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EVALUATING THE USE OF COMPREHENSIVE QUALITY STANDARDS IN GOVERNMENT HOSPITALS

Master Thesis

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Supervisor

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DECLARATION

I hereby declare that in the preparation of this thesis, scientific ethical rules have been followed, the works of other persons have been referenced in accordance with the scientific norms if used, there is no falsification in the used data, any part of the thesis has not been submitted to this university or any other university as another thesis.

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The thesis study of Abdullah BASIM HASAN titled as Evaluating the use of comprehensive quality standards in government hospitals has been accepted as MASTER THESIS in the department of Department of Business Adminstaration by out jury.

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SUMMARY

The study's main aim is to assess how well Bagouba University Hospital in Diala, Iraq, uses comprehensive quality standards. A two-part structured questionnaire is developed for the goal of this study. The first part of this thesis concentrated on the MEDQUAL assessment scales, whereas the second half examined the socio-demographic features of the individuals. The study will conduct almost all of the doctors in the sectors under consideration. The number of nurses and patients will be defined by the number of rooms in the department as well as the size of the unit. A convenience and quota sample will be used to create the sample. As per the findings of this study, patients evaluated the level of services delivered more than medical staff on all MEDQUAL scale criteria and the total MEDQUAL scale. From doctors, nurses, and patients, the dimension of Department Organization had a significantly higher weighted mean of about (3.50).

Finally, in the study of patient satisfaction and healthcare quality, there was no statistical variance in any dimension based on the kind of patient (i.e. inpatient or outpatient). Because no statistically significant difference was found were discovered, it was decided that the same standards should be used for all types of patients.

Key Words: comprehensive quality, hospital quality, quality evaluation

ÖZET

Araştırmanın temel amacı Irak, Diala'daki Bagouba üniversite hastanesinde kapsamlı kalite standartlarının kullanımını değerlendirmektir. Bu çalışmanın amaçları doğrultusunda, iki bölümden oluşan yapılandırılmış bir anket oluşturulacaktır. İlk bölüm MEDQUAL ölçeği maddelerini içerirken, ikinci bölüm cevaplayıcıların sosyo-demografik özelliklerini incelemiştir. Çalışma, incelenen bölümlerden neredeyse tüm doktorları içerecektir. Hemşirelik personeli ve hasta gruplarındaki katılımcı sayısı, bölümdeki yatak sayısı ve bölümün büyüklüğü ile orantılı olacaktır. Numuneyi oluşturmak için bir kolaylık ve kota numunesi kullanılacaktır. Bu çalışmanın sonuçları MEDQUAL ölçeğinin tüm boyutları ve toplam MEDQUAL ölçeği için olup, hastalar verilen hizmetlerin kalitesini sağlık personeline göre daha yüksek değerlendirmiştir. Doktorlar hemşireler ve hastalar, bölümün organizasyonu boyutuna yaklaşık olarak (3.50) istatistiksel olarak anlamlı derecede daha yüksek bir ortalama puan vermiştir.
Son olarak, tıbbi hizmetlerin kalitesinden memnuniyet analizinde, hasta tipine (yatarak veya ayaktan) göre herhangi bir boyutta istatistiksel olarak anlamlı bir fark yoktu. İstatistiksel olarak anlamlı bir fark olmadığı için, tüm hasta tiplerinin bakımında aynı standartların kullanıldığı doğrulandı.

Anahtar Kelimeler: Kapsamlı Kalite, Hastane Kalitesi, Kalite Değerlendirmesi

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INTRODUCTION

Although there was no precise definition of quality, the term "quality" was coined many years ago. Its significance has evolved throughout time. During World War II, quality became a need for a comprehensive dimension to nature. Several methods, including process control charts, were used to assess the quality and monitor the output. Quality gurus were at the vanguard of a larger meaning throughout the 1960s. Until then, quality had been examined from the standpoint of the production process, with the conclusion that quality could be applied across the board (Ravangard, 2014).

On the other hand, the technical and functional quality of service is critical to a service company's success. The technical correctness of diagnoses and procedures is the most important criterion for measuring technical quality in health care. Several methods for assessing technical quality have been presented and are now in use in healthcare settings. This data is generally exclusively available to healthcare professionals and administrators and not to the general public. Functional quality, on the other hand, pertains to how healthcare services are delivered. Several studies have linked providing high-quality services to increased profitability, market share, and cost reductions. Quality control, service quality, and the efficacy of medical treatment have become increasingly essential as a result of competitive pressures and the growing need to provide patient happiness. There has been very little study on non-clinical elements of medical care quality, even though there are numerous references to medical quality and consumer viewpoints in the literature (Ravangard, 2014, p 108–1130).

Healthcare professionals, as well as policymakers, are always seeking new methods to expand their expertise. Some of this is due to differences in healthcare quality between individual providers as well as system performance, which is reflected in system variances due to differences in design, content, healthcare facilities, specialized interventions, and system management. Many socially acceptable results can still be achieved. The notion of quality is often misunderstood when it comes to improving performance. Analysts produce an increase in which systems contribute to intended results, identify the concept depending on the requirements of the health factors that influence attainment, and develop plans that will affect the system,

institution, facility, or activity under consideration, as per literature. To learn more, click here. that is both useful and relevant (Lee, & Yom, 2007, p.522).

Improving and evaluating service quality has become a top priority for employees in companies that want to stay competitive and meet their clients' expectations. Healthcare occupies a unique position among non-clinical services due to its transient nature. Client satisfaction and understanding their demands are the most important aspects of improving quality. In 1983, the National Organization of Health Services in the United States established regulations mandating all healthcare institutions to develop plans based on patient feedback (Vingerhoets et al., 2001).

Hospital service quality and patient satisfaction were examined in a variety of research. The results showed the necessity to keep an eye on quality issues, make hospital managers aware of possible concerns, as well as find solutions to them. Questionnaires on patient perceptions are a common method of client-centered assessment. Client Oriental supplier efficiency, Lot Quality Assurance Sampling, or Criteria of Quality, and also Statistical Process Improvement, SERVQUAL, and Importance Performance Monitoring may all be used to assess service quality (Azmi, , Mustafi, 2017). This study aims to evaluate the use of comprehensive quality standards in Bagouba University Hospital in Diala, Iraq.

CHAPTER ONE

A THEORETICAL FRAMEWORK FOR QUALITY AND QUALITY THEORIES

1.1 THE CONCEPT AND DEFINITION OF QUALITY

Walter A. Shewhart (1931) looked at quality from the standpoint of a manufacturing organization, identifying process variability and the desire to reduce variance as important quality features. Crosby (1965) defined quality as conformity to specifications, or the product designers' set objectives and tolerances, in a production-oriented approach with "zero faults." Client focus has been the dominant attitude in quality management within the production-oriented paradigm (e.g., Juran & Godfrey, 1998). Numerous conceptualizations of quality management emphasize client attention and client orientation (Lindsay, 2011; Prajogo & McDermott, 2005).

While client-oriented manufacturing has historically been centered on commodities, the last decade has seen research on service production and logic. As of the early 1980s, service quality has been the subject of research, leading to the creation of service-oriented quality dimensions (Parasuraman, 2002), which complement the produced goods dimensions. Grönroos (2008) made a significant contribution to service quality and its concept within service industry research. Quality, in his view, has both technical and practical aspects. The physical features, or what the consumer obtains, are referred to as technical quality. Quality is a crucial component of manufacturing or services to keep clients happy. Individuals use the term "quality" in a variety of ways, but business interpretations all accept that the quality of a product or service is determined by how well it satisfies the customers' requirements (Khalifeh, , & Razavi, 2012).

Quality is defined by Tickle (2001) as the degree to which a collection of intrinsic traits meets a set of standards. As per the American Society of Quality, quality is subjective, and different people have different ideas about it. To them, quality may mean one of two things: a product's or service's ability to match a certain need, or a defect-free product or service. It may be defined as a state of compliance with valid criteria, where valid goals are identified as quantifiable and attainable circumstances that satisfy customer desires. According to Peters (1999), quality is a "magic bullet"

that offers reduced costs, better client service, better goods, and greater profitability. He also said that "quality is in the eye of the beholder," indicating that it is whatever the client says it is (Khalifeh, and Razavi, 2012).

Kondo (1997) argues that quality is a source of employee empowerment in organizations. A company's major objective, according to him, is to appeal to its staff and clients while still producing a profit for its shareholders. According to Grönroos (2011), there are two sorts of characteristics in the universe: efficiency and inefficiency. According to him, efficiency is something that every senior manager should strive for, and consumers want service efficiency. He said that inefficient organizations are the consequence of employers' lack of people training or the assignment of duties to unqualified employees. It doesn't matter how it's defined, quality is seen as an integral part of an organization's culture, and it should extend to all aspects of production (Grönroos, 2011).

If a product has an intangible characteristic, such as how it interacts with a consumer, it is functional (goods and or services). It is possible to declare objectively the technical quality, but the functional quality is completely subjective. Consumer value is often co-produced by the client or even solely created by the client (Grönroos, 2008, 2011).

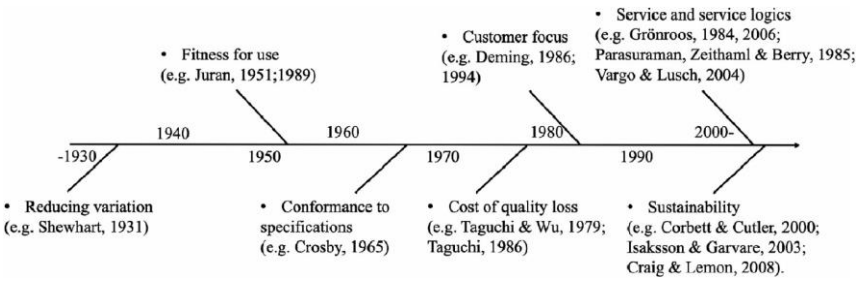

Figure 1. History of quality definition

Source : J. Martin et al , 2011.

Quality is described as a result of consequences and as a result of proof in this way. In the 1990s, climate change and environmental problems influenced quality management. You may characterize quality as being shown in this way. Quality research and sustainability (environmental, economic as well as social) have grown into key characteristics of qualitative research. (Craig, 2008; Isaksson, 2003). The American Society for Quality has recently included sustainability. For almost three decades, the term "quality" has been understood from a variety of angles. For every client, there are certain expectations, and those expectations need to be translated into quantifiable qualities (Grönroos, 2008, p. 309). Ultimately, the goal is to make the consumer happy with his or her purchase. As an example, let's look at the following:

A quality product is appropriate for its intended purpose.

A quality product or service conforms to the specifications or design.

Quality is the ability to fulfill the standards or norms of a product or service.

Quality is a measure of how well you do something.

On the other hand, the answer to the question, "What does the term "quality of service" mean?" is far from simple. The concept of service quality, according to Lafuente, is still unclear, and its implications are largely reliant on the research setting and cannot be generalized to other contexts. There is no uniform definition of "quality" at this time. Others have recognized and researched the five different meanings of the term quality (Nyaga, & Gakobo, 2017).

From the transcendental standpoint, in this context, quality is synonymous with "innate excellence." It is an unequivocal and universally recognizable emblem of high standards and outstanding performance. Quality, on the other hand, is a basic, unquantifiable characteristic, an ideal toward which we should aspire but which can never be realized in reality. Pirsig's famous philosophical treatise on the essence of quality has probably the best transcendental portrayal of quality. Even though quality cannot be described, it is neither a mental nor a physical attribute. It is a separate third entity from the other two. Quality isn't material. It's also not a method. It's on the outskirts of both. The technique's goal is to achieve this (Zarei, 2012, p 30).

However, save for advertising efforts, such a perspective of excellence has little practical use. Such quality cannot be assessed by specialists and must be judged only based on personal experience. Furthermore, the characteristics of "ideal" quality change with time. As a result, it is more feasible to define quality in some constructive way in real-world circumstances.

In the product-based approach, the term "quality" refers to features or traits that are quantitative and measurable. To put it another way, it looks at quality from the inside out, assuming that a product with strong internal features would also have good outside qualities. The ISO-9004 standard backs this up, defining quality as suitability for use, performance, security, and reliability. This frame of view is also known as design quality. This approach has several flaws, including the fact that it disregards a user's preferences and assumes that the absence or presence of a feature correlates to higher quality. To put it another way, it assumes that the more desired a feature is, the higher the quality of the object. According to Leffler, quality refers to the amount of unpriced quality present in each unit of the priced attribute. (Phillips, , 2000, p. 36).

