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Importance-Performance Analysis applied to a Laboratory Supplies and Equipment Company

Hélder Pires Ferreira^a, Paula Odete Fernandes^{a,b,*}

^a*Polytechnic Institute of Bragança, Campus de Sta Apolónia, 5301-857 Bragança, Portugal*

^b*UNIAG; NECE (UBI), Portugal*

Abstract

With this study, we intended to implement a management tool to assess the degree of importance and performance of the Critical Success Factors (CSF), from the customers' perspective. For this purpose, it was used the Importance vs. Performance Matrix proposed by Martilla and James [1]. This allows through a representation on a Cartesian system identify the CSF where an organization should focus, reduce or maintain their efforts and also evaluate the CSF where the largest deviations occur between what is important to the client and which he is receiving. For data collection, it was used a questionnaire applied randomly to 225 company customers and it was assumed a sampling error of 5.8 % and a significance level of 5%. The results allowed to observe that the CSF: Price Competitiveness and Strategic Management of the Company, are well positioned in the Quadrant where it is suggested that the company should continue the good work, which is a good indicator for the company.

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1. Introduction

The marketing has been increasingly adopting strategies of communication as well as aggressive promotional campaigns to stimulate demand. The promotional campaigns include a wide variety of payment plans, discounts, home

* Corresponding author. Tel.: +351 273 303103; fax: +351 273 313051.

E-mail address: pof@ipb.pt

delivery services and other promotions to attract more consumers, such as loan with low interests and instalment payments, etc.

It is important that the companies provide the correct information about their products/ services to customers, since these are increasingly informed at a competitive level. Thus, it is necessary to know the information that enables meeting the real needs of consumers, as well as how the best way to satisfy and retain them.

This study aims to understand how it is possible to retain customers and if they are satisfied with Futurlab - *Material de Laboratório* (Laboratory Supplies Ltd.) (hereafter Futurlab), and allow administrators/managers assess and identify the major strengths and weaknesses of today's key business factors and possibly suggest the modification of some, with the goal that the company can sustain and maintain the success which achieved in the market.

This study not only provides a specific analysis of the case study but also summarizes the strategies of the company from a more practical point of view, and in a real context.

It intends to apply an assessment tool to measure the degree of satisfaction and importance of key factors in the implementation of Marketing strategies and this can be used in the universe of Portuguese companies of laboratory supplies and equipment.

To this end, the study was done with Futurlab customers. The universe was a total of 1055 customers spread across different types of companies and/or economic sector. The collected data are related to 2010/2012.

For data collection, it was used a questionnaire applied randomly to 225 company customers and it was assumed a sampling error of 5.8 % and a significance level of 5 %.

As a tool for collecting data we resorted to the application of a questionnaire survey already validated in what was intended to obtain generic information about customers [2], identify the assigned importance and degree of performance against rated each item of the company under study and analyse the dimensions (Critical Success Factors) the quality of services provided. Subsequently positioned themselves search results in Importance-Performance Matrix, developed by Martilla and James [1], to observe what the perception of customers on the various policies adopted by the company.

2. Background

In order to follow the technological scientific and economic progress, it is required more and more to actual companies that they seek strategies that maintain them in the competitive market of the economic society. Namely defining and implementing promotional campaigns to stimulate demand, with offer of payment plans, discounts, home delivery and other promotions to attract more consumers, such as offering loans with low interests and instalment payments.

In this sense, companies must identify a limited number of action areas where the results are satisfactory, which will ensure a successful competitive performance for the company that was called Critical Success Factors (CSF) [3]. The analysis of CSF is an empirical method, based on interviews, that allows identify management priorities, the results of this interviews are later analysed by managers for use in planning and construction of information systems [3].

Associated with the CSF is the quality of services provided, above all by the importance that this also has in the organizational 'balance' of any company, it should be defined initially as answer to the demand of customer satisfaction and its expectations.

In the analysis of the evolution of the concept of quality, it was noticed that exists an easier definition of quality when it is related to products and not services. Because the history of this concept is intrinsically associated to the industry, is also correct to note that the quality is easier identified when we talk about products and more subjective when it is related to services [4].

