SOME THOUGHTS ON SERVICE QUALITY MEASUREMENT

The STCP Case Study

Álvaro Costa[1], Sofia Pinto[2] and Jorge Freire de Sousa[3]

Abstract

1. Introduction

The effective service quality management requires the implementation of policies, which can be translated to concrete and measurable goals. The aim of this paper is to share some thoughts regarding service quality measurement at a transport operator, the STCP - Sociedade de Transportes Colectivos do Porto, SA (Portugal). In our discussion we call attention to the importance of the choice of the measures, and to the integration of different quality indicators, its continuous assessment, and its comparative analysis with the predefined goals. The STCP case provides ground to discuss some points emphasised by the quality literature by showing the evolution of an implementation process in a real case.

2. The quality measurement

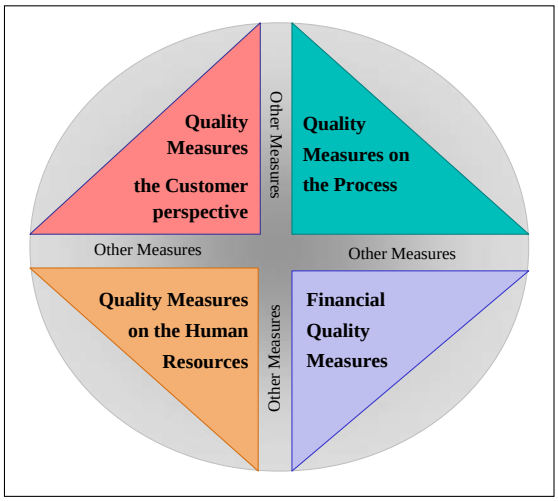
The evaluation of service quality requires the attention to the nature of the service provided so that the quality definitions adopted in that analysis consider the relevant dimensions of the particular service (Sousa and Voss, 2002). The STCP case study evolves based on the quality concepts of conformity to requirements and perceived service quality. Perceived quality is the consumer judgment about the global excellence of an organisation. Perceived quality is a form of attitude related to (but not equivalent to) satisfaction, resulting from the comparison between performance expectations and perceptions (Parasuraman *et al.*, 1988).

Moreover, quality is a multi-dimensional concept, and, as such, research studies should use multidimensional quality measures (Sousa and Voss, 2002).

Based on the study of quality evaluation models we propose a consistent set of categories of service quality measures.

From the analysis of the quality measures proposed by Garvin (1992), of the Balanced Scorecard defined by Kaplan and Norton (1992; 1996), and of the EFQM model (1999) we suggest a set of categories of quality measures for the service quality evaluation. Those categories, shown in figure 1, are: quality measures from the customer point of view; quality measures on the process; quality measures on the human resources; and the financial quality measures.

Figure 1 – The Service Quality Measures



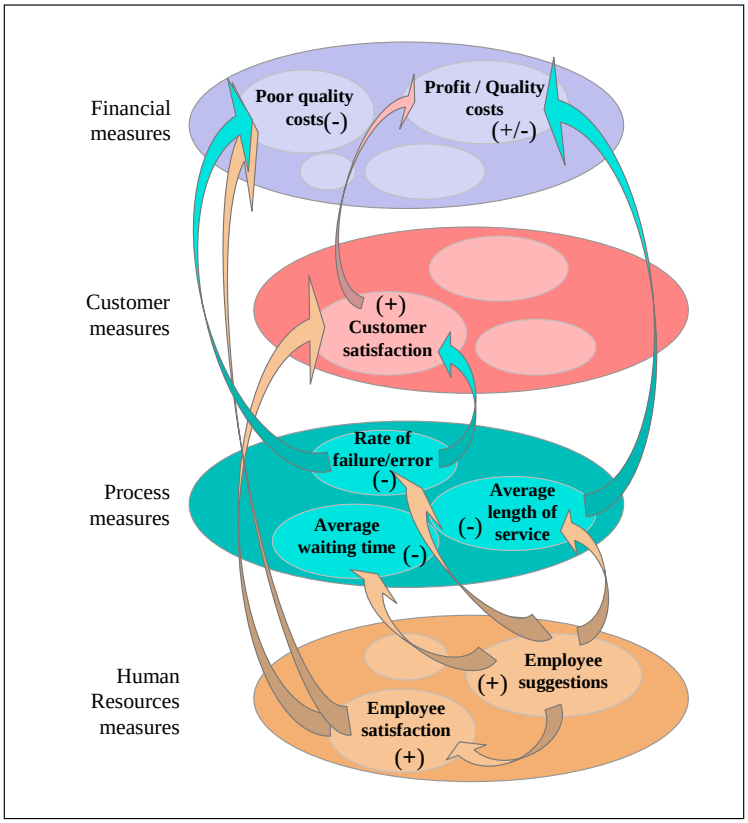
Source: (Pinto, 2003)

