

A Methodology for Making Offshoring Strategic Decisions in International Logistics

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Abstract. Offshoring occurs when a production unit is relocated to another country but there is also the possibility to outsource the process to a foreign supplier, thus appears the necessity to choose between a strictly speaking offshoring strategy and an offshore outsourcing one. The main question of our research is: "how to take an international relocation decision?" We will use a SWOT-AHP hybrid model to analyze the decision and organize it rigorously. Our model allows us to test the potential choices that a decision to offshore encompasses: from producing internally but abroad, to offshore outsourcing, or simply to abandon the idea and continue production locally. SWOT-AHP analysis allows to get a structured thinking and take into account the internal and external environment of the firm in line with a make-or-buy strategy.

Keywords : SWOT, AHP, offshoring, outsourcing, decision making

1 Introduction: Offshoring, a Multicriterion Strategic Decision

This work deals with the conceptualization of a model to make an offshoring decision. Offshoring is a phenomenon we hear often about in the media using the following definition: "Offshoring is closing a domestic production unit, with its reopening abroad." [1] However, if this definition seems to satisfy most press gurus, it does not exactly match what is found in the academic literature. Experts agree that this vision of relocation represents a small share of international financial flows and employment losses observed all over the world [2]. Most business administration studies that deal with real life relocation cases fall in one of these categories [3]: Complete closure of a production site in one country and opening of an alternative site in another country; Complete closure of a production site in one country and looking for a subcontractor / supplier in another country; Any combination of the two partial solutions to reduce local production and increase foreign production. Here we will limit ourselves to the study of the phenomena which correspond to the first two cases. We will then refer to these two options with the terms offshoring / international relocation for the first, and outsourcing / international outsourcing for the second. That way, we can offer a simple definition of international relocation: **offshoring and international outsourcing are the partial or total transfer of a process carried out in country A to a subsidiary or subcontractor in country B.**

Like any location decision, it a strategic one. An error will result sooner or later in a reshoring process (to seek to repatriate activities in the country of origin). A well-known Quebec case is about the second largest producer of construction toys behind the Danish multinational, LEGO®, MEGA Brands Montreal company, which has repatriated its China operations to its home city in 2010 [4]. The rise of labor costs in the developing world are making strategists thinking twice before entering an offshore project. According to a recent survey by the firm AT Kearney, the reduction of delivery times is now the first motivation cited by specialists for relocation decision and accounts for 34% of the decisions. [5] The other reasons cited in this study are: the reduction of total costs (29%), the quality improvement (28%), customer satisfaction (25%) and brand image (17%) [5]. These questions lead to very complex problems that a simple analysis of labor and transportation costs cannot solve. Indeed, a number of quantitative and qualitative criteria arise. We must not only take into account the quantifiable economic aspects (operating costs, cost of access to resources, living standards, etc.), but also cultural considerations (languages, religions, social norms), administrative standards (colonial relationship, political relationship, cooperation agreement) and geographic realities (access to the sea, transport and telecommunications infrastructure, size of the country). Most of the mentioned criteria cannot be easily quantified. Yet managers facing this strategic decision should be able to use their judgment in a rigorous and rational way to take the best decision in the interest of the company and not by following a simple trend. It is necessary that this

decision be sustainable over time, that is to say, it falls within a long-term approach and avoid the pitfalls that lead to "reshoring". We can divide the general problem in two smaller part: deciding for a relocation is initially selecting an offshoring strategy, then operationalizing it by choosing either the right partner or the right location. We are interested here in the first step, that is to say, to try to develop a strategic analysis of both the internal environment and the external environment of the firm to determine whether or not the company has interest in engaging in relocation and if yes, in what kind of relocation.

2 Literature Review

In supply chain management, the choice of such a strategy refers to purchasing portfolio management models. Figure 1 shows a make-or-buy matrix [6] developed by McIvor (2011) for outsourcing decisions. The dimensions studied in this matrix are the internal capacity of the organization to carry out the process at stake and the contribution of this process to the strategic advantage of the company. This model therefore addresses the relative position between internal and external capabilities of the organization, approaching in this a typical SWOT (Strengths, Weaknesses, Opportunities, Threats) Analysis. It focuses mainly on outsourcing or "in-sourcing" part of the process without necessarily taking into account the ability to produce in-house, but in another country. Moreover, relocating a unit is a highly strategic decision for the company. Therefore we will use a **SWOT-AHP hybrid model adapted to the dimensions of make-or-buy matrix models**.