In the User-Centered Approach, quality is defined as appropriateness for a certain purpose. The market-place quality or consumer preferences are terms used to describe this point of view. They believe that quality is a personal matter and that the highest-quality items are those that most closely match the user's tastes. This has led to a context-dependent understanding of quality since a judgment about the quality of something is based on the objectives and goals of its intended use. User-based views are more tangible than transcendental views despite their subjectivity, as they focus on product qualities such as usability, dependability, and efficiency as seen from the user's point of view rather than from a transcendental viewpoint. As a result, this viewpoint associates client satisfaction with quality. It asserts that if a product fulfills the demands of a large number of people, it is of high quality (Khalifeh, & Razavi, 2012, p 48).

In the user-based view of quality, In the definitions of quality supplied by founders of quality assurance theory, such as Crosby and Juran, quality is described as "conformance to user demands" or "fitness for use." However, because multiple users position different weights on different quality features, deciding how to sum it

up to the varying individual preferences of individual people and deciding what qualities are for quality or which are for customer satisfaction is among the most significant barriers to implementing the consumer view in practice. It's quite tough to devise an objective statistical technique capable of collecting such a diverse set of subjective choices. Moreover, despite their close association, most service researchers believe that quality and customer pleasure are distinct ideas, at least in the context of services. Although perceived service quality is a fairly consistent idea, a user's satisfaction may vary from transaction to transaction. Several non-quality variables, such as user requirements, equality, and fairness beliefs, might impact user pleasure. The gaps between client expectations and performance along the quality dimensions, on the other hand, maybe viewed as a function of service quality. As a result, the user-based quality definition is the most difficult (Bunkley, Nick, & Joseph , 2008, p. 236).

In a manufacturing-based In this approach, quality is defined as conformity to a specification of requirements where the demands are primarily expressed in technical terms. In the words of Gilmore, "quality is the degree to which a given product corresponds to a design or specification." Any departure from the standard, according to this view, degrades quality. Manufacturing-based quality is objectively quantifiable, just as it is from a product-based standpoint. The manufacturing-based perspective, on the other hand, emphasizes the production of error-free goods or services rather than the absence or presence of certain attributes. "Compliance quality" is a term used to describe this point of view. Although it does not dismiss the user's need for quality, it implies that this want may be met provided the product is well-made. The goal is for a product to be built "right the first time," eliminating or at the very least reducing reworking expenses. The manufactured-based perspective argues that mistakes may be avoided by following process standards and focusing on engineering and manufacturing processes (Lotfee, 2009, p 20).

It also implies that by improving the process, product quality can be progressively enhanced. It is backed up by the ISO 9001 and CMM standards. "Process standards, on the other hand, provide only output homogeneity, which might institutionalize the creation of poor or inferior products." As a consequence, when user wishes or preferences are correctly specified and expressed in requirements specifications, the manufacturing-based approach is solely interested in them. "A quality definition based on compliance with specifications may be unsuitable for

services, particularly where there is a significant degree of human contact," says the report (Lee, & Yom, 2007, p. 519).

In the Value-Based View, when it comes to quality, it's all about getting the best for the money. Price-quality trade-offs are made; the goal is to give as much quality as the client is willing and able to pay. To me, a good product works well and is priced reasonably. According to Garvin, "the problem with adopting this technique is that it combines two related but different concepts." It's becoming increasingly difficult to distinguish between quality and value. As a result, a hybrid idea known as "affordable excellence" emerges, with no defined bounds and no practical use. According to Boehm, "It is particularly challenging for a value-neutral method to make advice for making its goods beneficial to people," since this requires dealing with varied individuals' utility functions or service offerings. Using value-neutral approaches to make financially prudent judgments is equally difficult. Many other researchers agree with Boehm's point of view (Mohammadi, & Shoghli, 2009, 105).

Internal compliance to standards (manufacturing-based approach) and the extent to which customer expectations are satisfied must both be addressed when establishing quality as a value (user-based view). Gale has developed a quality model for a value-based approach. In it, researchers looked at several different methods for calculating client value. The Value-Based View may be defined as a triangle of cost versus functionality versus time to provide in the context of online services. It indicates that two of these three factors can be satisfied, but not all three (Mohammadi, & Shoghli, 2009, p 108).

In conclusion, the notion of quality has many and often even confusing meanings. It represents a vast range of events, and the meaning of the term varies depending on the context and even the historical period studied. New definitions of excellence, on the other hand, have not yet supplanted previous ones. All of them are still in use today. Aside from that, each definition has its own set of strengths and limitations, and no one definition is superior to another in every scenario or environment.

As a result, it is difficult to construct a unique ontological model of quality in general since we are dealing with a collection of linked ideas rather than a single notion. Reeves and Bednar also agree with this finding (Wu, & Shyu, 2010, p. 1120).

1.2. Objective And Subjective Dimensions Of Quality

When it comes to dimensions of quality, the first person to do so objectively and subjectively was Shewhart (1931). Garvin (1984) and Juran (1985) both express similar sentiments. Garvin (1984) describes the multi-dimensional concept of quality in five different ways. We may identify two dominant assessment viewpoints, according to Garvin's definitions (1984), When it comes to quality, it is determined by a significant subjective or objective evaluation. To better understand what quality means, this study uses the contrast between objective and subjective viewpoints on quality. According to this definition, objective evaluations are context-independent and transcendent, which means that they are based on a single, globally recognized "image variable" that is unaffected by any scenario (Wong, & Shoal, 2002, p 412).

Rolls-Royce automobiles, Patek Philippe watches, and Martin guitars, together with Picasso, Shakespeare, and Bach, inspire timeless and high-quality imagery. Qualitative management theorists who support the objective approach describe situational and transcendent variables for judging quality. Theorists who embrace a more product-oriented orientation believe that the business's design (sometimes generated experimentally) is largely guided by an attempt to improve the product's inherent quality. Subjective quality, on the other hand, relies on a wide range of needs, desires, and utility assessments. The subjective component of quality management might be regarded to have adhered to a client-centric approach. Product specifications have little value unless they are generated from client needs or requirements (Grönroos, 2006; Vargo & Lusch, 2015). introduced a service logic approach centered on client or user co-creation, which welcomed the client viewpoint while also adding service quality to the subjective component of quality (Xesfingi, Vozikis, 2016).

1.3. Stakeholders, Arbiters, And Beneficiaries of Quality

According to Lengnick-Hall (1996), clients play a variety of roles. Through the inclusion of a broader stakeholder perspective in quality management, this study seeks to extend her input-focused and output-focused understanding of client roles (Bergquist et al., 2006; Foley, 2005). The difficulty is encountered in the traditional view of clients, who are seen as the primary beneficiaries and final arbiters of quality (Lengnick, 1996). With the introduction of new quality requirements, it is necessary

to have a more complete understanding of what creates value and advantages for consumers, as well as other stakeholders. The micro-level (or individual parties) and macro-level (or collective parties) stakeholder categories are provided to broaden the traditional client-focused approach by distinguishing between direct and indirect quality benefits. Both subjective and context-dependent concepts of quality are included in micro-level notions of quality. Qualitative methods that are context-free and objective are also available (Grönroos, 2011).

According to Crosby (1965), Taguchi (1986), Craig & Lemon (2008), and others, macro-level or collective ideas of quality are emphasized more in manufacturing and production-oriented methods. "Cost of excellence," as described by Crosby (2014), refers to clients' expectations as a whole, as opposed to a single individual. Qualitative considerations are taken to a higher level by Taguchi (1986) and those who advocate sustainability as a component of quality management (Craig, 2008; & Garvare, 2003). A framework for analyzing quality has been proposed. The recommended framework for understanding the underlying concept of quality includes subjective and objective evaluation, besides individual and social (multi-actor) aspects. Over time, quality has been defined in several ways (Wahid, & Corner, 2014, p 802).

Stakeholder and societal perspectives have recently questioned and criticized the commonly held notion of quality as a subjective experience provided by the client. This form of criticism assumes that something useful to a single consumer may be extremely crucial and harmful to society. Similarly, many public-sector agencies must assess quality from a variety of perspectives, such as in criminal justice, where perpetrators and victims are likely to hold opposing viewpoints. Another conundrum is determining if the quality is inherent or preset concerning a client's subjective viewpoints (Dr. Joseph 2004, p 47). Price alone can make an inexpensive wristwatch appear superior to one made in Switzerland, according to clients who evaluate quality solely based on price. Essentially, the consumer is solely responsible for determining whether or not a product is of high quality, and consequently, nothing else counts. For this reason, we agree with the following viewpoints on quality standards: The greatest approach to describing perfection is to think about it in terms of context. Diverse environments, such as commercial product manufacturing

businesses, private service organizations, healthcare, and public services, may yield considerably different conceptions of quality.

Quality definitions frequently advocate the adoption of a single point of view. As a result, there is a risk of compartmentalization of viewpoints that do not complement one another, as well as a risk of failing to completely comprehend what it means to work with quality in practice. We propose a larger, comprehensive view to overcoming the flaws in present concepts of quality. We divide the idea of quality into two dimensions, using the aforementioned elements as a starting point for future investigation (Dr. Joseph , 2004, p 76).

For example, discerning between a single actor and numerous interested parties, individual and aggregate consumer and/or important stakeholder perspectives on quality. The notion of quality encompasses the person, the organization, stakeholders, and the community as a whole. This classification separates (a) the product's and/or client's relational characteristics, and (b) the relationships and interactions among multiple actors who may be interested in the product. Differentiating between productive and predefined criterion views is a form of differentiation. An objective view related to defined quality requirements can be separated from a subjective viewpoint of quality provided by relevant stakeholders, such as the individual client who is experiencing the product. Figure 2 depicts the four different types of quality generated by the two dimensions (Anbari, Tabaraie, 2013; p 60).

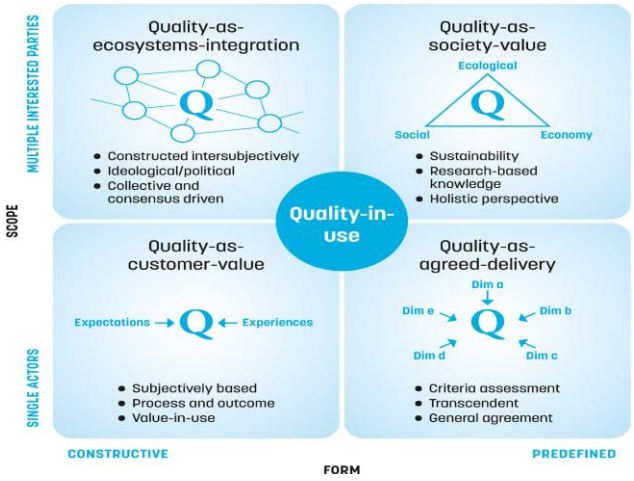

Figure 2. Quality dimensions

Source : J. Martin et al. 2011

1.4. Types Of Quality

1.4.1 Quality-As-Client-Value

Many practitioners and academics believe that quality is the outcome of the subjective experience created by the client's expectations and experiences with the product. According to this viewpoint, the following components determine quality: Client and end-user experiences with a product determine Total Quality Management and Business Excellence. The product's functional and technological elements, as well as the method and result. The value computed while in use is known as value-in-use. Goods and services that respond to a wide range of individual consumer demands and perceptions of value are referred to as quality-as-client-value (Bakar, & Al-Assaf, 2008,p 341).

From the consumer's perspective, a mobile phone's qualities, such as design and usability, are mostly subjectively determined by the perceived value the client derives from using the phone. As a result, to a large extent, quality is subjectively determined by how effectively particular consumer expectations are met.

1.4.2. Quality-As-Agreed-Delivery

In terms of quality-as-agreed-delivery, a product's quality can be determined using several product specifications or end-client criteria. Quality-as-agreed-delivery is made up of various dimensions and traits that a priori describe the product and are acknowledged as such by the actors. Unlike a more positive perspective of quality, agreed-delivery is associated with pre-quality standards that attempt to determine whether a product is of acceptable quality. It is an important consideration to ensure agreement adherence, criteria are evaluated. The aspects of transcendent excellence are those that reflect total and inherent perfection (Ravangard, 2014,p 21).

