumer's expectations and the firm's service quality specification. Sometimes there are different kind of difficulties to deliver what consumers' expected. For instance, the lack of qualified staff or staff on vacation and so on. Thus, all of these affect service quality from consumer's standpoint.

GAP 3 Service quality specifications-service delivery gap: The gap is difference between service quality specifications and actual service delivery. The differences of employees can affect service quality which are perceived from consumer's point of view.

GAP 4 Service delivery-external communications gap: The gap is difference between service delivery provided by firms and external communication gaps. Media advertising and other communication gap can affect consumer expectations. And sometimes some firms promise more than they can deliver. So these kind of discrepancy about what consumer expected and perception of consumers' viewpoint can affect service quality.

GAP 5 Expected service-perceived service gap: The gap is difference between consumers' expectations of the service and the perception of the service delivered by consumers. As a result of this, if a firm meet or exceed consumers' expectations, they have 'good service quality' can be said.

The aim of gap analysis is to determine and measure the disconfirmation process where the service delivered to consumers against expected service by standpoint of consumers. Thus, satisfactory service is the key point to reach ideal service quality system.

Internal Servqual Model – INTSERVQUAL is an adaptation model of Parasuraman’s Servqual model and also grounds on gap analysis. The main idea of INTRESVQUAL model is that firms firstly have satisfied employees to be able to gain satisfied customers.

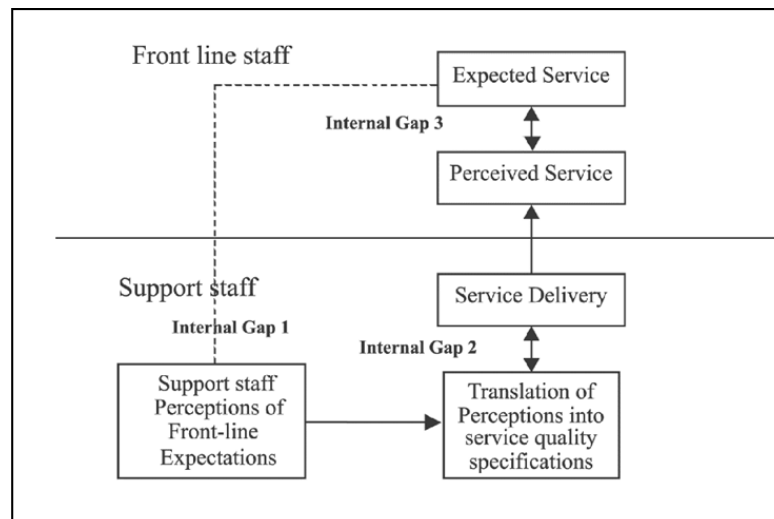
This model examined dimensions, and relationships of dimensions, that determine service quality among internal personnel which interact with customer (front-line personnel) and internal suppliers (support staff) within a large service organisation. There are 3 gaps for this model as shown Figure 2.9.

The Internal Gap 1 explains the discrepancy between support staff’s perception (internal supplier) and front-line’s expectations (internal customers).

The Internal Gap 2 is the significant difference between service quality specifications and the service actually delivered resulting in an ‘interval service quality gap’.

The Internal Gap 3 focuses on front-line staff’s gap (internal customers). This gap is based on the discrepancy between expectations of front-line staff and support staff’s (internal supplier) perceptions.

Figure 2.9: Internal service quality model



Source: Frost and Kumar (2000)

At the beginning, Servqual had 97 item scale and 10 dimensions for service quality measurement, then after several reexaminations and recomputations, model had 54 item scale, 34 item scale and 22 item-scale respectively, likewise 7 dimensions and 5 dimensions, respectively. Finally, there are 22 parallel expectation (E) and perception (P) statements that show the five service quality dimensions.

10 dimensions were tangibles, reliability, responsiveness, communication, credibility, security, competence, courtesy, understanding/knowing customers and access. Afterwards, current five dimensions and their definition are listed at table 2.1. Assurance and Empathy contain former 2 dimensions.

Table 2.1: Dimensions of Servqual

| <u>Dimension</u> | <u>Definition</u> | <u>Number of Items</u> |
|------------------------|---|------------------------|
| Tangibles: | Physical facilities, equipment, and appearance of personnel | 4 |
| Reliability: | Ability to perform the promised service dependably and accurately | 5 |
| Responsiveness: | Willingness to help customers and provide prompt service | 4 |
| Assurance: | Knowledge and courtesy of employees and their ability to inspire trust and confidence | 4 |
| Empathy: | Caring, individualized attention the firm provides its customers | 5 |

2 more dimensions were added in our study which were taken by Owlia et.al (1996). Owlia et.al (1996) emphasized that if higher education institutions are chosen as the service sector then 2 more dimensions should be added which are called competence and content. Because some questions about quality of higher education are not exactly fit in Servqual's five dimensions. Curriculum, course objects, technology involved and so on are important for higher education. So, totally 7 dimensions were taken into consideration to be able to include all these kind of subjects in the model. We can definite both of these dimensions as below;

Competence: Sufficient (academic) staff, theoretical knowledge and qualifications, practical knowledge, content of the lectures are up-to-date, teaching expertise and communication.

Content: Relevance of curriculum to the future jobs of students, effectiveness, containing primary knowledge and primary skills, completeness, computer usage, communication skills and team working, flexibility of knowledge, being cross-disciplinary.

To sum up, tangibles, reliability, responsiveness, assurance, empathy, competence and content are the dimensions of the model. These dimensions are shown at table 2.2.

Parasuraman, Zeithaml and Berry (1994) emphasized that customers' satisfaction is an assessment of service quality. There is an equality to measure service quality according to Servqual method.