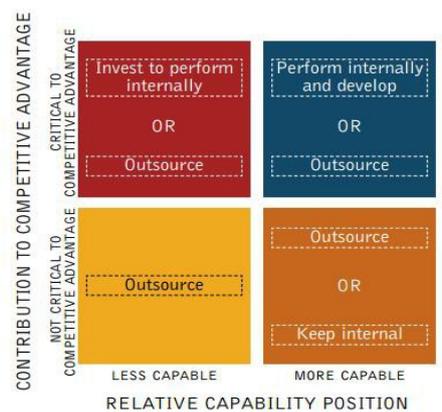


Figure 1: Make-or-Buy decision analysis matrice [6]

In logistics, a lot of research focuses on the problems of location and selection of suppliers. However, the model we propose includes a SWOT analysis based on the AHP-hybrid method to solve an offshoring problem. In addition, a parallel between SWOT and make-or-buy matrix is made to highlight specific aspects of supply chain management. The closest example of SWOT-AHP use in the literature is the one of Lee and Walsh (2011) which illustrate a case of a sports marketing service in the US that is outsourced. Ho (2007) notes in his review of the different utilizations of the AHP method that it has not heretofore been applied in conjunction with the SWOT analysis in the field of logistics. The author even states that it is unfortunate because this approach seems appropriate within this research field. [7]

The vast majority of articles dealing with the AHP method focuses on the final decision and do not include the full choices of relocation strategy. Thus the articles mentioning the use of AHP for offshoring decisions are actually directed on the selection of a supplier or the selection of a country to locate a subsidiary. But none addresses the choice of the offshoring strategy and the choice of the corresponding provider or implantation site. Reviewing the literature on the main databases, we found only two articles that attempt to tackle this specific problem with AHP. First the Yurimoto and Masui (1995) research which presents the originality to make the AHP analysis twice, once to determine which country will host the production and a second time to choose the site of implantation in the previously selected country. [8] Then the work of Schoenherr, Tumala and Harrison (2008) who analyze, using AHP, five alternatives for the relocation of a US company. Two of the alternatives studied concern an offshoring outsourcing strategy, the other three possibilities mix a complex strategy of outsourcing part of the process abroad and keeping the rest of the production within the company in various manufacturing sites [9]. For academic

research, our work is interesting in that it offers a relatively new conceptualization of the relocation problem. In addition, consultants who are dealing with relocation issues and seek to rigorously organize their recommendations can find here a methodology that will allow them to avoid many mistakes. "*Many make outsourcing decisions on a piecemeal basis and fail to develop outsourcing strategies for their processes that allow them to compete in the global economy.*"[6]

When taking an international relocation decision, we must be rigorous and not get carried away with some trends or simplistic analyzes of costs as it is too often the case.[10] So being vigilant and carefully considering all the factors of both direct costs such as labor and infrastructure, and indirect costs such as coordination is not an option. The challenge is to have a tool that allows to take into consideration all factors of risks and profits within a rigorous analysis where each step can be checked and discussed. That's why our choice fell on the AHP (analytic hierarchy process) method.

