An Importance and Performance analysis of ASS attributes for home appliances manufacturing firms

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Abstract— After sales services (ASS) are activities that take place after the purchase of the product and devoted to supporting customers in the usage and disposal of goods. ASS can create sustainable relationships with customers and contribute significantly to customer satisfaction. This study investigates the importance and performance of ASS attributes in an effort to determine the appropriate role of ASS on customer satisfaction through Importance – Performance analysis (IPA). In this study a customer driven model is proposed to examine both the importance and performance of ASS attributes via questionnaire survey to improve the performance of ASS attributes lying in the concentrate here and keeps up the good work quadrants of IP matrix and providing strategic improvement guidelines for managers to design better service activities. A case study is carried out to demonstrate the effectiveness of the developed model in the home appliances manufacturing firm and implications were discussed.

Keywords: after sales service, customer satisfaction, Importance Performance analysis

I INTRODUCTION

Customer satisfaction is considered very important now a day, it shows how firms are committed to provide equality product or services to their customers that eventually increase customer loyalty. Satisfying the customer is one of the basic objectives of the organization, as it is often said that customer is boss and boss is always right, so it means customer is right when he demands for after sale services. After sales service (ASS) is an emerging concept in the business community. Organizations have to provide better ASS to retain and satisfy its customer. Making and retaining valuable relationship with customer while using every aspect of taking, retaining and enhancing customer is known as customer relationship management [1](Kotler and Armstrong, 2010). Through customer relationship management, organizations can achieve their objective of retaining and satisfying customers. Customer satisfaction results in increased demand of product/service and the organization or brand reputation increases. When organization sell product effectively it has to make effective planning for services after sale, such planning is a part of customer relationship management. ASS has been important for organization to compete in the market by using such extended services [2](Vitasek, 2005).

The after sale value line includes timely delivery, installation of the product to customer, good warranty terms and time, enhanced service quality, proper feedback from consumer about the whole service, product and work according to majority recommendations of the consumer. All these after sale value line are considered vital part of ASS, and through proper usage of this value line organization can increase customer satisfaction and enhance the productivity of the organization [3] (Shaharudin et. al.,2009). The ASS business has grown in volume becoming a major profit center within many business environments. Multiple studies reveal that ASSs are growing both in volume and revenue share.

In this study a customer driven model is proposed to examine the importance of the various ASS attributes and the performance of the organisation via questionnaire survey, and through the Importance Performance analysis (IPA) the areas to be focused are identified to help the decision makers in devising suitable policies to improve the ASS performance. A case study is carried out to demonstrate the effectiveness of the developed model in a firm involved in the manufacturing home appliances.

II IMPORTANTCE – PERFORMANCE ANALYSIS

Many studies have been done about importance-performance model but most of them used this model in order to assess key attributes of an organization and they have identified areas, which need more improvement. Importance-Performance Analysis (IPA) is a matrix-based approach introduced by Martilla and James (1977) [4] to analyse the performance of automobile industry, which measures client satisfaction with a product or service. The IPA approach recognizes satisfaction as the function of two components: the importance of a product or service to a client and the performance of a business in providing that service or product [4]. In this way, IPA examines not only the performance of an item, but also the importance of that item as a determining factor in satisfaction to the respondent [5].
To construct this matrix, an agreed list of key attributes is provided in which evaluation will be done. Attributes are generally obtained from literature review, brainstorming and interviews with the concerned. After making questionnaires using this list, they are administered to respondents. Finally, importance and performance of the attributes are plotted against each other. Fig. 1 shows I-P framework. The four quadrants in importance-performance analysis are characterized as [4]:

Quadrant A: Attributes in this area are perceived to be very important but the performance levels of the organization about them are fairly low. It means that the organization should concentrate here.

Quadrant B: Both importance and performance level of attributes in this area are high. It means that the organization should keep up the good work.

