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A case of implementation
of the importance-performance matrix
in facility management

De Toni A. F. (University of Udine)

Deluisa R. (University of Udine)

Montagner M. (University of Udine)

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A CASE OF IMPLEMENTATION OF THE IMPORTANCE-PERFORMANCE MATRIX IN FACILITY MANAGEMENT

*Alberto Felice De Toni^o, Raffaella Deluisa[#] and Mattia Montagner**

*Management Engineering Laboratory, Department of Electrical, Managerial and Mechanical
Engineering, University of Udine, via delle Scienze 208, Udine (UD), Italy*

^oEmail: detoni@uniud.it – Tel. +39 0432 558330

[#]Email: raffaella.deluisa@gmail.com – Tel. +39 0432 558043

**Email: mattia.montagner@uniud.it – Tel. +39 0432 558043 (corresponding author)*

ABSTRACT

This paper describes the Importance-Performance Matrix (IPM) implementation in a Facility Management (FM) case study. The case is a multi-services contract signed by *Azienda per i Servizi Sanitari n.1* in Trieste (customer), a medical service authority, and *Consorzio Nazionale Servizi* (provider), FM service provider Italian leader. The tool is used to highlight the priority factors for the overall improvement of the contract established services. Both contract parties were involved in the tool implementation. Results highlight that a lot of factors need improvement actions, even though none with urgent actions. Furthermore research points out that not all the priority factors were recognized as such by contractors even before IPM implementation. After knowing the research results a meeting was called by the contractors to find out together improvement actions for contract established services. All the come out initiatives are implementing at the moment.

Keywords: Importance-Performance Matrix; Facility Management; Case Study.

INTRODUCTION

The main problem in Facility Management (FM) is the integration of services very different one from another. This problem often raises some criticism in service management that contractors must solve. However, when criticism is too much, it's necessary that the parties focus firstly on the priority ones for the overall improvement of the contract established services. To this aim, importance-performance analysis could be used.

This situation was found out in an Italian multi-services contract, the one signed by *Azienda per i Servizi Sanitari n.1* (ASS1, customer) and *Consorzio Nazionale Servizi* (CNS, provider). Previous research (De Toni *et al.*, 2007b) highlighted that this contract case was subject to different management problems, essentially due to a communication lack between customer and provider. To solve these problems the contractors have decided to call systematic meetings to jointly find out the solutions. These meetings turned out efficient: almost all the problems discussed were solved. However, some of them kept unsolved, because the number and the length of the meetings were insufficient to discuss all contract problems. So the parties decided to focus the discussion mainly on the problems about priority contract performance factors – requiring improvement actions before the others – reducing simultaneously the time to solve the less important problems. The Importance-Performance Matrix (IPM) (Slack's version, 1994) has been implemented in order to identify the priority factors for the overall improvement of the contract established services.

This paper describes the IPM implementation in the ASS1-CNS case study. IPM implementation allowed the contractors to identify the real priorities and so to direct the discussion towards the improvement of the most important contract factors.

The paper is organized as follows. In the first part FM is briefly introduced, while in the second one the theoretical basis of the IPM are defined. In the third, the description of the research methodology followed to implement the IPM is described. In the fourth part the FM contract case between ASS1 and CNS is described, while in the last one the results of the IPM implementation in the case study are reported. The conclusions illustrate the practical implications of the IPM implementation in the FM contract case.

BACKGROUND: FACILITY MANAGEMENT

Facility management is a multidisciplinary approach for designing, planning and managing in an integrated and coordinated way all non-core support services – most of them regarding the real estate – necessary for an effective and efficient execution of the company's core activities (De Toni, 2007). FM services are many and very different among them. Usually FM is associated to buildings and plants maintenance, cleaning, reception, catering, etc. Actually FM comprises a wider range of services like asset management, property management, utilities services (water, electricity and gas), Information and Communication Technology, etc.

FM services can be managed and provided in-house by the organization itself or outsourced to specialized providers, which can deal only with the execution or also with the management.