2.1 The Analytic Hierarchy Process – AHP

First, the AHP method (Analytic Hierarchy Process) is a proven method. It was created by Thomas L. Saaty in the late 70s Although some authors found references to the method dating from 1972 [11], it is Saaty in 1977 that published an article in the *Journal of medical psychology* entitled: "*A scaling method for priorities in hierarchical structures.*" It is in this article that is described in detail for the first time the method. In 1980 is published a book, "*The Analytic Hierarchy Process, Planning, Priority Setting, Resource Allocation*", which will be the starting point for the vast majority of subsequent studies [12]. The 80s marked the beginning of the first applications of the method: project selection, decision support in government policy, business strategy formulation in finance, choosing a location site for a electrical plant, antibiotic treatment planning, etc. [13]. The AHP method is gradually better explained with step-by-step examples to make it accessible to business managers and decision makers in the public domain. Thus, R.W. Saaty (1987) and T.L. Saaty (1990) wrote two articles that will help non-mathematicians to understand the method and implement it. [14] [15] From there, it is the explosion of applications of AHP method in the literature. Applications cover many research fields. This versatility is one of the strengths of the AHP method and comes together with a relative ease of implementation. Another fundamental interests of AHP method is the ability to integrate both deductive and inductive measurement and simultaneous comparison of quantitative and qualitative criteria. [14] And this is particularly important in the case of international relocation where taking into account multiple and diverse factors is necessary. Finally, the conceptualization of the method in many cases is relatively simple [14] [15]. The analysis of a decision with the AHP method must be highly structured and follow specific steps. [16] Yet, the best way to understand and practice is to follow a running example as we do in the illustrative part of this research.

2.2 Strategic Analysis with SWOT-AHP Hybrid Method

As we noticed, the AHP method allows us to make rational decisions on multiple criteria not necessarily quantifiable. Although it is most often applied to choose suppliers or site location, it seems to be adaptable to strategic decisions as shown in the article by Lee and Walsh (2011). They use it in conjunction with a SWOT (strength-Weaknesses, Opportunities, threats) analysis to take a decision to outsource. Although this case is taken from sports marketing, it is the only paper, to our knowledge, that combines the AHP method with a SWOT analysis to make a procurement decision. [17] We will adapt the technique developed by the authors for the supply chain management field crossing SWOT analysis and concepts of make-or-buy methodology [6] within AHP.

Another article, by Chen (2011) use a similar methodology to ours for the choice of a supplier. Indeed, it uses SWOT to analyze the strategy of the company and thus better identify priorities and decision criteria. However, this article does not directly use AHP and favors a mix of DEA, fuzzy logic and TOPSIS. It still remains interesting that the author separates the relocation decision in two stages [18]:

- The first phase corresponds to the strategic analysis of the needs. This analysis is conducted according to a SWOT-type structure to show the company's competitive strategy through the internal capacity and external factors. It is this analysis of competitive position that will be the basis for developing the framework for assessing suppliers.

- The second phase involves the evaluation and selection of suppliers. The author recommends using a multicriteria decision analysis method to keep up with the necessary rigor of the analysis.

The contribution of the SWOT analysis is in line with the long term strategy of the organization and with

the determination of the criteria. The first phase interests us especially since it is the subject of our research. We seek to deepen this aspect by applying the SWOT method in parallel with a Make-or-Buy analysis.

Note, however, that SWOT analysis is not a panacea and that it has many limitations due to its extreme simplicity. It is often criticized for only providing a simplified list of the real needs of the company. [19] *"Despite this, analysts often use SWOT as a first step to help start the process of strategic analysis"* [20]. We also note that if critics are directed to the structure of the method, or rather its lack of structure and the lack of means for weighting the priorities that we seek to establish, this can be remedied by using SWOT jointly with a multi-criteria method based on the weighting of indicators, such as AHP method [20]. Moreover, SWOT-AHP approach is not very addressed in the field of logistics, even if its use there would be appropriate [7]. Moreover, Helms and Nixon (2010: 240) adds that *"the future of SWOT analysis seems to lie in ordering the variables and moving toward weighting them to help add focus for decision makers. With ranked variables, prioritization of strategies will be improved and ways to close the key gaps internally and externally can be addressed."* All this allows us to think that despite its flaws SWOT-AHP hybrid method should provide good results for strategic analysis.