The effective service quality evaluation appears to follow three requisites: (i) the integration of the different categories of measures (Kaplan and Norton, 1992; 1996) (Kordupleski *et al.*, 1993), as the combination of its information provides a richer information to quality management; (ii) the continuous collection of measures (Parasuraman *et al.*, 1988), meaning that the measures chosen in each category should be maintained for a significant period of time, so that an evolution can be tracked for each of the measures and even for their relationship; (iii) and, the comparison of the quality measures with its predefined goals, and against other indicators (Wyckoff, 1984), such as the competitors service quality information (*benchmarking*).

We emphasise the need to integrate the information of the different measuring categories, so that the information can be critical and useful for

management. The categories of measures complement each other in the information they provide and they interrelate each other harnessing their effects, as represented in figure 2.

Figure 2- The link between the different Categories of Service Quality Measurement



Source: Adapted from Kaplan & Norton (1996)

3. The STCP Case Study

STCP is a public transport company owned by the central Portuguese government and operates in a regime of monopoly for the bus operations in the city of Porto. The enterprise provides some service to the outskirts of the city where it competes with private operators. The transport network covers an area that goes 10 km to the north and 6 km to the south of the city, including the neighbouring cities of Matosinhos, Maia, Valongo, Gondomar and Vila Nova de Gaia.

STCP, operating a fleet of approximately 600 buses, produces around 35 million km per year and has around 2600 bus stops.

In recent years we witnessed a remarkable improvement in the company performance, both in terms of production efficiency and of service effectiveness. For instance, the number of total staff decreased from 3672, reported in 1990, to 2952 in 1996, and 2240 in 2002. These figures are even more impressive when we look at the evolution of the number of drivers, which increased from 1229 in 1996, to 1334 in 2002, and represent now about 60% of the workforce when compared to 42% in 1996. The production has been around 30 million vehicle km per year but the increase in the number of drivers made it possible to cut extra working hours because, in 1996, around 10% of the production was made on staff overtime.

The fleet was modernized through the acquisition of buses in operational leasing, reducing the average age of the buses from 13.6 years old, at the end of 1997, to 6.2, in December 2002. All these improvements could be accomplished due to a strong investment in information and communication systems and to the centralization of the administrative offices. High valued land was sold and new places for the activity purchased. The real time control of the fleet operation was improved with the installation of a GPS system in the buses.

The company is now more customer service oriented, the corporate image has changed and the social recognition has strongly increased.

4. The quality approach in STCP

Since 1997, STCP is putting an effort to improve service quality. This is being carried out by setting targets for the global company and, at the same time, by identifying processes and improving their quality one by one. The approach was chosen in the belief that it is by improving the quality of each sector of the company that it is possible to achieve an outstanding level of total quality, reinforced by the fact that this is a never-ending process.

4.1. The strategy of the enterprise

The first task was to set targets for restructuring the company adopting a strategic view in four elements: a flexible organizational model, reinforcement of the role of STCP in the operation area, improvement of the competitiveness of the enterprise mainly by cost reduction and development of a new value based management model.

In the following tables we identify some of the main processes aiming to accomplish the strategic targets described above.

Restructuring	Problem: Over staffed. Objective: Reduction in indirect staff numbers. Methodology: Hire external consultants to prepare together with internal staff a program of rationalization, reengineering of processes and staff training. Benefits: Increase in productivity levels and reduction in labour costs. Before and after: Before – 2959 employees and 1264 drivers (1997) After – 2240 employees and 1334 drivers (2002)

Client	Enterprise	Collaborators	Finances	Others
Perception of dynamism Better service	Economic rationality Higher productivity	Staff reduction Perception of change in line with private management	Reduction in labour costs	Reengineering of processes

Autonomous Business Units	Problem: Enterprise with several core-businesses. Objective: Focus employees on the core-business of their activities. Methodology: Give autonomy to Maintenance and Museum activities through the creation of the Maintenance Management Unit and Museum and Tramcar Unit. Benefits: Economic rationality. Increase in income related to activities. Before and after: Before – Museum - 18839 visitors (1997); Maintenance – different criteria and maintenance methodologies and no outside contracts (1997) After – Museum - 32457 visitors (2002); Maintenance – standard procedures and increase in the number of outside contracts (2002)