This equality;

$$\text{Service Quality} = \text{Perceived Service} - \text{Expected Service}$$

- i. Perceived Service (PS) > Expected Service (ES)

When PS more than ES means the firm has satisfied customer by the service offered. This situation is an ideal quality for service sector.

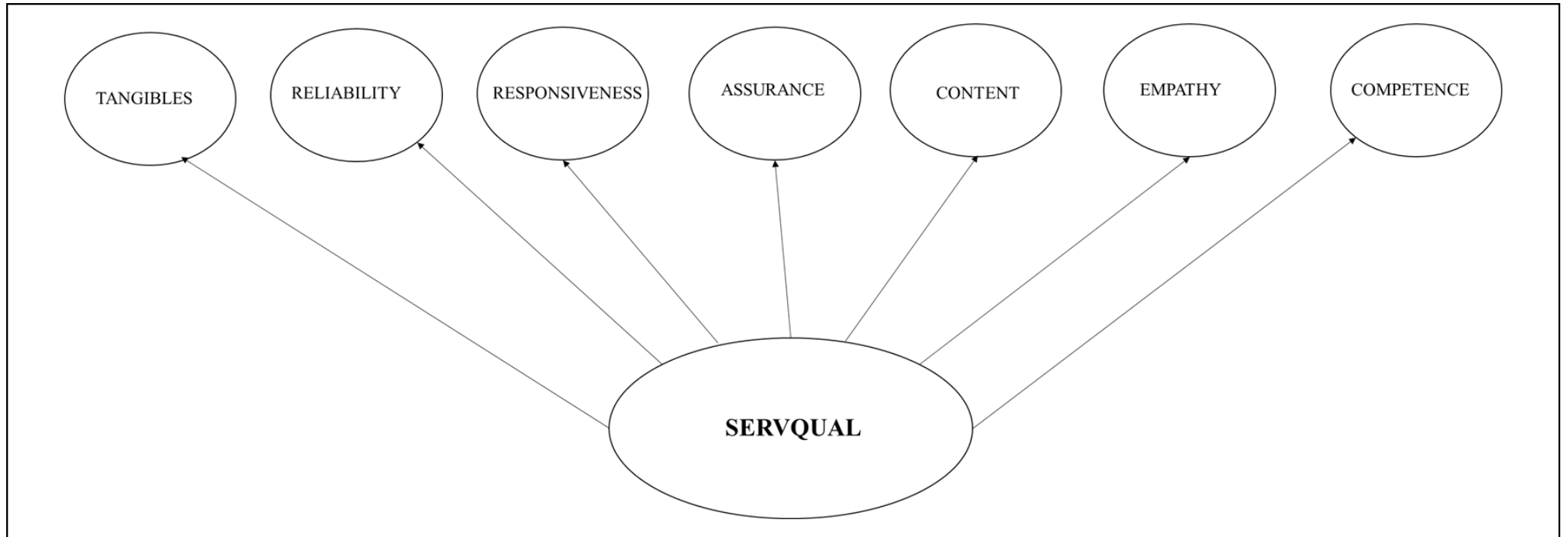
- ii. Perceived Service (PS) = Expected Service (ES)

This equation means perceived service is satisfactory. In other word, the firm meet the expectation of customers.

- iii. Perceived Service (PS) < Expected Service (ES)

When ES is more than PS means the firm cannot meet the expected service by consumers and it is totally unacceptable quality for the firm.

Table 2.2 Dimensions of modified Servqual model



2.3. SERVICE QUALITY MEASUREMENT

In 1980, service quality has become a remarkable topic for research. From then on, studies on service quality and service quality measurements are increased and improved.

Hoxley et.al (2000) evaluated the development of 26-item scale to be able to determine service quality in the United Kingdom. Consequently, professional service quality could be described as 4 factors which are called ‘what, who, how, when’ by Hoxley.

Tsinidou et.al (2010) identified the quality predictive for Greek Higher Education System and also measured their relative importance in students’ eyes. His study proved that communication skills of academic staff is the most important determinant for students.

Some researchers have either examined or developed different kind of model to measure service quality. Oh et.al (1999) developed a holistic perspective to examine customer equity within framework of both service quality and satisfaction of consumers. He focused on post-purchase decision-making process of customers and investigated the connection of customer equity with price, perceptions of performance, service quality, satisfaction of customer, and intentions for repurchasing and recommendation. His study proved that customer equity plays a substantial role in post-purchase decision-making process of consumers. In addition, it was an important variable for both service quality and customer satisfactions. There was no connection between service quality and price which were perceived by customers. However, impact of perceived price on customer equity was negative.

Mattsson et.al (1992) studied on a model of service quality hinged on ideal value standard. According to Mattson’s point of view, most of former research evaluated service quality only by perception of customers. Thus, he suggested to add other standards for evaluation service quality. These standards were experience-based ideal, minimum tolerable and desirable. Value was an essential criterion for his service quality model. Also value consisted of these standards. The perceived ideal standard compared with experienced outcome. Then, a negative disconfirmation effect, on pre-conscious value level, was

detected and a hypothesis was structured to decide satisfaction on a 'higher' attitude level. Briefly, the relation between negative disconfirmation and consumers' satisfaction was investigated on this model.

Brogowicz et.al (1990) proposed a service quality model to identify all dimensions of SQ in a managerial framework with implementation of the model. According to Brogowicz and his model, managers should determine what customers expect and how the service is perceived by customers' side.