In FM services outsourcing the following actors can be identified:

- a) *Customer*: the organization which hands over the FM services to external operators;
- b) *Provider/s*: the company (or a group of them) which supplies the FM services; there are three main categories:
 - b.1) Single provider able to supply all the services (often big multinational companies);
 - b.2) Group of independent companies supplying different FM services;
 - b.3) Consortium made up of a main contractor (which is responsible for FM services management) and of different companies (supplying the services);
- c) *Final consumers*: people benefiting FM services (i.e. customer employees or citizens).

THE IMPORTANCE-PERFORMANCE MATRIX

In service operations/marketing, the Importance-Performance Matrix (Martilla and James, 1977) is used to identify the priority service performance factors. The implementation of this tool consists of three main steps:

1. *Identifying the service performance factors*: usually workshops with managers from the operations, marketing/sales functions, etc. are realized;
2. *Positioning factors in the IPM*: managers evaluate importance and performance of each factor considering the service from the consumer's or the internal customer's point of view. Scales with 5 or 9 points are generally used.
3. *Discussing the results and identifying the priority factors*: usually workshops with managers from the operations, marketing/sales functions, etc. are realized too.

To identify the priorities, IPM is divided into four areas, considering different classes of factors (Figure 1a):

- A. *Concentrate here*: factors with high importance and bad performance;
- B. *Low priority*: factors with low importance and bad performance;
- C. *Keep up the good work*: factors with high importance and good performance;
- D. *Possible overkill*: factors with low importance and good performance.

IPM is a useful tool to identify the priority factors, but it has a remarkable limit. Slack (1994) underlines, in fact, that Martilla and James's tool expects that the lower bound of acceptability and

the performance are independent. To go beyond this limit, Slack proposed a modified version of the matrix, in which the areas are different (Figure 1b). The new classes of factors are:

- a. *Urgent action*: critical factors, that is very important ones, but with a too low performance level to be considered acceptable. These factors must be improved very quickly.
- b. *Improve*: factors to improve.
 - b.1. *Improve (lower priority?)*: factors just a little bit lower than the “lower bound of acceptability” or in the bottom left-hand corner of the matrix. These factors must be improved, but probably with a lower priority than the *Improve* ones.
- c. *Appropriate*: factors with a satisfactory performance level, at least in the short-medium term.
- d. *Excess?*: factors little or not important, but with higher performances. The company should verify if the resources used to reach these performances can be moved to improve other factors (especially the critical ones).

Slack’s IPM version seems to be more complete and precise than Martilla and James’s. For this reason Slack’s version is used in this research.