3 Conceptualizing the Choice of an Offshoring Strategy

A relocation decision is primarily a hierarchical decision, that is to say, a step-by-step process. In reality, the company starts to wonder if such a stance would be beneficial, but it has not already foreseen all alternative location sites or possible suppliers. However, in the cases and examples given for the AHP method, it appears that the relocation decision is either a choice of site location abroad or the choice of a supplier. It seems that the authors forget that upstream of these choices there is a primary strategic decision: to simply look at whether or not we want to relocate and how. This is what Hatonen (2009) illustrates specifying that internationalization is done in three stages and that the first two steps involve the relocation decision. The first step is to answer the question of the make-or-buy strategy, followed by the second step, according to the answer to the previous question, a location choice or a partner choice, sometimes both. Internationalization is fully taken into account only after the second step. [21] It seems that a relocation decision first involves an initial state: the production by the company in the domestic country, country of origin of the firm. This initial state is in the make-or-buy model referred to as the "make" situation. To this, we need to add, to reflect the reality of the models used in supply management, an alternative situation as part of a relocation strategy: looking for a foreign supplier. This alternative corresponds to the "buy" situation. It is at this level that stop most make-or-buy models like the one proposed by McIvor (2011). It is still a relatively simple decision: to keep the local production in-house or outsource it abroad for example. But we want to go further and consider the situation in which it is possible to continue to produce in-house, but in another country where production was not initially. The first stage of an international relocation decision is therefore a decision between three alternatives: **make, buy abroad or make abroad**. Depending on the chosen strategy, the second stage of the decision making process then arises. In case the company decides to continue production at the domestic level, then it will need to continue to innovate and invest to maintain its organizational capacity and remain competitive. In the second case, the company that chooses an international outsourcing strategy will then select the supplier or suppliers that seem best meet its needs. Finally, in the later case, the company must then choose a location site to continue or increase production abroad.

Note that it all look fairly similar to a traditional pattern of the AHP. Indeed, it contains a goal, the choice of a strategy, and alternatives, here three (make, buy abroad or make abroad). It only needs the categorized decision criterias to be able to completely operate the AHP method and that way find the best solution available to us. These categories of criteria are available in many previous supply chain management papers that deal with outsourcing. [6] The two dimensions of McIvor (2011) are the internal capacity of the organization to produce the process and the contribution of the process to the comparative advantage of the firm. However, simplifying slightly, we see that the organizational capacity to produce a process is none other than the analysis of internal factors of the company: its strengths and weaknesses. Similarly, the contribution to the comparative advantage is an analysis of external factors of the organization and its positioning in its environment. In other words, this corresponds to a comparison of the market opportunities and threats. Therefore the SWOT analysis fits a traditional logistic make-or-buy decision. Our conceptual framework for the choice of strategy is to be found in Figure 3. By consulting the managers of the firm with a SWOT analysis, they can describe the long-term goals and see what the

priorities of the company are. From this, one can determine the factors in each category of the SWOT analysis and their weighting. Following the AHP method, managers only have to give their perception of the relative importance of each factor in each category and the relative importance of each factor in relation to each of the alternatives. By doing so, the weights determined by the AHP method will lead to a rational decision.

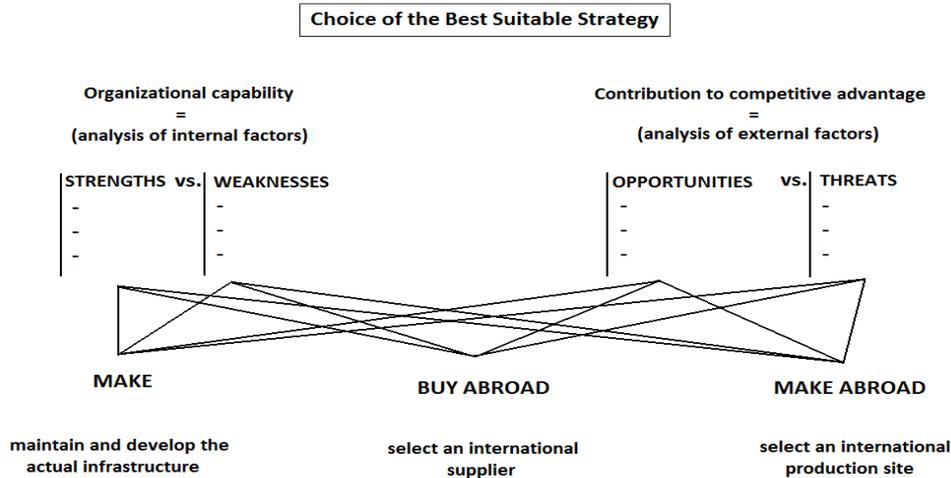


Figure 3: Synthetic model of international offshoring/outsourcing decision

At this point, by applying the SWOT-AHP method to the selection of a relocation strategy we are able to determine the way forward. This model is innovative in that it uses a SWOT-AHP mixed methodology for strategic logistic decision dealing with both outsourcing and offshoring while taking into account the possibility of the status quo.