There is widespread agreement on what defines high quality, based on widely accepted and established standards and expected outcomes. Items or services that comply with accepted and recognized quality standards are commonly used in quality-as-agreed-delivery instances. There are high-quality steel products utilized in the construction industry, which must meet specific quality standards to comply with regulations such as safety laws. When it comes to public sector services (such as quality rules for health and social care), and established understandings that 18-carat gold is superior to 10-carat gold, these are all examples of quality-as-agreed-delivery. (Ravangard, 2014,p 55).

1.4.3. Quality-As-Ecosystems-Integration

An organization is surrounded by a large number of interested parties, who are individuals or other organizations who are impacted by or engaged in the institution's results, whether favorable or bad. Performance is a web of contacts in which participants collaborate to integrate resources and produce value. Quality is decided by mutually agreed-upon values and created subjectively among the system's participants. Intercommunication is formed among different stakeholders. To the extent that particular ideals have been institutionalized within the environment, it is ideological. It's a consensus-based and social measure of leadership. Comparable commodities or services that are subjected to subjective group-based quality notions are a good illustration of quality as ecosystem integration (Kazemi, ,2009, p 46).

As an example, various groups of society have varied perceptions of the quality of cars and automobiles. A different set of stakeholders/clients are promoting the market for Sport Utility Cars than those of Super Mini or Sub Compact vehicles. Good quality is subjectively and collectively perceived as being of a high standard. This leads to market segmentation. Similarly, consumer/client hobbies such as collecting (fine art and furniture) and interior designers rely on the same group-based concepts. A social community gathering like Facebook may be a good example of ecosystem integration. It is possible to include in such representations of quality as ecosystem integration a wide variety of constantly evolving and different group-based and constructively produced perspectives of what constitutes value and quality in any particular location (McAdam, & Bannister, 2001).

1.4.4. Quality-As-Society-Values

Sustainability ideals are included in the social viewpoint of quality. Unlike the Quality-as-Ecosystems-Integration method, the social perspective is broader and includes individuals who may or may not have a direct connection to the product in issue. The grave challenge that threatens civilizations and humanity is gradually making its way onto the agendas of many organizations. The quality characteristics are derived from research and facts, rather than from the demands of a particular subjective group and/or actor. As a result, rather than being subjectively generated, quality is objectively derived from fact-based knowledge based on research (Ismyrlis, & Moschidis, 2015).

Qualitative values in society are therefore defined using predetermined and objectively proven facts. When it comes to defining greatness, it's important to remember that economic, social, and environmental sustainability typically go hand in hand with each other. Factors that are critical to this view include Sustainability is a major concern in every aspect of the business. As a basis for determining what constitutes quality, research-based data is used.

Having a thorough knowledge of what quality is and how it affects diverse stakeholders. Quality-as-society-values Examples include combustion engine performance in terms of carbon dioxide and nitrogen emission rates, equal access to health and social services for all citizens, engineering, and construction product quality

that does not jeopardize tenants' or other stakeholders' safety and security, and the production of goods and services (Mohammadi, & Shoghli, 2009, p 108).

1.5. Quality-In-Use

Complete knowledge of quality management is achieved via the interplay of different views. We must use a pragmatic approach, which we term Quality-in-Use, to achieve our goal. As a result, quality may take on several meanings depending on the context in which client and stakeholder values and expectations must be met. Since quality is subjectively generated or objectively established, its breadth and form will change depending upon the focus on one actor (or a group of single players) or a large number of stakeholders. As a result, quality arbiters must be receptive to new ideas and creative synthesis that may help an organization develop stronger and more focused quality criteria (Javed, 2015,p 2230).

Conflicts and inconsistencies are practically certain when measuring quality using the suggested framework, which providers must acknowledge and reflect on to fulfill expectations and ambitions that go beyond conventional client and stakeholder views. Our approach is based upon the argument made by Van de Ven and Poole (1995), according to which alternative viewpoints on the same phenomena (whether it's changed, quality, or any other important phenomenon) may be incorporated as long as they don't conflict with one other. As a consequence, the framework we provide should be considered complementary to the four quality categories presented, resulting in greater explanatory power and comprehension of the importance of quality (Bahadori, & others, 2014,p 43).

1.6. Perceived Quality

Quality may be described using the phrases superiority and excellence. A client's opinion of a product's overall quality or superiority is referred to as "perceived quality." There are two sorts of quality, as per Zeithaml (2002): objective quality and perceived quality. The actual quality of products refers to the things' technical excellence or perfection. Objective quality may be assessed using determined quantifiable highly recommend standards. There is worry about the selection of features and weights to measure objective quality since researchers and experts cannot agree on what the optimum standard or standards should be. However, there is no such

thing as an objective quality, and all quality assessment is subjective. This logic supports the second sort of quality, perceived quality. According to Zeithaml (1988), perceived quality is a consumer's evaluation of a product's overall quality or superiority. The argument of the authors is similar to Zeithaml's (2002). As a result, "quality" in this research refers to "perceived quality." A measurable and articulated statement of opinion or performance attribute is referred to as "perceived quality" (Zeithaml, Parasuraman, 2002, p 350).

1.7. Quality Improvement Theory

One aspect of quality management philosophy, according to Quality Improvement Theory, is that it lays the responsibility for organizations squarely on top management's shoulders. W. T. Deming, (1986). According to this idea, management is in charge of systems, which account for 80% of all corporate issues. No quality management system, Top management, according to Deming (1986), is the one that invests in procedures, builds business culture, picks suppliers, and forms long-term partnerships. Deming's Performance Improvement Theory provides firms with a plan to eliminate inadequate quality control problems through effective management tactics. Management's actions are evident in shaping corporate culture and defining what matters most to the business's success and survival.

Deming's (1986) theory of the quality system, as stated by Hubert (2000), involves the construction of an organizational structure that stimulates cooperation and learning to make process management approaches simpler to implement. As a result, processes, goods, and services are enhanced regularly, and employee satisfaction rises. These are necessary for attracting consumer attention and, as a result, ensuring a company's long-term viability.

Deming (1986) popularized the Plan Do Check Act cycle, which advocated for a systematic approach to problem-solving. The Plan Do Check Act (PDCA) cycle of continuous improvement is a worldwide quality improvement strategy to reduce the gap between client demands and manufacturing firm performance. The Quality Improvement Theory's theoretical underpinnings concentrate on quality issues in the construction of an organizational structure that encourages collaboration and learning to facilitate the adoption of performance-oriented process management techniques (Kalaja, et al, 2016,p 562).

Anderson et al (1994). Top management, according to Oakland (2004), should lead the way in implementing new processes and systems. Because it is the responsibility of senior management to establish and convey the vision for pushing the organization toward performance improvement, leadership is critical to the success of quality management. The majority of quality concerns can be linked back to top management; it should provide clear instructions to employees on what constitutes acceptable work and how to achieve it. These approaches entail creating a work atmosphere and climate that is free of guilt, fear, or blame, and instead emphasizes issue clarity, effective communication, and an appropriate work environment to increase performance (Lamport,2010).

The System of Systems Theory (SOPK) principles and methods allow a company to save money by decreasing waste, reworking, staff turnover, and lawsuits while simultaneously boosting quality, customer loyalty, worker happiness, and, ultimately, profitability. Deming,(1986). As per Deming's Quality Improvement Theory, quality management procedures are a quality management system that can be used to enhance the quality of goods and services via continuous improvement that organizations may utilize to achieve performance.

1.8. Quality Management

Planning and implementing plans as well as using control systems to monitor input and take corrective action are all part of quality management. The quality management efforts in a company can be divided into two categories. Overcoming client expectations; Improving overall efficiency. "Quality management" has, according to Juran (1988), as its primary aim the elimination of failure, both conceptually and in actuality. Therefore, not only will it fail to execute its intended purpose but it will also fail to meet the client's demands as a whole. Failure must be prevented in quality management, which necessitates planning, organizing, and controlling. Inspection, quality control, quality control, and overall quality management are the four stages of quality management covered by Dale et al (1994). (Wong, & Shoal, 2002,p 404).

1.8.1. Inspection

According to the American Society for Quality Control, inspection includes "activities such as measuring, inspecting, evaluating, gauging one or more characteristics of a product or service and comparing them to established criteria to determine conformity" (ISO 8402, 1986). Examining, measuring, and assessing a product's or service's characteristics, and also comparing them to specified requirements, and deciding if the attributes fulfill those requirements, are all part of the process. Inspection is a low-cost, high-efficiency approach to finding defects in services and products. ‘Inspection to discover poor product and discard it is too late, useless, and costly,' according to Deming (1986). Quality, he believes, comes through process improvement rather than inspection.

1.8.2. Quality Control

Organizations utilize quality control as a convenient way of quality management. Quality control is the process of inspecting and assessing completed work. This is mostly performed via product and service inspections (checking to confirm that what is being produced meets the required standard) that take place both during and after the manufacturing process. "Make comparisons it to norms and take action depending on the disparity," wrote Juran (1988). It's a more advanced management strategy that prevents items and services from reaching the final customer if they don't fulfill basic requirements. Procedures and activities used to guarantee that quality criteria are satisfied are known as quality controls (ISO 8402, 1994). Quality control, as a measure of quality, is, nonetheless, expensive when measured in terms of physical and intangible variable costs. When done late in the manufacturing process, it may result in the creation of inferior goods and services. Because of the difficulties involved with quality management, organizations are now focusing on different channels or methods for efficiently managing quality. Treating a problem after a non-conformance issue has occurred, as per Dale, and Lascelles (1994), is not an effective strategy to eradicate the root source of a problem (Sadikoglu, & Olcay, 2014,p 89).

1.8.3. Quality Assurance

This is a notion centered on the design of the manufacturing business process, intending to reduce the likelihood of generating poor products. According to Dale et al., quality assurance is a preventive strategy that focuses on product, service, and project planning to enhance product and service quality while increasing efficiency (1994). Quality assurance, in contrast to quality control, focuses on defect avoidance rather than fault detection after an item has been created. Quality assurance focuses on preventing the development of non-conforming goods, with a particular emphasis on manufacturing operations.

As a result, it's a management approach aimed at guaranteeing quality throughout the production process to eliminate quality problems. Quality is produced at the design stage, not the control stage, according to the quality assurance concept, and quality concerns are caused by bad process design. According to Lockwood et al., quality assurance "must need the formation of a new organizational philosophy and strategy that tries to be proactive rather than reactive, that encompasses motivating and integrating people in the process beyond traditional departmental boundaries" (1996). According to Hard (1995), quality assurance is the systematic and purposeful prevention of quality problems, which involves documentation (Sahney, et al, 2006).

1.8.4. Total Quality Management

This is the most stringent degree of quality control. It is concerned with the application of the quality management idea to all aspects of a business, including consumers and stakeholders (Dale et al, 1994, Lockwood et al, 1996). Total quality management entails incorporating quality management principles into all elements of a company, including partners and customers, as well as integrating them with important business activities. It's a technique that requires everyone in the company to work for continuous improvement. Total quality management is a concept that encourages everyone who contributes to a company's business process, as well as all of the company's stakeholders, to work together. Olcay,2014, states that Total quality management is a philosophy that encompasses every activity in which the needs and expectations of clients, as well as the objectives of an organization, are met most efficiently and cost-effectively by maximizing all employees' potentials in a continual drive for improvement (Sadikoglu, & Olcay, 2014,p 97).

For example, Mohammed (2006) argues that Total Quality Management (TQM) is a method that integrates various aspects in a system to ensure that services are provided at a low cost and with high levels of client satisfaction. We strive to meet the demands of our clients quickly, reliably, and profitably. An organization's day-to-day operations must be drastically altered to guarantee that quality is at the forefront of every employee and department's thoughts to achieve this. Priority Quality Management (TQM) is defined by Vorley and Tickle (2001) as the integration of an organization's organizational, technological and cultural components. It is a "heart-and-mind" approach that recognizes how corporate culture influences behavior, which impacts quality, according to them. As defined by Oakland (1989), total quality management aims to increase a company's competitiveness and agility.

