

Importance-Performance-Simplicity analysis: Prioritizing IPA matrix attributes from simplicity point of view

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ABSTRACT

Importance-Performance Analysis (IPA) model is a simple and flexible tool to evaluate the organization's strengths and weaknesses to implement the necessary resources in an appropriate manner. The primary objective of this research is to present an improved model for IPA (i.e. Importance-Performance-Simplicity Analysis) to assess the simplicity of improvement about each of the attributes lying in the matrix and to prioritize them in each quadrant for improvement. Since the attributes lying in quadrant 2 of IPA are very important for customers and, at the same time, has a low level of perceived performance, this paper suggests that management started improvement of these attributes according to the prioritization. In this model, the attributes are prioritized based on simplicity of changes for management while preserving its simplicity of use. For this purpose, Force Field Analysis (FFA) as a simple and effective tool is used for the IPA model. Finally, an example was presented in order to make the model clear.

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1. Introduction

The importance-performance matrix (IP) is a simple and useful managing tool which has been widely used for analyzing an organization and determining its weak and strong points. This tool has been applied in different areas of service industries such as tourism, education, traveling, E-government, restaurant, etc. Simple application, simple analyzing and assessing the results and its low cost made this model popular (Oh, 2001). One of the applications of this model is to identify organization's objectives and to solve management problems. In fact, it is useful in the first stages of strategic management process (Tyrrell & Okrant, 2004). Despite these advantages, there are some problems with this model, which are as follows,

- This model focuses on customer's opinions and perceptions and does not consider company's points of view about product and service and the difficulty of improvement process.

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- This model does not exactly prioritize the attributes lying in the matrix, so for spending resources on the improvement points it does not have exact priorities of improvement.

In the current study, we first add a third dimension (i.e. simplicity of improvement) to the traditional IPA (IPSA model) in order to apply the company's point of view about improvement points, and second using Force Field Analysis (FFA) prioritize these points for a better spending company's resources.

2. Literature review

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. Some of these studies have been summarized in Table 1.

Table 1
Some studies around importance-performance model

Author	Business industry	# of attributes	Scale
Chow, 2004	Tourism, Hong Kong	20	5-point Likert
Lee & Lee, 2009	Tourism, Guam	8	5-point Likert
Chang & Chen, 2011	mobility service needs for disabled air passengers, Taiwan	20	5-point Likert
Chu & Choi, 2000	Hotel industry, Hong Kong	6	7-point Likert
Ziegler et al., 2011	The whale shark tourism industry on Isla Holbox, Mexico	15	5-point Likert
Wong et al., 2011	E-government services, Japan	27	5-point Likert
Tamand et al., 2005	International Airport, Hong Kong	5	5-point

But, there are only a few studies concentrated for the assessments and revision of this model. Tyrrell and Okrant (2004) evaluated the model from an economic planning perspective and suggested 20 recommendations for improvement. One of the most important findings of this research was that this model was weak in terms of economic planning perspective. For example it does not take into account the cost of management decisions during problem solution strategy, but it is useful for identifying strategic objectives of an organization (Tyrrell & Okrant, 2004). In another study, Oh (2001) conducted a critical review of the model and reanalyzed published data, and developed suggestions for future hospitality and tourism research applying importance-performance analysis. For example, he stated that this model has not presented a certain definition of "Importance". So, depending on the customers' perception of attribute importance, this concept can lead to different assessment and perception for the researcher. Therefore, it reduces the validity and reliability of the results. Other finding was the relationship between "Importance" and "Performance", i.e. the level of performance of an attribute for a customer, which was related to how important it is for him/her. In fact, the more the importance of an attribute, the more the performance level of that attribute for him/her. Other weakness of the model was that according to customer satisfaction theory (Oliver, 1997), when a company's performance excels what its customers want, perceptions of high quality and customer satisfaction are achieved. But, "Possible Overkill" quadrant tells that the company should decrease its focus on the attribute lying in this part (Oh, 2001).

Tsai and Lin (2010) added a third dimension to the developed IPA (i.e. IPGA developed by Lin et al. (2009)) and made a 8-quadrant model for evaluating an organization and identifying the points to be improved. The third dimension i.e. management perception of customer expectations was added in order to identify the gap between customer expectations and management perception of customer expectations, therefore suggesting certain strategies for each quadrant. In the Force Field Analysis (FFA) context some studies have been done by researchers. For instance, Baulcomb (2003) assessed the effect of management of change in the day unit of the Department of Health Calman-Hine using FFA in order to increase continuity of care. The essential problem in the change was that this change

should have been done without any extra cost for the company. Therefore, the management decision was to do this change by suitable organizing of the personnel. Therefore, the current situation, the optimal situation, the problem and goal defined as follows:

Actual: day unit staffing allocation ad-hoc and lack of continuity,
 Optimal: more controlled staffing allocation to promote continuity,
 Problem: lack of staffing continuity in day unit of the company
 Goal: ensuring staff continuity within unit.

