An indicator-based management model for service levels in shared services centers

Renata R. Coelho(coelhore@hotmail.com)
School of Business Administration/Federal University of Minas Gerais (UFMG). State Secretariat for Planning and Management of Minas Gerais. 6627, Antônio Carlos Av. – Zip Code 31270-901 - Belo Horizonte - MG – Brazil

Ricardo S. Martins (ricardo.s.martins@uol.com.br)
School of Business Administration/Federal University of Minas Gerais (UFMG). Researcher at the Interdisciplinary Center for Logistics Research and Extension (NIPE-LOG/UFMG). 6627, Antônio Carlos Av.
Zip Code 31270-901 - Belo Horizonte - MG – Brazil

Débora S. Lobo(dslobo@uol.com.br)
Professor Dr., State University of Western Paraná (Unioeste). Researcher at the Research Group for Transport, Logistics and Systems Modeling (Translog) P.O. Box 520 Zip Code 85.900-970 Toledo PR – Brazil

Abstract
The focus on frameworks for service design and management still requires considerable further development, in a special way to service operations. This study has tried to assist in rectifying this omission, developing a management model for Shared Services Centers (SSC). The case study method was adopted using non-probability sampling according to accessibility. Data collection was carried out by means of interviews using a semi-structured questionnaire. In order to select indicators which were relevant from the customer`s point of view, the interviewees were presented with 21 indicators related to three categories which had some degree of significance for them.

Keywords: Service operations management, Shared services center, Operations strategy.

Introduction

Discussions on organizational models have traditionally focused on centralization or decentralization as the ideal models (Murray, Rentell, and Geere, 2008) Organizations have moved towards decentralization, since this mode of organization proved to be insensitive to the specific needs of local customers. However, since decentralization required more units with the same functions, it led to duplication of operations structures (Schulman et al., 1999).

This article discusses one type of support system for managing Shared Services Centers (SSC), a more recently developed organizational arrangement that aims to establish new organizational structures based on sharing intra-organizational services.

According to Chase and Apte (2007), if we examine the history of the important ideas which have influenced research into service operations, it will be found that these concerns are typical of contemporary studies that deal with the design of the service to be provided. According to these authors, the focus on frameworks for service design and management still requires considerable further development. Among other aspects, it is necessary to improve the contribution made by research into the development of service operations.

According to Schulman et al. (1999), shared services may be defined as the concentration of a company's resources on activities taking place in all areas of the organization with the aim of providing servicing multiple internal customers. Users are able to perceive the value that has been added because of the improvement in the level of service as a result of increased specialization and standardization, and cost reductions due to economies of scale and scope. This is achieved without any of the units having to give up their administrative autonomy or management of the respective costs and level of service (Janssen and Joha 2006).

In comparison to external services, internal services have received relatively little attention and, in addition to this, in general, the studies of internal services found in the literature do not offer any alternative to the SERVIQUAL tool for measuring customer satisfaction. However, there is no consensus on the applicability of SERVQUAL for internal service measurement (Brandon-Jones and Silvestro, 2008).

This study is organized according to the service strategy triad presented by Roth and Menor (2003), which consists of the following three elements: (1) the targeted market and customer segments; (2) the notion of a service concept as a complex product bundle (or "offering") for customers; and (3) the design of the service delivery system.

Service Operations Management (SOM)

Operations Management provides companies with a potential source of competitive advantage. The term "operations" refers to management of the processes of transformation of such resources as equipment and staff into outputs, whether these be products or services, in order to satisfy the needs of specific internal or external customers (Morris and Johnston, 1993). This type of transformation results from managing the aspects which are typical of the processes related to operations, namely, scheduling, loading, sequencing and monitoring and control (Slack et al., 1998). It is strongly influenced by the following aspects: the definition of strategic objectives, the technical or quantitative tools used and the way human resources are managed. In an organizational environment, operations management interacts strongly with such other functions as engineering, marketing and finance and helps the organization to achieve its strategic objectives.