Total quality management, according to Hellsten and Klefsjö (2000), includes interconnected parts including core values, process management, benchmarking, client-centered planning, and improvement teams together with other tools such as control charts. According to Dahlgaurd, et al (1999), Each aspect of an organization must work successfully together toward the same goal for it to be effective, realizing that each person and individual action has an impact on and is influenced by the actions of others (Lotfee, 2009).

1.9. Statistical Quality Control

To emphasize the importance of ensuring that the end product is of high quality, each production stage must be closely checked. As a consequence, statistical process control charts are an effective tool for meeting these requirements. The major goal of statistical quality assurance charts is to keep track of the process and acquire insight into what's going on at any given point during the venture. Their line graph is a straightforward method for attempting to enhance the quality of goods and services. Using statistical quality control's seven tools (SQC's seven elements), a process may be better monitored and understood. Flowcharts are one of them, as seen in Figure 3.

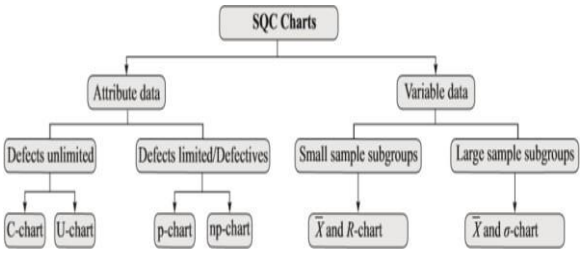

Figure 3: Classification of SQC Charts.

Source : Izabela Dagmara , 2017

Statistical process control (SPC) has two main goals: to assure product quality during the production process and to reduce waste. They include the following: (1) Satisfactory in terms of specification 2. The goods must be produced regularly. Using control charts, which visually compare process performance data, can help identify problems. Control limits are used to generate chart limiting lines. (Seidi, Hydari, 2005, p. 54).

1.9.1. Process Capability

As a result of a combination of equipment, tools, procedures, materials, and people, process capability is the ability to create quantifiable results from industrial processes. A basic understanding of control charts and their relationship to the normal curve is required.

1.9.2.Charts of control

All processes have variations, and these charts indicate the common causes and variances, letting you know whether or not the process is in control. Unless the issue is out of control, there is no need to change the settings. Change is needed if the process is not under control. Consistency is achieved and maintained by utilizing control charts.

1.10. Theories Of Quality

1.10.1 The Theory of Joseph Moses Juran-

The concept of quality, according to Juran, is "fitness for use." This indicates that the product or service should be tailored to the needs of the consumer. The second meaning of Juran's is a product that is devoid of flaws. Juran distinguishes between product characteristics and a defect-free product. Clients may experience difficulties as a result of the inadequacies, which leads to consumer discontent. The degree to which a product or service is tailored to its intended use is a quality indicator. Duran's perspective on the flaws is completely different (Phillips-Donaldson, Debbie, 2000, p 36).

He believes that all issues are enterprises and that if these enterprises are rectified and repaired one by one, an improvement may be made. Juran's enterprise-by-enterprise method is more noteworthy since it aids in the improvement of quality and standards. He believed that by focusing on the needs of the client, quality could be enhanced, and his primary interest was in resolving issues and eliminating the sources of such issues. He recognized three cyclic essential elements, including planning, managing, and improving, which he dubbed the "trilogy," which focuses on issue resolution and removing the sources of problems.

1.10.1.1. Quality Planning

question: Quality planning begins with a question: whom are you preparing? It's just a client. Quality planning is primarily concerned with identifying, as well as locating and detecting, a consumer. This raises several concerns, including:

Who is the client?

Can you tell me where this client is?

What are his requirements?

Why does he require this item/service?

When will he require the goods or services?

Figure 4. Juran’s quality trilogy

Source : JM Juran, JA De Feo – 2010

1.10.1.2. Quality Control

The second half of Juran's trilogy deals with "quality control," which entails evaluating, appraising, and determining process parameters. The focus of quality control is also on defect correction.

1.10.1.3. Quality Improvement

The third focus of Juran's is "quality enhancement." The following measures can be taken to improve the situation:

Identify the areas in which you need to improve.

• Highlight particular programs that need to be improved.

• Be able to foresee the causes.

• Provide solutions.

• Demonstrate the efficacy of the treatments.

• Maintain the benefit by providing control.

1.10.2. The Theory of Kaoru Ishikawa ("Quality Never-Ending Process")

According to Ishikawa, quality improvement is a never-ending process that can always be improved. According to him, who was the first quality expert to emphasize this, a company's whole quality control must be considered, rather than just goods and services. He also stressed the significance of "internal clients," or the people who follow you on the manufacturing line. In his opinion, everyone in the organization should share the firm's vision and goals, and working together raises the bar. The quality circles he founded, which are small groups of employees who volunteer to help with quality problems, are his most well-known achievements. To begin with, this was his first contribution. Ishikawa identified and demonstrated seven high-quality tools. It includes a flowchart, the control chart, the histogram, a scatter diagram, and the Pareto chart, among other tools. In Ishikawa's Seventh Quality Tool, the Fishbone Diagram is the most commonly utilized and most popular tool. As far as overall quality management is concerned, Ishikawa's contribution is the most well-known (Matta, Mayer, & Conlon, 1996, p 46).

1.10.2. 1. Cause and effect diagram

These diagrams are meant to assist people in figuring out what the main causes are and how they affect the system, so they may address the problem by focusing on the most likely sources of reported flaws. The center bone serves as a problem statement, the side bones serve as the main categories of reasons, and the sub-bones serve as specific causes.

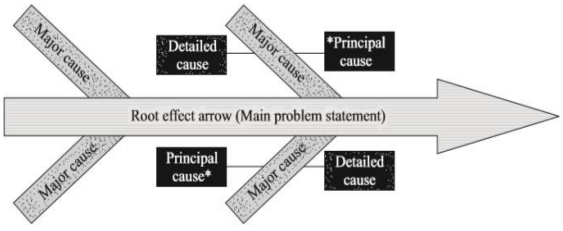

Figure 5: Cause and effect diagram

Source : Vivek A Deshpande ,2008

1.10.2.2 Quality Circles

Small groups of employees are responsible for discussing and resolving quality concerns in quality circles. Ishikawa has once again produced a significant impact. Companies and engineers should consider removing the causes after doing a cause-and-effect study. As a result, the fundamental principle regulating the operation of a quality circle is that quality circle members be the most knowledgeable about the problem. The maximum number of individuals in a circle is usually 10. The group is led by their supervisor or a senior member of the group. A "quality circle" leader is concerned about their members' educational development (Lee, & Yom, 2007, p 533).

1.10.3. Walter Edwards Deming's theory

However, although most philosophers describe quality in only one word or a single phrase, Deming stated it in many words. Quality, according to him, is defined only by consumers and may alter in reaction to their demands (Anbari, Tabaraie, 2013).

When it comes to maximizing the value for consumers, managers, administrators, and decision-makers must understand how consumer research, statistics, and the application of statistical approaches to operations may help. That means focusing on long-term goals and minimizing short-term gains. Without it, the items would be of low quality and the service would be delayed. Extrapolating from Deming's work, his ideology would place a strong focus on quantitative techniques and the use of those findings in products with a

1. degree of homogeneity due to reduced variability.

2. A lower cost

3. Appropriate for the market

Dr. Deming emphasizes "pride in craftsmanship," which is critical in removing impediments to workers' right to take pride in their job. The 14 points best demonstrate Dr. Deming's thinking. These are also known as management responsibilities, and they need the entire management commitment to implement his ideology (Sahney, S., 2006, 244). These points are listed below, along with a brief explanation. In conclusion, Prof. Deming emphasized the importance of management's responsibility for

• Consistency in improvement.

• Consistent innovation

Training and education

• Workers' right to be proud of their work

• Continuity in the transformation process

Figure 6: Plan-Do-Check-Act Cycle

Source : Pratik M Patel ,2017

A firm belief in the importance of his managerial responsibilities, which include a dedication to continual improvement, The "quality cycle" is a term used to describe a series of events. It's a powerful and practical strategy that may be applied at any level and to any degree of process improvement. The cycle was established by Walter Shewhart, but once Dr. Deming authorized and popularized it in Japan, it became linked with him. The cycle is split into four stages, each of which repeats itself in a cyclical pattern:

Plan: Decide on one of the most efficient businesses to work on.

Follow the instructions in the first step.

Check to ensure that the second step's implications are accurate.

Act: To correct any mistakes that have happened.

1.10.4. Armand Vallin's Feigenbaum theory

The quality chain, according to Feigenbaum, should start with a diagnosis of all client demands and requirements and end when the client is satisfied with the product. All organizational processes, from manufacturing to marketing, purchasing to production, shipping, must be of higher quality to achieve the functions of a quality chain. According to him, the most important component that may contribute to organizational success and growth in both domestic and foreign markets is quality. Quality control, according to Feigenbaum, is a management technique for achieving quality through the following four steps (Sahney, S., 2006, 256).

(1) Create the quality criteria

(2) Evaluate compliance with the standards

(3) Take action when standards are breached.

(4) Making plans to improve the standards.

1.10.4. 1. Total quality control

To achieve excellence, Feigenbaum believes that every employee in the company must devote their whole attention and engagement. To deliver a qualitative product to the consumers, quality-oriented work and service should be ensured at all stages of the organization and in all departments and subdivisions.

Quality: “Quality is, in essence, a method of controlling the organization,” Feigenbaum added. According to Feigenbaum, quality is an organization's client-focused activity that necessitates a well-defined set of actions to be carried out in a disciplined manner, ensuring that the quality output is maintained even at the limits of client capabilities (Bahadori, & others, 2014, p 36).

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The following quality ideas encapsulate the basic ideology of Feigenbaum's systematic approach:

Both individual and teamwork zealotry are required for quality.

•Quality is defined by what the consumer says.

•Quality is a management strategy.

• Quality and cost are equal, not divisible.

Quality is a company-wide initiative.

Quality and innovation are inextricably linked.

Continual improvement is required for quality.

• Quality is a code of conduct.

Control: According to Feigenbaum, control is a method for distributing responsibility and authority for a management activity while maintaining the ability to ensure adequate outcomes. He outlined four phases for developing control in a process:

Setting quality standards is number eight.

9. Assessing compliance with the standards.

10. Take action when it is required.

11. Making plans to improve the standards.

1.10.5. Shigeo Shingo theory

Dr. Shigeo Shingo's quality-improvement views and accomplishments laid the groundwork for the japan industry and influenced western firms. The Toyota Production System and Just-In-Time (JIT) were created by Shingo in 1959, and Shingo was acclaimed as an "engineering genius". He became known as an Industrial Engineer by decreasing the setup time for a 65,000-tonne supertanker from four to which focuses on removing flaws and mistakes that result in faulty items (Khalifeh, & Razavi, 2012,p 43). Shingo used his experience in the most breakthrough manufacturing method known as the "Single Minute Exchange of Dies" (SMED), which seeks to reduce setup time.

His theories were taken and used by several facilities to boost production and reduce work-in-process inventory as well as component faults.

Shingo is linked to three well-known equations:

• Single Minute Die Exchange (SMED)

• Poka-Yoke

• Right on Time (JIT)

1.10.5.1. Single Minute Die Exchange (SMED)

Single minute die exchange was the first to develop the most cost-effective method of lowering die setup and changeover fixed costs. Because of the reduced setup time, large lot sizes are not required to achieve machine operating efficiency. This approach increases output by allowing for the utilization of additional equipment. One of single-minute die exchange's advantages is its ability to respond quickly to design engineering modifications at a low cost. Shingo separated the setup time into two entities, one internal and the other external, with a single-minute die exchange's

permission. The first type of operation is just performed while the machine is turned off, but the second type can be performed while it is running (Ravangard, 2014,p 15).

1.10.5.2. Poka-yoke

It guarantees that all goods are thoroughly inspected before moving on to the next stage of the process. For example, if a hole is to be fitted to a shaft, a jig or fixture can be used to determine if the hole can be constructed properly or not. If the hole does not fit correctly, it was not manufactured according to the specifications and is thus faulty.

The kinds of poka-yoke in general.