After the driving and restraining forces for the change are identified, the ward manager first clarifies the need for the change and the results of the change for the personnel. After the group is interested in the change, some changes in the score of forces are made, leading the driving forces to excel the restraining ones. The final outcome of this change was more focusing on the job, further development of practical skills, further development of management skills, reduced anxiety for change (Baulcomb, 2003). In another research, Patterson (2005) suggested FFA for better executing negotiations. According to this study, since in each negotiation the main goal is to reach an agreement with the other side and the necessary information about the other side is not available, so we should use FFA before the negotiation and by identifying driving and restraining forces of the agreement trying to make strategies for amplifying the driving forces and reducing restraining ones. FFA can be used for identification, analysis and prioritization of these forces. Using this tool, the negotiator is readier and more confident for the negotiation (Patterson, 2005). Another use of FFA is to determine prioritized improvement areas in impact-easiness matrix. In this matrix (developed by EFQM), the factors impacts and easiness are the basis for decision-making. It means that first we should determine what the impact of improved attributes on organization improvement will be if they become an improvement project and second how possible its implementation is (Azar & Tavakkoli, 2006). In the following, the use of IPA in a health care and prioritization of the result based on easiness and possibility is explained.

3. Method

3.1. IPA Matrix

Briefly, IPA model is a matrix-based approach, which aims at representing customer perceptions of 'importance' and 'performance' of some key attributes in a simple and understandable way for interpretation. To make this matrix, we should provide an agreed list of key attributes in which evaluation will be done. This list is generally obtained from literature reviews and interviews. 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 (Walter Skok et al., 2001).

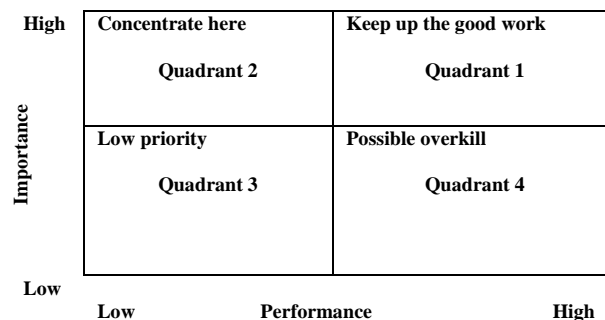


Fig. 1. An I-P map (Walter Skok et al., 2001)

Quadrant 1: Both importance and performance level of attributes in this area are high. It means that the organization should keep up the good work.

Quadrant 2: 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 3: Both importance and performance level of attributes in this area are low. It means that limited source should be spent on this area.

Quadrant 4: 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 (Zhang & Chow, 2004).

Despite the advantages of IPA, there are some problems with it. For example, this model focuses on customer's opinions and perceptions and does not consider company's points of view about products and services and the difficulty of improvement process. Also, This model does not quantitatively prioritize the attributes lying in the matrix, so for spending resources on the improvement points it does not have exact priorities for improvement. Note that every change costs the organization and also for the difficulties associated with change itself, being aware of organization's weaknesses and strengths (performance level) is not enough. Besides, management must also consider company's ability and the difficulty of change for the company to remove any possible weaknesses. So we need to consider three criteria of "importance", "performance", and "simplicity" together to make a simple and useful tool of evaluation for the management. To achieve this, a third criterion should be added to the two-dimension IPA matrix. Due to the fact that this criterion should represent simplicity of the change, we use Force Field Analysis (FFA) as the third criterion to represent the "simplicity" and to prioritize the points to be improved.

3.2. Force Field Analysis

Force Field Analysis provides a framework for considering the forces that influences a situation. These forces are those which act either towards (helping forces) or against (hindering forces) a particular goal. This principle, developed by Lewin (1947) is an important contribution to the fields such as social science, psychology, process management, and change management.

Lewin assumes that in every situation there are both driving and restraining forces, which influence the situation. To get a desired state, driving forces should overcome restraining forces. Fig. 2 illustrates the basic Force Field Analysis diagram (Patterson, 2005).