Operations management strategies make it possible to acquire, maintain and increase competitive strength. According to Pilkington and Fitzgerald (2006), the most important authors who have dealt with topic of "Operations Strategy" are Skinner (1969), Hayes and Wheelwright (1984), Swamidass and Newell (1987), Ferdow and De Meyer (1990) and Miller and Roth (1994). In addition, the survey carried out by Pereira et al. (2010) found that recent scientific research from 2004 to 2009 has used the following approaches:- Resource-based View, Networks, Lean Manufacturing, Strategic Logistics and Supply (SCM), Manufacturing strategy, "Green" Supply Chain, Agglomerations, and Performance Indicators.

To be able to manage operations in this context, it is essential to establish performance indicators. These indicators should be subdivided for each sub-function but must also be coherent with the organization's criteria so that it is possible to manage and develop the process of continuous improvement.

Along with the growing importance of the service sector in the economy, there has also been increasing interest in carrying out research into services (Fitzsimmons and Fitzsimmons, 2000; Roth and Menor, 2003; Heineke and Davis, 2007; Chase and Apte, 2007; Johnston and Michel, 2008). Although the study of services is interdisciplinary in nature, in management research, they have mainly been studied in the disciplines of operations, marketing and human resources. Within the discipline of operations, the topic is studied within the area of service operations management (Johnston, 1994).

The specific operations service´s features are reproduced in the production system. Service operations can be divided into the following two areas: one where there is customer contact and another where there is none (Johnston and Clark, 2008). In the service literature, the area where there is customer contact is usually called "front office" and it is here that any customer-company interactions take place. These can either be of the personal or non-personal contact type. This "front line" is where the "service encounter" takes place, i.e., the period of time when the customer interacts directly with the service. The customer's perception of service quality is shaped by each of the moments that make up the service cycle. That is to say, every time any type of contact is made between a service company and customers, whether it be remote or local, the customers constantly assess the service in relation to the performance aims or criteria that they consider to be most important.

The area which there is no customer contact is called the "back office". The activities carried out here support service provision but, in this case, there is little or no contact with the customer, for example, in a restaurant kitchen.

The process of drawing up an operations strategy can be understood to consist of two large blocks. The first is where the mission or concept of the service is defined, that is, which features or aspects of the service should be provided with high performance levels. The second has to do with planning the actions required to achieve the desired levels of performance defined in the service mission. The needs deriving from improvements in performance should be prioritized here.

Methodology

This research was carried out in accordance with the criteria proposed by Collis and Hussey (2009) and consists of an exploratory study of objectives (Malhotra, 2001), using quantitative/qualitative procedures and inductive reasoning (Creswell, 2003). The case study method was adopted using non-probability sampling according to accessibility. Data collection was carried out by means of interviews using a semi-structured questionnaire and Stated preference cards.

The case study method was adopted and, according to Yin (1994), this technique is frequently used when trying to understand the how and why of particular phenomena and when dealing with contemporary phenomena where the associated behaviors cannot be manipulated.

Sample

Non-probability sampling according to accessibility was used to obtain the sample, this method being chosen because of the difficulty in obtaining access to the companies studied. The sample was selected from the units that accepted taking part in the study and supplied the information required for the research (Hair et al., 2005).

The Executive Branch of the Government of the State of Minas Gerais, Brazil, was chosen as the unit of analysis, since it is located in an area known as the "Administrative City" near the capital city of Belo Horizonte where the State Government has brought all government bodies together in one physical location, whether they be institutions that are part of direct state government or autarkies, foundations or companies

Research Strategy and Type of Information

The research was carried out using the strategy of in loco semi-structured interview. According to Craighead and Meredith (2008), studies that use people's perceptions of reality (primarily through surveys) have led to a relative increase in researchers "leaving their offices" and thus to more direct observation of the phenomenon being studied, so that the findings obtained have more relevance for managers and for the problems they face.