1. The contact technique

2. Move in a step-by-step manner

3. A technique with a fixed value.

If proper contact is achieved between the components and other parts of the product, defects of the first kind can be identified. The second kind determines whether or not the stages or motions of a method are carried out. The third type assesses if a particular number of movements have taken place.

1.10.5.3. Just in Time (JIT)

Instead of waiting for supplies to arrive on time every day or hour, just on time relies on retaining a limited amount of stock or a strategy that may be utilized in combination with it. Every step of a production process has the correct amount of material supplied on time and with the right products. Material for the manufacturing line will be delivered straight to the production line without being stored first. just on time translates to 'right on time' or 'timely' in Japanese. "Continuous improvement" or "lean manufacturing" is a new trend in the manufacturing sector that is based on this idea. The first objective of just on time is to deploy the system to gain competitive advantages and increase production by reducing the wastes listed below (Sadikoglu, & Olcay, 2014,p 90).

• There is a lot of inventory • There is a lot of waiting time

• Wastage due to excess production

• Expensive transportation

1.10.6. Philip B. Crosby's theory

One of the best in the world when it comes to quality, the information technology corporation employed Crosby for fourteen years as director of quality and corporate vice president. Having begun his career as a technician in a quality

department, Crosby has worked his way up through the ranks of several organizations to become the director of quality. When he was working for Martin Marietta Corporation in the 1960s, he developed the notion of "Zero Defects". During the next 10 years, Philip Crosby Associates Inc. (PCA) was transformed into a publicly listed business. Crosby's book Quality is Free became a top seller in the world of management after selling over two million copies. Another great seller is quality without rips. The Crosby approach's fundamental concept is prevention. The following principles are the best way to understand his quality philosophies (Bunkley, et al, 2008,p 214).

1. Do it right the first time
2. There are no flaws
3. There are four quality absolutes.
4. The Six C's

1.10.6.1.if It Right from First Time- It Right for Every Time Rather than perceiving and trying, he believes that the greatest way to attain greatness is to avoid it. As a result, he places a premium on doing things well the first time, every time. A great product, in his opinion, meets the design criteria. Every company's attitude toward, and perception of, quality must evolve. According to Crosby, many managers think that errors are unavoidable and necessary aspects of doing business and that they should be accepted.

1.10.6. 2. Zero defects

The zero-defect idea is a management strategy that aims to enlist the voluntary participation of employees in accepting personal responsibility for the task's quality. It's a solution to the challenge of ensuring high-quality, error-free work output. Employees and companies are required to make zero defects a catchphrase under the zero-defects initiative. The intent and purpose of this deed are that if employees adopt it as a motto, they will undoubtedly absorb it and develop a zero-defect manufacturing culture. Furthermore, using the phrase as a banner encourages, reminds, notifies, and urges the firm, its employees, and management to enhance quality (Lotfee, 2009, p 19).

1.10.6. 3. Four absolutes of quality

Crosby's four absolutes of quality management, which he says are the basic concepts of the quality improvement process, are the starting point for quality improvement. The following are the four absolutes:

1. Quality refers to a person's ability to meet a set of criteria rather than their best.

2. Prevention, not assessment, is the key to achieving quality.

3. Quality has a zero-defect performance goal, which is undesirable.

4. Quality is determined by the cost of non-conformance rather than indices.

1.10.6. 4. The 6 C’s

"The 6 C's" technique was developed by Crosby to help companies maintain a zero-defect product or service, according to Crosby's theory of perfection. Every employee must have a basic understanding of what quality is, as shown by the first C. It is important to note that the second C stands for commitment. This means that everyone in the organization, from workers to managers, should create and adhere to a quality policy. Three Cs are needed to implement the quality improvement approach, which includes education and training. Everybody can grasp the concept of quality through the fourth C, Finally, the sixth point stressed the need of making the process a way of life in the company (Lotfee, 2009, p 21).

1.10.7. Genichi Taguchi's theory

At Kiryu Technical College, Taguchi's drought statement in 1942 piqued people's interest in statistics. Prof. Masuyama, at the time the best statistician in the world, assisted him in honing his statistical skills. He worked at the Institute of Statistical Mathematics from 1948 to 1950, where he was lauded for his industrial trials on penicillin manufacturing. Despite his prominence insignificant Japanese enterprises.

In Taguchi, Japan's manufacturing process was cost-effective thanks to Taguchi's contributions. As a result, Dr. Genichi Taguchi's parameter design is based on statistically-planned experiments. Design of experiments (DoE) or experimental design is seen as a critical tool for increasing quality and efficiency in this research approach. This approach is characterized by three conceptual features:

It is also known as the Taguchi loss function (TLF) or the quality loss function (QLF).

Testing for quality robustness (QRD).

Noise Ratio (SNR).

Taguchi has devised a new manner of expressing "excellent." Until then, quality has been regarded favorably. Quality is seen negatively by Taguchi, who defines it as "the loss suffered by society as a result of the product's shipment." He found a new source of loss: the cost of client dissatisfaction, which may result in a loss of business reputation and goodwill.

1.10.7. 1. Design of Experiments

An experiment's design is a collection of methods for improving the design and operation of a product or process while reducing the influence of uncontrollable elements. as well as the output of a process is all part of it. For example, a variation-resistant system's performance can be evaluated by looking at the importance of design variables. As well as creating new products, the concept can also be used to improve existing ones (Mohammadi, 2009, p 113).

1.10.7. 2. Noise and Signal-to-Noise Ratio

The phrase "noise" has a special connotation in Taguchi's technique. Noise, according to him, is an unwanted component or force that uses up useful energy. Simply described, it is the result of an external source creating a component that has a detrimental influence on quality. And it should be minimized to the maximum extent possible (Anbari, Tabaraie, 2013).

CHAPTER TWO
QUALITY AND QUALITY EVALUATIONS IN HOSPITALS

2.1. Quality In Hospitals

In many societies, hospitals serve an important symbolic purpose. As Glasby et al (2006) put it, "Hospitals are much more than mere facilities where healthcare is provided; they represent the physical embodiment of the National Health Service NHS and its values within a particular region. The National Health Service (NHS) was founded as part of the post-war welfare state, and it symbolizes the values of fairness and commonality. Hospitals have traditionally been a focal point for local philanthropy, creating a sense of communal ownership as well as symbolic importance as a symbol of shared goals. Hospitals are also a significant source of employment in the surrounding community. Workplaces are important locations for socializing and developing one's identity, thus this is more than a practical concern.

Hospitals can become a part of daily life for parents, careers, the elderly, and individuals with disabilities or long-term illnesses, either for themselves or for friends and family, for a short time. When compared to other publicly financed services, healthcare has a particular value and relevance for people. It is personal and relational, and it is typically accessed at times of fear and anxiety. Hospitals are at the crossroads of life and death, and so are closely tied to our ideas of "ontological security," whether via personal experience or communal imagination. This has to do with people's faith in the continuation of their self-identity and their everyday life. According to Giddens (2005), most human behavior centers around maintaining this sense of ontological security and avoiding existential anxiety. Part of our anxiety stems from our awareness of our death.

As a result, the presence of a nearby hospital with life-saving equipment may give a community a strong sense of security Quality is providing patients with the treatment they need, when they need it, in a cost-effective, safe, and effective manner in healthcare facilities such as hospitals and other health centers. Quality healthcare also includes involving and engaging the patient so that he or she takes charge of preventative care and treatment of identified diseases (Wankar, 2017).

2.2 Perceived Quality Service in Hospitals

The perceived quality of hospital services is determined by the user's overall evaluation of what is received and provided (Duggirala et al., 2008). There were additional studies on patient perceptions of service quality (e.g. Lee, & Yom, 2007, and Badri, M2009). The pioneering work in this field defined 10 dimensions: concrete, dependability, responsiveness, competency, courteousness, trustworthiness, security, availability, communication, and reliability. After that, the 10 dimensions were reduced to five: palpable, reliability, sensitivity, certainty, and empathy (Parasuraman et al., 2005). The service quality model was next provided, which shows how different limitations in the service process disrupt and affect the consumer's impression of service quality. Knowing and using patient information about facilities is one of the simplest ways to enhance service quality in healthcare organizations. Many research has shown that the service quality model is effective in the healthcare business (Rohini & Zineldin, 2006), and previous studies have suggested that Service quality is beneficial in the healthcare industry (Berwick D, Godfrey, Roessner , 1990 and ovretveit J. 2002).

Service quality and other existing methods, on the other hand, have been proven to be inappropriate for evaluating patient satisfaction across numerous medical contacts in certain studies. Certain scholars have defined quality of service in healthcare as a formative notion (Rossiter, 2002). The formative technique illustrates that the measurement parameters that make up the service quality construct define the construct. The healthcare literature also includes several conceptual service quality frameworks and emphasizes the use of Total Quality Management approaches, which serve to enable a patient-centered approach to healthcare delivery (Talib et al., 2011).

According to many academics (Baker et al., 2007; Levit et al., 2013), consumer-centered healthcare should be the dominant paradigm for service delivery. Technical care and interpersonal care processes were identified as two major areas that should be addressed as part of the quality control process in healthcare. Technical care methods are concerned with medical breakthroughs and technological usage in healthcare, whereas interpersonal care is concerned with the management of relationships between the service provider and the patient. The quality of healthcare is also considered to be influenced by the amenities of care. A fourth component has also been proposed, which is concerned with the administrative aspects of service delivery. Similarly, interpersonal quality, outcome quality, and environmental quality have all been used to describe service quality (Brady & Cronin, 2001).

Researchers found new aspects of healthcare service quality as a result of this area of investigation. It has also been advised that technical quality, quality processes, quality infrastructure, quality communication, and quality environment be considered (Zineldin, 2006).

Other research has presented a four-factor structure that includes the availability of qualified physicians and staff, the simplicity with which the treatment procedure may be completed, the cost of the therapy, and tangibles, claiming that these characteristics indicate technological, functional, environmental, and administrative excellence (Choi et al., 2005).

2.3 Impact of Hospital Service Quality

According to Gronroos (2007), the client's perception of the actual service determines the quality of the service.

Due to the increased numbers of patients, there may develop a dependence. This dependency may imply that keeping the current service levels needs a high level of service quality. The largest number Of People rely on the national healthcare system to meet their medical requirements (Rensburg, 2016).

Asif, and Gouthier, (2014), the conventional European view of what defines quality healthcare, the focus must be on the practitioner, notably the medical practitioner's science knowledge and expertise. The efficacy, adequacy, acceptability, accessibility, and equality of the health system are all assessed from a modern European perspective.

In certain American literature, the perspective is restricted, focusing only on technical expertise. Because it influences the patient's health, the patient's contact with the healthcare practitioner is critical (Manary et al., 2013). Patients can evaluate service quality based on their healthcare experience. The experience also helps healthcare practitioners to manage their patients' perceptions of their service.

Many studies have found a strong relationship between service quality and patient satisfaction (Lai & Chen, 2011; Lee, 2011), confirming the general idea that service quality influences patient satisfaction and other outcomes. According to their findings, personal attention, good communication skills, empathy, and compassion on the part of the service provider all lead to increased patient satisfaction (Chen et al., 2016).

There is also a strong link between service quality, patient happiness, and practitioner loyalty. According to numerous studies (Arasli et al., 2008; Meehan et al., 2002), as service quality improves, so does the number of satisfied clients and the level of loyalty. Satisfied patients might earn more money through recurring business, decreasing total costs. Increasing the degree of care offered, offering efficient, quick, and accurate hospital data and information, and managing more sympathetically, according to other studies, Patient satisfaction is connected to open, honest, and empathetic relationships between patients and service providers.

According to Duggirala et al (2008), patients' views of service quality are connected to patient satisfaction. Other research has discovered that service quality has a significant impact on service satisfaction and behavioral intentions, as well as that patients' emotions and service quality, have a significant impact on patient satisfaction. Patient satisfaction and behavioral intentions are influenced by service quality, (Dagger, Sweeney, & Johnson, 2007).

2.4 Hospital Quality Service and Patient Satisfaction

Patient satisfaction is viewed as a result of care in and of itself, making it a key factor in enhanced patient compliance and, as a result, improved clinical results (Baker & Streatfield, 1995). To calculate satisfaction, one must consider the technical, personal, social, and moral aspects of care. Patient satisfaction and reputation are inextricably intertwined; with patient satisfaction comprising the likelihood that the patient will be better happy with the level of treatment received and will refer the service provider to others.