Grönroos et.al (1984) suggested a model to be able to gain customer satisfaction. Therefore, in the first place, employees should be satisfied. The aim of his model was to analyse internal gaps. Internal Gap 1 described differences between support staff's perceptions and front-line staff's expectations. Internal gap 2 was the difference service quality specifications and the service actually delivered and lastly, the internal gap 3 was about front-line staff. According to internal gaps' results, the most effective dimension was responsiveness.

According to Noaman (2013), there was no universal unified quality criterion in higher education, and also there were some shortcoming in the scope of some educational quality standard. Therefore, Noaman et.al (2013) illustrated an advanced higher education quality examination model at King Abdul-Aziz University (KAU). They helped achieve excellent recommendation for better quality services with their study.

Srikanthan et.al (2002) defended that quality management is a suitable model for service industry. Besides, QME (quality management in education) is an appropriate model to research educational literature. So, TQM and QME were implemented together. His model comprised the education and service-delivery on the campus. The objective was to link regularly all alternative approaches to quality. So, a holistic model could be a future model to collaborate organizational and educational theories for management of higher institutions' quality.

Ho et.al (1996) aimed to specify benefits of TQM and develop higher education TQM excellence model. Hetomex was developed to be able to highlight target area by consisted gaps in HE system and also to reach all the stakeholder.

There are several important methods for service quality measurement and one of them is Servqual. A quality measurement model was developed by Parasuraman, Zeithaml and Berry (PZB) (1985). Because, in 1980's there were just a handful studies in service quality. PZB researched some earlier studies, investigated four service sectors and finally a model was developed for service quality. According to their studies, research and tests, ten service quality dimensions were evaluated which were reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding and tangibles. These 10 dimensions were effective and reliable on these sectors. As a result of these, a SQ model was created to measure gaps.

Parasuraman et.al (1988) kept continue to study about service quality. One of his and his friends aim was to define the improvement of a multiple-item scale for service quality measurement which is called Servqual. And, consumers' perception of service quality were assessed for this definition. Second aim was to discuss scale's properties and potential applications. Firstly, Servqual had had 97 items and 10 dimensions to measure service quality then it reduced as 54-item scale. 34 items and 7 dimensions represented after re-examination and re-computation. As a result of some analyses, 5 dimensions were found essential. Lastly after all analyses and re-computations, model has had 22 item scale and 5 dimensions. As a conclusion of the research, Servqual could be applied to most service sectors for quality measurement.

Parasuraman et.al (1991) refined Servqual instrument and re-examined its reliability and validity at three different services; telephone repair, retail banking, and insurance.

According to result, the present Servqual was a better model than the original scale, the basic five-dimensional structure of the original scale protected its reliability according to the refinement results. In addition, tangibles split into 2 dimensions such as

facilities/equipment and employees/communication materials, which had been unidimensional in the original scale.

Parasuraman et.al (1994) responded some concern by re-examining the underlying arguments and introducing additional perspectives. Reliability became the most important dimension. However, tangibles became the less important dimension, as a conclusion of all retested.

Atrek et.al (2012) aimed to evolve a scale to measure service quality which was exclusive and tested in Dokuz Eylül University. He compared 3 type of measurement models including Servqual. According to analyses, original five-factor Servqual's model fit was better than model fit of three-factor Servqual scale, and adapted Servqual model as a result of Confirmatory Factor Analysis (CFA).

Rodrigues et.al (2011) determined difference or concurrence of Servqual and Servperf. Cause both of Servqual and Serperf are service quality measurement. As a result of the study, both of these scale had significant differences.

After development of Servqual, researchers mostly preferred to apply Servqual model to measure service quality especially in 2000's.

Shekarchizadeh et.al (2016) and Ibrahim et.al (2013) focused on foreign students' expectation and perception about the programs. Shekarchizadeh et.al (2016) assessed international students' perception and expectation of service quality in top 5 public Malaysian Universities. According to the result of statistical analyses, except expectations, all the items were seen noticeably negative. Students were not satisfied with the education service in each 5 universities. Ibrahim (2013) measured foreign students' expectations and perceptions about quality of Scottish universities by using Servqual. In a conclusion, all overseas students were unsatisfactory for all dimensions, especially reliability.

Lupo et.al (2013) proposed a method based on a recent extension of the Servqual model and that used in combined manner the Fuzzy Set Theory and the Analytic Hierarchy Process (AHP) method is applied in their study, and this technique purposed to tackle uncertainty effectively. The combined model was used at Management Engineering program at an Italian university. In a major conclusion of the study, the service quality perception of professors' meaningfully influenced overall service performance level. Also, all overseas students dissatisfied all dimensions, especially reliability.

Çerri et.al (2012) evaluated SQ and investigated dimensions of SQ in Albanian public universities. Structural equation modeling (SEM) was constructed for testing all hypotheses. Principal component analysis were conducted and factor analysis was run to decide factors, final analysis were CFA. Firstly, all five service quality's dimensions were confirmed by statistical analyses results. Secondly, responsibility was the main dimension for Albanian students it is followed by tangibles.

Udo et.al (2011) used a Servqual model, which was modified by him at the beginning of study, to assess SQ of e-learning courses. Except reliability, all four dimensions played significant role for quality in perceived e-learning quality. This situation and results could affect future enrolments and ideas in online courses.

Tan et.al (2004) enhanced an approach for measuring student satisfaction by using Servqual. The aim of his study was to analyze satisfaction level of students. These students were chosen from 2 local universities. According to the result of this study, students had dissatisfaction about school principals and communicating with the university's management for both universities.

Oliveria et.al (2009) aimed to contribute towards improving education service in production engineering program at Sao Paulo State University in Brazil by adapting Servqual method. The dimensions of tangibility, reliability, promptness, security, and empathy were perceived unsatisfied by students. According to the results, manager should have developed a strategy to enhance service quality.