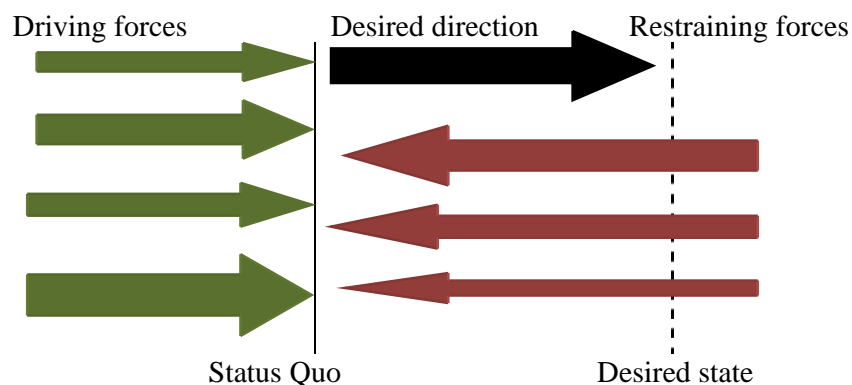


Fig 2. The basic Force Field Analysis diagram (Patterson, 2005)

To use this method the following steps should be done first:

1. State the problem or the desired situation for the team,
2. Identify driving and restraining forces,
3. Review and clarify each force. What is behind each force? What should be done to balance the situation?

To carry it, the following steps should be done:

1. List all driving forces for change in a column, and all restraining forces in another column,
2. Assign a number for each force. This number shows the strength of that force and is between 1, which represents weak and 5 specifies for strong (Lewin, 1951).

3.3. Importance-Performance-Simplicity Matrix (IPSA)

The proposed model of this paper combines FFA with IPA matrix to insert organization's view about the attributes and then prioritizes them. For this purpose, we use IPA to identify the preliminary areas for improvement and then for each one of the quadruplet areas we prioritize the attributes in terms of simplicity point of view using FFA. After identifying the forces influencing the changes, which includes the changes of an attribute performance towards a better position we assign a score from 1 to 5 for each force. After reviewing the forces and their scores (for improvement), we calculate sum of the driving forces on one hand and sum of the restraining forces on the other hand. Then, we subtract the latter from the first one. The output represents how the organization is capable of improvement. Comparing the results for all attributes of an area, we can determine priorities for improvement. Clearly, quadrant 2 of the matrix has the initial priority for improvement, because they have much importance and at the same time low level of performance. Therefore, the attributes lying in this area have the highest priority for both customers and organization.

3.4. Example

In this part, an example is used to demonstrate the implementation of the proposed model of this paper. To start with, 10 hypothetical quality attributes associated with a service company (e.g. a health-care) are chosen (Table 2). As illustrated in Table 2, 10 health-care service quality attributes are taken into account to evaluate their importance and performance.

Table 2

10 health-care services' attributes

Number	Attributes	Number	Attributes
1	<i>Punctual (A)</i>	6	<i>Sympathetic (F)</i>
2	<i>Honest and trustworthy (B)</i>	7	<i>Appear neat and tidy (G)</i>
3	<i>Polite (C)</i>	8	<i>Well-trained (H)</i>
4	<i>Respect customers (D)</i>	9	<i>Patient (I)</i>
5	<i>Friendly (E)</i>	10	<i>Equipped well and up-to-date (J)</i>

