

## QUALITY SERVICES EVALUATION MODEL BASED ON DEDICATED SOFTWARE TOOL

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**ABSTRACT:** *In this paper we introduced a new model, called Service Quality (SQ), which combines QFD and SERVQUAL methods. This model takes from the SERVQUAL method the five dimensions of requirements and three of characteristics and from the QFD method the application methodology. The originality of the SQ model consists in computing a global index that reflects the customers' requirements accomplishment level by the quality characteristics. In order to prove the viability of the SQ model, there was developed a software tool that was applied for the evaluation of a health care services provider.*

**KEY WORDS:** *Quality; QFD; SERVQUAL; Model; Software Tool; Quality Management Tool.*

**JEL CLASSIFICATION:** *L15*

### 1. INTRODUCTION

The transformations in the way of thinking and understanding the quality concept led to a wider area of its applicability.

In the past the quality was interpreted only as a statistic parameter that was related mainly to the products. Now, due to the client perspective introduction, the quality concept can also be applied to services field.

The characteristics and particularities of the services make it hard to give a generally acceptable definition. The aspects of quality (figure 1) make it difficult to

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define and quantify the services' quality that is generally considered a measure of the clients' requirements accomplishment.

The most known instrument in attempting to quantify the services' quality dimensions is "The gap model" of service or SERVQUAL model developed by Parshuraman in 1985.

This conceptual framework was developed initially to measure customer perception of service quality for the financial service sectors but later extended to sectors such as hospitality, telecommunications and healthcare.

The main goal of this model is to determine the average gap score (between customer's perceptions and expectations) for each service attribute.

We have chosen from the quality management tools the QFD method. The approach of this method is to early eliminate starting from the design phase the gaps between customer expectations and perceptions.

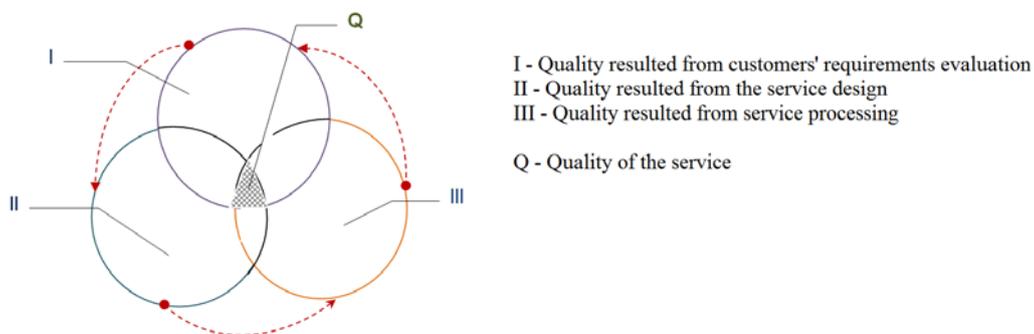


Figure 1. The aspects of quality (Dragulanescu, 2003)

## 2. LITERATURE REVIEW

QFD transforms the customer needs into engineering characteristics for a product or service, prioritizing each product or service characteristic while simultaneously setting development targets for it.

The QFD method can be used for both tangible products and non-tangible services (Ionica et al., 2010).

QFD is a quality management tool focused on customer. It was primarily meant for products, but it can be easily applied for services too.

There are reported applications of the QFD method in many service areas, such as accounting by Booth, in 1995, administration by Hofmeister in 1992, banking by Ko and Lee in 2000; contracting process by Hybert in 1996, engineering services by Pun in 2000, food distribution by Samuel and Hines in 1999, government services by Lewis and Hartley in 2001, hotels by Dube in 1999, on-line bookshops by Barnes and Vidgen in 2001, mortgage by McLaurin and Bell in 1993, professional services by Adiano in 1998, public sectors by Curry in 1999 and Hallberg in 1999, real estate appraisal by Ferrell and Ferrell in 1994, retail by Nagendra and Osborne in 2000, technical library and information services by Chin in 2001, wholesale by Keenan in

1996 and, in particular, healthcare by Chaplin and Terninko in 2000; Einspruch in 1996; Hallberg in 1999; Lim and Tang in 2000; Matsuda in 2000 (Chan et al., 2002).

There is a great amount of QFD resources available. Part of the QFD softwares were developed to help the QFD use in various applications, such as software evaluation (by Fawsy Bendeck of Universitat Kaiserslautern, Germany: [http://www.agr.informatik.uni-kl.de/\\_bendeck/qfd/index.html](http://www.agr.informatik.uni-kl.de/_bendeck/qfd/index.html)), QFD Designer (by Qualisoft/ Fulfillment Services, USA: <http://www.qualisoft.com>), QFD Scope (by Integrated Quality Dynamics, US: <http://www.iqd.com>), QFD/CAPTURE (by International TechneGroup, US: <http://qfdcapture.com>), QFD2000 (by Total Quality Software, UK: <http://www.qfd2000.co.uk>), Qualica QFD (by Qualica Software, Germany: <http://www.qualica.de>), and VOCALYST (by Applied Marketing Science, US: <http://www.ams-inc.com>) (Chan, et.al., 2002). Herzwurm have performed a thorough analysis and evaluation of the QFD software tools.