Selecting the constructs

In the model proposed by Slack et al. (1998) it is suggested that indicators should be classified into the following five broad categories related to the performance aims for operations: quality, speed, reliability, flexibility and cost. Given that this classification is generic, it will be used for various operations and types of service provision (Slack et al., 1998) that are consistent with the focus of this study.

First of all, the "Quality", "Speed", "Reliability" and "Flexibility" constructs were analyzed. The categories of "Speed" and "Quality" in the model proposed by Slack et al. (1998), which was adopted in this study, were changed to "Delivery" and "Service Quality" respectively. In the case of "Delivery" this was done in order to represent more effectively the indicators making up the category and in the case of "Quality" the change was made as the result of a pre-test carried out before using the technique, where it was found that this term was understood in a distorted manner by the target population. In addition to this, since we are dealing here with an internal organizational unit, the "Cost" construct was not taken into consideration, given that this research does not include situations where payment is made by one unit for services rendered by another. It is also considered that, during the operation, internal customers will lose the ability to measure "Cost" and this will prevent them from being able to evaluate SSC operations correctly when they are actually taking place.

The Multivariate Declared Preference Technique was used to validate the constructs held to be important for evaluating SSCs and also to establish the relative importance that should be attributed to the different service requirements. According to Ortúzar (1998), Stated Preference consists of a set of methodologies that are based on the subject's declared opinion about hypothetical situations that are presented to him. This allows the service to be organized at a later date so that it is more in line with the wishes of future customers of the SSC

Since customers' perceptions form the basis for evaluation of service quality, it is essential for the model to be able provide a set of criteria that are meaningful to the customer (Bowersox, Closs, and Cooper 2002). Christopher (2005) therefore recommends carrying out research in order to find out which aspects of service customers value most highly. The categories used and their associated levels are shown in Table 1.

Table 1 - Categories Used with Associated Levels and Code Numbers

Construct	Levels	Code Number
Delivery	**Fast**: corresponds to shorter order cycles (the period between confirmation of the order and delivery of items or beginning of service). It means faster reaction times in response to unexpected changes in demand.	1
	Slow: organizations and institutions do not wish to have longer order cycles, given that it forces them to carry out detailed planning of demand, something that is not always possible, due to the urgent nature of some order (e.g., during epidemics or insurrections).	0
Service Quality	**Satisfactory**: Customer contact is considered to be efficient both as regards the information supplied and products delivered or service provided according to previously agreed specifications.	1
	Unsatisfactory: Customer service is adversely affected by lack of accurate information, mistakes in dealing with customers and incompatibilities regarding what was purchased and what was actually delivered	0
Reliability	**Certainty**: customers can be confident that their requirements will dealt with according to specifications and that delivery times will be strictly complied with.	1
	Uncertainty: customers cannot be confident that their requirements will be dealt with according to specifications and that their orders will be delivered on time.	0
Flexibility	**Alterations are possible**: both the product and service mix and hours of business can be altered by the customer	1
	Alterations are not allowed: neither the product/service mix nor the business hours can be modified.	0

These alternatives were presented to interviewees by means of cards that contained the categories and levels in the form of self-explanatory figures (Martins et al., 2008).

The Logit Multinomial Model was used to analyze the data collected by means of this technique (Ben-Akiva and Lerman, 1985).

Selecting the indicators

Performance measurement is an important tool for checking that the aims established by the organization are being achieved (Kennerley and Neely, 2002). According to Neely, Gregory, and Platts (2005), performance measurement is the process of quantifying the efficiency and efficacy of an action by means of performance indicators. These indicators are forms of quantification that can be compared in order to see if there has been a real improvement in the indicators and the complete set indicators constitutes the performance measurement system.

Therefore, a questionnaire was used to select the level of importance to be given to the indicators making up the measurement model. This questionnaire was given to 45

directors from the Planning, Management and Finance Superintendencies of the government bodies whose head offices will be moved to the Administrative City.