Zafiroopoulos et al (2008) analyzed SQ in Greek HE institute based on students' and staff's opinion. Consequently, in every Servqual dimension, staff's gap had higher than students'. Staff perceived higher level of current educational service than students and staff had greater expectation than students. Lastly, perception of students differed from each other according to their departments.

Some researchers especially investigated post-graduate students' satisfaction in quality of higher education system. Gao and Arambewela researched about international post-graduate students' expectation and their perception. Gao et.al (2012) evaluated the satisfaction level of international post-graduate students on business program of a British university. According to the study, student education, student feedbacks, service recovery, total quality initiative, staff motivation and development had to be focused on for service quality. Arambewela et.al (2007) aimed to examine Asian post-graduate students' perception of factors who were study in Australia. As a result, social, technology, economic, accommodation, safety, prestige, education and image were significant indicators for Asian students' satisfaction.

Haman et.al (2012) examined the differences in expectations and perceptions between post-graduate students and undergraduate students who were studied at accounting program. As a result of comparing, post-graduate students were more interested in their programs and they expected more practical accounting skills in the class than undergraduate students.

Barnes et.al (2007) analyzed SQ among a sample of Chinese post-graduate students at a leading business and management school in the United Kingdom. A modified Servqual was applied and reliability was the most important dimensions for Chinese students.

Angell et.al (2008) also measured SQ in post-graduate programs in the UK. According to post graduate students, "Academic" and "industry links" aspects of SQ were the most crucial parts.

Mwatsika et.al (2013) reviewed and compared service quality measurement methods on MBA program at Malawi University. The analyses discovered 2 new dimensions about MBA service quality such as management of the MBA program and image. In addition to that, this study specified that using the Top-of-mind technique could identify key service criterion.

Students are involved every step of service in higher education institutions. According to the process students can be taken as a product or a customer. Most of studies took students as the major stakeholders.

Conway et.al (1994) investigated the question about who were the customer in polytechnic and colleges sectors in the UK. These three institutions were failed to perceive customer groups. Sirvanci et.al (1996) also investigated the question whether students are the true customers of higher education systems. As a conclusion of the study, students had 4 different roles in regard to setting at higher institutions. In the first place, students were taken into consideration as product in process; they were considered as a raw-material. In the second place, student were the internal client for lots of campus facilities. Thirdly, they were the laborers of the learning process. And lastly, students were internal clientele for delivery of course material. Helms et.al (1994) asked that if students are customers in the classroom or they are more than that. He answered his question as students are more than customers in the classroom because they both sought to improve teaching system and get service as customers.

Browne et.al (1998) took students as customers on the study. He focused on detection the service quality's impact and educational services on either satisfaction or dissatisfaction of students. Consequently, global satisfaction tented to be directed by the student's quality assessment about courses and other curriculum-related elements.

Köksal et.al (1998) targeted to develop Industrial Engineering Program's education quality at Middle East Technical University by a quality Function Deployment approach (QFD). Participants were consisted of students, administrative personnel and future employers of students. AHP (Analytic Hierarchy Process) was applied to find

stakeholders requirements weight. As a result of the study, students' roles in quality development were multiplied.

Owlia et.al (1996) investigated a new framework for the dimensions and quality factors. According to the study, students were the main customer groups, staff was the external customers in higher education. Besides that, academic staff, government and families were also customers. So, all frameworks found out that the interest and feeling of customers are varied by different type of groups. Eventually, some new dimensions were added according to service type.

Kwan et.al (1999) and Gatfield et.al (1999) investigated whether students' expectation and perception change according to students' type. Kwan et.al (1999) evaluated the quality in higher education. He compared perceptions and expectations of Australian and international students. Consequently, international students' perception and perception of Australian students were exactly different from each other. Gatfield et.al (1999) applied the adapted Servqual skill to determine Hamptons finding about US university students with students in Hong Kong and China. In a conclusion of this comparison, Hong Kong students tended to be more examination oriented than China students. Students in China were more interested in the way to prepare them to ever-changing social and economic environments and they preferred more silent places to study. Hong Kong students chose 'availability of computing facilities'. In a conclusion, both Hong Kong and Chinese students were more practical and only focused on study-related activities rather than campus's social life. Students in States were really keen on campus life. The Chinese students were less pragmatic and instrumental than Hong Kong students. Students in China expected better communicating with the university while Hong Kong students were satisfied.

Naidu et.al (2016) compared two type of higher institutions which were public universities and private universities in Malaysia. The priority criterions were education and satisfaction of sophomores for quality. There were not so many differences among both universities according to the study.

Aoudia et.al (2015) examined methods of ABET (The Accreditation Board for Engineering and Technology) and presented recent method of analyzing cohort. In a conclusion, ABET was not really focus on students. That's why it did not satisfy.

Seth et.al (2005) aimed to appraise all quality models and identify them for future studies. 19 different models were examined. They were generally derive linkage between them. However, all service quality measurements depended on type of service setting, situation, time, need etc.

Anderson et.al (1995) compared 2 types of procedure as high tech and high touch by evaluating a TQM program in higher education. The high-tech focused on TQM laboratory increased student perceptions of service quality regarding reliability and responsiveness. However, there was a corresponding decrease in the high touch area.

3. METHODOLOGY

3.1 SAMPLE AND DATA COLLECTION

The survey was applied to collect data from master's students and PhD students about their expectation and perception. The survey is at Appendix-1.

The sample for this research consisted of 24 post-graduate programs and 3 institutes which are institute of social sciences, institute of education sciences and graduate school of natural and applied sciences. The survey was applied at Bahçeşehir University, Beşiktaş campus in Istanbul.

