

FEASIBILITY OF USING QUALITY FUNCTION DEPLOYMENT IN PUBLIC SERVICES: A Case Study

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SUMMARY

QFD (Quality Function Deployment) is a tool that enables the translation of customer needs in requirements suitable to every stage of product design or service. Although it is best known in the field of industrial operations management, its effectiveness in the planning of quality services also is also documented. This research aimed to evaluate the effectiveness of QFD tool in public services. The study proves, through performance indicators analyzed before and after the implementation of the tool, that the use of QFD in public services is perfectly feasible, adding value for citizens-clients and for the State organization itself. It is important to note that this is an innovative experience in terms of quality management in services, once rare are the public organizations that apply in their management quality tools, especially an elaborated tool as the QFD.

Keywords: *Quality, QFD, Public Services, Organizational Behavior*

1. INTRODUCTION

According to Martins and Laugeni (2005), QFD is the acronym in English for quality function deployment. It is a tool that connects the design of products or services to the process that generates them".

In simple language, the QFD consists of a process of translating consumer needs for each stage of the elaboration of product or service, i.e. is a cross-functional interface between marketing (product design or service) and production (project implementation) that allows both departments to speak the same language of the client.

In practical terms, the QFD consists of a "matrix that has the purpose to execute the quality project, organizing the qualities demanded by customers" (MARTINS and LAUGENI, 2005, p. 508). This matrix is also known as the "house of quality" or "quality matrix" and is obtained from the intersection of customer requirements table (voice of the customer), with the quality characteristics of production table (voice of engineering).

In fact, Eureka and Ryan (2003, p. 17) state that the QFD "can be seen as a process divided into four parts: the first and the second phase is focused on the planning and design of the product, and the other two, to process planning and factory floor activities" and add that the crux of the first phase is the "array of product planning (house of quality) used to identify the customer's needs , project requirements, goals and evaluations of the competitiveness of the product ".

Hauser and Clausing (1988) relate that the QFD matrix was originated in 1972 in the shipyards of Mitsubishi in Kobe, later being developed by Toyota and its numerous suppliers. At the end of the 80's was already used successfully by a large number of Japanese companies, some in the area of services, when American companies began to also make use of QFD (Digital, AT & T, HP, Ford and GM).

Still according to Martins and Laugeni, (2005) the array is constructed in six steps that respond to key questions, according to following table 1.

Step	Question
1	What attributes the customer consider important for the product or service?
2	What's our position regarding our competitors about the items enumerated by customers?
3	What Engineering features affect one or more of the attributes identified by the customers?
4	What kind of correlation exists between what customers want and what the production wants?
5	How our product behaves in front of competing products?
6	What are the interrelation in the potential project?