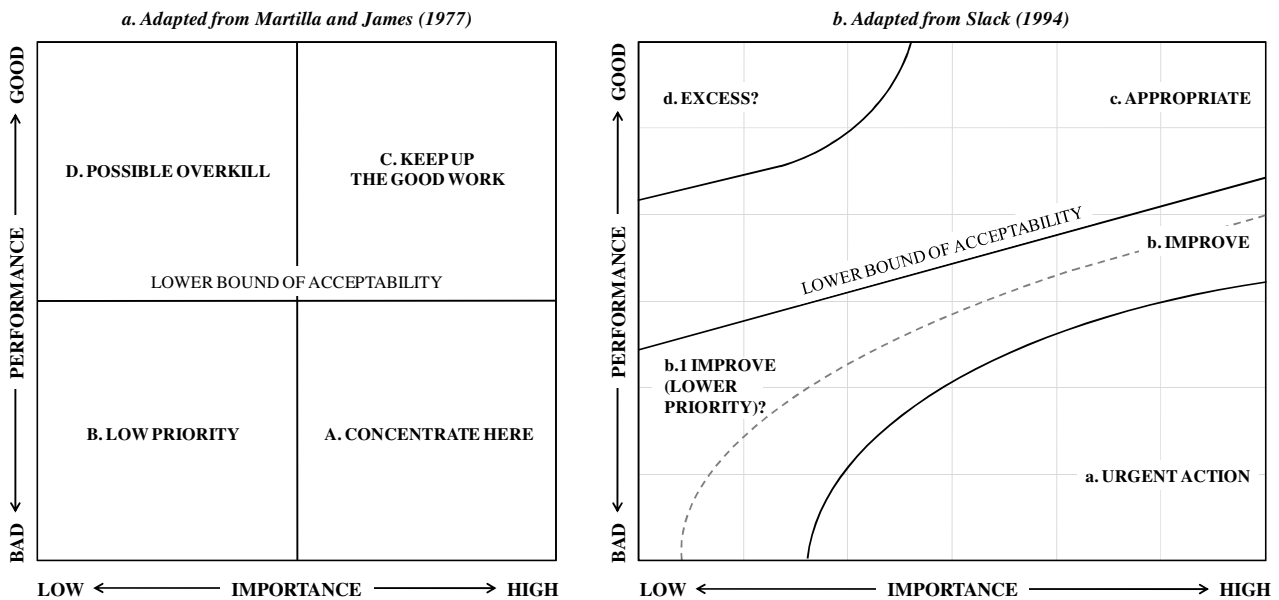


Figure 1 – Comparison between Martilla and James’s (1) Importance-Performance Matrix and Slack’s (2)

METHODOLOGY

IPM has been implemented in a FM case study: the contract between *Azienda per i Servizi Sanitari* in Trieste (customer) and *Consorzio Nazionale Servizi* (provider). The IPM implementation has consisted of four main steps.

Step 1. Performance factors identification: the main performance factors of the contract case have been found through 3 workshops considering 9 contractors’ managers. A deep previous FM literature analysis facilitated the activities of workshops.

Step 2. Positioning factors in IPM: the identified factors have been positioned on IPM. The positioning data have been collected through a questionnaire (Q1) which involved a sample of 34 contractors’ managers among service and staff managers.

Step 3. Usefulness of IPM implementation: the usefulness of IPM implementation has been valued through a second questionnaire (Q2). 10 among the main participants to contract periodic meeting answered to the questionnaire.

Step 4. Discussion: finally the previous steps results have been analyzed together with the main contractors’ managers during two workshops in order to obtain some general indications for the contract improvement.

AN ITALIAN CASE STUDY OF FACILITY MANAGEMENT

The FM case analyzed is the contract (non-core services outsourcing) between an Italian public administration and FM service provider Italian leader. The actors are:

- a) *Customer: Azienda per i Servizi Sanitari n.1* in Trieste (ASS1), an Italian medical service authority which supplies sanitary services to citizens;
- b) *Provider: Consorzio Nazionale Servizi (CNS)*, main contractor of a consortium made up of 5 other qualified service providers;
- c) *Final consumers: ASS1 employees* (about 1.200) and the citizens of Trieste territory (about 240.000).

The non-core services outsourced to CNS have been:

- *technical services or “hard FM services”*: plants and buildings maintenance and energy supply;
- *non-technical services or “soft FM services”*: cleaning, restoration, laundry and logistics.

Moreover, the provider had to implement a custom-made information system and a call center in order to manage the service calls and in order to monitor the service levels. CNS had also to establish the ASS1 real estate register.

The contract began on January, 1st 2003 and envisaged a total length of 6 years.

Meetings between the parties to improve the contract: the partnership table

After two years from the contract beginning, some criticism in the FM services management came out. The criticism often caused unsatisfactory service levels for the customer. This was mainly due to the lack of communication between the parties aiming to find out quickly shared solutions (De Toni *et al.*, 2007b).

To overcome the problems and to improve the contract the parties started up an organizational tool (March, 22nd 2006): they called it Partnership Table (PT). It is a discussion place where information about services, service levels and the technical, managerial and organizational contract issues is exchanged. Recurring meetings are called in order to discuss the problems and jointly look for the best solutions. PT allows the parties to analyze the contract, highlight the problems and share the solutions. It is made up of permanent and changeable customer's and provider's managers. Changeable managers could attend meetings where topics regard their specific field of expertise (De Toni *et al.*, 2007a).