Before the real survey, a pilot survey were applied to 23 students who are enrolled post-graduate programs. Cumulative grade point average (CGPA) and scholarship ratio were asked for the pilot survey but then both of these questions were cancelled. Because, especially CGPA were answered by only 39 per cent students.

The questionnaire were applied before the beginning of post-graduate lectures. This survey was based on voluntariness. That's why, participation of this survey was up to students. Master's students and PhD students attended to this research. The total sample size was 119. Whilst, 73 participants were male, the number of female was 46. Employment status was also asked for the survey. Meanwhile 81 per cent post-graduate student managed both working and studying, nearly a-fifth (19%) students preferred to focus on educational life, only. A significant proportion of post-graduate students (78%) who were participants of this survey were enrolled graduate school of natural and applied sciences. 22 per cent of post graduate students were enrolled institute of social sciences and institute of education sciences. And lastly, a very large majority of the participants were at the first year of their post-graduate programs (78%). The number of students who studied at the post-graduate programs more than a year was only 26 in 119.

3.2 SURVEY INSTRUMENT

This research used both online survey and hard copy survey to collect the data from post graduate students including PhD students. Each students were asked to fill out the survey during three weeks at the first semester. The questions, which were asked on the survey, used to measure the seven dimensions of quality of higher education institution. Five of seven dimensions were taken from Servqual dimensions. In addition, two of them were added from study of Owlia et.al (1996). A five-point Likert scale ranging from one (strongly disagree) to five (strongly agree) was used to measure gap score. In the last part of survey 3 more questions were asked for an overall evaluation. These questions were also measured on a five-point Likert scale.

4. DATA ANALYSES AND RESULTS

4.1 STATISTICAL ANALYSES

4.1.1 Factor Analysis

The respondents were asked about their opinion, in a 5-point Likert scale. All the collected information were tested on IBM SPSS Amos 20.0. Structural Equation Modelling (SEM) were constructed to measure all items. We have already known the quality dimensions. So, confirmatory factor analysis (CFA) were structured to further asses the dimensionality, reliability and validity of the model.

CFA is a multivariate statistical procedure in order to test how well the measured variables reflects the number of constructs. In Confirmatory factor analysis, the number of factors required in the data and which measured variable is related to which latent variable can be specified. In other words, CFA shows how explains dimensions of quality measurement of higher education system.

The structure is well established according to goodness of fit indicators. Model are significant at a p value which is 0.019. Value of CMIN/DF should be less than 3 for a fit model. In our data CMIN/DF is 1.215. Value of GFO must be over than 80 per cent. The score of GFO in our study is 85 per cent. CFI value should be more than 90 per cent. In our data analysis, it is 0.952. Value of RMSEA should be under 80 per cent. In our analysis, it is 0.043. According to all these value, this data set is exactly fit. The goodness of fit (GFO), adjusted goodness of fit and all the other values are shown table 4.1.

Table 4.1: Model fit summary

| CMIN | | | | | |
|--------------------|------|----------|-----|-------|---------|
| Model | NPAR | CMIN | DF | P | CMIN/DF |
| Default model | 68 | 252.686 | 208 | 0.019 | 1.215 |
| Saturated model | 276 | 0 | 0 | | |
| Independence model | 23 | 1179.113 | 253 | 0 | 4.661 |

| RMR, GFI | | | | |
|--------------------|-------|-------|-------|-------|
| Model | RMR | GFI | AGFI | PGFI |
| Default model | 0.065 | 0.852 | 0.803 | 0.642 |
| Saturated model | 0 | 1 | | |
| Independence model | 0.286 | 0.303 | 0.239 | 0.277 |

| Baseline Comparisons | | | | | |
|----------------------|---------------|-------------|---------------|-------------|-------|
| Model | NFI Delta1 | RFI rho1 | IFI Delta2 | TLI rho2 | CFI |
| Default model | 0.786 | 0.739 | 0.954 | 0.941 | 0.952 |
| Saturated model | 1 | | 1 | | 1 |
| Independence model | 0 | 0 | 0 | 0 | 0 |

| RMSEA | | | | |
|--------------------|-------|-------|-------|--------|
| Model | RMSEA | LO 90 | HI 90 | PCLOSE |
| Default model | 0.043 | 0.019 | 0.06 | 0.736 |
| Independence model | 0.176 | 0.166 | 0.186 | 0 |

4.1.2 Hypothesis and Paths Testing

Path analysis technique's first step is to create a path diagram to show relation of the variables which have cause and effect relation within each other. According to path diagram and diagram coefficient all the analysis and interpretation are done. Path analysis is structured to test our quality model and secondly to decide either reject or except the hypotheses. The hypothesis of this model,

H₀: Quality in post-graduate education does not influence satisfaction of students.

H₁: Quality in post-graduate education influences satisfaction of students.