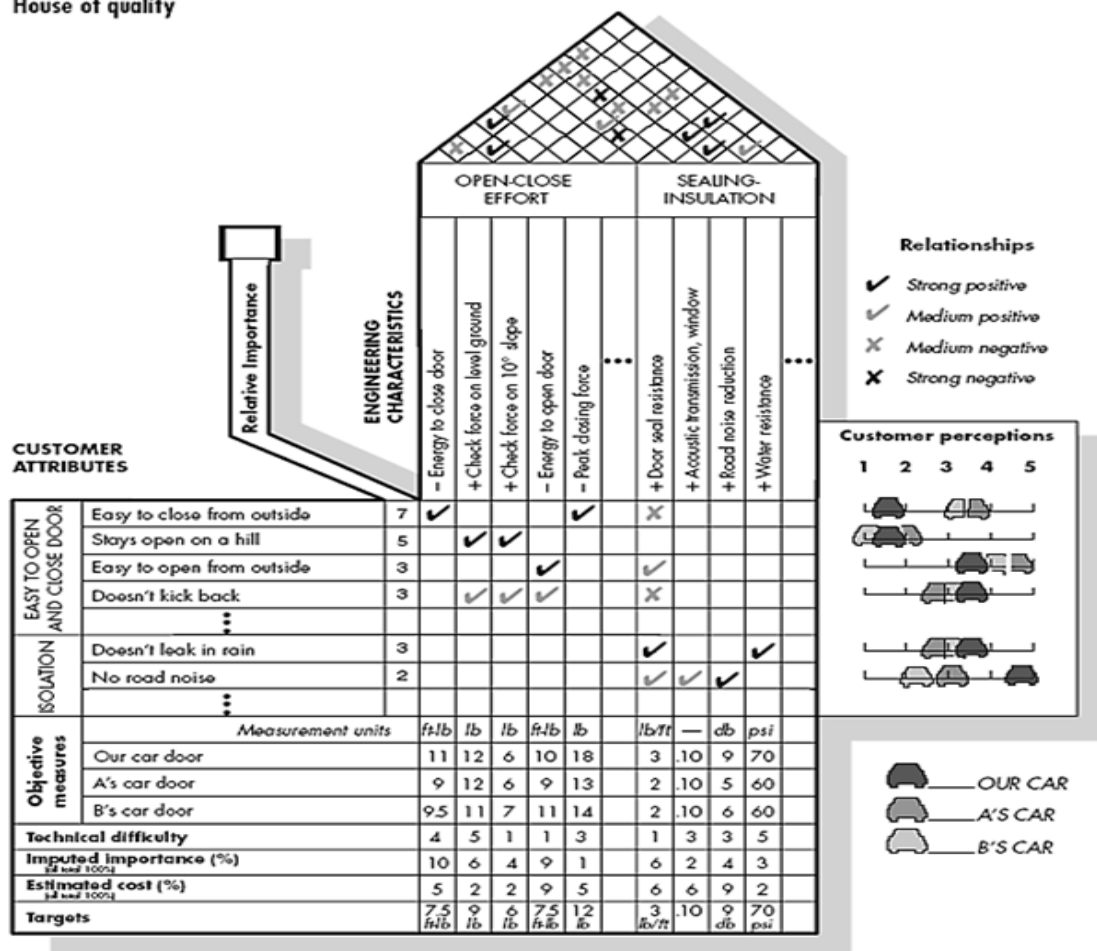
Table 1: Steps of construction of the QFC Array
 Source: adapted from Martins and Laugeni, (2005; 508).

Note that in step 1, you hear the customer, i.e. seek to hear from him what are the requirements that really make a difference. It is also important to be able to situate himself before the competition (step 2), in order not to super or undersize the requirements that will be offered. In the third step, the production is consulted, in order to identify which aspects directly affect the requirements desired by customers. In the array, these aspects are classified with "+", if the production can increase the level offered and with "-" otherwise. The fourth step is to correlate the customer's wishes (voice of the customer) with what the production can perform (voice of engineering).

Martins and Laugeni (2005) explain that the fifth stage consists of a technical comparison between the company's product and the product of the competition, in which each feature mentioned by the customer must be evaluated and assigns a scale of 1 to 5, 1 being the best and 5 worst review evaluation, in order to establish targets for production.

Finally, the interrelationships of the project are identified and are indicated improvements in design characteristics that can interact in a negative way about another feature, in order to avoid useless efforts and rework.

EXHIBIT X
 House of quality



Source: Hauser and Clausing (1988).

Hauser and Clausing (1988) use the example of a car door to demonstrate the construction of the array, which is used by numerous other authors. Based on them we built figure 1, that in your left-hand side brings "what" Customer understands by a quality door, i.e. a "door easy to open and close", a concept that is unfolded in four items "like": "easy to close from outside", "stays open on a hill", "doesn't kick back" and "no road noise". These four items "like" are again deployed and we found five more items "such as", which are at the top of the figure 1: "energy to close door", "check force on level ground", "check force on 10° slope", "energy to open door" and "peak closing force".

These latest items "like" are now deployed on the items "how much", units of measurement that are below in figure (Joules and Newtons, units of measurement respectively for energy and strength), because we cannot forget that only what is measured can be managed and therefore improved.

On the right side of the matrix, is the product or service compared to what is offered by the competition and at the bottom of the array is the weighting of factors in relation to competition. In the center of the array, as can be seen, is made the correlation between the identified items. The same reasoning should be applied to the requirement "isolation".

We could also understand the requirement of the customer as the objective to be achieved by the company, the items "like" of the first deployment would be the actions, the items "like" of the second deployment the goals and the items "how much" the indicators to be monitored. For understanding the step-by-step construction of the array, we suggest reading Hauser and Clausing (1988) or Eureka and Ryan (2003), especially chapter 2.