### **3. RESEARCH METHODOLOGY**

The advantages of combining the two methods, SERVQUAL and QFD, were identified by previous works in this field, like the paper “A QFD and SERVQUAL Approach to Hotel Service Design” (Ikiz et al., 2008).

The model from this paper integrates the best elements of SERVQUAL and QFD methodology.

Also, in literature, it is stated that only Miyoung and Haemoon have used SERVQUAL in house of quality design to measure customer satisfaction in return for service quality.

We introduce an alternative solution for services’ quality evaluation, a new model called Service Quality (SQ).

This is to compute an overall index that measures the level of customer requirements accomplishment.

For this reason there were followed the steps involved in the QFD methodology. In order to facilitate the QFD methodology implementation was designed and developed a dedicated software application that also computes the index.

As application for this methodology we chose the healthcare field. The customer requirements were captured using the techniques of questionnaire applied in two phases.

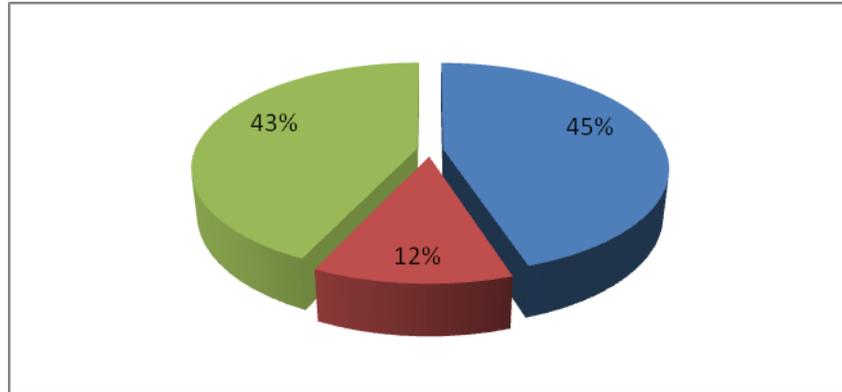
The first phase regarded general aspects about the respondents and their perception on the existing services.

The second phase had the goal of determining the specific and detailed customer requirements.

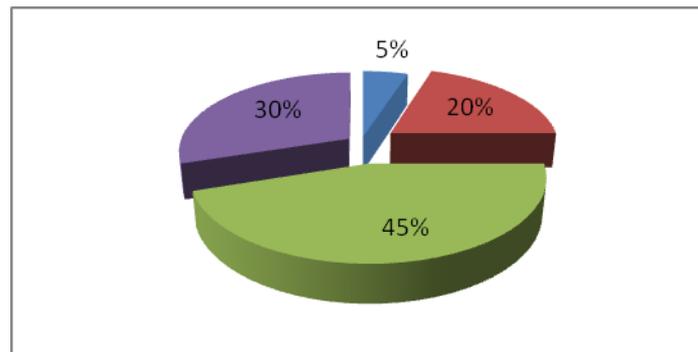
### **4. RESULTS**

The main results related to the respondents, clients of a pharmacy, and their perceptions regarding the provided services are presented below. The answers to the first question, “How often do you use services offered by our pharmacy?”, showed that 45% use them monthly, 12% weekly and 43% infrequent (figure 2).

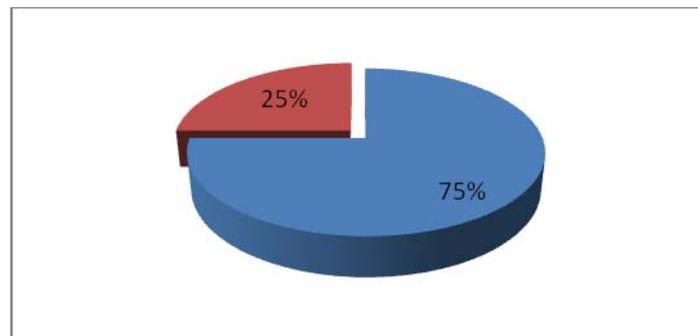
For the second question 5% of the respondents said that they use the services of the pharmacy for several days, 20% for one month or less, 45% for several months and the rest of 30% for several years (figure 3).