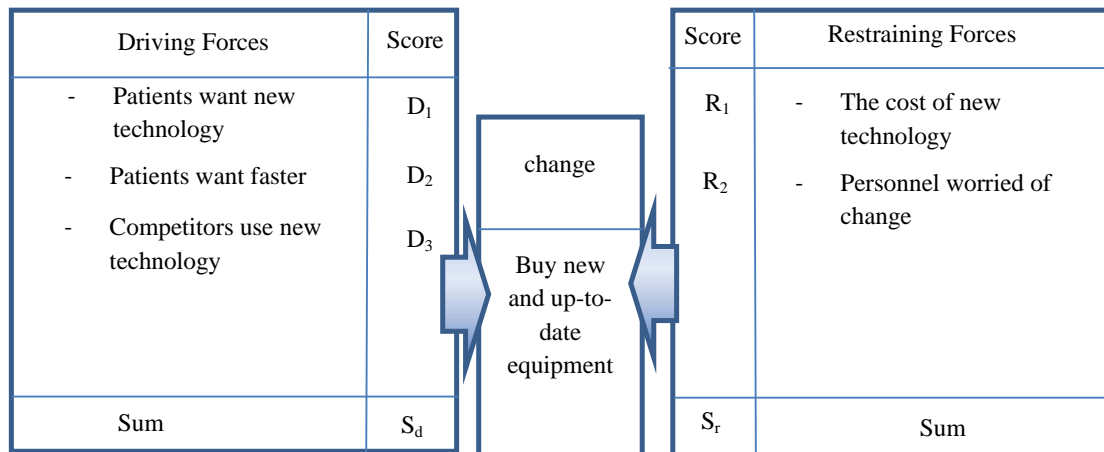
After this, the attributes are evaluated by using suitable questionnaire, where customers are asked to evaluate first the relative importance of each attribute for them, and second how well the company has performed in terms of each factor. The relative importance of attributes can be rated using 5-point Likert scale from 1 (least important or weakest performance) to 5 (most important or best performance). In order to address the perceived importance of company's service quality attributes, the mean scores of perceived importance of the attributes should be calculated (I_1 to I_{10} in Table 3). The mean scores of the perceived performance about the company on the same 10 attributes should also be calculated (P_1 to P_{10} in Table 3). The survey results are presented according to the ranking of mean scores (Table 3). Since a 5-point scale was used, the calculated means are between 1 and 5.

Table 3

Perceived importance and performance of a health-care's service quality attributes

Attribute	Performance ¹	Importance ²	(S _d - S _r) about change of each attribute
Honest and trustworthy (B)	P ₁	I ₁	S ₁
Equipped well and up-to-date (J)	P ₂	I ₂	S ₂
Polite (C)	P ₃	I ₃	S ₃
Well-trained (H)	P ₄	I ₄	S ₄
Friendly(E)	P ₅	I ₅	S ₅
Sympathetic (F)	P ₆	I ₆	S ₆
Patient (I)	P ₇	I ₇	S ₇
Respect customers (D)	P ₈	I ₈	S ₈
Punctual (A)	P ₉	I ₉	S ₉
Appear neat and tidy (G)	P ₁₀	I ₁₀	S ₁₀
Grand Mean	M _p	M _i	

The final stage is FFA. To do this, first the forces affecting the change (improvement) should be determined by managers. Then, each force is scored by a number from 1 to 5 by managers of the company. After calculating sum of scores (about each kind of forces), the difference of them should be calculated. The output number shows the ability of the company for improvement of that attribute performance (simplicity of change). For instance, Fig. 3 illustrates FFA for improving the attribute 'Equipped well and up-to-date' (i.e. 'J'). One way to improve it is to buy new and up-to-date equipment. So, we should deal with the forces influencing 'buy new and up-to-date equipment' (Fig 3). In the figure, D₁, D₂, and D₃ are scores of driving forces and R₁ and R₂ are scores of restraining forces. Sums of the scores about each kind of force are S_d and S_r, respectively.

**Fig. 3.** FFA for improving the attribute 'Equipped well and up-to-date'

After making FFA tables for all attributes, we can review the forces and scores and if possible, we should change them in order to reduce the restraining forces and increase the driving ones and therefore increase the difference between the two kinds of forces (i.e. $S_i = S_d - S_r$, Table3). This activity also should be done by the management. For example, management can consider some extra payment to help personnel to reduce their fear. As a result, score of 'personnel's worrying of change' will be decreased. This led the score of restraining forces to reduce and the change became easier. So, the difference of the driving and restraining forces for this change becomes more. Finally, the attributes are ranked according to the scores difference about each change ($S_d - S_r$).

¹Mean scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree

²Mean scale: 1 = extremely unimportant, 2 = unimportant, 3 = neutral, 4 = important, 5 = extremely important

3.4.1. IPSA Matrix

To plot IPSA matrix, first IPA matrix should be plotted. The vertical axis represents ‘importance’ and the horizontal axis represents ‘performance’. Both axes are calibrated based on a 5-point scale (between 1 and 5- Fig. 4). We used the grand means for ‘importance’ and ‘performance’ to determine the center point of the axes in the IPSA grid (M_p and M_i in Table 3). Clearly, the corresponding mean of importance and performance about each attribute were used to plot the corresponding point of that attribute (Fig. 4).