2. METHODOLOGY

The choice of public service provider organization object of this research, fell on Empresa Brasileira de Correios e Telégrafos whose official abbreviation is ECT, for two main reasons: primarily for convenience of the researcher, one of the leaders of the QFD project in the organization during the period examined whose results were obtained and which will be reported and, secondly, because Correios are still today, among of the Brazilian public companies, the one which enjoys the best positive concept by the population in terms of confidence and credibility for its services.

The author had access, during the deployment process of the project in São Paulo Metropolitan Board of Correios (DR/SPM), at various formal and informal sources of data and information first-hand, taking advantage of the unique advantage of being a witness, as an employee of the Organization and participant in the process, therefore, the study is also qualified as action research (THIOLLENT, 2009).

Noting that in this case study were analyzed results of the period before and after the implementation of the project by three cycles, being therefore well-founded in their considerations.

3. IMPORTANCE OF QFD

Garvin (1992) argues that there are several dimensions of quality and for the customer the quality can mean many different things. It's not always easy to translate into words our wishes and much more difficult is to incorporate expectations on attributes of products or services.

The QFD, however, is based on the premise that products and services must be created and improved to meet customers's wishes and needs. Is, therefore, the tool that every marketing department wants, because besides being able to translate clients's expectations in production requirements, also manages to make the various areas and departments of the company talk to each other on single customer language, which leads the organization to achieve greater synergy.

You might want to point out that the larger the organization, the more important becomes the use of QFD, because we all know that the more complex is a company, the harder it is to get close to the customer and understand their needs.

In this way, the use of QFD represents a huge advantage to the wearer, because be able to identify exactly what the customer wants and value his expectations implies go straight to the point, leaving aside musing in the areas of planning, development and marketing. Hauser and Clausing (1988) tell that Toyota in the 70's and 80's obtained dramatic reductions in costs of design and production of bodywork, of up to 60%, because reduced significantly the changes in the products until reach the final version.

Eureka and Ryan (2003, p. 1) mention that the QFD can decrease costs by half, double the productivity and reduce the time by two-thirds. This is easily explainable, because once established a dialogue with the customer,

it will not be needed so much effort to develop the product or service that meets his needs. The QFD acts, therefore, as an interpreter, capable of making the company and all its departments, understand exactly what the customer wants.

In this sense, the QFD is as useful for products as for services. Imagine if a customer finds a product complicated to use, or a service difficult to access. Although it is so that customers usually express themselves, doesn't help companies to improve product, as complicated or difficult can mean many things. The QFD allows unfold (hence his name) each of these adjectives in dozens of other things (items "like" and "how much") that really matter to the client, but are synthesized in a single word that reveals little or nothing to marketing and production.

Important to note that the QFD is no longer a tool of quality, in fact, it is a powerful planning tool that is ideal to integrate cross-functional teams in joint efforts to improve the level of customer satisfaction.

In fact, for a fruitful use of QFD is needed to make use of all the other quality tools in order to make the product or service exactly the way the customer wants.

The advantage of using the QFD is that it allows you to plan the product with the requirements relevant to the customer and improve, in the case of existing products, those features that really add value and eliminate all the superfluous.

As it is based on a simple technology, of easy conceptual understanding, is ideal for use in any type of organization, regardless of the business, the type of product or service or the purpose. In fact, it is an extremely efficient tool of information transmission from the customer to the Organization, i.e., ultimately is an instrument of communication and mutual understanding between customer and organization.

4. APPLICABILITY OF QFD IN PUBLIC SERVICES

Service is a special type of product, defined as "an act or performance essentially intangible that a party can offer to another that does not result in the possession of any good" (Kotler, 1993, p. 413). Therefore, by definition, if the QFD is perfectly applicable to a tangible product, must also work with services and, in fact, Eureka and Ryan (2003, p. 15-40) claim that the QFD applies to ingredients, materials or services and can be used both in factories and offices.

It remains to be seen whether public service has some characteristic that makes it incompatible with the QFD and, in this sense, refers to the administrative law in order to obtain a proper definition. Cretella Júnior (1989, p. 409) considers public service "all activity that the State has to fulfil its purposes..., directly or indirectly, to the satisfaction of the public interest". Therefore, the State can provide services directly (through their agents) or indirectly (concession regime), always seeking the satisfaction of citizens.