**Figure 2. Frequency of services use**

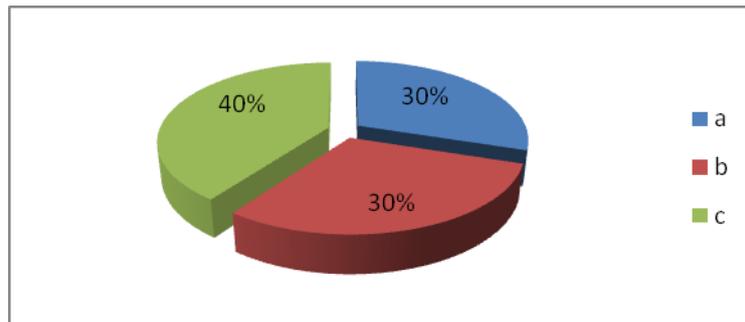


**Figure 3. Duration of services use**



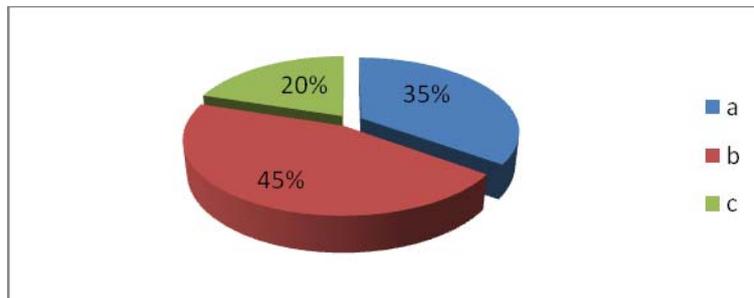
**Figure 4. Clients' satisfaction**

Regarding the clients satisfaction, 75% of the respondents say they are satisfied by the services offered by the pharmacy and 25% are less satisfied. No respondent is completely satisfied or unsatisfied (figure 4). Compared to other pharmacies, the offered services were evaluated by the 30% of the responded as much better, 30% as better and the rest of 40% as the same (figure 5).

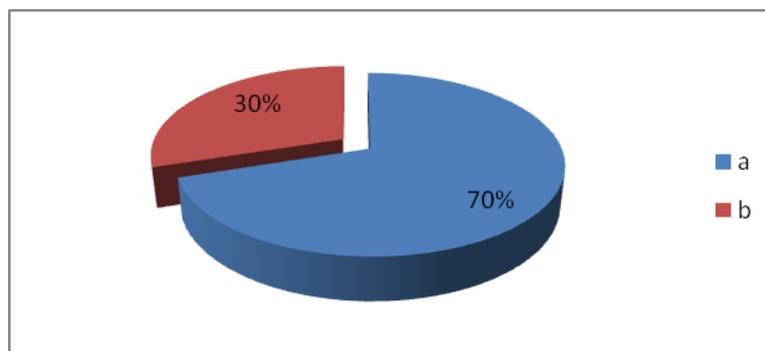


**Figure 5. Compared services**

35% of the responded declared that they will surely further use the services of the pharmacy, 45% probably and 20% possibly will (figure 6).



**Figure 6. Further use of services**



**Figure 7. Problem solving**

From the respondents, 70% appreciated that they encountered no problem related to the services and products offered by the pharmacy and 30% had all the problems encountered solved in time by the pharmacy's personnel (figure 7).

The detailed customers' requirements resulted from the second phase of questionnaires.

Combining the SERVQUAL and QFD methods, the customers' requirements were grouped in five classes as follows:

**Table 1. Customers' requirements grouped in classes**

| SERVQUAL class | Code | Requirement                          |
|----------------|------|--------------------------------------|
| Reliability    | CR1  | Easily solve the requests            |
|                | CR2  | Prepare recipes in own laboratory    |
| Responsiveness | CR3  | Treated with professionalism         |
| Assurance      | CR4  | Get clear and precise information    |
|                | CR5  | Friendly environment                 |
| Empathy        | CR6  | Treated with kindness and compassion |
| Tangibles      | CR7  | Free additional services             |

The quality characteristics were also grouped in classes as follows:

**Table 2. Quality characteristics grouped in classes**

| SERVQUAL class       | Code | Characteristic                         |
|----------------------|------|--|
| Process              | QC1  | Waiting time in the queue              |
|                      | QC2  | Free blood sugar measurement           |
|                      | QC3  | Free HTA measurement                   |
|                      | QC4  | Free cholesterol measurement           |
|                      | QC5  | Free body weight measurement           |
| People               | QC6  | Explain understandable to the client   |
|                      | QC7  | Personnel with communication abilities |
|                      | QC8  | Kind reception                         |
|                      | QC9  | Well trained personnel                 |
| Physical environment | QC10 | Pleasant environment                   |

In order to apply the model resulted from the combination of QFD and SERVQUAL we designed and developed a software application that computes a global index that reflects the customers' requirements accomplishment level (figure 8).