4 Example of the Proposed Methodology

To explain the modeling of the proposed methodology, a small example is a good solution. Consider a company producing quality socks, called KBis and established in France. It plans to relocate part of its production. The company must ensure that the relocation decision is the good one. It is paramount, in this context, to be able to wisely compare alternative strategies including the one not to relocate. The first phase of the decision-making process is therefore to establish a SWOT analysis of the company and its sock production process by focusing the axis Strengths-Weaknesses on the internal capacity of the company to achieve production and directing the axis Opportunities-Threats on the contribution of the process to the competitive advantage of the firm. To determine the internal factors of organizational capacity or “**strengths**” in the SWOT analysis, we pose the following question to decision maker: “*What internal factors of KBis are keys to the development and the marketing of quality socks ?*” The three corresponding factors we found are: product quality (S1), the capacity for innovation (S2) with respect to consumer demands and leadership (S3) for online sales of socks in France. These three factors correspond to the realities of KBis: this firm is distinguished by high quality and innovative products and KBis is a pioneer of online sales. **Weaknesses** were determined by answering the question: “*What internal factors prevent the development of KBis?*” We put forward three factors that appeared preponderant: production costs (W1), difficulties in improving production rates (W2) and the company's liquidity are down (W3). The first and last factors are directly derived from balance sheets. The second is related to the announcement by unions that the working labor and production tools are already fully exploited. The question that makes **opportunities** arise is: “*What benefits of the European socks market KBis can capture?*” We emphasize four criterias : the possibility of growth (O1) by capturing more market share (400 million pairs of socks sold in France), the increase in consumer demand for innovative products (O2), increased sensitivity of end consumers to environmental and social responsibility of the firm (O3),

the exponential growth of online sales that already helps the company to stand afloat (O4). Finally, the question of **threats** is raised: “*What challenges KBis is facing on the European socks market?*” For the managers, it seems that pressure from international competition (T1) is growing especially since distributors are very big players who have a strong influence on prices (T2). We also note the difficult economic conditions (T3) in Europe following the structural crisis. Finally, in the face of union pressure and strike threats, the company is afraid of having to negotiate new working conditions (T4). Now that we have determined the components of the SWOT analysis, we must integrate the hierarchical analysis process by structuring the problem. This is what we do in Figure 3.

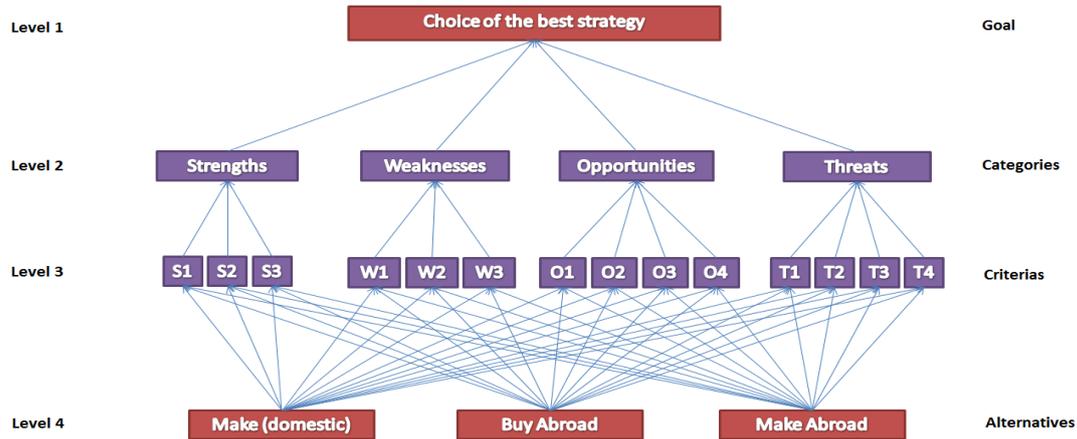


Figure 3: Hierarchical structure of the decision problem.