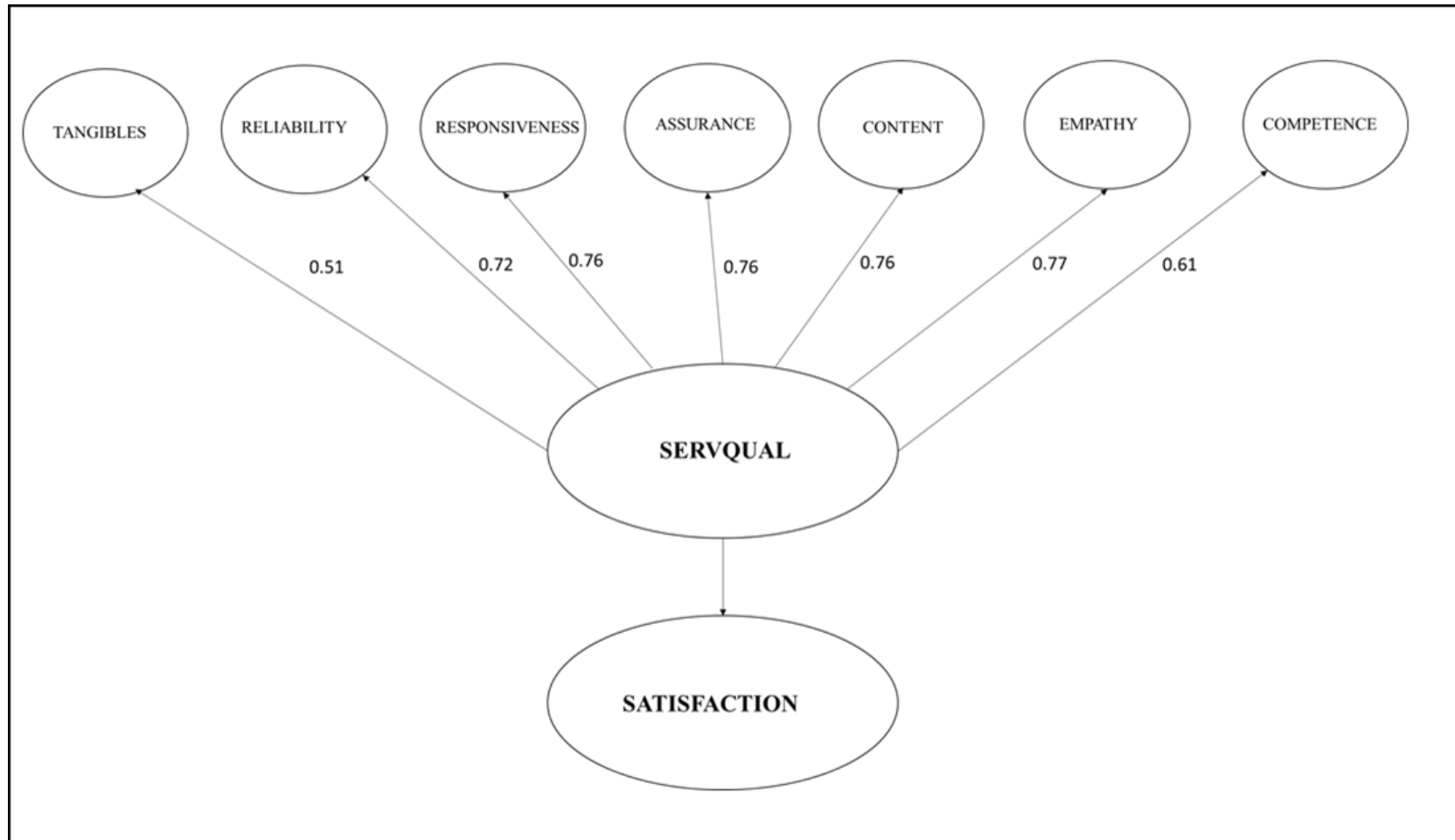
First of all analyses and interpretation, model fit should be checked. All stated values; CMIN/DF, GFI, AGFI, RMSEA shows that the path model is fit. The standardized coefficient are significant at a p value of 0.00. All of this values are shown at table 4.2.

The statistical significance of all the structural parameter estimates was examined to determine the validity of the hypothesized paths. The hypothesis was tested using SEM approach. SEM is comprehensive statistical approach. H₀ hypothesis was rejected. SEM is showed that all variables of service quality can be explained by seven dimensions of model. The structural model of quality measurement is shown at table 4.3. These table can clarify the construction of the model. Rejection of H₀ demonstrated that quality of post-graduate education measured by modified Servqual score significantly influences of post-graduate students' satisfaction.

Table 4.2: Path model fit summary

| Model Fit Summary | | | | | |
|-----------------------------|---------------|-------------|---------------|-------------|---------|
| CMIN | | | | | |
| Model | NPAR | CMIN | DF | P | CMIN/DF |
| Default model | 21 | 66.079 | 34 | 0.001 | 1.943 |
| Saturated model | 55 | 0 | 0 | | |
| Independence model | 10 | 564.479 | 45 | 0 | 12.544 |
| RMR, GFI | | | | | |
| Model | RMR | GFI | AGFI | PGFI | |
| Default model | 0.039 | 0.908 | 0.851 | 0.561 | |
| Saturated model | 0 | 1 | | | |
| Independence model | 0.268 | 0.373 | 0.234 | 0.306 | |
| Baseline Comparisons | | | | | |
| Model | NFI Delta1 | RFI rho1 | IFI Delta2 | TLI rho2 | CFI |
| Default model | 0.883 | 0.845 | 0.94 | 0.918 | 0.938 |
| Saturated model | 1 | 1 | 1 | 1 | 1 |
| Independence model | 0 | 0 | 0 | 0 | 0 |
| RMSEA | | | | | |
| Model | RMSEA | LO 90 | HI 90 | PCLOSE | |
| Default model | 0.089 | 0.057 | 0.121 | 0.027 | |
| Independence model | 0.313 | 0.29 | 0.336 | 0 | |

Table 4.3: Structural model



4.2 SERVQUAL SCORE

The main purpose and analyse of this study is to gain Servqual score to measure the service quality. Perceptions' total scores and total value of expectations which were obtained from post graduate students firstly sums up, separately. Right after, these total scores of exception and perception divided into N, respectively. (N is total number of the participants). Then, next step was to gain subtraction of these values which were calculated for each perceptions and each exceptions. Finally, this subtraction was our gap scores to gain Servqual scores. Servqual score was gained by multiplying by each of gap scores and their factor loadings.