Therefore, there is no impediment to use the QFD and its concepts in public services just by, rather than listen to the voice of the customer, listen to the voice of the citizen, which, for the purposes of this work does not make any difference, so that it uses the term customer indistinctly for citizen and vice versa.

In addition, the QFD allows you to hear the voice of all stakeholders, as a society, the environment, the Government, the workforce, all internal and external clients, being, therefore, an extremely democratic quality tool, perfectly suited to the management of public services, which should take precedence before all to hear and understand the demands of all stakeholders.

5. QUALITY MANAGEMENT IN CORREIOS

Until the first half of the decade of 1990, the quality in Correios was an exclusive subject of the operations area, and the inspection area held the monitoring of the quality of the services provided.

Only from 1996 is that began to be triggered actions in order to implement and develop in ECT quality in a systemic way through the National Program of Quality in Correios – PNQC, which introduced in organization the concepts and techniques of Total Quality Management - GQT.

Since then, the Organization has defined its mission, vision, quality policy, commitments and Values and adopted the criteria of excellence from the national quality award, certification of processes by NBR ISO 9001: 2000, the 5S program and Routine management and management of the improvements – GRGM, typical tools and programs of Total quality management-TQM, in addition to numerous projects and actions as shown in table 2.

Projects	Activities Developed	Year
Seminars	Dissemination of general concepts about Total Quality. - QT	1997
Commitment of leadership	Signature of the term of "postal Commitment to Total Quality".	1997
Total Quality Awareness	Lectures and training.	1997-2003
Choice of Logo	Contest.	1997
Mission, Vision, Policy And Values.	Disclosed by trainings, booklets, brochures etc.	1997-2003
Deployment Plan	Definition and disclosure documents, booklets, lectures, etc.	1997
Launch of the program	Seminars, lectures, trainings, booklets, brochures.	1997
Quality of life at work	Events about health, sports, gymnastics, Life Quality Fair (FEIQUALITY).	1998-2003
Training and education	Form developers to implement PNQC, courses and training in the workplace - TLT.	Continuous
5S program	Implementation of the program with biannual audits and review in 2004.	1998-2004
Improvement of attendance	Training, new models of shops and service systems, evaluation of results through the opinion of customers.	1998-2003
Process improvement	Standardization of units and creation of Quality Teams.	1998-2003
Routine management program and management improvements – GRGM.	Training and deployment of Total quality tools.	1998-2004
Workshop of Total quality.	Exchange of experiences on quality initiatives.	1999-2003
Adoption of the NBR ISO 9000 series.	Certification of CDD Mogi das Cruzes by ISO 9002: 94 and recertification by ISO 9001: 2000	1998-2002
Creation of the Regional Advisory of Quality-AREQ	Regional Advisory of Quality, dedicated exclusively to the promotion of the culture of excellence.	2002
Management evaluation system based on the criteria of national quality award - PNQ	Creation of Postal Excellence Model along the lines of the Model of the National Quality Foundation.	1999-2003
Selective Waste Collection	Creation of the GT and deployment of the system in the headquarters building and other Regional units. Reversal of 50% of the revenue from the sale of waste on behalf of the Regional Program of volunteering	2002-2003
Introduction of the Benchmarking	Creation of the Benchmarking Working Group.	2003
Expansion of ISO 9001:2000 SQG to Attendance	Certification of nine Own Agencies.	2004
Institutional Image	Info Award	2005
Marketing Actions	Top of Mind Award	2006
Social Responsibility	World Mail Awards	2007
Institutional Image	Época Negócios award, Superbrands 4th Edition and trustmarks.	2008
Institutional Image.	Época Negócios 100 award. The most prestigious Companies in Brazil 2009-2010.	2009
Logistics	World Mail Awards.	2010
Services/Logistics	Época Negócios 100 award - best Services Company of Brazil/DCI Award Companies of the year - Best logistics company.	2011
Fulfilment of the goals of quality in the provision of basic postal services	Delivery of more than 95% of letters posted and delivered in the same State within two business days — the goal is 90%. The State non-urgent parcel delivery in up to four business days, which also has target of 90%, reached 94.8%.	2012
CNI/IBOPE Survey	CNI/Ibope survey pointed out that 78% of the Brazilian population considers the quality of Correios services too high or high (25%), or adequate (53%). The company is	2013