In figure 9 is presented the global index resulted after improvements on the QC2 characteristic, by including the supplementary services of free blood sugar measurements for more clients.

In order to increase the customers' requirements accomplishment level, we focused on introducing new or improved free supplementary services.

Initially, the only free service offered by the pharmacy was blood sugar measurements only as occasional offer once a month for 50 clients. In figure 9 is shown the case of this free service improvement, by offering blood sugar measurements one a week for 25 clients.

As can be seen the global index increased from 40.129% to 51.041%.

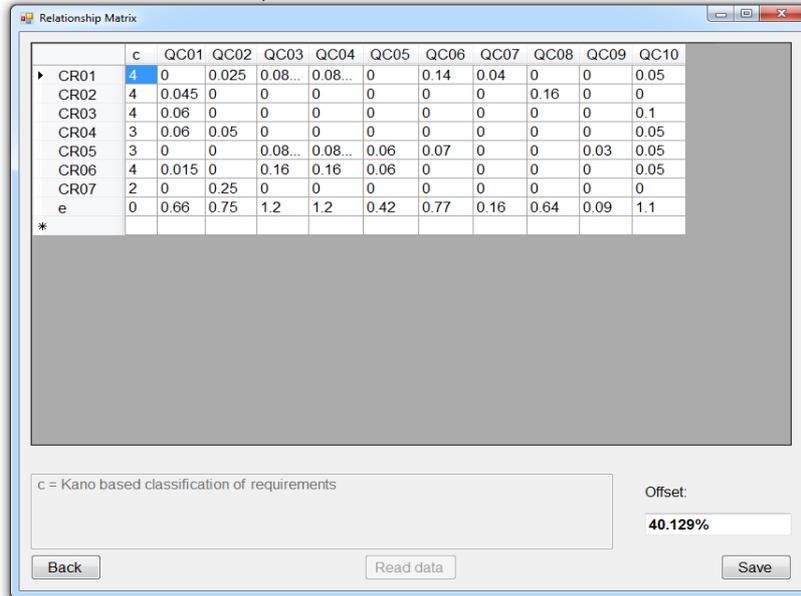


Figure 8. Global index

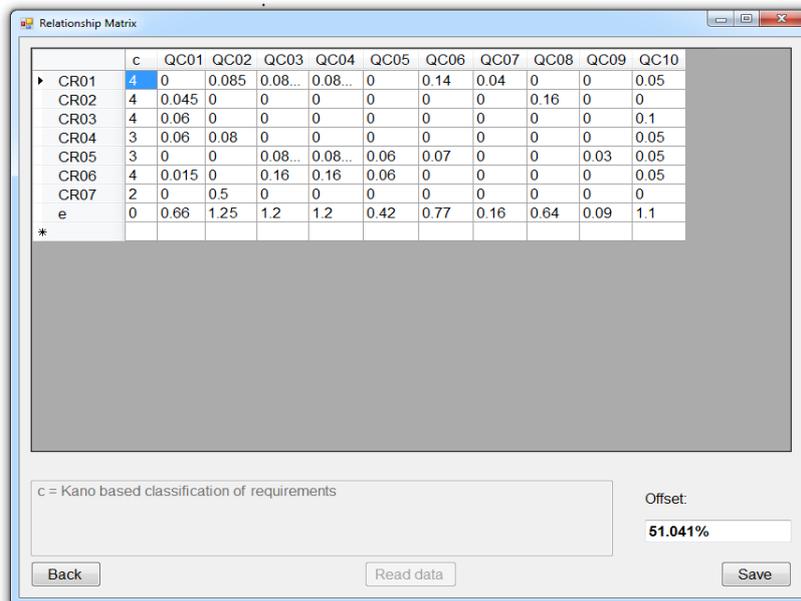


Figure 9. Global index after QC2 improvement

#### 4. CONCLUSIONS

The paper developed the SQ model based on SERVQUAL and QFD methods for the evaluation of services quality. There was designed an own software application that computed a global satisfaction index based on the developed model.

The global index is a measure of the customers' requirements accomplishment level by the quality characteristics.

There can be established a satisfaction grill based on the correlation between the general information resulted from the first phase of questionnaires and the computed index values. The proposed grill is presented in table 3.

**Table 3. Satisfaction grill**

| Satisfaction level     | Index value |
|------------------------|-------------|
| Completely unsatisfied | 0 – 20 %    |
| Unsatisfied            | 20 – 40 %   |
| Satisfied              | 40 – 60 %   |
| Very satisfied         | 60 – 80 %   |
| Completely satisfied   | 80 – 100 %  |

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