In Italy, especially in the public sector, partnership table is rarely utilized, contrary to what happens in the countries where FM is more developed (i.e. Houston and Youngs, 1996 and Okoroh *et al.*, 2001, in the UK FM industry).

The need for a priority factor analysis

PT has resulted as an efficient tool to solve contract problems (De Toni and Montagner, 2008) and the contractors have highlighted its utility (De Toni *et al.*, 2007b).

After one year of PT activity, a lot of problems have been solved (almost all those discussed at PT), while many others have remained unsolved as they have not been discussed at the meetings.

This has been due to a lack of time for discussion (and solving) of all the problems. In fact the meetings, lasting usually 2 hours, were called more or less only every 40 days: so the available time for discussion was restricted. Increasing the discussing time at PT (more frequent and/or longer meetings) was not considered by the parties at that moment as the best solution. So, as a solution, the parties have chosen to focus the discussion on the problems about the priority contract factors, reducing simultaneously the time to solve the less important ones. As a consequence, it was necessary to identify the priority factors for the overall improvement of the contract established services.

THE IMPLEMENTATION OF THE MATRIX IN THE CASE STUDY

Step 1. Performance factors identification

In FM two types of performance factors can be identified:

- *general performance factors*: valid for most FM contracts;
- *particular performance factors*: typical of only one or few FM contracts.

The literature has been analyzed to find out the general performance factors, considering the main international FM journals, *Facilities* and *Journal of Facilities Management*. 18 FM general performance factors have been found.

3 workshops have been organized (authors acted as facilitators) in order to verify that general performance factors were valid also in the case study and in order to identify the particular ones. The first workshop involved 4 provider's managers, while in the second one there were 5 customer's managers. These managers were really experienced in FM sector and in the contract case. In both workshops, the managers discussed the results of the literature analysis (general performance factors) and proposed a possible list of particular performance factors. In the third and last workshop, with all the 9 contractors' managers taking part, the performance factors list for the contract case was jointly defined. The contractors agreed that all the 18 general performance factors were valid also for their contract. Moreover they added 6 particular performance factors. The so defined factors have been grouped into 4 perspectives and 10 classes (Table 1).

Step 2. Positioning factors in IPM

The identified factors have been positioned on IPM. The positioning data were collected through a questionnaire (Q1) directed to 70 contractors' managers among service and staff managers (52 for the customer and 18 for the provider, the ratio 3 to 1 between customer and provider was fixed with the contractors to give more importance to customer's opinion). The questionnaire consisted of three parts:

1. Demographic information about managers answering the questionnaire.
2. Importance level of factors. Managers were asked to score the level of importance for each factor using a four point scale (0. not important; 1. slightly important; 2. important; 3. extremely important).
3. Performance level of factors. Managers were asked to score the level of performance for each factor using a four point scale (0. very unsatisfactory; 1. unsatisfactory; 2. satisfactory; 3. very satisfactory).

Four point scales have been used to avoid neutral positions. The questionnaire was tested with 4 managers. The survey took place in April 2007.

A total of 34 usable questionnaires were received (26 for the customer and 8 for the provider, so the ratio 3 to 1 between customer and provider was respected), resulting in an overall response rate of 48,6%. The results reliability is made sure by the answering sample, in fact the managers that answered:

- are experienced in FM sector: 56% of them have more than 10 years experience;
- belong to all operational areas of the contract: 21% deal with technical services (maintenance, energy, etc.), 15% deal with non-technical services (cleaning, restoration, etc.), while the remaining 64% are staff managers (administration, purchasing, corporate finance, etc.);
- are experienced in the contract case: 74% work in services/activities linked to the contract since the very beginning;
- know the final consumer's needs: 68% have a daily contact with the final consumer.