Patient satisfaction also reflects how patients feel about their hospital stay and whether or not they will return. Almost all studies see service quality as a cognitive concept, whereas pleasure encompasses both cognitive and emotive aspects. Elleuch, 2007; Choi et al., 2005).

The finest healthcare service delivery may be used by hospital administration to distinguish the institution, develop competency, and gain a competitive advantage in the marketplace. Perceived quality, according to Gronroos (2009), is the process by which a client contrasts their expectations with their service observations. The gap between customers ' expectations and perceptions of services determines the quality of healthcare services. Patients are the hospital's capital in the healthcare sector. Medical service provision is more important in terms of client happiness and retention. Patients can evaluate the way services are delivered, the outcomes and the organization, According to research on patient judgment conducted in industrialized countries (Wang et al., 2004), the findings reveal a relationship between patient satisfaction and the quality of healthcare services offered.

In addition, Badri et al (2009), found that patients are aware of important components of the hospital, such as health care appraisal and execution. In addition, satisfying patient expectations and sustaining high medical care standards are important to achieving high significance. In healthcare settings, client satisfaction is a typical metric for assessing service quality.

There is a link between patient happiness and healthcare service quality, according to Shabbir et al (2014). Their findings indicated a substantial relationship between patient satisfaction and healthcare services. Examining the gap between expected and perceived health care might also aid in determining patient satisfaction. Effective public learning may help hospitals develop trust and give useful feedback.

According to Chahal (2004), healthcare service delivery influences patient satisfaction. Patient satisfaction serves as a connection between a person's objectives and the quality of their healthcare services.

2.5 Laboratory and Diagnostic Care

Some studies consider it to be an important part of healthcare services and patient satisfaction. Lee, M.A et al (2007), revealed that laboratory services had a significant impact on patient satisfaction, whereas Kamra et al (2016). indicated that by utilizing laboratory services, hospital administration can improve patient pleasure. It is a key component of hospital prenatal care, according to Wankar (2017). This research examines the current condition of this element in Pakistan in terms of female satisfaction and other patients. The role of the laboratory in public health as a disease diagnosis tool is as essential as any other medical activity. Furthermore, the importance of laboratory services in the healthcare business cannot be overstated. When the World Health Organization (WHO) decided to incorporate laboratory services in healthcare, they recognized the importance. As a result, as part of a primary healthcare strategy, the World Health Organization urged nation members to promote and improve healthcare services through health laboratories.

2.6 Preventive Healthcare

Healthcare services are well-positioned to address chronic illness prevention and management issues, with each medical visit providing a potential chance to provide preventative therapy. For both patients and doctors, one of a physician's major responsibilities is prevention. It has been proven that physicians' short engagement is effective in encouraging changes in smoking, drinking, weight loss/gain, and physical activity behavior.

2.7 Prenatal Care

Every country's most essential element is prenatal care. Any condition or occurrence that exists or occurs during the first trimester of pregnancy, from conception through the birth of the baby, is referred to as prenatal care. As a consequence, prenatal care is linked to the behavior of physicians, nurses, and midwives, as well as the behavior of technology devices, from the prenatal checkup through the healthy birth of the baby. Prenatal care has been praised as one of the most effective health therapies for lowering maternal morbidity and death. It includes regularly monitoring the unborn babies' and mothers' well-being. The most common causes of death are childbirth and pregnancy problems, especially among women of reproductive age who have disabilities. All pregnant women get direct prenatal and postnatal treatment from hospital health specialists, who also recommend or notify patients about forthcoming examination visits. Because pregnancy is a key element in evaluating service performance in the healthcare business, some academics utilize it to analyze patient happiness. Pregnant women seek facilities that provide superior services including medical testing, physical examinations, and health information, as well as politeness on the part of the doctor As a consequence, several studies have discovered that prenatal therapy affects patient satisfaction.

The hospital's main objective is to increase patient satisfaction with health services as well as provide excellent prenatal care (Kamra et al,2016).

2.8 Physician’s Behavior

According to Robin DiMatteo et al (2002)., patients seek deep ties and courteous behavior from their doctors. It also influences patients' decisions to remain loyal to their providers. When patients' expectations are not realized, they are less likely to follow their medical regimen, return for checkups, or otherwise assist in their treatment, according to Dagger, and Sweeny, (2007). In general, the more friendly and supportive the physician is, the happier and more satisfied the patient will be. These and other research have all shown that a physician's capacity to offer information, as well as his or her polite demeanor, are both positively connected to patient satisfaction. According to the literature, studies on physician behavior have been restricted in the past.

As a result, to reduce this gap, it is critical to explore the above-mentioned relationships between the research variables.

2.8.1. The measurement and evaluations of health service quality

A review of the literature on assessing the quality of idea services was done. several studies (Gronroos, 2007; Parasuraman et al, 2005) demonstrate that using a standardized measurement tool to evaluate a concept is preferable.

When evaluating the quality of health services, it is important to consider their complexity, unpredictability, and ambiguity. Throughout the examination, however, not just the provider's point of view, but also the patients' point of view, should be considered. Many healthcare organizations use quality management principles similar to those used in the industry in their quality evaluations (Eiriz & Figueiredo, 2005:405). It's debatable if implementing these principles has enhanced a company's efficiency and effectiveness (Eiriz & Figueiredo, 2005:405). Health-care executives have long been worried about how to evaluate the quality of treatment delivered by providers (Tateke, Woldie & Ololo, 2012: 11).

Buttle (1994) found that the service quality instrument was suitable for research for the following reasons:

· The instrument has been proved to be trustworthy in a range of service situations, and it provides scientifically valid conclusions. The instrument's scales have a minimal number of components, making it simple to operate.

· The instrument has a standardized analytic approach that simplifies data presentation.

Zeithaml, Parasuraman, and Berry carried out preliminary research that led to the development of the service quality instrument (2005,23). This exploratory study process was meticulously carried out and confirmed the instrument's functionality.

To begin, Zeithaml et al (1990:23) established a definition of service quality and 10 assessment criteria. After performing a quantitative study based on data obtained from five different service businesses, they constructed their measurement gadget. The quantitative study is crucial because it enhances the statistical acceptability of the service quality instrument.

Second, Zeithaml et al. (1990) recast the 97 constructions into two claims. One statement evaluates a client's overall expectations of a firm in a certain service area. The second statement evaluates a client's perceptions of a business's service quality.

Zeithaml and colleagues (1990) improved the abstract factors of service quality. Using survey data, they determined the scale's trustworthiness. The final result

was the following five measurements:

Reliability refers to a service company's ability to follow through on a commitment accurately and consistently.

Leaders are open to an employee's eagerness to assist clients and deliver quick service.

Assurance refers to an employee's capacity to express trust and confidence via their knowledge and demeanor.

Sympathy refers to employees' concern for and individualized attention to customers.

Ultimately, Zeithaml et al (1990:51) discovered that five gaps affect the quality of service:

Finally, Zeithaml et al. (1990) described the perceived quality elements as follows: Service quality is assessed by comparing expected and perceived service, according to the findings. The study used focus groups' identical criteria to evaluate service quality regardless of the kind of service. The criteria were divided into ten "service quality aspects" that overlapped. The way clients rate the quality of consumer goods and services is determined by how Nelson's characteristics are classified. He distinguished between two sorts of attributes: (1) property searches, and (2) experiential characteristics, which can only be determined after the purchase or during consumption, and which a consumer can recognize before making a purchase. Color, price, style, and feel are search characteristics, but wearability and dependability are experience attributes.

To Nelson's categories, Darby and Karni (1973) added a third category, believability characteristics, which describe traits that are difficult to judge before, during, and after consumption. Credibility features include medical procedures. Few individuals have the medical knowledge to evaluate if these surgeries are necessary or if they are carried out appropriately. The easiest to evaluate are those with a high search value; those with a high experience value are more difficult to evaluate, and those with a high credibility value are the most difficult to grade. Because most services have few search criteria but a lot of knowledge and credibility, determining their quality is more difficult than determining the quality of commodities (Zeithaml et al, 2007).

The most crucial experience qualities, according to the group discussion, are access, politeness, reliability, responsiveness, knowing the client, and communication. The customer has access to every one of the metrics only when getting or utilizing the service. Even when they have certain knowledge based on their own or others' experiences, shoppers are likely to re-evaluate these components each time they make a purchase. As per the proposal, while evaluating service quality, clients often depend on experience attributes.

According to the findings of the study, when customers' expectations aren't reached, they perceive quality to be poor. Quality is regarded as good when expectations are satisfied. When expectations are met or exceeded, quality is said to be above average (Parasuraman et al, 2005)

Other scholars have carried the quality of service instrument to the test in a hospital setting and published their findings. The following sections go over some of the conclusions.

Tangibles: The reported hygiene of hospitals is associated with patient contentment, according to Tateke, and Ololo (2012:10-11).patients must be heard properly during discussions with healthcare practitioners (2012). Healthcare practitioners will learn further about the patients and health conditions if they are receptive and commit adequate consultation time. The length of the session was discovered to be a determinant of patient satisfaction in the study. This means that healthcare staff must demonstrate response by maintaining appropriate patient satisfaction levels.

The subject of whether a particular aspect of service quality is much more significant to clients has been explored in the literature. It is self-evident that enough core elements must be addressed when assessing service quality. It's also self-evident that irrespective of service in issue, clients appreciate dependability the most and tangibles the least. Clients are pleading with service providers, to be honest, and to accomplish what they say they will do.

2.8.2. Other measures of the quality of health service

2.8.2.1 The Gronroos model

Gronroos developed a marketing and health-care concept in 1990. In his service quality model, Gronroos (2007) distinguishes between functional and technical quality, and the table below outlines six functional quality standards.

Table 2.1. Gronroos' dimensions of perceived service quality

Definition	Dimension
Employees are knowledgeable and skilled in resolving client issues.	Professionalism and skills
Employees are interested in resolving issues.	Attitudes and behaviours
Is the set-up intended to facilitate access?	Accessibility and flexibility
Rely on workers and systems to keep their word and operate in the best interests of the company.	Reliability and trustworthiness
Count on your organisation to respond to unexpected events and handle challenges.	Recovery
You can count on the operations to deliver.	Reputation and credibility

Source: Gronroos, (2007)

Above that, the service quality category represents the client's opinion. The typology is intended to be adjusted to meet unique demands and to act as a reference point for those evaluating quality of service (Schneider &White, 2004:38).

The Gronroos model's qualities are similar to the servqual model used by Parasuraman et al. in marketing (2005). Both approaches share a belief in the organization's and its workers' talents. Gronroos places a greater emphasis on the simplicity with which customers may obtain services and indeed the company's capacity to respond to customer concerns.

2.2.1. 2 .The Naumann and Giel model

The Naumann and Giel (1995:12) customer satisfaction measuring technique is a tool for determining the extent to which client value is created and given. Client input is collected, evaluated, and incorporated into the corporation's learning process. This business asks customers for suggestions on how to improve and innovate. The program takes the uncertainty out of calculating customer expectations and allows the company to assess client value as well as whether or not expectations are satisfied. If the program is ingrained in the company's culture, it will be beneficial.

According to Naumann and Giel (1995:13), the most profitable organizations have the greatest levels of client satisfaction. Worker and client attrition rates are usually the lowest in successful businesses. Customer happiness, retaining existing customers, and staff satisfaction are all linked to profitable businesses.

The model's inception, development, and implementation, according to Sajjadi H, and his collagenous (2013), is a cyclical and iterative process. The model applies a well-defined procedure, even though it lives in a dynamic environment. Client value is made up of quality of product, quality of service, and price depending on those factors. Product and service quality are all linked to environmental stewardship, responsible business, and a company's overall integrity. Client happiness is linked to client value expectations.

According to Naumann and Giel (1995:12), client satisfaction assessment is the true measure of client-driven success. Organizations are becoming more client-driven, which is a global trend in management practice. To be client-centric, a business must focus on its core strengths, or areas where it excels in providing value.