Client	Enterprise	Collaborators	Finances	Others
Increase the number of clients and their satisfaction	Economic rationality Each area is focused in its core business (better effectiveness and efficiency)	Staff focused on the activities they have to perform Staff with proper training Staff reduction	Reduction in the deficit of the Museum. Important cost reduction in Maintenance and increase in the number of outside contracts	Local community benefits with the activities of the Tramway Museum (schools and tourism)

Corporate Image	Problem: A poor corporate image, turning difficult to develop a marketing strategy. Objective: A new corporate image, enabling a better relationship with the clients. Methodology: Ask for proposals and test image with clients. Benefits: Enterprise with a modern image. Before and after: Before – no identity and no marketing strategy (1997) After – strong corporate image and aggressive marketing strategy (2002)

Client	Enterprise	Collaborators	Finances	Others
Positive evolution of image attributes	Increase coherence in all information and communication supports	Perception of a coherent change	Cost of development of new corporate image but lower costs in the long run (due to standardization)	Improves the social recognition of the enterprise

Balanced Scorecard	Problem: Absence of an organizational culture of value creation, low efficiency and low performance of collaborators. Objective: Focus the organization in the objectives defined by the Board of Directors, towards a value creation culture; actuate on external variables in order to achieve social and environmental benefits as a consequence of the public service assured by the company. Methodology: Implementation of the Balanced Scorecard and Value Based Management in an integrated manner. Short course prepared and presented by Kaplan (March 2002). Benefits: Comprehension of the strategic vision and translation into executable tasks and measurable indicators. Before and after: Before – lack of knowledge about value creation; lack of organizational alignment regarding strategic goals. After – identification of value drivers and key performance indicators in each department; consolidation of a strategic alignment and cooperation; new resource allocation; build-up of a compensation scheme linked to established and accepted targets.

As this process only started in 2001 the following table reflects the expected and non the achieved results unlike the previous tables.

Client	Enterprise	Collaborators	Finances	Others
Client satisfaction: - Regularity and punctuality of service - Increasing number of bus lanes - Better interchange conditions - Public service contract Increase demand of public transport	Social and environmental benefits: - Operational time gains - Less pressure over parking downtown - Less accidents due to less vehicles on circulation - Better energy and lower consumptions	Employee satisfaction: - Unity and integrity of purposes - Better use of management capabilities - Increasing productivity	Increasing demand of public transport Better occupancy degree Increase of productivity Greater income	Process redesign

	Economic rationality: - Lower financial effort from the stakeholder			

4.2. Processes and quality indicators

The second task was to identify processes needing improvement and to proceed to the reengineering of each of them. The objective was always to perform better with fewer resources in order to achieve excellence. Several processes in different areas of the enterprise were identified and, for each of them, the main problems were characterized, the objectives to achieve were established and a methodology to follow was selected.

The main areas were operations and means of support, marketing and client service, human resources and organizational development and support systems. We are going to present an example of a re-engineering in each of the selected areas.

Operations

Acquisition of buses (Gas, leasing)	Problem: Aged fleet. Objective: Buy new buses. Methodology: Preparation of the legislation diploma authorizing the bus operators to run buses acquired in operational leasing in order to submit it to the government. The reason for this was that technological and economical risks of buses running on natural gas had to be supported by the manufacturer. Benefits: Economy in terms of combustible consumption and maintenance as well as environmental benefits. Before and after: Before – Buses running on diesel and bought by the company (1997) After – 175 buses (30% of the fleet) running on natural gas acquired in operational leasing (2002)

Client	Enterprise	Collaborators	Finances	Others
Better attributes of the buses in terms of comfort Client satisfaction	Average age of the buses decreased Lower costs on energy consumption Lower costs on maintenance	Number of maintenance staff decreased New skills for maintenance staff	Financing with low all-in cost Operational risk on the side of the manufacturer Lower costs on energy and maintenance	Lower emissions

Marketing

Travel cards selling network	Problem: Long queues in STCP selling points at the end of each month. Selling activity costs representing 8% of the income. Objective: Improve the quality of the service and cut costs in the selling network. Methodology: Outsourcing. Benefits: Activity cost reduction (2% commission plus management costs) and higher satisfaction of the clients. Before and after: Before – 11 selling points dedicated to STCP (1997) After – 73 selling points (5 dedicated to STCP + 68 outsourced to the Post CTT) (2002)