This hierarchical structure, first stage of the AHP method, provides a coherent overview of the situation; it highlights the decisions factors, grouping them into categories and gives the potential alternatives. The structure of the decision then takes the following form: first a decision goal, here choosing a strategy. The decision is subject to a set of criteria that are determined by the SWOT analysis (from S1 to T4). Those criteria are grouped in categories (Strengths, Weaknesses, Opportunities, Threats). Finally, there are several alternatives: make, buy abroad, make abroad.

It is then time to move to the second phase of the method: the creation of judgment matrices. In Figure 4 is the top-level matrix: comparing the categories between them. It will serve as an illustration since all judgment matrices are constructed in the same manner. The AHP method adopts a methodology from the field of psychology to classify the alternatives, criteria and categories together. This is the pair-wise comparison. Instead of providing a grade directly to a category, criterion or an alternative, we will give a relative grade by judging the performance on a given subject over another alternative, category or criterion. For this, TL Saaty (1990) uses a scale of verbal judgments from 1 to 9, with 1 for an equal importance and 9 if an element is absolutely more important than the other. [15] It is by using this scale that the user will be able to rate the different pairs of elements to compare them. We then build a matrix of judgment from pairwise comparisons made between elements of the same level (see Figure 4). We give a relative weight, based on judgments made by managers and decision makers, to categories: Strength, Weaknesses, Opportunities and Threats. Here, the current difficulties of the company were taken into account in setting priorities.

Level 1 matrix	Strengths	Weaknesses	Opportunities	Threats	Weights
Strengths	1	1/3	3	3	0,2785714
Weaknesses	3	1	3	3	0,4690476
Opportunities	1/3	1/3	1	2	0,1484127
Threats	1/3	1/3	1/2	1	0,1039683

Figure 4: First level judgement matrix with weight vector and CR calculated.

We see that overall opportunities and threats have a score equivalent enough, slightly higher for opportunities, as the company has retained confidence in the future and believe to have the capacity to take advantage of these opportunities without to succumb to threats. This is what is expressed when the

importance of the strength category exceeds that of opportunities and threats. Nevertheless, weaknesses get the highest score since the company's concerns are precisely those weaknesses which can bring down the company if it continues to cope with the current market conditions. We will proceed the same way for all other matrices of second level (where we compare criteria within each category) and of third level (where we compare each criterion against strategic alternatives). We do not present here the results matrix to alleviate the paper structure but the end results are compiled in Figure 5.

				Composed indices						
				Make	Buy abroad	Make abroad	Make	Buy abroad	Make abroad	
Choice of the best strategy	Strength	0,2786	Quality of products	0,106	0,63247312	0,06940092	0,29812596	0,0187	0,0021	0,0088
			Innovation capability	0,26	0,63334572	0,10615632	0,260497956	0,0460	0,0077	0,0189
			Leadership e-business	0,633	0,62322473	0,13728766	0,239487608	0,1100	0,0242	0,0423
	Weakness	0,4690	Production costs	0,244	0,09035205	0,35372103	0,555926916	0,0103	0,0404	0,0635
			Treasury issues	0,671	0,08194444	0,34305556	0,575	0,0258	0,1080	0,1810
			Production rate	0,085	0,09641944	0,28422847	0,619352089	0,0039	0,0114	0,0248
	Opportunity	0,1464	Market size	0,077	0,09641944	0,61935209	0,284228474	0,0011	0,0071	0,0032
			Demand for innovative products	0,263	0,66869689	0,08820212	0,243100985	0,0261	0,0034	0,0095
			CSR sensitivity	0,159	0,66507024	0,10384738	0,231082375	0,0157	0,0025	0,0055
			growth in e-business	0,501	0,58888889	0,25185185	0,159259259	0,0438	0,0187	0,0118
	Threat	0,1040	International competition	0,649	0,09035205	0,55592692	0,353721034	0,0061	0,0375	0,0239
			Big retailers pressure	0,197	0,61935209	0,09641944	0,284228474	0,0127	0,0020	0,0058
			Hard economic recovery	0,103	0,07377211	0,64338887	0,282839025	0,0008	0,0069	0,0030
			Labor regulations	0,051	0,09035205	0,55592692	0,353721034	0,0005	0,0029	0,0019
					Sum					
					0,3214	0,2747	0,4039			