Quadrant C: Both importance and performance level of attributes in this area are low. It means that limited source should be spent on this area.

Quadrant D: This area contains attributes of low importance and high performance. Although respondents are satisfied with the performance; managers should consider overdoing their efforts on the attributes of this cell as being unnecessary [6].

Though IPA had been devised with marketing uses in mind, this tool has been extensively used to examine the level of customer satisfaction for improving service quality in a wide range of fields that spans from tourism management to education to IT services to health services and so on as shown in Table 1. These studies used this model to assess key attributes of an organization or a service and further to identify the areas, which need improvement. Nevertheless it is observed that research on the application of IPA to ASS is non-existent and this defines the scope for the first stage of the proposed approach.

III METHODOLOGY

Basically, the proposed approach is concerned with the identification of ASS attributes, derivation of the mean scores of the importance and performance of these ASS attributes by customer rating on survey questionnaire and identification of poor performance ASS attributes by conducting I P analysis and to develop the strategic action plans to meet the customer expectation. The approach consists of the following steps and it is to be noted that, though this can be applied generally, the process is explained with reference to ASS, the focus of the present work.

1. Identification of ASS attributes through the review of relevant literature and interaction with company executives and service people.
2. Development of survey questionnaire.
3. Determination of importance mean score and performance mean score from the survey results.
4. Analysis of perceived importance and performance by using IP analysis.
5. Selecting the ASS attributes lying on the concentrate here and keep up the good work quadrants of IP matrix.
6. Development of strategic action plans to meet the customer expectation.
7. Periodical review of ASS performance and strategy. Figure 2 presents the details of the steps involved in the proposed approach.

Table 1 Previous studies of IP analysis in various areas

<table>
<thead>
<tr>
<th>Area of application</th>
<th>Author(s)</th>
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<tbody>
<tr>
<td>Hotel industry/ Food services</td>
<td>Sampson and Showalter (1999)[7], Chu and Choi (2000)[8], Tontini and Silveira (2007)[9].</td>
</tr>
<tr>
<td>Education</td>
<td>Alberty and Mihalik (1989)[10], Ortmann et al. (1989)[11], Ford et al. (1999)[12], Nale et al. (2000)[13], Kitcharoen (2004)[14], O’neil and Palmer (2004)[15].</td>
</tr>
<tr>
<td>Banking</td>
<td>Ennew et al. (1993)[22], Matzler et al. (2003)[23], Yeo (2003)[24], Joseph, et al. (2005)[25].</td>
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<tr>
<td>e-business and IT</td>
<td>Skok et al. (2001)[26], Levenburg and Magal (2005)[27], Ainin and Hishan (2008)[28].</td>
</tr>
<tr>
<td>Service quality</td>
<td>Ennew et al. (1993)[22], Matzler et al. (2003)[23]</td>
</tr>
<tr>
<td>Tourism</td>
<td>Evans and Chon (1989)[29], Hollenhorst et al. (1992)[30], Duke and Persia (1996)[31], Huang et al. (2002)[32], Hudson et al. (2004)[33], Zhang and Chow (2004)[6], Enright and Newton (2004)[34], Ziegler et al. (2011)[35].</td>
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IV CASE COMPANY DESCRIPTION

In this study, the IPA is used to develop successful strategies for ASS operations of a company located in South India, manufacturing high volume of home appliances includes specialized products like water purifiers for domestic purpose. The case company under consideration is one of the India’s leading water purifier makers, offering a wide range of models from ordinary water filter to reverse osmosis water filters with advanced alerting system. Customers, on purchase of these products, receive the ASS in the form of home visit. The company has a limited range of service and call centers to handle the ASS operations. The goal of their ASS is to attain higher level of customer satisfaction.