Firstly statements were calculated and according to results; post graduate students thought the university provides quality service. In addition to that may be the statement of 'In the university, physical learning environment is ergonomically designed for students' could be improved. Although the value of this statement was nearly as same as the other statement, it was the lowest one. They preferred more comfortable and ergonomic designed classes and class' materials. Table 4.4 list the statements of service quality dimensions in higher education institution and it is shown as below.

The other important result is post graduate students who do their master's degree and PhD thought the university staff dress well. This statement is the only one statement that could exceed the exception, slightly.

Table 4.4: Statement of dimensions

| Constructs/Items | Gap Score | Factor Loading | SERVQUAL SCORE |
|--|--------------|----------------|----------------|
| Tangibles | -0.28 | 0.51 | -0.14 |
| P1: The university's staff are well-dressed. | 0.50 | 0.65 | 0.33 |
| P2: The university's campus is appealing. | 0.07 | 0.25 | 0.02 |
| P4: In the university, physical learning environment is ergonomically designed for students. | -1.41 | 0.60 | -0.85 |
| Reliability | -0.88 | 0.72 | -0.63 |
| P3: The university fulfil their promise on time. | -1.13 | 0.68 | -0.77 |
| P5: The university is dependable. | -0.97 | 0.69 | -0.67 |
| P8: The university performs activities in line with its academic calendar. | -0.55 | 0.37 | -0.20 |
| Responsiveness | -0.84 | 0.76 | -0.64 |
| P6: The university provides the students with a time schedule related to their services. | -0.93 | 0.71 | -0.66 |
| P11: The university staff always help the students. | -0.68 | 0.71 | -0.48 |
| P7: There is online access to university libraries. | -0.92 | 0.29 | -0.27 |
| Assurance | -0.78 | 0.76 | -0.59 |
| P13: Students trust the university's staff. | -0.77 | 0.90 | -0.70 |
| P15: The university provides its employees with necessary support to perform its tasks better. | -0.79 | 0.67 | -0.53 |
| Content | -0.86 | 0.76 | -0.65 |
| P14: Curriculum at the university is reviewed / updated continuously in regard to stakeholders' opinions. | -1.00 | 0.58 | -0.58 |
| P9: The university helps alumni retain up to date knowledge via its continuous education centers. | -0.74 | 0.49 | -0.36 |
| P10: The university offers recognized certification programs to their students. | -0.83 | 0.43 | -0.36 |
| P12: The university provides the students with some industry practice, where they can find opportunities to apply knowledge. | -0.85 | 0.57 | -0.48 |
| Empathy | -0.64 | 0.77 | -0.49 |
| P16: The university gives students individual attention. | -0.64 | 0.72 | -0.46 |
| P17: The university staff deal with students' personal problems apart from educational issues. | 0.01 | 0.57 | 0.00 |
| P19: The university designs its activities to meet the students' most important requests. | -0.78 | 0.50 | -0.39 |
| P18: The university provides counselling services to the students in addition to academic acquisition. | -1.14 | 0.67 | -0.77 |
| Competence | -0.65 | 0.71 | -0.46 |
| P21: There is adequate amount of academic staff employed at my university. | -0.97 | 0.67 | -0.65 |
| P23: Courses are offered by titled academic staff. | -0.43 | 0.81 | -0.35 |
| P22: Academic staff at the university have theoretical knowledge. | -0.55 | 0.77 | -0.42 |
| P20: Academic staff have practical / applied knowledge and have industry / professional background. | -0.64 | 0.67 | -0.43 |

Generally in former research, reliability's score was the highest and scores of tangibles had the lowest one. For instance, Cuthbert et.al (1996) analysed quality of higher education with 5 Servqual dimensions. According to the result, tangibles could not exceed expected mean score. Cuthbert showed that students always complain about facilities and materials of their university. In our study tangibles had the highest gap score. Because tangibles contained both variable that had the lowest gap score and variable that had the highest gap score at table 4.4. However, according to Servqual score, tangibles had the highest Servqual score, in addition, reliability, responsiveness and content had the lowest Servqual scores among all seven dimensions.

These results gave the necessary information about students' perception about university's services. All of the seven dimensions which are competence, empathy, tangibles, responsiveness, reliability, assurance and content met nearly expectation of post-graduate students in Bahçeşehir University. Servqual scores of all dimensions were approximately 0. According to Servqual score, post graduate students received what actually they expected from the university. In more detail, all the scores of dimensions were nearly same as each other.

5. DISCUSSION AND CONCLUSION

The five dimension SQ model proposed by Parasuraman et.al (1991) and in addition to that two dimensions from study of Owlia et.al (1996) were combined for quality measurement of higher education institutions. Firstly, this modified quality measurement model was tested. Next, SQ measurement was performed. All seven dimensions which are tangibles, responsiveness, reliability, assurance, content, empathy, competence are significant drivers of SQ in higher education system were positively confirmed.

The measurement of service quality in higher education is a fundamental improvement way of quality of university. If a university wants to avoid customer churn and increase market share, manager should develop a strategy. This strategy should follow perception of customer. Cause if a customer satisfy from the service, the customer may return the service or recommend the others. A good experience of customers provides a recommendation others. In other words, it is a kind of marketing communication. So, university could gain new students.

Managers firstly should identify all those aspects of service where they are performing better or worse. Secondly, they should identify the areas which need improvements or they also identify the areas where they are over-performing, monitor the performance of staff, academicians and units. One of the major idea is to understand customers' expectation of service quality well, what students want? Or how much they want? The point to take into consideration in here is student type. Because all requests and needs could be changed according to students type. For instance, whilst under graduate students may want more sport facilities in and around the universities, this criterion may not necessary for post-graduate students. Managers also should measure overall performance of the university.