Figure 5: Summary calculations table of AHP methods

The purpose of the AHP method is to define an overall score for each alternative. Before we get there, it must pass through an intermediate stage where it is necessary to determine the weighted score for each alternative for each criterion, and each criterion for each category and each category for the goal. This is what Saaty TL (1990) calls Eigenvector. The calculation of the Eigenvector (the weighted scores for each element) needs to go through three intermediate calculations. Let a_{ij} represent the result of the judgment of the relative importance of i with respect to j , if $a_{ij} > 1$, then i is preferred to j if $a_{ij} < 1$ then j is more important than i . First, we need to sum the elements a_{ij} of each column (j) of the judgments matrices. Then we establish the normalized matrix of the matrix of judgment by dividing each element a_{ij} by the sum determined previously for each corresponding column j . Finally, we calculate the eigenvector, local weight of each element i , by computing the mean of the normalized matrix lines (Eigenvalues, the weights column in figure 4). Of course, the calculations meet certain conditions to ensure the rigor of the method. To ensure the consistency in the judgments Saaty has created a consistency ratio (CR) which should not exceed 10% otherwise inconsistent judgments in the matrix are too great. The formulas and how to implement them are already fully described in the literature [14], [15] and are not the main subject of this conference paper. We would be happy to give a full mathematic description of AHP in a future research article. However, in this illustration, for each matrix, CR is less than 10%. This ensures consistency of weights determined by the method.

The final step is paradoxically the simplest. Indeed, by calculating all the local weight of each level judgment of matrix 1, 2 and 3 were obtained the following relative weight: Alternative weight (i) with respect to each criterion (j) of each category (k) ALT_{ijk} ; The weights of the criteria (j) with respect to each category (k) $CRIT_{jk}$; Weights of each category (k) CAT_k .

With P_i equal to the final weight of the alternative i , we only have to distribute local weights for all i, j :

$$P_i = \sum_{j,k} [ALT_{ijk} \times Crit_{jk} \times Cat_k]$$

To complete the process, simply compare P_i of each alternative and choose the one with the highest score. That way, we make sure to have chosen the best possible alternative. In Figure 5, we have grouped the weights obtained for each category, each criterion and alternative. In this table, we see appearing at the bottom, the sum of the scores of each alternative (P_i) for each weighted criterion, and the highest score is the strategy to be recommended in this case. Here, "relocate" with the score of 0.40, well ahead of the strategy to stay at home with 0.32. This result seems robust at first sight and is not close to being reversed by minor changes in the scores: even if we change the score of an alternative for one or two criteria it does not produce any change in the final decision.

5 Conclusion

"How to take a rational and lasting international relocation decision?" It seems that such a decision must first focus on an analysis of the best internationalization strategy possible given the strategic and operational framework of the company. Once this analysis gave a positive response, then the method moves to the determination of a suitable location production site or to the choice of alternative suppliers. We propose in an upcoming research article to expand the model to include everything relocation decision encompasses, from the choice of a strategy to the choice of a supplier or site location.

The main contribution of this research lies in the proposal of a new model of relocation decisions based on a SWOT-AHP hybrid methodology adjusted for the make-or-buy model. To conclude, we would like to say that offshoring decisions are too important to people, employees and companies involved to be left to irrationality and superficial costs analysis.