The participants were requested to classify the 21 indicators according to level of importance. Each indicator had to be evaluated by using 5 for the highest level of importance A, 3 for an intermediate level B and 1 for a low level of importance C. It is important to point out that the 3 indicators referring to the category of "Flexibility" were excluded from the questionnaire used, since the Stated Preference technique revealed that this indicator had no statistical significance in the model under study.

The ABC technique was used to analysis the data. This type of analysis is based on Pareto's work, and holds that a small number of items can stand for the majority of cases. Thus, 4 indicators (20%) should be selected to represent level A importance; 6 for level B importance and 11 for level C.

The questionnaires were filled in and returned by e-mail from December 14-30, 2009. The size of the sample was obtained by using Barnett's (1991) formula, with a standard deviation of 5% that corresponds to a 95% (Z = 1.96) level of reliability and a confidence level of 5%. Since 30 subjects answered the questionnaire, the statistical requirement for a minimum of 26 persons was fully satisfied by the study.

Results

Defining the Weighting of the Constructs

Based on the results obtained by the Stated Preference Technique shown in Table 2, it was noted that the order of importance given to the attributes was as follows:- "Reliability", "Level of Service", "Delivery" and "Flexibility". Furthermore, it was noted that "Reliability" was given 55.75% of the total weighting of the attributes followed by 22.21% for "Level of Service", 19.54% for "Delivery" and 2.50% for Flexibility. These percentages were obtained by a simple rule of three, taking into account the representativity of the attribute in relation to the total value of the coefficients (5.7941).

Table 2 - Statistical Results for the Attributes

Atributo	Coefficient	Error	t Test	CI. (t=2.5%)
Delivery	1.1320	0.2047	5.5221	[0.721 ; 1.540]
Service Quality	1.2871	0.2088	6.1640	[0.869 ; 1.705]
Reliability	3.2303	0.3282	9.8413	[2.574 ; 3.887]
Flexibility	0.1447	0.1941	0.7454	[-0.244 ; 0.533]

NB. Number of Interviews = 80 Number of Cases = 240
Rho = 0.5337 Rho (Ajt) = 0.5180

The significance of the β parameters can be checked by using the t test. The Logit Multinomial statistical program with Conditional Probability uses the t test with a significance of 95% for these parameters. The values obtained from the t test are all, in module, higher than 1.96 so the null hypothesis for the constructs is rejected and it is accepted that they all make a significant contribution. However, the "Flexibility" attribute gave a value, in module, lower than 1.96 and therefore, would be rejected by the t test, that is, it does not make a significant contribution to choice (Ortúzar, 2000).

Defining the indicators

After selecting the indicators according to the literature and excluding those related to "Flexibility" because of the result produced by the Stated Preference technique, 21 indicators for the categories of "Delivery", "Reliability" and "Service Level" were considered to be suitable for selection.

When applying Pareto's criterion (used by those participating in the research to indicate the level of importance attributed to the indicators) to analyze the results, the marks for each indicator were added up and their level of importance established by placing the marks in rank order

It can be seen from the results that the indicators for level A, that is, the 20% with the highest classification (corresponding to the first 4 indicators) matched the importance of the attributes. Thus, "Reliability" accounted for slightly more than half the importance and the rest was divided almost equally between "Service Level" and "Delivery". This ratio was maintained by the decision to choose two indicators for "Reliability" (% of orders dealt with according to specifications and % of orders delivered on time) and for each of the other categories (for "Service Level":- product/service in compliance with specifications and for "Delivery":- delivery time for each order).

Great effort is required in order to define many of the indicators and this can divert managers' attention from matters that are important or critical and which require monitoring and assessment. It is held that choosing the 9 indicators for level A and B in order to create the performance measurement system would require choosing an appropriate number of indicators that are in line with the strategy of an SSC.