2.2.1.3Kano Model

Quality and service are two closely related concepts that both begin with the objective of satisfying the client's needs. Because they are dependent on the clients' opinions and attitudes regarding the services given, they are two subjective terms. On the other hand, quality is not synonymous with perfection. Quality attempts to fulfill the client's needs, whereas excellence goes a step further by attempting to evoke the client's emotions and sensations. Service excellence, according to the 2015 CEN/TS 16880 standard, refers to an organization's capacity to consistently offer exceptional client experiences. In this sense, Asif (2014), recognized two critical components in the idea of service excellence. Client satisfaction is the cornerstone of the conventional concept of service excellence, but it also needs a rigorous approach to its implementation. According to Schneider and Bowen, joy is defined as evoking sensations of pleasure and amazement in consumers that have a positive impact on their behavior, such as increasing the chance of a new purchase and building loyalty. According to Berman (2005), the difference between client satisfaction and pleasure may be described in terms of the result of the service experience (good or bad) and the presence of expectations .

As a result, if the output meets or surpasses the client's expectations, they will be pleased. On the other side, if a client's expectations are not met, they will be dissatisfied. However, pleasure is achieved when the client has no preconceived notions about the conclusion of the contact and feels that it will be positive; otherwise, the client would be insulted by the service. Finally, according to Berman (2005), client expectations are established by previous experiences with the same level of service, which might lead to satisfaction after a few interactions.

As a result, exceptional organizations must strive to deliver services that surprise and excite clients by exceeding their expectations. Some of the most well-known approaches to the issue of service excellence in the specialized literature are the Johnston model, the business excellence model, and the Kano model. The Johnston method defies conventional thinking, which holds that exceeding and delighting clients is at the heart of outstanding service. It emphasizes that exceeding clients' expectations is not always achievable, because doing so requires excessive use of resources and raises the service's cost.

The model identifies a set of important components in service excellence:

(1) Following through on a promise: This is the model's most important characteristic, and it distinguishes it from other approaches to client service excellence. The firm is trustworthy since it keeps its commitments and does not disappoint its consumers .

(2)Providing a personalized feel: The customer is grateful that the company is concerned about them and provides individualized service.

(3)Going as far as to foresee the patient's demands is an example of adding the full mile. Clients value a company's capacity to respond to a service failure.

(4)Dilemma and effective patient service. As can be seen, the Johnston model claims that firms must fulfill their obligations while also offering a personal touch (proactive approach) and taking the necessary steps to resolve problems (reactive approach).

The lack of a systematic method for constructing buildings and practices to assure consistency in the provision of outstanding services is one of the constraints. As per the service model, customer orientation is a critical aspect of generating customer value.

The implementation of a framework of measures, practices, processes, and routines that support the behaviors that contribute to achieving service excellence is characterized as service orientation:

(1)Service administration: It is critical to have a services leader in charge of encouraging and assisting people in the workplace. It's crucial to express a service vision or a dedication to providing excellent service .

(2)Client interactions: These are the so-called "moments of truth" when staff interacts with consumers. As a result, how clients are treated has a direct impact on how they perceive the service and their level of satisfaction. As a result, the business must participate in actions that result in positive consumer perceptions of service quality. Employees must also be empowered to make decisions in this area (empowerment). As a consequence, employees will feel more accountable, motivated, and productive, and they will respond to client complaints or issues more promptly .

(3)Client service systems: An integrated system of practices and procedures must be established to deliver a high-quality service. Procedures for preventing and recovering from service disruptions, as well as client communication, must be included in this system .

(4)Human resource management: The organization must establish training techniques since worker training and incentive are linked to increases in customer service delivery. The most important contribution of this paradigm, according to Asif (2014), was the introduction of things that enable a methodical approach to teaching and learning and continual improvement in service offerings. However, this ignores important components of service quality, such as customer happiness. Quality Management Models were developed at the end of the 1980s.

When we talk about health care, we're talking about addressing and treating people's physical, mental, and social needs. As a result, there is a need for techniques to collect this multidimensionality of requirements. Furthermore, in the healthcare business, quality management is a vital component of achieving excellence in wellness organizations. That the factors that create satisfaction, as well as those who generate discontent, are not the same; and there may well be products that increase patient satisfaction more than proportionately when the customer does not anticipate it (Zineldin, M.,2006).

Traditionally, customer happiness has been assessed in a one-dimensional manner, with a user's degree of satisfaction simply reliant on the quality of the service provided. But on the other hand, the linear link between enjoyment and service quality seems to be shaky. The Kano model uses a dualistic method to get past this one-dimensional restriction. The Kano model separates quality features of goods or services into 5 groups based on the degree of service conformance (horizontal line) and customer enjoyment (vertical axis). (1) the required (M), (2) the

appealing (A), (3) one-dimensional (O), (4) reversible (R), and (5) indifferent (I).

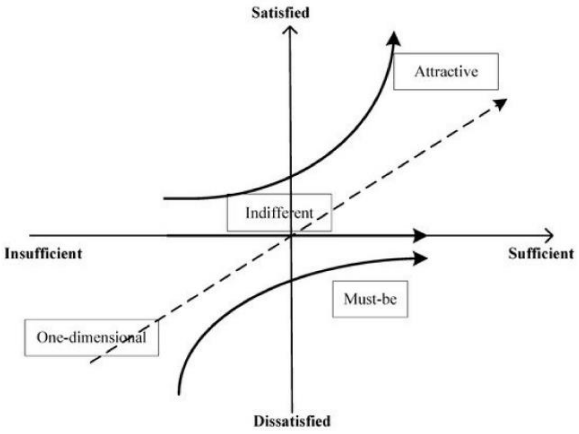

Figure 7. The Kano model, as suggested by Jin et al.

The traits are listed below, along with their definitions:

• Needed or "must-have" (M): Since this function is so basic, its lack causes a lot of client discontent. This criterion is taken for granted by the client, thus satisfying it does not increase their degree of satisfaction. Whenever this criterion is accomplished, the status is changed to "satisfied."

• One-dimensional (O): This is a linear criterion; if it is met, client satisfaction rises; when it is not met, client satisfaction falls and they become dissatisfied.

• Appealing (A): This quality has the greatest effect on customer satisfaction. Even if the customer does not exhibit this quality, its existence improves pleasure in a way that is more than proportionate. Additionally, pleasure does not lessen if promises are not satisfied.

• Indifferent (I): This function has had no preference criterion, implying that the client does not care about it.

• Reverse (R): When this characteristic is absent, consumers are satisfied, but when it is there, they are dissatisfied.

CHAPTER THREE

METHODOLOGY

3.1.Community And Sample Of The Study

The empirical study will conduct by survey at Bagouba university hospital in Diala, Iraq. The study will conduct in the medical, surgical, and anesthesiology/ intensive care departments at Bagouba university hospital in Iraq. The departments under study contain more than 160 beds these departments include about 32 doctors and 98 nurses and there is a daily average of about 76 inpatients and about 80 about patients.

The constructs and survey instruments will be tested using factor analysis. The study will involve about 120 participants and will meet the condition of a sample size of 100 or more participants.

The sample will be made up of a preference and quota sample. Only respondents affiliated with the departments under study were included in the convenience sample, The quota sample, which refers to the medical team quota, will be calculated as the ratio of medical staff working in the study sections to the overall number of medical staff hired.

3.2.Data Collection

For this study, a two-part structured questionnaire will be constructed. The study's first section includes survey common questions such as age and job title. The second section includes MEDQUAL scale questions (like , a patient’s right to privacy is ensured and a patient has confidence in the doctor) Taken from the study of (Ksenija, Josipa, Jasna, Vesna, Suzana, and Aleksandar, 2018 and Patrice F, Jean P, Muriel T, Jose, Thomas R And Dominique V, 2003) whereas the first section looked at participants' socio-demographic factors. Almost all of the doctors in the divisions under investigation will be involved in the research. The number of nursing patient care and patient participation will be proportional to the number of beds in the unit and the department's capacity.

3.3.Model of the study

- Independent Variables

1. Trust in the Doctor-Patient Relationship

2. Professionalism of Doctors Service

3. Professionalism of Nurses Service

4. Organization of The Department

- Dependent Variables

1. Quality in Hospitals

Figure 7. Model Of The Study

3.4.Research questions

- What is the MEDQUAL evaluating system and how could it be used to improve and control the health services in health organizations?
- How do the inpatient and outpatient evaluate the health care services provided by Baquba hospital in Iraq?
- How do the medical staff (doctors and nurses) evaluate the health care services provided by Baquba hospital in Iraq?
- Is there a significant difference between patients and medical staff in evaluating the health care services provided by Baquba hospital in Iraq?
- Is there a significant difference between doctors and nurses in evaluating the health care services provided by Baquba hospital in Iraq?
- Is there a significant difference between inpatients and outpatients in evaluating the health care services provided by Baquba hospital in Iraq?

3.5.The Hypotheses Of The Study

H1: There isn't a significant difference between patients and medical staff in evaluating the provided health care services in Baquba hospital in Iraq.

H2: There isn't a significant difference between doctors and nurses in evaluating the quality of health care services provided in Baquba hospital in Iraq.

H3: There isn't a significant difference between inpatients and outpatients in evaluating the health care services provided in Baquba hospital in Iraq.

3.6. Research Setting

The research was conducted at Bagouba University Hospital in Iraq, in the medical, surgical, and anesthesiology/intensive care divisions. The departments under investigation have about 160 beds and undertake about 18,000 surgeries. Each year, about 106,000 exams are done, including emergency and obedience tests, as well as exams in other departments and clinics. The nursing and medical personnel from the

medical, surgical, and anesthesiology/intensive care units, along with patients, acquired authorization and permission for involvement from the University of Baquba, Iraq, before the study.

The suggested questions and properties of the MEDQUAL instrument were altered to assess particular words connected with the area where this research was conducted using a theoretical framework called SERVQUAL. All criteria that health providers from particular departments could not independently affect were omitted from the analysis, which is a unique characteristic of this study. Because the preliminary testing tool is made up of two small elements of the questionnaire that a support receiver must fill out before (perceptions) and after (perception) having received a provider, the structure and thus the assessment of the new tool proffered differ from the SERVQUAL methodology. Analysts that utilize MEDQUAL employ a single questionnaire and begin by assuming that a health system's greatest expectations are always met (in the case of a 5-point Likert scale, the expectations are measured by number 5). As a result, clients and medical personnel were provided only one 23-question survey to complete, which asked them about their perceptions of the quality of care they got. Patients' and medical staff's perceptions of (1) creating confidence in the doctor-patient connection; (2) doctors' professionalism when offering healthcare services; (3) nurses' expertise when offering health services; and (4) the department's design are all connected to the aspects.

3.7.Statistical analysis

Categorical data was expressed using relative and absolute rates. In the instance of a normal curve, descriptive statistics were reported as the mean and standard deviation, and in other circumstances, the median and inter-quartile range boundaries. The variable form and dimension of the idea under investigation were assessed using extractive factor analysis. The Kaiser-Meyer-Olkin (KMO) test and Bartlett's test were used to look into the mutual association between latent variables. The KMO test was evaluated using the Kaiser-Rice criteria (1974), which specifies that a result higher than or equal to 0.9 is exceptional, whereas a value of at least 0.8 is respectable, A score of 0.7 or more is considered normal, 0.6 or higher is regarded mediocre, 0.5 or more is regarded unpleasant, and less than 0.5 is termed undesirable. The Varimax technique to factor spinning was used using the Kaiser criterion.

Cronbach's alpha reliability ratio was used to assess internal consistency. The scholars utilized an independent t-test to notice the difference between the average personal MEDQUAL dimensions and the categories of individuals who judged the quality of medical care. To see if the distribution was normal, the Kolmogorov-Smirnov test was applied. The criterion for significance was fixed at 0.05. The data was analyzed using IBM SPSS Statistics 16.0 analytical software.

3.8. Results

Table 3.1. Gender Type Cross Tabulation

		type		
		patients	medical staff	Total
gender	male	29	38	67
	female	22	11	33
Total		51	49	100

The study included 120 respondents 20 of them was eliminated because the lack of information and 100 questionnaire were accepted . The sample consisted of (67%) male and (33%) female representatives. More male representatives (38) were discovered among the health practitioners ,but more female representatives (22) were found in the group of patients.