Crato [4] identifies Paladini [5] as the main researcher, who defines the characteristics of quality management about services, taking into account that the production and consumption are simultaneous, and there is no way to define where one ends and the other begins. The quality management is clearly directed to actions that seek greater connection with the customer, defining their interests, preferences, requirements, needs, and suitability. Therefore, all that is considered relevant in the service provision; that the quality assessment focuses only on elements – there are not specific control points that can be identified; that the quality management emphasizes the focus of the company to a specific model of relationship with the customer; that the service cannot have the skill to make stock.

In fact, what should be evaluated, according to the different authors mentioned, is the customer satisfaction after the provision of the service quality in order to keep it and to make that him feels more than more satisfied with the services of the company.

When the companies define the CSF they should also make an analysis of their position in the market, in order to evaluate the steady performance and directed to the pursuit of quality [6], bearing always in mind customers satisfaction.

The satisfaction appears as one of the most important resources available to the companies always bearing in mind to achieve and enhance competitiveness and ensure the long-term success in environments more than more competitive and more demanding customers [7].

When is compared the importance with the satisfaction of certain factors, this allows us to identify areas in which we must interfere and focus on the performance of services [1], [8-13].

On this framework we are going to describe the management tool adapted developed by Martilla and James [1], where these authors measure the Importance vs. Performance of the company. This tool, Importance-Performance Analysis (IPA), has been used in service industries as travel and tourism [14-16], education [11], [17-18], hospitals [19-20], and other sectors [12-13], [21-23].

This analysis allows through a representation on a Cartesian coordinate system identify areas where a company should focus, reduce or maintain their efforts and also assess the areas where the largest deviations occur between what is important to the individual and what he is receiving [12-13]. The quadrants can be used to generate proposals for managers by discriminating between them [1], [11-12].

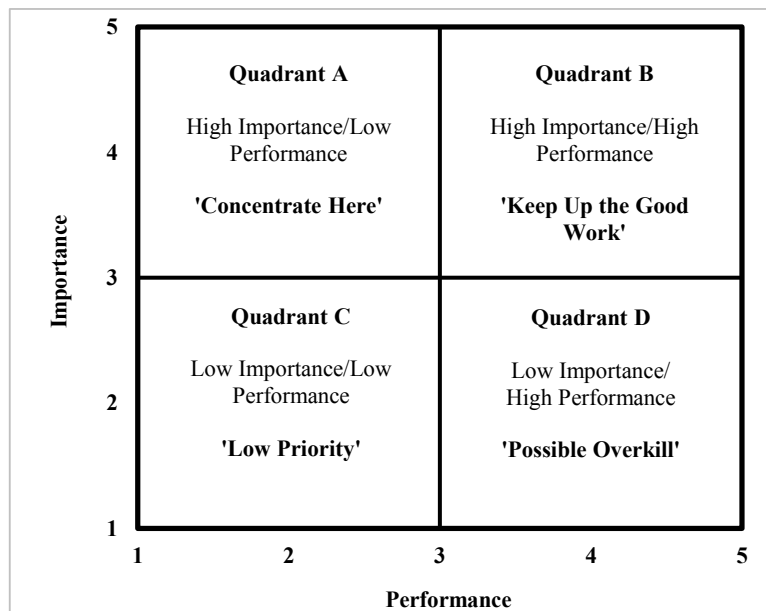


Fig. 1. Importance vs. Performance Matrix [1].

Therefore, in the Fig. 1 the Cartesian system are obtained four quadrants that allow set out four distinct strategies, namely [1], [11-12]:

- Quadrant A - Concentrate Here;
- Quadrant B - Keep Up the Good Work;
- Quadrant C - Low Priority;
- Quadrant D - Possible Overkill.

All the variables that are being studied are also used to measure the Importance vs. Performance, from the perspective of customers. This analysis assumes that there is linearity between Importance and Performance and the intersection of the axes are the averages based on each dimension - Importance and Performance.