	listed as the best evaluated among 13 types of public services. Were heard 7,686 people over 16 years of age, in 434 municipalities, between July 9 and July 12, 2013.	
Prestigious champion company in the service sector	For the sixth consecutive time, Correios was considered the Country's most prestigious firm in the category services. The result is part of the ranking "top 100 most prestigious firms of Brazil", from the magazine Época Negócios, based on research conducted by the Trojan Group Branding. In the general ranking, the State-owned rose nine positions with relation to previous research, getting this year in seventh place.	2014
XV Modern Consumer Award for excellence in customer service	Federal public services category	2014
Table 2: Projects aimed at quality in DR/SPM/Posts and implemented improvements		

Source: the author, with data collected in the survey.

6. IMPLEMENTATION OF QFD

The pursuit of quality in organization as shown in the table 2, followed a schedule well set whose actions and projects have succeeded one another in complexity and effectiveness, to the point where it was necessary, to achieve higher levels of quality in the face of budget constraints typical of public organizations, to find a way to better understand the client in order to focus efforts on their most important needs.

In this context, Empresa Brasileira de Correios e Telégrafos, since 1997 had been using a biannual survey, carried out by its clients to assess their satisfaction with the processes of attendance (corporate and retail clients) and distribution (mail delivery).

This research, carried out by a specialized external body of recognized technical capacity, assesses various requirements and presents stratified and individualized results in relation to Regional Directors of the company, its products and services.

It turns out that, after the dissemination of the results of the research, there was no coordinated activity to plot action plans in order to meet customer expectations. Each area that received these results was limited to know them and, depending on the Manager, were taken actions not always aligned with the strategies of the company. In addition, there was no way to measure the effectiveness of actions taken, or to analyze critically the actions adopted in face of the new results of subsequent searches.

When the implementation of a Quality Management System – EMS in the Regional Board of São Paulo Metropolitana, it was realized the need that customer expectations were treated as a priority by senior management. The multifunctional working group designated to carry out the project of certification of the SGA in Sao Paulo searched a tool capable of bringing the customer-citizen and his expectations of the various agencies and departments involved in the provision of services of the company.

The choice of the Working Group, supported by a specialized consulting, fell on the QFD which, nonetheless being quite used in industry showed good prospects also for services, as actions planning tool that impacted directly on the results of client satisfaction. In a first moment, it was defined the deployment of QFD to the mail delivery service (distribution), typically public and that was, at the time, the process that was in the process of certification by the NBR ISO 9001: 2000.

Thus, the decision to use the QFD aimed to identifying customers's' expectations of the distribution process to direct efforts and outline action plans to improve the requirements and attributes more valued by them in this service. In this way, the Working Group took the project forward by following the steps shown in table 3 below.

Survey of requirements and results of the latest external research carried out in year X. Formatting a worksheet in Excel with all data. Convocation of the managers of Vila Maria Letters Treatment Center, Letters Management, Regional Advisory of Quality, Planning and Management Advisory and Mogi das Cruzes Home Distribution Center, for participation in a training about what was the matrix of QFD and what served for. Presentation of the formatted worksheet with the research results.

Jointly review of what actions would be needed to improve customer satisfaction in distribution.
 Definition of indicators for each planned action.
 Inclusion of these indicators on the dashboard (Regional Work Plan) of the Home Distribution Center - CDD of Mogi das Cruzes.
 Evaluation of the results annually.

Table 3: Project Implementation Stages of QFD.

Source: the author, with data collected in the survey.

As can be seen in table 3 above, the project selected as pilots for implementation of QFD the House Distribution Center - CDD of Mogi das Cruzes. The obvious choice on this Home Distribution Center occurred because the unit was already certified by the NBR ISO 9002 and needed to be recertified by the updated Standard, NBR ISO 9001: 2000.

The development of QFD matrix was accomplished in stages that covered a specific segment of customers, as presented in table 4 below.