References

1. Fontagné, L., Lorenzi, J.-H. « Désindustrialisation, délocalisations », rapport, Conseil économique et social, la documentation française, Paris, 133p. (2005)
2. Grignon, Francis. Délocalisations : pour un néo-colbertisme européen, Rapport d'information du Sénat Français n° 374 (2003-2004), [version électronique], <http://www.senat.fr/rap/r03-374/r03-374.html> (2004, 23 juin)
3. Contractor, Farok J., Vikas Kumar, Sumit K. Kundu, Torben Pedersen. « Reconceptualizing the firm in a world of outsourcing and offshoring : the organizational and geographical relocation of high-value company functions », *Journal of Management Studies*, Vol. 47, No. 8, p1417-1433, 17p. (2010)
4. Larocque, Sylvain. « Quand Montréal déclassé la Chine », La Presse, [version électronique], <http://plus.lapresse.ca/screens/a83d9ca3-29b8-4bfe-9793-66b0580ce7e7|g1XCIElcvq-U.html> (2014a, 6 octobre)
5. Larocque, Sylvain. « Le retour du made in america », La Presse, [version électronique], <http://affaires.lapresse.ca/economie/fabrication/201410/03/01-4806172-le-retour-du-made-in-america.php> (2014b, 5 octobre)
6. McIvor, Ronan. « Outsourcing done right », *Industrial Engineer: IE*, Vol. 43, No. 1, p30-35. 6p. (2011)
7. Ho, William. « Integrated analytic hierarchy process and its applications – A literature review », *European Journal of Operational Research*, Vol. 186, pp211–228, 18p. (2007)
8. Yurimoto, S., T. Masui. « Design of a decision support system for overseas plant location in the EC », *International Journal of Production Economics*, Vol. 41, pp411–418, 8p. (1995)
9. Schoenherr, T., V.M. Rao Tummala, T.P. Harrison. « Assessing supply chain risks with the analytic hierarchy process: providing decision support for the offshoring decision by a US manufacturing company », *Journal of Purchasing and Supply Management*, Vol. 14, No. 2, pp100–111, 12p. (2008)
10. Booz Allen Hamilton, « Business Process Offshoring: Making the Right Decision », http://www.boozallen.com/media/file/BP_Offshoring_Making_Right_Decision.pdf (2003)
11. Ishizaka, Alessio, Ashraf Labib. « Review of the main developments in the analytic hierarchy process », *Expert Systems with Applications*, Vol. 38, pp14336–14345, 9p. (2011)
12. Saaty, T.L. « The Analytic Hierarchy Process, Planning, Priority Setting, Resource Allocation », McGrawHill, New York, 287p. (1980)
13. Golden, Bruce L., Edward A. Wasil, Patrick T. Harker. « The analytic hierarchy process: Applications and studies », Heidelberg: Springer-Verlag, Berlin, 265p. (1989)
14. Saaty, R.W. « [The analytic hierarchy process—what it is and how it is used](#) », *Mathematical Modelling*, Vol. 9, No 3–5, pp161-176, 16p. (1987)
15. Saaty, T.L. « [How to make a decision: The analytic hierarchy process](#) », *European Journal of Operational Research*, Vol. 48, No. 1, pp9-26, 17p. (1990)
16. Subramanian, N., R. Ramanathan. « A review of applications of analytic hierarchy process in operations management », *International Journal of Production Economics*, Vol. 138, pp215-241, 27p. (2012)
17. Lee, Seungbum, Patrick Walsh. « [SWOT and AHP hybrid model for sport marketing outsourcing using a case of intercollegiate sport](#) », *Sport Management Review*, Vol. 14, No. 4, pp361-369, 9p. (2011)
18. Chen, Yuh-Jen. « Structured methodology for supplier selection and evaluation in a supply chain », *Information Sciences*, Vol. 181, pp1651-1670, 19p. (2011)
19. Pickton, D.W., S. Wright. « What's SWOT in strategic analysis? », *Strategic Change*, Vol. 7, pp101-109, 9p. (1998)
20. Helms, Marilyn M., Judy Nixon. « Exploring SWOT analysis – Where are we now? A review of academic research from the last decade », *Journal of Strategy and Management*, Vol. 3, No. 3, pp215-251, 36p. (2010)
21. Hatonen, Jussi. « Making the locational choice – A case approach to the development of a theory of offshore outsourcing and internationalization », *Journal of International Management*, Vol. 15, pp61-76, 16p.. (2009)