From the analysis of the previous figure it can be said that [1], [11-13]:

- The Quadrant A represents the attributes that are very important, but the level of performance is evaluated as below average. To increase global performance, the company should focus on these attributes;
- The attributes positioned in Quadrant B are evaluated with high importance and performance and represent opportunities to gain or maintain competitive advantages;
- The attributes positioned in Quadrant C are considered less important and the performance level below average. Usually it is not necessary to focus on these attributes;
- The attributes that will be fixed in Quadrant D are valued with high performance and low importance. This implies that resources committed with these attributes would be better used in others; high performance attributes considered irrelevant indicate a possible exaggeration.

3. Research Design

In this research work a questionnaire has been used already validated which was the basis for the study of the authors Wu, Tang and Shyu [2] developed in Japan, who aimed to identify the key success factors of the company E-Life Mall Corporation (Taiwan). The variables of individual characterization were adapted to the Portuguese context in order to be applied to customers of the analysed company, namely the client companies of Futurlab - *Material de Laboratório, Lda* (Futurlab Company - Laboratory Supplies, Ltd). This company combines extensive experience that has been built over the last 30 years in the trade of laboratory supplies and equipment. It has been focused in the innovation of laboratory techniques in the areas of education, research and industrial control, which has been positioned as market leader in laboratory supplies and equipment.

In this context and based on the Critical Success Factors as Strategic Management of the Company, Convenience Strategy, Promotional Strategy, Price competitiveness, After-sales Service Quality, Information Systems Services, and Corporate Image, it was intended to observe the position of these CSF in the Importance-Performance Matrix for the company Futurlab in the perspective of its customers.

To achieve these 7 CSF it was performed a total of 30 attributes proposed and presented in the original questionnaire [2]. All the CSF are made up by four attributes, with the exception of After-sales Service Quality CSF that is composed by 6 attributes. It was used a five point Likert scale to measure the importance (1= very unimportant to 5 = very important) and performance (1 = very unsatisfied to 5 = very satisfied) assigned to each attributes. It should be noted that for each CSF it was calculated the median, average and standard deviation overall based on the attributes that make up the respective CSF, and also for the both dimensions (Importance and Performance).

4. Results and Discussion

4.1. Sample Brief Description

The study population is based on the universe of customers loyal to Futurlab as supplier of laboratory equipment. We talk about schools, external analytical laboratories of water and food among others, pharmaceutical industry, food industry, among others. It is also important to note that it was also sought to examine what function the respondent plays in the company and what gender he/she is. So, whole analysis is based on the response of the director/manager of the client company of Futurlab. It stands out in the period 2010-2012, from a total list of 1055 Futurlab customers that were random inquired, in which only 225 responded to the questionnaire representing 21% of the study population and according to the distribution that it can be analysed in the table below. To calculate the sample size it was assumed a sampling error of 5.8% and a significance level of 5 %. Be noted that for the calculation of the relative frequency for the sample size by sector it was taken into account the universe of that sector.

A curious fact, the 40 external laboratories all responded to the questionnaire, from the 140 food companies 40 responded to the questionnaire representing 29% of the sample, 17% of the sample is pharmaceutical industry and 36% are education institutions or research laboratories.

The predominance of Futurlab customers is essentially the Education/Research with 23.6 % of the responses, followed by food Industry and External Laboratories with 17.8 %. The Pharmaceutical Industry has also a great representation of this, being 12.4%.

The majority of respondents are located in the Lisbon and Tagus Valley Region (*Zona de Lisboa e Vale do Tejo*) with 58.2 % of respondents, followed by Oporto and North of the country (*Porto e Norte*) with 17.8 % of responses.

With regard to the gender of the respondents that were inquired, being the directors/managers of Futurlab's client company, it was observed that the majority were female, 61% and 39% male. It is interesting to see this significant percentage that corresponding to female, so it can be observed the increasing tendency of women to perform management functions or responsible for departments.

The most respondents are young, belonging to the age group between 31 and 35 years old, representing 24.9 % of the respondents. It may also be noted that 93.8 % of the individuals have less than or equal to 50 years old. Only 6.2% are older than 50 years. Of these respondents, only 0.9 % corresponds to 2 individuals who are older than 56 years.