V QUESTIONNAIRE DESIGN

Questionnaire based survey method is used for this research study. The list of relevant attributes is developed after perusal of the relevant literature and personal interviews with the company personnel those involved in ASS and presented in the Table 2. A questionnaire was developed using scale rating to assess the importance and performance of each attribute. Pre-testing of the questionnaire was made during the pilot study. After determining those attributes that are worthy of subsequent examination, response from customers was solicited with regard to two questions: the first one relating to the expectations or importance of the attributes and the other to the company’s performance in terms of delivery of these attributes. The questionnaire was structured so that each ASS attribute was rated using a 5-point Likert scale, ranging from 1 (= Not at all important) to 5 (= extremely important) in the importance part, and from 1 (= poor) to 5 (= excellent) in the performance part. To capture a wider range of respondents, the questionnaire was printed in two languages: English and Tamil (the local language).

VI SAMPLING AND DATA COLLECTION

The questionnaire was pilot tested and the Cronbach’s alpha coefficient for all of the importance and performance attributes ranged from 0.72 to 0.81. After conducting the pilot test, the authors revised the tested questionnaire into the final version for this study. In total 1200 printed questionnaires were distributed to the customers of case company and another 200 electronic questionnaires were sent via email. Of the total 1400 questionnaires distributed, 858 were obtained yielding 61% response rate in which 767 (63.9%) were received in person and 91 (46%) were received in electronic form and statistically analyzed. The reliability of the questionnaire was assessed using Cronbach's alpha analysis. The Cronbach’s alpha value is improved and ranged from 0.95 to 0.98 due to revision of questionnaire after pilot study and it shows that there is an internal consistency in the questionnaire.

VII IP ANALYSIS

The aggregate importance and performance values of each service attribute together with the difference that shows the performance gap between the two are listed in Table 3. The results of the survey revealed that the respondents were the least satisfied with the attribute of ‘accessibility of service people’ (the mean performance score of 2.97). In contrast, the respondents expressed the greatest satisfaction with respect to the following attributes: ‘availability of information and advice at service center’ (mean score of 3.34), ‘quality and availability of technical manuals / service documents’ (mean score of 3.33), ‘interpersonal behaviour of service people’ (mean score of 3.31), ‘technical competence of service people’ (mean score of 3.25), ‘reasonable servicing cost’ (mean score of 3.25) and ‘professionalism of service people’ (mean score of 3.24). Table 3 also indicates the respondents’ perception that performance on all ASS attributes were below their expectations or level of importance (revealed by the negative gap between the expected importance and perceived performance) and this implies that there is room for improvement with respect to all performance attributes. The degree of difference, however, varies and to decide which attributes merit attention and improvement, one can analyze the discrepancies between the performance and importance scores, so that attributes with greater differences will be given higher priority.

From the gap between means, it is observed that the ASS department needs to work harder to achieve better results on the ASS attributes such as ‘time taken for resolving the complaint’, ‘complaint registration facilities’, ‘responsiveness to customer complaints’, ‘provision of service as promised’ and ‘provision of needed spare parts’. These five items have the highest gap scores indicating that the firm needs to focus more on these attributes. On the other hand, the items with the lowest gap scores suggest that
the current performance levels are manageable, even if they are still below customers’ expectations. These include ‘interpersonal behaviour of service people’, ‘quality and availability of technical manuals / service documents’, ‘availability of information and advice at service center’, ‘professionalism of service people’, ‘choice and range of service’ and ‘provision of service tools / equipments’.