Step	Description
1	Deployed the array of QFD for the recipient client segment of the mail delivery service (distribution).
2	Deployed the array of QFD to the retail sender client segment of attendance service.
3	Deployed the array of QFD to the sender client segment for the treatment process (separation and routing of correspondence).
4	Unification of QFD matrix with all segments and integrated action plans to the processes, so that could be determined the goals for each item prioritized by the customer.
5	Definition of overall satisfaction goal for the service and distribution processes as "input" on planning the measurement of performance in the dashboard of the Regional Board.

Table 4: stages of development and implementation of the array of QFD.

Source: the author, with data collected in the survey.

With the deployment of QFD, action plans have been accompanied individually by its managers and the result of each requirement assessed by Regional Planning and Quality Advisory when the following search result of customer satisfaction. In this opportunity, is elaborated the skeleton of the new array of QFD for discussion of action plans in a meeting with the senior management of the organization.

The positive results for the organization extrapolated the initial expectations of the Working Group and, among them, one can enumerate in qualitative terms: better knowledge of clients's expectations in all areas and departments of the company, better assessment of actions that should be taken to generate results, integration of processes and people and creation of a culture of management by indicators at all levels.

Several indicators of the organization have improved with the use of QFD (ex.: operating income), however, as it is difficult to demonstrate the correlation between them and the use of QFD, as there are many other factors involved, will be presented in the following tables the results of scores granted by customers to the attributes of the services they considered most important.

Factors	Year X	X + 2	X + 4	Evolution
Presentation of the postman	8.1	8.4	9.4	Improved
Knowledge of the service	8.2	8.4	NR	Improved
Delivery to the correct address	8.6	8.7	9.2	Improved
On-time delivery	8.1	8.7	9.2	Improved
Provision of information	7.8	8.3	9.2	Improved
Ability of the postman	NR	NR	9.3	1 st . Evaluation
Time of passage of the postman	8.1	8.7	9.1	Improved
Personal identification of the postman	NR	8.2	9.4	Improved
Preservation of correspondence	8.7	8.7	9.1	Improved
Secrecy of correspondence	9.2	8.7	9.3	Improved
Treatment of Mailman with the resident	8.8	8.9	9.4	Improved
Overall satisfaction index with distribution	8.6	8.7	9.2	Improved

Table 5: Evolution of Factors Evaluated in the Recipient Client Segment - Distribution Process in DR/SPM (NR = not rated); zero to ten notes.

Source: the author, with data collected in the survey.

It should be noted that in X + 2, by a series of short-term factors, the notes given by customers to the service of delivery of correspondence kept, in general, levels similar to evaluations made two years before, and one of them even worse, despite the company's work with the concepts of total quality and continuous improvement, as described in table 2.

After deployment of the QFD, however, all indicators have improved, exceeding the nine points, which indicates levels of excellence in service provision in the evaluation of the own customers.

You might want to point out that the factors that have had treatment of actions were Providing Information, Service Knowledge, Treatment of the postman with the resident, On-time delivery and Preservation of correspondence, which were the most important factors for customers and who had the lowest notes.

The results show that the acting focused on these four criteria allowed raising the General index of customer satisfaction in 0.5 point, a remarkable result considering that it is being used a scale of zero to ten with results above nine.

The experience with public administration shows one of the big problems to improve the quality of services is to distribute scarce resources, especially financial, for all points that need improvement or who are disabled.

Several years of work with public resources management taught that the mere distribution of available resources for improvement of all weaknesses, equally or by any other criterion that the voice of the customer, brings no noticeable benefits to the citizen and, therefore, neither the organization.

In this way, the QFD helped to direct resources and precious efforts for its scarcity for those really important factors from the point of view of the client, helping to improve the favorable perception of the company as a whole vis-à-vis the citizen consumer of postal distribution service.

In face of the auspicious results achieved with the use of QFD in the distribution process (delivery service of correspondence), the Working Group decided to proceed with the implementation of the QFD in a second service, that was the attendance in postal agencies, retail customers segment, with specific action plans, whose results are presented in table 6.