Examining the results it has been possible to position the performance factors in IPM (Figure 2). Results point out that 18 performance factors on 24 totals need improvement actions, even though none with urgent actions. Among them, the factors 10, 12, 18, 22, 23 and 24 are priority, because nearer to the *urgent action* area; instead 7 are the factors needing improvement, but probably with less priority (2, 4, 6, 14, 16, 19 e 20).

PERSPECTIVES (De Toni <i>et al.</i> , 2007c)	CLASSES	PERFORMANCE FACTORS (PF)			
		DESCRIPTION	PARTICULAR PF FOR THE CONTRACT CASE STUDY (source: workshops)	GENERAL PF FOR FM CONTRACTS (source: literature review)	REFERENCES
Financial perspective	Costs	1. Costs of outsourced services reduction		×	Smith (1995); Kaszubski and Ebben (2004); Keller and Keller (2004); Minami (2004); Moran <i>et al.</i> (2004); Cigolini <i>et al.</i> (2005)
		2. Costs of non outsourced services reduction		×	Lynch (2001); Kaszubski and Ebben (2004)
	Management charges	3. Procedural iter quickness	×		\
		4. Range of outsourced services	×		\
Final consumer/ customer perspective	Social liability	5. Protection of environment, safety of facilities, buildings and citizens		×	Barton <i>et al.</i> (2001); Lancashire (2004); Patterson (2004); Alexander and Brown (2006)
		6. Society's development		×	Alexander and Brown (2006)
		7. Attention towards weak groups		×	Ormerod and Newton (2005)
		8. Individual development of both contractors' employees	×		\
	9. Improvement of working conditions for both contractors' employees		×	Alexander and Brown (2006)	
Customer satisfaction	10. Customer's and final consumer's satisfaction		×	Cigolini <i>et al.</i> (2005)	
Facilities perspective	Service	11. Intervention efficiency		×	Holtz and Campbell (2003)
		12. Outsourced services development	×		\
		13. Supply effectiveness in emergencies, at high volumes and demand peaks	×		\
	Asset/property	14. Reduction of decay of customer's buildings and facilities		×	Barton <i>et al.</i> (2001); Lancashire (2004)
		15. Customer's real-estate and facility property management		×	McDougall <i>et al.</i> (2002)
		16. Customer's real-estate and facility property improvement		×	Barton <i>et al.</i> (2001); Lancashire (2004); Minami (2004)
Learning and growth perspective	Infrastructure	17. Informative system use		×	Smith (1995); Forbes (2002); Livingstone and Dibkey (2002); Keller and Keller (2004); Cigolini <i>et al.</i> (2005)
	Competences	18. Customer's internal employees' skills		×	Smith (1995); Moran <i>et al.</i> (2004)
		19. Provider's management and technical know-how	×		\
		20. Knowledge of economic, technical and normative evolutions connected to the contract		×	Grimshaw (1999); Pratt and Kaplan (2004)
	Network	21. Look for new kinds of collaboration with third parties (different from contractors)		×	Ngowi and Mselle (1998)
	Partnership	22. Look for profitable results and share of risks for both contractors		×	Smith (1995); Okoroh <i>et al.</i> (2001); Salonen (2004)
		23. Share of knowledge, information and competences between contractors		×	Smith (1995); Barrett (2000); Griffin (2002); Keller and Keller (2004)
24. Share of activities planning between contractors			×	Keller and Keller (2004)	