The indicators making up the system are shown in Table 3.

The total mark for an indicator is derived from the average of the marks it is awarded by users. The average mark for each category is then calculated from this mark and multiplied by its weighting. The final mark for service quality is calculated by adding up the weighted marks.

In this model the weightings used are those defined in the Stated Preference Technique. Since the "Flexibility" category was excluded, the weightings for the rest of the other attributes were obtained by a simple rule of three which resulted in 57.18% for "Reliability"; 22.78% for "Service" and 20.04% for "Delivery".

Table 3 - Selected indicators for the Performance Measurement System in SSCs

Category	Indicator	Definition	Formula
Service Quality	Product /Service in compliance with specifications	Product delivered or service provided in compliance with specifications	Semantic Differential Scale with ten levels – Opposite Ends of the Scale: Total Compliance; Total Non-compliance.
	Quality of Customer Contact (Ordering made easy, Rapid Confirmation, Friendliness, Willingness to please)	Customer's perception of quality of customer contact (based on a number of methods of observation, ranging from the use of electronic means to personal presence)	Ten-point Differential Semantic Scale - Opposite Ends of the Scale: Vey Bad; Very Good
Reliability	% of orders dealt with perfectly	Percentage of delivered orders whose requirements were fully met (variety and quantity) in a specifically determined period in relation to the total number of orders dealt with in the same period.	Sum total of orders whose requirements were fully met/Total number of orders dealt with in the same period.
	% of orders dealt with on time	Percentage of orders whose previously determined delivery time for the product or time for beginning the specific service were complied with, , in relation to the number of orders dealt with in the same period.	Sum total of orders dealt whose previously determined delivery or start time was complied with /Total number of orders dealt with in the same period.
	% of orders dealt with having the correct billing and documentation	Percentage of orders dealt with that were correctly billed and had the correct documentation in relation to the number of orders dealt with in the same period.	Sum total of orders dealt with that were correctly billed and had the correct documentation/Total number of orders dealt with in the same period.
	% of products delivered undamaged.	Percentage of products delivered undamaged in a specific period in relation to the total number of products delivered in the same period.	Sum total of products delivered undamaged/Total number of products delivered in the same period.
Delivery	Average time order was delayed	Average time of delay elapsed from specified delivery time to actual delivery	Date and time order received – delivery of product or beginning of service – Date and time previously agreed for delivery
	Response time for dealing with requests for information or with complaints	Number of hours elapsed after time of request for information or of complaints until solution provided by supplier	(Date and time solution provided) **-(**Date and time request made)
	Delivery Time (by order)	Number of hours elapsed between delivery time of products or beginning of service ordered after date order placed.	Date and time product deliverd or servisse begun **-** Date and time order made/placed

Final Considerations

This study sought to develop a management model based on performance indicators for a Shared Services Center that was based on a process of selection and weighting of indicators consistent with strategic objectives. Thus, it is held that the model can be used a source of technical guidance for future performance systems adopted by private and public organizations.

The methodological contributions, which may help to disseminate the development of SSCs, are strong points of the model which deserve to be highlighted, especially the method of selecting constructs by use of the technique of multivariate analysis. This procedure means that the constructs come closer to reflecting the expectations of customers who are directly affected by the adoption of the model, since it actually uses the constructs that were taken from the literature and then validated by those who use the SSCs.

Both the indicators comprising the performance measurement model and the relative weightings for each attribute were selected according to the perceptions of their relevance expressed by those who will be the main customers of the service center. This makes it possible to establish logistic processes on the basis of assumptions that customers consider to be important if their needs are to be attended to.

In conclusion, it should be pointed out that precise definition of the indicators and targets comprising the measurement model helps to reduce any opposition to it and guarantees that top management will agree to provide funds for it, since, when there is a stable consensus regarding the attributes of the services that will be provided, any negative expectations regarding a drop in service quality are eliminated.

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