Factors	Year X	X + 2	X + 4	Evolution
Access to information	8.8	9.2	8.8	Worsened
The Agency's internal environment (QFD)	8.0	8.5	8.8	Improved
External appearance	NR	NR	8.7	1a. Evaluation
Personal presentation of the attendant	8.5	9.0	9.0	Kept
Preferential service	NR	9.2	8.8	Worsened
Knowledge of the service	8.8	9.1	8.8	Worsened
Courtesy/attendant handling	8.9	9.2	9.0	Worsened
Availability of products and services	8.7	9.3	8.7	Worsened
Operation of machinery and equipment/systems	8.7	9.1	8.7	Worsened
Hours of operation	NR	9.2	8.7	Worsened
Personal identification of attendant	NR	9.1	9.0	Worsened
Location of Agency	9	9.2	8.9	Worsened
Organization	NR	NR	8.7	1a. Evaluation
Proactivity of the attendant (QFD)	8.4	8.4	8.5	Improved
Guidance and signage	8.3	9.1	8.5	Worsened
Time of attendance	NR	NR	8.9	1a. Evaluation
Waiting time in the queue (QFD)	7.5	8.0	8.6	Improved
Index of overall satisfaction with customer service	8.5	8.9	8.9	Kept

Table 6: Evolution of the Factors Evaluated in the Client Sender Segment - Retail Service Process in DR/SPM (NR = not rated); notes from zero to ten.

The source author, with data collected in the survey.

The results presented in table 6 above are perhaps the most interesting and deserve careful analysis. Firstly, we must point out that were elected to object of action plans only the factors of Time waiting in line, attendant's Proactivity and internal and external Environment of the Agency.

Only those three factors were selected to be treated by specific action plans, because as stated by QFD were the most relevant to the client and who had worst evaluation, which were prioritized.

The notes are in table 6 show that working just three factors, it was possible to maintain the index of overall satisfaction with the service, even with decreases in ten other factors, checking that the scarce public resources, especially financial, were directed to the factors that really matter to the client.

It's easy to imagine what would have happened without the use of QFD, because unfocused, would try to meet all the factors and divide the few resources among them. Obviously for some would left, and would lack for others, because with so many factors to be considered, the share of resources would never be ideal.

The QFD, however, allowed to focus on the attributes of the service that were more important from the perspective of the customer and, with this, it was guaranteed maximum effectiveness in the application of resources, i.e. even with limited resources acted on what really mattered to people, so that the organization could keep the index of overall satisfaction, even with the few resources that were not sufficient to meet all demands.

Must also be considered that the attendance process is under treatment of QFD just two years ago, being a process whose treatment through QFD is much more recent than the distribution (mail delivery), which makes the results even more meaningful.

As a control group, was kept the customer segment of sender service, i.e. the factors for this group of customers were treated through the use of QFD, but solely from the previous form, exactly the same way as they were worked out before the introduction of QFD, i.e. with uncoordinated actions carried out by the managers of the areas, in accordance with its own criteria of evaluation.

The results presented in table 7 following clearly indicate that the general situation worsened significantly in almost all factors, taking the general index of satisfaction of this segment of customers with the service provided, the level below the verified in the base year X even considering all the other quality tools and techniques spread by the company (see table 2).

Factors	Year X	X + 2	X + 4	Evolution
Access via internet	8.1	8.0	7.8	Worsened
Personal presentation of the commercial representative	8.3	7.4	8.4	Improved
Customer service request on localizing objects	7.8	7.9	NR	-
Commercial service	8.0	7.8	6.7	Worsened
Financial service	7.9	7.8	7.2	Worsened
Commercial representative interaction capacity	8.0	7.5	8.5	Improved
Contractual conditions	8.3	8.1	7.3	Worsened
Communication conditions	8.0	8.0	6.9	Worsened
State of preservation of the correspondence	8.2	8.3	7.6	Worsened
Flexibility in service provision	8.2	8.0	NR	-
Frequency of visits from sales representative	5.9	6.1	7.5	Improved
Information contained in the billing	8.2	8.0	6.9	Worsened
Punctuality in delivery	8.1	8.2	NR	-
Delivery time	8.0	8.1	7.8	Worsened
Receipt of billing in a timely manner	8.1	8.0	7.4	Worsened
Object tracking system	7.3	7.6	7.3	Kept
Overall satisfaction	7.9	7.8	7.5	Worsened

Table 7: Evolution of the factors evaluated in the Corporate Sender Client Segment - great customers Service Process in DR/SPM (NR = not rated); notes from zero to ten.