Table 1 – Performance factors for the contract case study

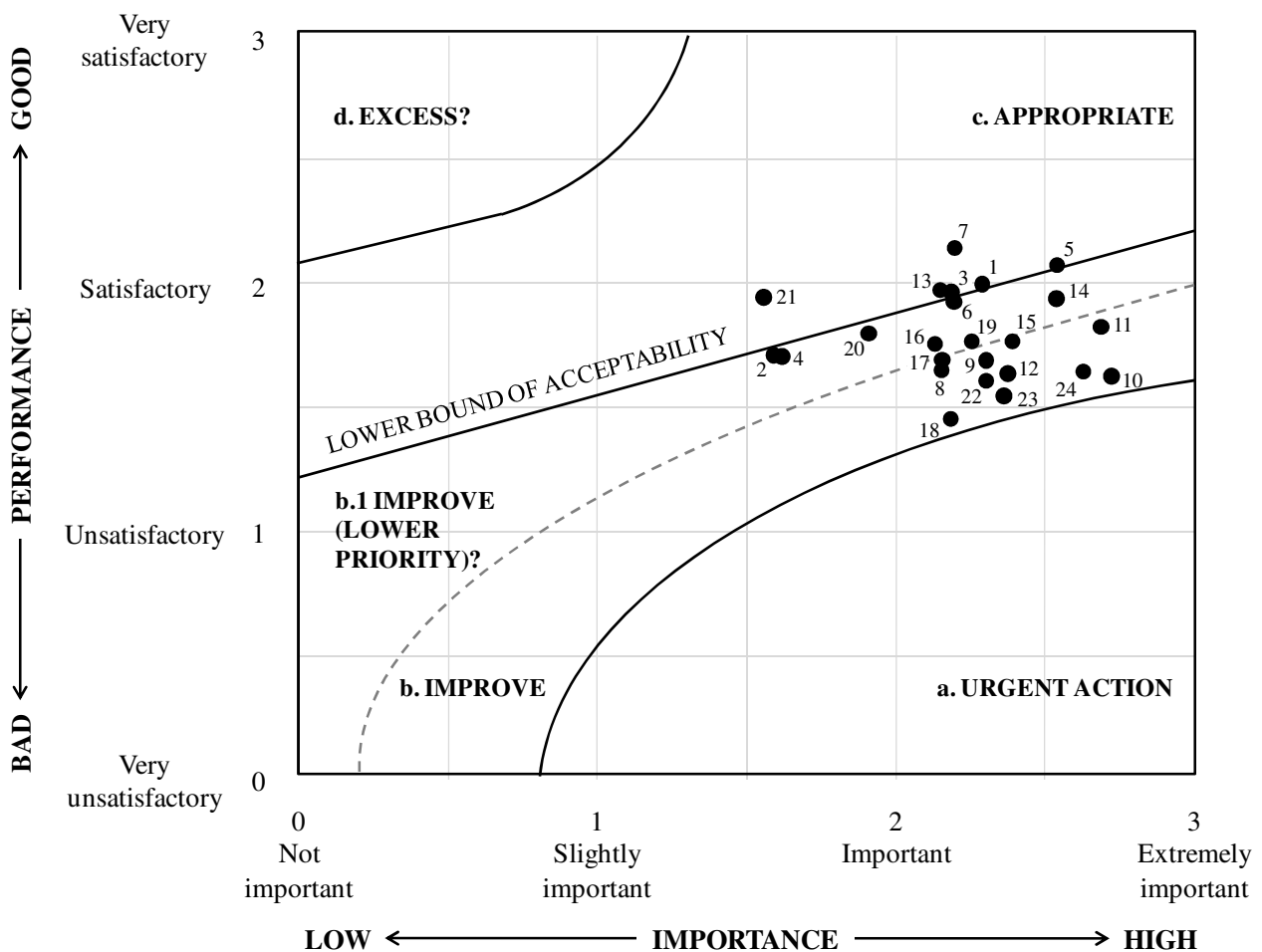


Figure 2 – Positioning performance factors of FM contract case study

Step 3. Usefulness of IPM implementation

Also priority of performance factors, which was assigned by contractors' managers during PT meetings, has been inquired to verify the usefulness of IPM implementation. Then the main participants at PT meetings have been required – through a second questionnaire (Q2) – to define which was, up to that moment, the discussion level at PT for each performance factor. The questionnaire Q2 was directed to 18 contractors' managers (6 for the customer and 12 for the provider) among permanent PT participants and changeable ones who took part to at least half of the meetings. Managers could classify factors as:

- not usually discussed at the meetings because we think that its priority is very low (score 0);
- slightly discussed at the meetings because we think that its priority is low (score 1);
- usually discussed at the meetings because we think that its priority is high (score 2);
- in-depth discussed at the meetings because we think that its priority is very high (score 3).

