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# SELECTION OF PROJECT MANAGEMENT TOOL: AN EX-POST FACTO CASE STUDY

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# Agenda

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  2. Literature review
  3. Objectives
  4. Methodology
  5. Data analysis
  6. Conclusions
- Acknowledgements
- Main references



# 1. Introduction

Supplier selection on price: simple rule  
The cheapest supplier is the selected one

Nevertheless, lower-cost supplies may imply in higher-cost processes  
Customers may look for higher benefits instead of lower costs

Supplier selection has received extensive attention in SCM literature  
MCDA methods has been applied to supplier selection  
AHP is a leading MCDA method, also in SCM literature



# 1. Introduction

A real case of supplier selection by a Brazilian company of fuel distribution

Considering only benefits, a senior project manager selected one of the supplier with highest price

Afterwards, AHP was applied to investigate and justify his choice

*Ex-post facto* AHP application: 10 criteria and 3 alternatives



## 2. Literature review

A project is a temporary endeavor designed to produce a unique product or service. Project management (PM) is the application of knowledge, resources, skills, and tools, to meet the project requirements  
(Project Management Institute, 2017)

Until 1900, PM discipline is understood as more an art than a science  
(Lock, 2013)

From the beginning of last century, with the Scientific Management, PM became scientific. In the end of century, new tools to PM emerged as guides, standards and software to PM  
(Ahmad & Laplante, 2006)



### 3. Objectives

Nowadays, PM seems to be impracticable without software tools

The wide variety of PM software creates a decision problem:  
which tool to select?

Thinking on services, that is the implementation and post-sale services,  
the decision becomes a supplier selection problem

Supplier selection on price is not indicated due to these strategic  
implications

MCDA seems to be a proper way for this decision-making

This paper presents a real case of supplier selection of PM software,  
considering benefits and costs



## 4. Methodology

Case: one of the major industrial groups operating in Brazil, mainly focuses fuel distribution, but, also includes pharmacies and other services with chemicals products

The division of liquefied petroleum gas (LPG) distributes LPG to houses in Brazilian Southeast, including states of Rio de Janeiro and Sao Paulo

A senior project manager needs to standardize PM software used in LPG division

Only a few PM software packages satisfy requirements of LPG division

Software Providers 1 and 2 (SP1 and SP2) are the largest providers in Brazil, and they are subsidiaries of worldwide providers of PM software

SP3 is a local provider of PM software and consultancy



## 4. Methodology

Senior project manager selected SP1, despite being not the cheapest one  
That is, supplier selection was not on price

The main justification are the best benefits expected with SP1  
All these benefits were confirmed, after the supplier selection,  
when SP1 started to provide the PM software

However, there are some doubts hovered in the air:

Were the senior project manager's feelings correct?

Has SP1 the best benefit/cost ratio?





## 4. Methodology

To answer those questions, AHP was applied

Only the senior project manager for LPG division provided judgements (pairwise comparisons) and he also identified criteria, adapting the model proposed by Ahmad & Laplante (2006) to the Brazilian case

Previously, the senior manager had never heard about AHP

AHP was introduced in LPG by the second author of this paper, after she was hired as a PM trainee by the company

For AHP application, no specific MCDA software was applied  
That is, AHP was applied only with electronic spreadsheets



## 5. Data analysis

Criterion	A	B	C	D	E	F	G	H	I	J	Priority
Portfolio management (A)	1										2%
Time planning (B)	7	1									16%
Task management (C)	5	1/3	1								8%
Risk management (D)	3	1/5	1/3	1							4%
Change management (E)	3	1/5	1/3	1	1						4%
Resource allocation (F)	7	1	3	5	5	1					14%
Costs (G)	7	1	3	5	5	3	1				18%
Demand management (H)	9	3	5	7	7	3	3	1			<b>30%</b>
Financial management (I)	5	1/9	1/7	1/5	1/5	1/5	1/7	1/9	1		2%
Integration (J)	3	/15	1/3	1	1	1/5	1/5	1/7	1/5	1	3%



## 5. Data analysis

Portfolio management	SP1	SP2	SP3	Priority
Service Provider 1 (SP1)	1			<b>1</b>
Service Provider 2 (SP2)	1	1		<b>1</b>
Service Provider 3 (SP3)	1/7	1/7	1	0.143

Service provider	A	B	C	D	E	F	G	H	I	J	Overall
SP1	1	1	1	1	1	1	0.281	1	1	1	<b>0.873</b>
SP2	1	1	0.333	1	1	1	0.079	1	0.442	1	0.775
SP3	0.143	0.333	0.333	0.333	0.333	0.200	1	0.116	0.084	1	0.378



## 4. Data analysis

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SP2	1	1	0.333	1	1	1	0.079	1	0.442	1	0.775
SP3	0.143	0.333	0.333	0.333	0.333	0.200	1	0.116	0.084	1	0.378

As previously selected by the senior project manager, SP1 has the highest overall priority with the AHP ex-post facto application

Curiously, SP2 was dominated by SP1: regarding to all criteria, priority for SP1 was equal or better than SP2

Local priority of SP1 is not the best only regarding to costs (Criterion G)

Sensitivity analysis: only if priority of costs be increased from 18% to 46%, overall priorities of SP1 and SP3 will tie at 0.57



## 6. Conclusions

With AHP, it was possible to measure the performance of different suppliers on subjective criteria

AHP application also incorporated a quantitative criterion, measured by decision maker perception: costs

Some priorities for different alternatives were the same on different criteria

This is an indication that, possibly, there are dependency among criteria or among alternatives

Therefore, ANP could be most indicated to this decision analysis



## 6. Conclusions

Another limitation for this research is on data collection

The pairwise comparisons were provided by only one decision maker:  
the senior project manager

This is legitimate, considering that this paper presents a case study

However, it will be interesting to study similar decisions on SCM or  
PM considering comparisons from different managers

Group decision-making techniques may be applied, enhancing the  
scientific aspects of the research



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