This study also has several limitations. First of all, the sample was drawn in Bahçeşehir University in Istanbul, and also just post-graduate students' opinion about service quality are taken into consideration. Service quality of public and private universities may be compared or perception of international students and Turkish students' perception may

be compared. Another idea about future study is to combine two of these idea. Finally, this study can be done again with more questionnaire.

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APPENDICES

Appendix 1

Dear Participant,

This survey study constitutes an important part of the MSc thesis of Gülin Bahçivan who works under the supervision of Assoc. Prof. Ahmet Beşkese. It aims to measure the quality of postgraduate programs by evaluating the perceptions and expectations of the students and it is expected to come up with some suggestions for improvement. Participation is voluntary, but every single piece of information you share with us is extremely important for the success of the study.

To complete the questionnaire will take some 15-20 mins. Your answers will be kept anonymous and will only be used in statistical evaluations.

For further details, please feel free to contact with Gülin Bahçivan. Contact details are as follows:

Mobile: (552) 229 4656

E-Mail: gulinbahcivan@gmail.com

Thank you very much for your time and attention.

Name/Surname:

.....

Age:

.....

Gender: Female | Male

Do you work?: Yes | No

Please indicate your university:

.....

Please indicate your institute:

.....

Please indicate your program:

.....

Which semestr are you at your graduate program ?:

.....

First column-How important is this statement for an ideal university?

| Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree |
|-------------------|----------|-----------|-------|----------------|
| 1 | 2 | 3 | 4 | 5 |

1. University staff should be well dressed.

1 2 3 4 5

2. University campus should be appealing.

1 2 3 4 5

3. Universities should fulfil their promise on time.

1 2 3 4 5

4. In universities, physical learning environment should be ergonomically designed for students.

1 2 3 4 5

5. Universities should be dependable.

1 2 3 4 5

6. Universities should provide the students with a time schedule related to their services.

1 2 3 4 5

7. There should be online access to university libraries.

1 2 3 4 5

8. Universities should perform activities in line with their academic calendar.

1 2 3 4 5

9. Universities should help alumni retain up to date knowledge via their continuous education centers.

1 2 3 4 5

Second column- How much do you agree with this statement for your university?

| Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree |
|-------------------|----------|-----------|-------|----------------|
| 1 | 2 | 3 | 4 | 5 |

1. My university's staff are well dressed

1 2 3 4 5

2. My university's campus is appealing.

1 2 3 4 5

3. My university fulfils their promise on time.

1 2 3 4 5

4. In my university, physical learning environment is ergonomically designed for students.

1 2 3 4 5

5. My university is dependable.

1 2 3 4 5

6. My university provides the students with a time schedule related to their services.

1 2 3 4 5

7. There is online access to university libraries.

1 2 3 4 5

8. My university performs activities in line with its academic calendar.

1 2 3 4 5

9. My university helps alumni retain up to date knowledge via its continuous education centers.

1 2 3 4 5

10. Universities should offer recognized certification programs to their students.

1 2 3 4 5

11. University staff should always help the students.

1 2 3 4 5

12. Universities should provide their students with some industry practice, where they can find opportunities to apply knowledge.

1 2 3 4 5

13. Students should trust university staff.

1 2 3 4 5

14. Curriculum at universities should be reviewed/updated continuously in regard to shareholders' opinions.

1 2 3 4 5

15. Universities should provide their employees with necessary support to perform their tasks better.

1 2 3 4 5

16. Universities should be expected to give students individual attention.

1 2 3 4 5

17. University staff should deal with students' personal problems apart from educational issues.

1 2 3 4 5

10. My university offers recognized certification programs to their students.

1 2 3 4 5

11. My university staff always help the students.

1 2 3 4 5

12. My university provides the students with some industry practice, where they can find opportunities to apply knowledge.

1 2 3 4 5

13. Students trust my university's staff.

1 2 3 4 5

14. Curriculum at my university is reviewed / updated continuously in regard to shareholders' opinions.

1 2 3 4 5

15. My university provides its employees with necessary support to perform its tasks better.

1 2 3 4 5

16. My university gives students individual attention.

1 2 3 4 5

17. My university staff deal with students' personal problems apart from educational issues.

1 2 3 4 5

18. Universities should provide counseling services to students in addition to academic acquisition.

1 2 3 4 5

19. Universities are expected to design their activities to meet the students' most important requests.

1 2 3 4 5

20. Academic staff should have practical/applied knowledge and should have industry/professional background.

1 2 3 4 5

21. There should be adequate amount of academic staff employed at universities.

1 2 3 4 5

22. Academic staff should have theoretical knowledge.

1 2 3 4 5

23. Courses should be offered by titled academic staff.

1 2 3 4 5

18. My university provides counseling services to the students in addition to academic acquisition.

1 2 3 4 5

19. My university designs its activities to meet the students' most important requests.

1 2 3 4 5

20. Academic staff have practical / applied knowledge and have industry / professional background.

1 2 3 4 5

21. There is adequate amount of academic staff employed at my university.

1 2 3 4 5

22. Academic staff at my university have theoretical knowledge.

1 2 3 4 5

23. Courses are offered by titled academic staff.

1 2 3 4 5

Overall Evaluation

| Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree |
|--------------------------|-----------------|------------------|--------------|-----------------------|
| 1 | 2 | 3 | 4 | 5 |

1. If you were to start over a graduate program today, would you **choose** the same? 1 2 3 4 5
2. Would you **recommend** your program to others? 1 2 3 4 5
3. If you had a chance, would you **drop out** your program? 1 2 3 4 5