### Table 2. Description of ASS attributes

<table>
<thead>
<tr>
<th>#</th>
<th>ASS attributes</th>
<th>Description</th>
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<tbody>
<tr>
<td>2</td>
<td>Choice and range of service [37]</td>
<td>Offering variety of services.</td>
</tr>
<tr>
<td>3</td>
<td>Provision of service tools/equipments [38]</td>
<td>Use of appropriate, adequate and modern service tools, equipments and technology.</td>
</tr>
<tr>
<td>4</td>
<td>Reasonable warranty policy [38]</td>
<td>Warranty coverage for maximum number of parts of the product for a reasonable period.</td>
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<tr>
<td>5</td>
<td>Provision of needed spare parts [39]</td>
<td>Availability of spare parts at the time of repairing without delay.</td>
</tr>
<tr>
<td>6</td>
<td>Accessibility of service centre [38]</td>
<td>Location of service center nearby the customer.</td>
</tr>
<tr>
<td>7</td>
<td>Complaint registration facilities [38]</td>
<td>Facility for registration of complaints through online, phone and in person.</td>
</tr>
<tr>
<td>8</td>
<td>Responsiveness to customer complaints [38]</td>
<td>Customer is replied promptly against his/her complaint.</td>
</tr>
<tr>
<td>9</td>
<td>Time taken for resolving the complaint [40]</td>
<td>Total time taken between the customers lodged complaint and the complaint is resolved. (Turnaround time)</td>
</tr>
<tr>
<td>10</td>
<td>Provision of service as promised [41]</td>
<td>Attending and resolving complaint then and there as promised.</td>
</tr>
<tr>
<td>12</td>
<td>Accessibility of service people [38]</td>
<td>Feeling of convenience when the customer approaches the service people.</td>
</tr>
<tr>
<td>13</td>
<td>Easiness to contact service people [38]</td>
<td>Feeling of comfortableness when the customer contacts the service people.</td>
</tr>
<tr>
<td>14</td>
<td>Understanding the needs of customers [38]</td>
<td>Understandings the needs, preferences and expectations of customers.</td>
</tr>
<tr>
<td>15</td>
<td>Handling of customers [38]</td>
<td>Establish the long term relationship and fulfill the requirements of customer.</td>
</tr>
<tr>
<td>16</td>
<td>Professionalism of service people [38]</td>
<td>Keeping commitments, doing high quality work, and behavior of service people.</td>
</tr>
<tr>
<td>17</td>
<td>Technical competence of service people [40]</td>
<td>Ability of service technicians to explain the problem and clarify the customer’s doubt technically.</td>
</tr>
<tr>
<td>18</td>
<td>Interpersonal behaviour of service people [38]</td>
<td>Healthy interpersonal relationship between service people and customers</td>
</tr>
<tr>
<td>19</td>
<td>Quality and availability of technical manuals / service documents [39]</td>
<td>Availability of manuals with clear concise instructions</td>
</tr>
<tr>
<td>20</td>
<td>Availability of information and advice at service center [38]</td>
<td>Customers will get appropriate information and advice about the features and functions of product.</td>
</tr>
</tbody>
</table>

**VIII RESULTS OF IPA ANALYSIS**

The mean scores for both importance and performance data on all attributes are plotted as coordinates on the importance-performance map as depicted in Figure 3. Figure 3 highlights the relative positions of attributes in matrix format, with the importance values on the vertical axis and performance values on the horizontal axis with the hairlines fixed at the mean level of importance at 4.61 and the mean level of performance at 3.16. It is observed that many of the attributes crowd together at the top of the matrix. As pointed out by Abalo et al. [20], the IPA procedure has a natural tendency to record high importance ratings on a metric or Likert scale for the salient attributes selected for evaluation, with the result that they all crowd together at the top of the IPA grid. Such a crowding phenomenon is quite common and this may be attributed to lack of involvement of respondents [43] and the possible lack of expertise of respondents regarding the product or service assessed [44].

The ASS attributes that fall in quadrant IV are needed to be concentrated upon and they include ‘accessibility of service people’, ‘accessibility of service center’, ‘easiness to contact service people’, ‘understanding the needs of customers’, ‘responsiveness to customer complaints’, ‘time taken for
resolving the complaint', 'provision of needed spare parts', 'compliant registration facilities', 'reasonable warranty policy' and 'provision of service as promised'. This shows that the attributes related to service personnel – the easy accessibility, their service capability in terms of efficiency and timely response – are to be mainly focused upon by the company, which may need enhancement of the competency of service personnel through appropriate planning and policies.