Client	Enterprise	Collaborators	Finances	Others
Better attributes related to the selling network Less claims and less time of response More selling points, longer opening times and more qualified attendance	Economic rationality (outsourcing)	Staff reduction Increase in the level of staff qualification	Important reduction in the cost of selling	

Organizational development

Workflow system	Problem: Workflow based on physical circuits. Objective: Improve the accessibility of information in terms of rapidity and economy. Methodology: Use of information technology. Benefits: Higher rapidity in the access to the information and economy in internal transport. Before and after: Before – Physical circulation of all the information. During – Installing a commercial workflow system. After – Break of the system due to an unexpected level of success and acceptation of the workflow system. Acquisition of a more powerful system of workflow.

Client	Enterprise	Collaborators	Finances	Others
Lower times of response Less errors in the services	Better and faster communication between departments Better integration of information Service effectiveness Simpler control process Non duplication of processes and documents	Better access to information More time to non routine tasks	Lower cost due to an improvement on process efficiency Lower physical circulation of information	

Support Systems

Implementation of an ERP	Problem: Low quality and integration of information; low effectiveness of internal processes. Objective: Improve information, processes, communication and control. Methodology: Installing SAP R/3 by consultants with high involvement of the company. Benefits: Simplification and elimination of processes; analysis, correction and cleaning of historical information; integration of information; increase of cooperation and communication between departments; new analytical account and yield analysis model. Before and after: Before – Inconsistent information; weak communication inter departments; high number and complexity of processes. During – Installing SAP R/3. After – Integrated and unique information; good cooperation inter departments; simplified processes; reduction of processes.

Client	Enterprise	Collaborators	Finances	Others
Simplification of processes Reduction of response times to clients	Analysis, refinement and even elimination of spurious historical data To uniform concepts and integrate information	Dialog and joint resolution of problems Deep change in the way of working	Implementation of a new analytical account and yield analysis model for the different business areas Increasing potential for cost and profit control	Renovation of Information Systems

5. Conclusions

The case herein presented reports the experience of a transport operator that is being involved in a process of service quality improvement with a customer focus.

The definition of a strategic plan followed by the identification of the areas needing improvement and finally of the processes inside each of them and the effort put in the definition of quality indicators for measurement summarizes the approach adopted in STCP. However, we do not claim that there is a unique way to improve quality. This was an approach for improving the service quality in a company needing modernization and a lot of cultural changes. And this was a successful experience.

The option made in STCP to improve quality has been different from the choice made by other operators, which preferred to involve their companies

in quality certification processes. Such a step, which is another (or a different) aim of quality improvement will come at the right time.

6. References

EFQM - European Foundation for Quality Model e APQ - Associação Portuguesa para a Qualidade (1999) *The EFQM excellence model*. Brussels.

Garvin, D. A. (1992) *Operations Strategy*. Prentice Hall International Editions.

Kaplan, R. S. and Norton, D. P. (1992) The balanced scorecard - measures that drive performance. *Harvard Business Review*; (January-February):71-79.

Kaplan, R. S. and Norton, D. P. (1996) Using the balanced scorecard as a strategic management system. *Harvard Business Review*; (January-February):75-85.

Kordupleski, A. J.; Rust, R. T., and Zahorik, A. J. (1993) Why improving quality doesn't improve quality (or whatever happened to marketing?). *California Management Review*; (Spring):82-95.

Parasuraman, A.; Zeithaml, V. A., and Berry, L. L. (1988) SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*; 64(1):12-40.

Pinto, S. S. (2003) *Gestão de Serviços - a avaliação da qualidade*. Lisboa: Editorial Verbo.

Sousa, R. and Voss, C. A. (2002) Quality management re-visited: a reflective review and agenda for future research. *Journal of Operations Management*; 20.

Wyckoff, D. D. (1984) New Tools for Achieving Service Quality. *Cornell Hotel and Restaurant Administration Quaterly*; (November).

---

[1] Corresponding Author: afcosta@fe.up.pt; CITTA – Centro de Investigação do Território, Transportes e Ambiente, Faculdade de Engenharia da Universidade do Porto.

[2] Faculdade de Economia e Gestão da Universidade Católica Portuguesa.

[3] GEIN – DEMEGI, Faculdade de Engenharia da Universidade do Porto.