The survey was carried out simultaneously to the first questionnaire (Q1). A total of 10 usable questionnaires were received (4 for the customer and 6 for the provider) resulting in an overall response rate of 55,5%. Considering the results, it has been possible to define the list of performance factors priorities, really followed by the contractors during PT meetings (Figure 3).

As regards the usefulness of IPM implementation, the results highlight that the factors come out as priority from IPM analysis (10, 12, 18, 22, 23 and 24) are among those usually discussed at the contract meetings. However it also comes out that a factor (13) is highly discussed at PT even if it isn't among the improving ones according to IPM. In fact factor 13 is located in the *appropriate*

area. Probably, contractors could allocate the time spent to discuss this factor to other factors (i.e. priority factors or factors 8 and 9 which are little discussed, but are located in the *improve* area).

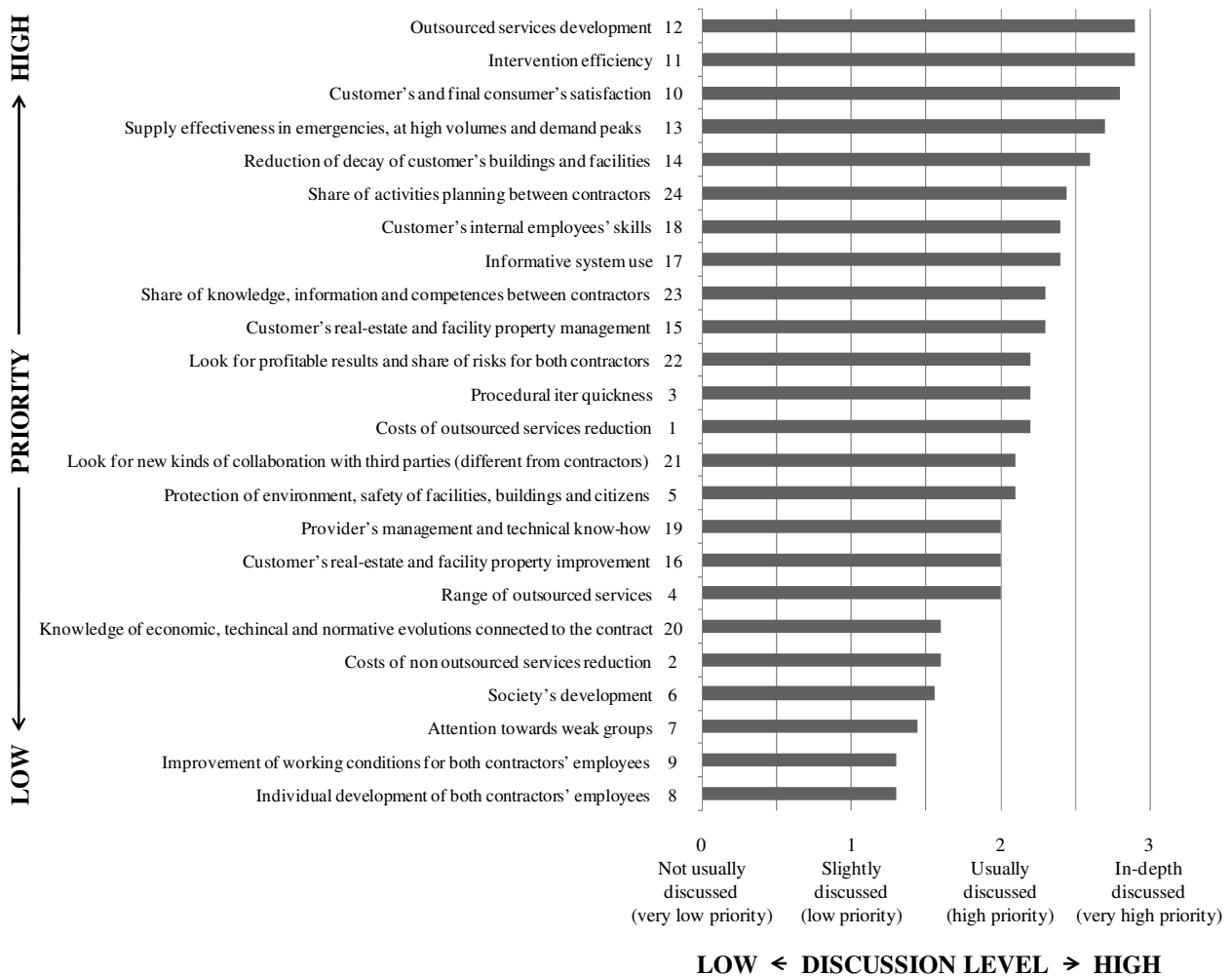


Figure 3 – Priority factors for the contractors before IPM implementation

Step 4. Discussion

The research results were presented during two workshops (April 20th and May 21st, 2007) with the presence of the main contractors' managers. The aim of the workshops was to define some general indications for the contract improvement. Starting from the research results the participants have chosen 6 performance factors as priority for the contract improvement:

- Customer's internal employees' skills (18);
- Share of knowledge, information and competences between contractors (23);
- Look for profitable results and share of risks for both contractors (22);
- Outsourced services development (12);
- Customer's and final consumer's satisfaction (10);
- Share of activities planning between contractors (24).

Moreover the contractors called a meeting (May 23rd, 2007) aiming to define jointly the initiatives to put into action to improve the contract established services. The participants were 15 (8 for the customer and 7 for the provider). During that meeting the contractors developed several improving proposals (Table 2). All these initiatives are at the moment developing.

Table 2 - Initiatives studied by contractors for the improvement of the Italian contract case.

PRIORITY FACTOR	INITIATIVE
Customer's internal employees' skills (18)	<ul style="list-style-type: none"> - Offering training courses for customer employees about the contract services - Doing a survey directed to the customer employees about the utilization level of information tools supporting the contract - Developing the "Carta Servizi" (a webpage describing the contract services)