Table 3.2. Age Type Cross Tabulation

		type		
		patients	medical staff	Total
age	18-24	8	24	52
	25-34	6	7	13
	35-44	4	6	10
	45-54	15	3	8
	55-65	18	9	17
Total		51	49	100

By looking to the table 3.2 The group of health care recipients IS on average slightly older 33 of 51 from respondents their age are between 45 and 65 ,but 24 from 49 participants from the group of medical service providers their age are between 18 and 24 years old.

Table 3.3. Education Type Cross Tabulation

		type		
		patients	medical staff	Total
education	less than College	24	4	28
	College	16	6	22
	bachelor degrees	6	19	25
	postgraduate degree	5	20	25
Total		51	49	100

By looking to the table 3.3 we can find that the big percent of the medical service recipients' education have less than college degree 24 from 51 .On the other side we can see that the big percent of the medical staff ' education have bachelor and postgraduate degree 39 from 49.

Table 3.4. Patient Type Frequency Analysis

		Frequency	Percent
Valid	Outpatient	30	58.8
	Inpatient	21	41.2
	Total	51	100

We can notice by looking to the table 3.4 that the big percent from the patients are outpatient (58.8%) and (41.2%) are inpatient .

Table 3.5. Medical Staff Type Frequency Analysis

		Frequency	Percent
Valid	Nurse	30	61.2
	Doctor	19	38.8
	Total	49	100

We can notice by looking to the table 3.5 that the big percent from the medical staff are nurses (61.2%) and (38.8%) doctors .

Table 3.6: Factor Loading and Cronbach's Reliability analyzes

Factor's Name	Variables	Factor Loading	Eigen-value	Variance Explained
Trust in the doctor (TD)	TD 1	.634	2.428	70.112
	TD 2	.753		
	TD 3	.688		
	TD 4	.821		
	TD 5	.870		
	TD 6	.753		
Professionalism (nurse) (PN)	PN 7	.796	1.644	59.869
	PN 8	.681		
	PN 9	.827		
	PN 10	.906		
	PN 11	.778		
Professionalism (doctors) (PD)	PD12	.677	1.554	65.933
	PD13	.708		
	PD14	.720		
	PD15	.883		
	PD16	.744		
	PD17	.848		
	PD18	.666		
	PD19	.786		
Organization of the department	OD 20	.741	1.395	54.319
	OD 21	.790		
	OD 22	.672		
	OD 23	.634		

Kaiser-Meyer-Olkin value = 0.71 , Cronbach's Alpha value = 0.907

The scale has 23 items on it that were sorely tested. After spinning the items, they were divided into four categories (Varimax that use the Kaiser criteria). Table 3.6 displays the items that were kept (a total of 23 items) due to high features; all factor loading ratings of the items are more than 0.5. The KMO results of the test are 0.71, which is higher than 0.5 and considered acceptable. The eigenvalues of all four components exceeded one. The overall variance described for MEDICAL elements is larger than 50%. (See Table 3.6.) Factor 1 may be referred to as 'Trust in the doctor' in the patient-medical staff connection since it has the greatest value of variance accounted on the scale. It is defined by features connected to developing the doctor-patient interaction and is at the core of all therapies.

The 2nd and 3rd variables are both linked to the medical staff profession, with the first comprising factors related to the nursing professionalism as well as the second

containing medical professionalism-related items. Variables about employee engagement toward their profession define both traits, which adds to better patient safety and trust. The fourth component, 'Department Organization,' collects the components related to the department's organization and functioning, as well as its equipment. The psychometric evaluation of the whole MEDQUAL scale found internal consistency, with a normalized Cronbach's alpha of 0.907. The inter-item correlation and item-total correlation were examined in the reliability analysis.

Independent Samples T-Test

Samples t-test is performed an independent to notice the difference between the average individual MEDQUAL characteristics and the sorts of respondents that rated the quality of medical care.

Table 3.7. Assessment of the quality of the received health care service provided by surgical department according to the type of patients

MEDQUAL and dimensions		Outpatients	Inpatient	Difference between medians	95% CI for difference in medians		p*
		Median			Lower	Upper	
MEDQUAL		2.8435	2.3428	-0.18	.46193	.50067	.016
Trust in the doctor		3.0944	2.7051	-0.04	. 22411	.38932	.302
Professionalism	Nurses	2.6056	2.0705	.25447	.25447	.53504	.013
	Medical (doctors)	2.4750	1.9952		.43019	.47981	.036
Organization of the department		3.5500	2.8173	-0.25	.20300	.73269	.030

*Mann-Whitney test; 95% CI = 95% confidence interval

Table 3.8. Assessment of the quality of the healthcare service provided by medical, surgical and anesthesiology/ intensive care departments

MEDQUAL and dimensions		Nurses	Doctors	Mean difference	95% CI of difference		p*
		Mean (SD)			Lower	Upper	
MEDQUAL		2.7304	2.6667	-0.159	-.44245	-.09716	.021
Trust in the doctor		2.9083	3.0417	-0.129	.42562	-.20863	.047
Professionalism	Nurses	2.5667	2.4583	0.062	.48406	-.24921	.047
	Medical (doctors)	2.3750	2.2760	-0.136	.40656	-.16152	.030
Organization of the department		3.3625	3.1771	-0.332	.84548	.08715	.026

*Independent samples t-test; 95% CI = 95% confidence interval

The efficiency of health care services was rated differently by patients (Table 3.7) and medical staff (Table 3.8). All patients positively evaluated the quality of the healthcare they received in all elements of the MEDQUAL scale and the entire MEDQUAL scale when it came to Professionalism ,Trust in the doctor and department organization and there is no differences between them in evaluating the health care services provided by Baquba hospital in Iraq (Table 3.7).

All nurses and doctors positively evaluated the quality of the healthcare care received in all categories of the MEDQUAL scale and the full MEDQUAL scale when it came to Professionalism ,Trust in the doctor and department organization and there is no differences between them in evaluating the health care services provided by Baquba hospital in Iraq (Table 3.8).

On all areas of the MEDQUAL scale and the total MEDQUAL scale, patients evaluated the quality of services provided higher than medical staff. Doctors, nurses, and patients gave the dimension of organization of the department a highest mean rating (3.50) (Table 3.7 and 3.8).

Finally, there was no significant difference in any area affecting the kind of patients in the research on perceptions of medical service quality (i.e. inpatient or outpatient). Because there were no differences found, it was decided to incorporate the same criterion for all patients.

CONCLUSION

The quality of health care in Iraq has been the subject of intense debate in recent years, with deficiencies in patient care well recognized and documented. To measure improvements in-hospital care, a consortium of organizations, This is the first of several papers to emerge from the study. This thesis aimed to investigate if there is a significant difference between medical staff and patients, outpatients and inpatients, and nurses and doctors in evaluating the

health care services provided by Baquba hospital in Iraq. To answer the questions of this thesis and to reach the aim that the researchers were determined for this study the MEDQUAL scale was employed with its four dimensions (trust in the doctor-patient relationship,

organization of the department, professionalism of doctors service, professionalism of nurses service)

The results showed that the first hypothesis is unsupported whereas the second and third hypotheses are supported, which means that the medical staff and the patients looking to the provided medical services from different sides especially in evaluating the doctor-patient relationship and the organization of the departments.

Healthcare centers provide services that are one-of-a-kind in every manner, especially in terms of their impact on the health and well-being of those who receive them. The quality of the medical service provided is also a multidimensional measurable term, because the quality evaluation of a wide range of services may be done methodologically. A collection of indicators has been produced by assessing service quality to determine which components of the service require investigation and training in a certain healthcare system. The evaluation of healthcare service quality in this study was based on previously learned theoretical and practical features of evaluating service phenomenon ideas.

SERVQUAL has been changed to MEDQUAL in the context of biomedical services, studied, and critically remarked on, as one of these ideas has experienced several modifications in diverse service activities. The MEDQUAL scale has some disadvantages. The first is because it is insufficiently specific. This problem can be avoided by including items unique to a certain locale or patient group (e.g., pediatrics,

psychiatry). An ongoing study of the MEDQUAL measure might be constructed and applied to certain groups (PEDQUAL, PSYCHOQUAL), or the institution as a whole, to discover other characteristics that influence healthcare service quality (HOSPIQUAL). The second problem with the stated findings is that they were only tested in one health institution.

The third issue is the time-consuming and wasteful requirement to collect data in waves (i.e., at regular intervals). The findings of this study open up the prospect of a real-time evaluation of the quality of care delivered within a single site, as well as a longitudinal study of comparable phenomena. To continue to improve the quality of health care, divisional managers must be engaged, and the need for collaboration with medical personnel must be maintained. This might lead to improved departmental infrastructure and hardware, and more time for patients, resulting in increased patient and hospital professional satisfaction, and ultimately, higher satisfaction with healthcare services.

RECOMMENDATIONS

Given the scarcity of medical staff and their overtaxing, especially with administrative chores, such an outcome is not surprising. More improvements in the quality of medical services could be decided to make by redistributing responsibilities to existing administrators after appropriate training, as well as better advancement and connectivity of the health information systems, which would allow for easier and quicker availability of information and allow nurses and doctors to devote more time to patients.

After assessing their quality and safety condition and outlining the many techniques that could be suitable for their scenario, hospitals should pick which option to use.

When evaluating different sorts of tactics, hospitals and authorities ought to be skeptical of proponents' assertions because there is no strong proof that any plan is beneficial. They should understand the importance of broad experience as proof, as well as the financial element of the expanding "quality business" in health care.

After deciding on a quality plan, it really should be regularly reviewed and adapted to changing circumstances and the responses of interested individuals. Efforts should be taken to determine if a lack of outcomes is the consequence of a weak plan, poor implementation, or the time it takes for results to become measurable. This evaluation can be aided by close monitoring and the use of a variety of data sources.

LIMITATION

The data in this study came from only one hospital in Diala, Iraq. A more diverse and representative sample can aid in the generalization of findings.

This study does not contain demographic or socio-psychographic characteristics to examine and further broaden the understanding of the quality standard in the hospitals

This study only used the SERVQUAL scale to evaluate the quality standard in the hospital other studies can use more scales to make the evaluation.

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APPENDIX (1)

Questionnaire

PARTA

1. Gender
   a) Male [ ]
   b) Female [ ]

2. Education

   a)less than College [ ]
   b) College [ ]

   c)bachelor's degrees [ ]

   d) postgraduate degrees [ ]

3.Age

   a) less than 25 [ ]
   b) 25-34 [ ]
   c) 35-44 [ ]
   d) 45-54 [ ]
   e) more than 54 [ ]

4. Patient
   a) Inpatient [ ]
   b) Outpatient [ ]

5. Medical staff

a) nurse [ ]

b) doctor [ ]

PART B
(Please choose as appropriate)

	STATEMENT	SCALE				
		Absolutely I disagree (1)	**I disagree** (2)	**I am undecided** (3)	**I agree** (4)	**Absolutely I agree** (5)
1.	The doctor explained to the patient in an easy and understandable way the procedures and interventions that need to be done.					
2	The doctor informed the patient about the potential risks.					
3	The doctor explained to the patient his/her health condition in an easy and understandable way.					
4	The doctor responds to a patient's need for conversation and additional information.					
5	A patient's right to privacy is ensured.					
6	A patient has confidence in the doctor.					
7	Nurses are compliant (willing to help).					
8	Nurses kindly respond to a patient's call.					
9	Nurses do their job professionally.					
10	Patients have confidence in nurses.					

11	Nurses look neat.					
12	A medical / surgical / anesthesiology/ intensive care service has been performed professionally.					
13	You felt safe during the performance of a A medical / surgical / anesthesiology/ intensive care service.					
14	Doctors are experts.					
15	Doctors are compliant (willing to help).					
16	Doctors take care of patients.					
17	Doctors are professional in regard to their relationship with patients.					
18	Doctors look neat					
19	A surgical service was provided at a time agreed upon in advance, with no longer waiting period.					
20	A A medical / surgical / anesthesiology/ intensive care department is equipped with modern equipment.					
21	The rooms for hospitalized patients are adequately equipped.					
22	A A medical / surgical / anesthesiology/ intensive care department is well equipped with medical supplies.					
23	A A medical / surgical / anesthesiology/ intensive care department is clean (tidy).					