ASS attributes namely ‘consistency of service quality’, ‘reasonable servicing cost’, ‘technical competence of service people’ and ‘handling of customers’ were identified to belong to quadrant I (Keep up the good work). Again these attributes signify the role of service personnel. Though performance on these attributes may be considered to be satisfactorily in meeting the customer needs it is to be seen that the efforts are to be maintained in relation to these four aspects.

The ‘low priority’ quadrant (quadrant III) consist of ASS attributes namely, ‘choice and range of service’ and ‘provision of service tools/equipments’. Although the result showed that the customers perceive these attributes not-so-important, this does not mean that the case company should reduce their efforts to improve such attributes of ASS performance. On the contrary, these services are often considered as the basic facilities to customers.

Quadrant II (possible overkill) quadrant, there are four ASS attributes namely, ‘professionalism of service people’, ‘interpersonal behavior of service people’, ‘quality and availability of technical manuals / service documents’ and ‘availability of information and advice at service center’ which are rated by customers as of low importance with high performance. Here, the customers are very satisfied with the organization’s ASS performance and the company is able to meet the expectations of the customers.

As pointed out by Coghlan (2012)[45], the traditional IPA technique identifies areas of perceived high or low attribute importance, providing managers with guidelines to factors that (i) are performing well but need attention (Quadrant I), (ii) require additional care and attention as they are underperforming (Quadrant IV), (iii) are of low priority and may not require any attention (Quadrant III) and (iv) are at risk of overinvestment as they are of low importance to customers (Quadrant II).

Attributes that are rated high in importance and low in performance fall in Quadrant IV and these are attributes on which the firms should pay particular attention for improvement. Researchers commonly suggest that attributes belonging to this Quadrant should be top priority and targeted for immediate improvement efforts [4]. Apart from this the attributes that are rated high in importance and high in performance score suggest that firms ‘keep up the good work’ and the attributes belonging to this Quadrant also need to be focused on by the firms for enhancing customer satisfaction.

IX IMPLICATION

As determined in this study, key attributes of after sales service performance pertain to interpersonal behaviour of service people, availability of information and advice at service center, quality and availability of technical manuals / service documents and technical competence of service people are critical in delivering customer satisfaction. On the other hand, accessibility of service people, time taken for resolving the complaints and provision of needed spare parts are deemed to be the most important ASS attributes.

The Importance-Performance map (Figure 3) revealed that all twenty ASS attributes were performing below the end-users’ expectations. The five variables with highest gap scores were accessibility of service people, time taken for resolving the complaint, provision of needed spare parts, complaint registration facilities and responsiveness to customer complaints. For example, to improve the accessibility of service people, the ASS department could strive to improve the utilization of human resources. This may include the recruitment of adequate man power with technical competence.

Based on the gap analysis, the ASS department has already fostered good relationships with the customers, encouraging a high user involvement in the development of new applications. This makes customers feel that they are more in control and they are assured that the solutions developed are highly relevant to their tasks. The ASS department would be wise to maintain their healthy relationship with the customers, while pursuing the enhancement of the ASS attributes identified with the highest gap scores. Managers from the HR and financial department may work together with the ASS department to reduce the importance-performance gaps. They should play a more active role in the development and implementation of new systems.

X CONCLUSION

A decision support tool to assist in the process of strategic management is developed in this study and the proposed model can be used to analyze the perceived importance and performance of ASS attributes by the IP analysis with the objective of identifying the ASS attributes those affect the customer satisfaction. It has also been demonstrated how the proposed model can be customized to allow companies using this approach to develop and implement their business strategic plans by considering the after sales service operations of a case industry involved in household appliances business. Lastly, it should be noted that most of the previous work on IPA was conducted in different areas like hotel service, tourism service, banking service and information systems. No research of this sort has ever been done with the home appliances manufacturing firms in India.
REFERENCES