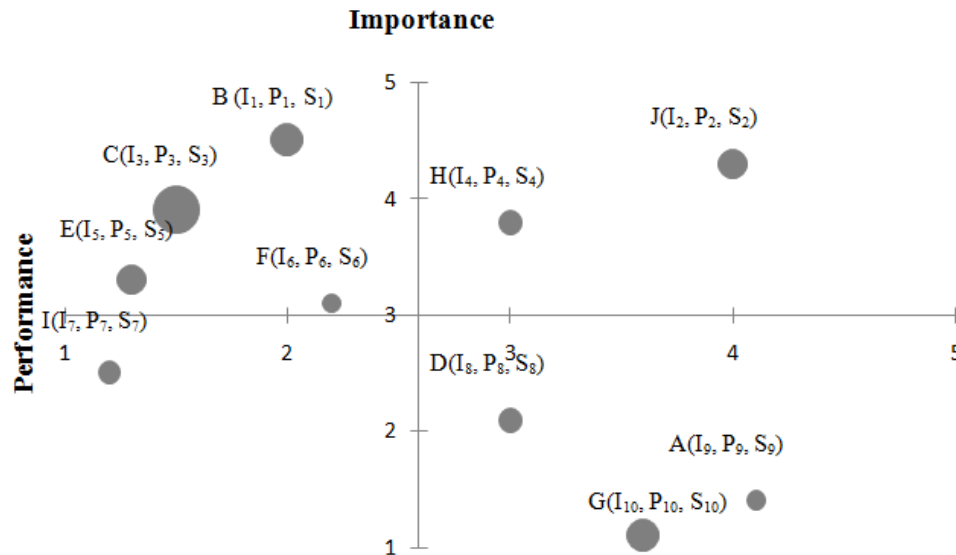


Fig. 4. IPSA matrix for a health-care

As illustrated in this figure, only 2 out of 10 attributes identified in ‘keep up the good work’ quadrant. These were ‘Equipped well and up-to-date (J)’, ‘Well-trained (H)’. As a result, the company should try to preserve these levels of performance or even improve them. From Importance-Performance Analysis point of view, the most important quadrant is quadrant 2. The company should focus on the attributes in this area and spend more resources on them. 4 of 10 attributes identified in this area. These were ‘Honest and trustworthy (B)’, ‘Polite (C)’, ‘Friendly(E)’, ‘Sympathetic (F)’. To increase customer satisfaction, the company should concentrate more on the attributes in this area. For example, the company can provide some courses to increase nurses’ communication ability. The only attribute identified in quadrant 3 was ‘Patient (I)’. This means that although the company did not perform well about this attribute, but it should not be worried about this weakness since little perceived importance of this attribute. Finally, 3 of 10 attributes identified in quadrant 4. They were ‘Respect customers (D)’, ‘Punctual (A)’, and ‘Appear neat and tidy (G)’. The message is that the company should try to keep the performance in standard level without any extra resource spending. The next stage for IPSA matrix is to add the third dimension i.e. ‘Simplicity of Change’. To illustrate ‘simplicity of change’ on the matrix, we used circle, i.e. the factor with easier possibility for change was assigned bigger circle, and vice versa (Fig. 4). So, the first rank has the biggest circle and the last rank has the smallest one. So, in the example the easiest change is improving ‘C’ and the hardest one is about ‘F’. From IPSA point of view, priorities of improvement in a quadrant are associated with ‘simplicity of change’ for each attribute in that quadrant. So, in quadrant 1 ‘J’ excels ‘H’ for improvement. In quadrant 2, attributes ‘C’, ‘B’, ‘E’, and ‘F’ are in priority, respectively. In quadrant 3, there is only one attribute (‘I’). Finally, in quadrant 4, the ranks are attributes ‘G’, ‘D’, and ‘A’, respectively. Totally, considering attributes lying in quadrant 2 as the most important quadrant (as mentioned in section 3.3), the first priorities for change are about ‘C’, ‘B’, ‘E’, and ‘F’ respectively. Fig. 4 shows IPSA matrix for a health-care.

4. Conclusion

Importance-Performance matrix (IP) is a simple and useful managing tool which has been widely used for analyzing an organization and determining its weak and strong points. Despite its advantages, there are some problems with it. For instance, this model focuses on customer's opinions and perceptions and does not consider company's points of view about product and service and the difficulty of improvement process, and also, this model does not exactly prioritize the attributes lying in the matrix, so for spending resources on the improvement points we does not have exact priorities of improvement. In this research, FFA applied to IPA matrix to first include company's view about improvement of attributes, and second prioritize attributes of each quadrant of IPA matrix based on simplicity of change, making a new model namely IPSA model.

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