Share of knowledge, information and competences between contractors (23)	<ul style="list-style-type: none"> - Developing a performance measurement system shared by the contractors - Improving the information system (more data about service levels)
Look for profitable results and share of risks for both contractors (22)	<ul style="list-style-type: none"> - Modifying and improving the supply processes of some services in regard to what defined in the contract
Outsourced services development (12)	
Customer's and final consumer's satisfaction (10)	<ul style="list-style-type: none"> - Doing a final consumer satisfaction survey about contract services
Share of activities planning between contractors (24)	<ul style="list-style-type: none"> - Increasing the frequency of contractors' periodic meetings

CONCLUSIONS

This paper describes the Importance-Performance Matrix implementation – in Slack's version – in a FM contract case, the one between *Azienda per i Servizi Sanitari n.1* in Trieste (customer) and *Consorzio Nazionale Servizi* (provider). In consequence of IPM implementation in the case study it has came out that:

- a lot of performance factors (18 on 24 totals) need improvement actions, even though none with urgent actions;
- the 6 performance factors with lower performances result as priority for the contract improvement.

The results come out from the tool implementation have allowed the contractors to line up the focus of their meetings to the real contract priorities. In fact, as a result of the research, the contractors called a meeting to study jointly the initiatives to improve the 6 factors resulted as priority. The initiatives are at the moment implementing. The future research should establish if the initiatives really improved the contract services.

The implementation of this tool in the case study has figured out very useful. The research has highlighted that:

- not all the priority factors have been recognized as such by contractors even before IPM implementation;
- a factor resulted with an appropriate performance has been instead considered priority before IPM implementation.

These results allow the parties to optimize the resources allocated to the problems solution. To improve priority factors, contractors could reduce the discussion time for those factors with an appropriate performance.

Finally, according to contractors' opinion, IPM implementation has been a useful process to highlight the real contract priorities, such as to consider a systematic application of the tool.

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