The educational qualifications of the respondents are mostly graduates (53.3 %) corresponding to a total of 120 respondents. It is also found a large percentage of respondents holding a master's degree with 25.3 %.

We also analysed the frequency of visits by the Futurlab commercials to the customer companies surveyed. From the analysis it is possible to measure the regularity with which commercial moving companies to customers exceeding one month stands at 46 %, and with a monthly visit are 28% and 22 % fortnightly. Noted that weekly visits with only 4 % of respondents.

4.2. Importance vs. Performance

At this point, it was intended to evaluate Importance vs. Performance, based on the 7 CSF identified in the study made by Wu, Tang and Shyu [2]. For that, was used the matrix developed by Martilla and James [1].

In order to address the importance that customers attach to different CSF in analysis as well as their degree of satisfaction with Futurlab's performance, the averages and standard deviations were calculated for the aggregated data.

The research results are reflected in Table 1, according to the averages. Regarding the importance all attributes had an approximate or higher average score of 4 (from relatively important to very important in Likert scale) varying between 3.207 and 4.107. The three attributes considered most important were: Price competitiveness, Strategic Management of the Company, Information Systems Services. The attribute considered less important was the Promotional Strategy (average of 3.207 and standard deviation of 0.943).

Table 1. Importance vs. Performance of the CSF, for Futurlab.

CSF	Importance			Performance		
	Average	Standard Deviation	Ranking	Average	Standard Deviation	Ranking
Strategic Management of the company	3.847	0.775	2	0.774	3.529	1
Convenience Strategy	3.729	0.809	4	0.737	3.439	2
Promotional Strategy	3.207	0.943	7	0.725	3.094	7
Price Competitiveness	4.107	0.792	1	0.950	3.413	3
After-sales service Quality	3.724	0.944	5	0.849	3.393	4
Information Systems Services	3.803	0.918	3	0.816	3.239	6
Corporate Image	3.597	0.768	6	0.559	3.272	5
Global Average	3.716	0.850	-	0.773	3.340	-

Based on the values presented in the table and on the degree of company performance, it were also calculated the averages and standard deviations. The average of the performance attributes varies between 3.094 and 3.529 being the average of responses between the 3 - Not dissatisfied, and neither satisfied and the 4 - Satisfied, according to the Likert scale used. It can be stated that the average values are satisfactory since they are always above the midpoint value 3.

These results indicate that in general customers are satisfied with the performance of Futurlab as the average of all aggregate variables is above the midpoint.

Still, the analysis of the values recorded in the previous table, the attributes that have seen better performance considering those who had a mean value higher than the global average was 3. The 1st place in the ranking was for the Strategic Management of the Company, the 2nd place for the Convenience Strategy and finally for Price Competitiveness. The Promotional Strategy was the attribute that recorded lower performance from the perspective of customers.

In addition, these results are in general low values of standard deviation, considering that the values of variance of responses are low.

The Importance vs. Performance analysis, as mentioned above, can be made by examining the quadrants. In Figure 2 are distributed and positioned the 30 attributes analysed.

It is indispensable to make an analysis of the Quadrants based on the overall median values for the axes, in order to allow see the trend of attributes, [1] and [24].

Grouping the 30 attributes in their CSF proposed and presented in the original questionnaire and similarly, it is applied the Importance vs. Performance Matrix for the following CSF: Strategic Management of the Company, Convenience Strategy, Promotional Strategy, Price competitiveness, After-sale Service Quality, Information System Services, Corporate Image.

Therefore, the following figure shows the attributes position having as orientation the median values. Consequently, four quadrants can be observed, being the axis defined by the overall median values (3.26; 3.73) and for the attributes to the overall averages.