Source: the author, with data collected in the survey.

When comparing the results achieved with the use of QFD which were presented in tables 5 and 6 with the results presented in table 7 whose process suffered no treatment with QFD, it is perfectly acceptable to infer that the QFD made a big difference in relation to other tools and quality programs that were already in general use in the organization.

A more detailed analysis of results (tables 5, 6 and 7) leads to the conclusion that the QFD served as a map for the leadership of the organization, which indicated exactly where, when and how should be focused efforts, allocated resources, in addition to point precisely on which points the use of other tools and quality programs available would have more effects and bring results that were perceived by clients.

This perception of QFD as a map or compass indicating the path to be followed in search of higher value results to customers not only by qualitative and quantitative results presented, but is also confirmed by testimonials and statements of those involved in the implementation of the project.

All these extremely encouraging results led the working group to conclude the advisability of proceeding with the use of QFD, because the data and information collected and analyzed allow to point out that the use of QFD in public services is effective face of significant improvements identified, however, the project was not continued by other issues that do not fit be discussed here, in relation to political transitions and natural administrative changes in public organizations.

7. FINAL CONSIDERATIONS

The results clearly indicate that the QFD can be successfully used in public services and with great prospects for application in various governmental spheres due to its simplicity, low cost of implementation and, above all, by streamlining that gives by directing the decision process in favor of the customer, in the case of public administration, the citizen.

The case shows that the QFD is a good management practice, because in addition to the factors mentioned above, one must also consider the unification of the understanding of customer expectations by everyone involved in the processes, the adoption of actions taken specifically to meet the expectations of customers, the main recipient of the public efforts and ultimately strengthens the planning and decision-making based on facts and data by eliminating the evil character of decisions undertaken based solely on political or for the moment criteria since the QFD clearly specifies the characteristics that are important for the client and allows its quantification, facilitating its operation.

For the public administration, the QFD can provide invaluable contribution, because as seen, while improving quality, decreases costs, the perfect equation not only to the private sector as well as for any responsible Government which seeks to offer citizens the maximum satisfaction as possible with as little investment as possible as the QFD methodology, in addition to discipline the process of creation and improvement of services simply prevents several kinds of errors and waste to happen.

An area of public administration in which QFD could be used with great odds to achieve great benefits is in the shopping sector, due to the proactivity of the methodology and the opportunity of dialogue between suppliers and buyers, including regarding the specifications of public notices, which opens possibility of new research also.

Another great possibility of QFD is as a repository of knowledge about wishes and needs of customers and citizens, which through most modern database technologies, can be shared between the various levels of public administration, with undeniable advantages for citizens. This is also a new possibility of research.

As not everything may submit only positive aspects fit to mention that the great difficulty encountered when implementing QFD was the ignorance of the people involved about the importance of QFD matrix as a tool for planning, obstacle easily overcome after the presentation of the first positive results.

It is important to note, in case it haven't been clear, the QFD is not a technique that works by itself, an independent planning tool, in fact, does not exempt the entire set of practices, procedures and tools of total quality, such as Pareto diagrams, cause and effect diagrams, stratification, check sheets, histograms, scatter diagrams, control charts, value analysis, statistical process control, failure mode analysis and defects, just to name a few.

In fact, the QFD is complementary to quality programs to the extent that it can be used as a compass that points when and where to apply a particular quality tool, i.e. the QFD indicates the point where you need a more refined analysis work which requires a solution or improvement that will really increase the value to the client.

With this powerful tool, as seen, it is possible to ensure that the service offered to the citizen, or the product available on the market, meet more fully the needs and expectations of customers. This is really a great opportunity to improve management practices and to offer better services to society.

In addition, this research has shown that the QFD may be an ideal tool of communication between citizens, consumer of public services, and the Government machine, represented in our case by Correios, because it allowed that the needs of the customers do not suffer distortions during the complex and bureaucratic process of citizen service, characteristic of public administration.

Finally, it is hoped with disclosure of this research project to stimulate new experiences with the use of QFD, including in innovative areas, because, as demonstrated in the face of positive results presented in the first two processes deployed and studied here, the prospects of QFD are very auspicious in public area, as is in the industry.

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