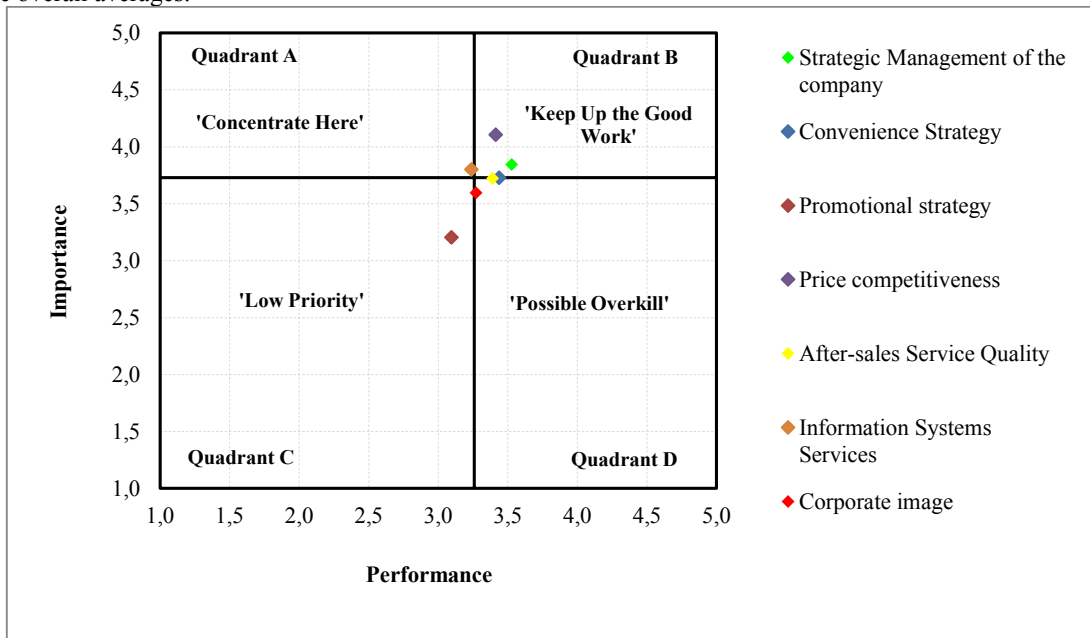


Fig. 2. Analysis of the quadrants for the CSF, with the axis in the medians (3.26; 3.73).

By analysing, the figure above it can be verified that the company has good results for the Price Competitiveness and for the Strategic Management of the Company, so they are the strategic factors for Futurlab and represent opportunities to gain or maintain competitive advantages.

It is notable that the After Sales Service of quality and the Convenience Strategy are on the axis between quadrant B and D.

It is suggested that the Futurlab should focus on the CSF of Service Information Systems. Moreover, the Promotional Strategy is positioned in Quadrant C which represents a low priority by suggesting to the company that

does not focus too many efforts on these CSF. In the quadrant D is positioned the Corporate Image by implying that the resources committed to this CSF would be better used in others, because high performance in CSF considered irrelevant indicate a possible exaggeration.

5. Conclusion

This study aimed to identify Critical Success Factors in the development of strategies that maximize the customers' satisfaction of the company Futurlab - *Material de Laboratório Lda.* (Laboratory Supplies Ltd.), located in Lisbon.

From the developed research and analysing the Importance vs. Performance Matrix, it was verified that the company have good results for Price Competitiveness and Strategic Management of the Company, so these are the strategic factors for Futurlab and they represent the opportunities to win or keep the competitive advantages. However, it is advice improve the After Sales Services of Quality. Should be taken a special care and to concentrate efforts in the attribute Information System Services. It is also suggest reformulate the promotional strategies and the Corporate Image is considered an unnecessary effort.

In general, customers are satisfied with the performance of Futurlab and this has all the necessary conditions to provide quality services to attract new customers and retain its current ones. Satisfied Customers contribute to loyalty to the company maintaining the company for future purchases.

This research presents an important contribution because it allowed us to identify the level of satisfaction of Futurlab's customers based on the Performance, never analysed until the moment. It was possible to identify the attributes and dimensions related to the quality of services that influence customers' satisfaction and a preview of company's ability to attract, retain and engage their customers.

As future lines of research, the authors propose to do a cluster analysis to identify the group of homogeneous customers and to validate this analysis would be interesting to perform a trajectory analysis (Path Analysis), in order to understand the relationship between the latent variables and Critical Success factors identified.

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