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10 | 2010

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June 2010

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BANCO DE PORTUGAL

Edition

Economics and Research Department

Av. Almirante Reis, 71-6th

1150-012 Lisboa

www.bportugal.pt

Pre-press and Distribution

Administrative Services Department

Documentation, Editing and Museum Division

Editing and Publishing Unit

Av. Almirante Reis, 71-2nd

1150-012 Lisboa

Printing

Administrative Services Department

Logistics Division

Lisbon, June 2010

Number of copies

170

ISBN 978-989-678-028-9

ISSN 0870-0117

Legal Deposit no. 3664/83

A MULTIPLE CRITERIA FRAMEWORK TO EVALUATE BANK BRANCH POTENTIAL ATTRACTIVENESS

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Abstract:
Remarkable progress has occurred over the years in the performance evaluation of bank branches. Even though financial measures are usually considered the most important in assessing branch viability, we posit that insufficient attention has been given to other factors that affect the branches' potential profitability and attractiveness. Based on the integrated used of cognitive maps and MCDA techniques, we propose a framework that adds value to the way that potential attractiveness criteria to assess bank branches are selected and to the way that the trade-offs between those criteria are obtained. This framework is the result of a process involving several directors from the five largest banks operating in Portugal, and follows a constructivist approach. Our findings suggest that the use of cognitive maps systematically identifies previously omitted criteria that may assess potential attractiveness. The use of MCDA techniques may clarify and add transparency to the way trade-offs are dealt with. Advantages and disadvantages of the proposed framework are also discussed.

Keywords: Bank Branch, Potential Attractiveness, Cognitive Maps, MCDA.

JEL Classification: C44, G21, L25, M10.

INTRODUCTION

Few would contest that financial and banking institutions compete in a more complex and hostile environment in today's global economic climate, where it is absolutely necessary that each financial institution understands not only its mission and major objectives but also specifically identifies the strategies and tactics used to achieve them. Furthermore, globalization of financial markets, the recent financial crisis and evolving regulation are forcing substantial changes and reforms on financial institutions. Therefore, the ability for banks to mobilize, explore and evaluate tangible and/or intangible resources deserves increased interest from academics, regulators and bank management.

According to Carmeli (2004: 111-112), "*the real source of competitive advantage is underlined by the organization's ability to consistently meet environmental changes […] intangible, more than tangible, resources have potential for competitive advantage creation*". Although the latest tendency to adopt multichannel banking strategies has been increasing, it seems evident that the traditional bank branch network still has a relevant role in the banking activity. This idea seems to be supported by Serna (2005: 2), who argues: "*bank branches are the primary place in which consumers have access to products for either building assets and/or obtaining credit*".

Given that bank branches will continue to be a primary point of service, it seems evident that relative bank success will depend on the use of evaluation systems to measure bank branch performance and attractiveness. The fact that there are multiple intangible variables influencing branch attractiveness and profitability complicates the identification and development of evaluation systems. Many of the intangible variables fall out the banks' sphere of control, which increases the interest (but also the difficulty) of developing potential attractiveness measurement frameworks.

It is appropriate to clarify that this study associates the term "potential attractiveness" to all external variables that fall out (totally or partially) of the banks' sphere of control, where these variables may create differentiation among branches by imposing strict constraints on their performance and influencing profitability. Thus, variables such as quality of service, managers and personnel's activities, contacts in the community, courtesy and skills, will not be considered since these variables may be controlled by the banks' administration.

Although remarkable progress has taken place during the past two decades in the development of performance measurement frameworks (*e.g.* the Balanced Scorecard of Kaplan and Norton, 1992), it is recognised that there are still issues which deserve further research and further clarification. Two major intertwined categories of issues may be identified: the first refers to the way that (qualitative and/or quantitative) evaluation criteria are selected and the second refers to the way that trade-offs between those criteria are made explicit. In this paper, we show how cognitive mapping and MACBETH – *Measuring Attractiveness by a Categorical Based Evaluation Technique* – (see Bana e Costa and Vansnick, 1994 and Bana e Costa *et al.*, 2005) can be integrated and used to support the development of multidimensional performance evaluation systems that deal with bank branch potential attractiveness.

This study covers only a part of a larger multiple criteria model for bank branch performance evaluation (see Ferreira, 2008), which was grounded on a case study that involved directors from the five largest banks that operate in the Portuguese banking system. These participants in the Ferreira study addressed, among others things, the potential attractiveness problem. We find no other documented evidences reporting the integrated use of these techniques to support the conception (and desirable implementation) of performance measurement systems for bank branch potential

attractiveness.

To review what has already been done on the analysis of potential attractiveness, we begin with a review of bank branch performance evaluation measures. We then present the way in which the methodologies have been used to develop the respective framework, and we further discuss the framework's strengths and weaknesses. We conclude by presenting some closing remarks and giving suggestions for further research.

1. BRIEF REVIEW OF THE BANK BRANCH POTENTIAL ATTRACTIVENESS LITERATURE

Since the late 1980s, worldwide banking system reforms have been implemented for banking systems of all developed nations. Several factors have been behind these reforms, such as: globalization, standardized capital requirements, sector's liberalization, fusions and acquisitions, financial and technological innovation, cross-selling, full-service branches, to name just a few. As a consequence of the organic growth of bank branches, they have become increasingly concentrated, not only geographically but also in terms of a limited number of (larger and consolidated) financial institutions, thus increasing competition (Hirtle, 2007). These circumstances have led banks to search for promising new branch locations and to compare relative branch performance based on a wide diversity of clients served and on the different competition conditions offered by each location. Therefore, banks have tried to establish and place into effect different decision support systems, *"to allow for local conditions in planning new locations, evaluating performance and providing marketing support to their geographically separate units"* (Boufounou, 1995: 389).

Despite this progress, it is important to bear in mind that the present economic

and financial conditions place additional pressure on the branch networks evaluation. According to Zhao *et al.* (2004: 541), *"although measures of financial performance are typically considered the most important in evaluating the viability of branches, there is evidence suggesting that a number of more general factors are important in assessing branch potential"*. From this point of view, it seems obvious that bank branch results are dependent not only on management performance but also on different "external" factors related to the branches' local conditions.

Our assumption of "potential attractiveness measurement" is supported by Boufounou (1995: 391), who states: *"in order for performance measurement to be sufficiently reliable, it has to explicitly capture the effects of "external" factors into branch results"*. According to the author, those external variables are mainly connected to *location features*, *trade area characteristics*, *competitive situation features* and *internal branch characteristics*. Nevertheless, we posit that insufficient attention and proper treatment has been given to those factors, namely because they fall out the banks' sphere of control/action.

Four different performance evaluation methodologies have emerged according to Parkan and Wu (1999) and Stavárek (2003 and 2005): (1) *Ratios and Indexes*, that report simple analysis between two or more variables, and are known as traditional measures of performance evaluation; (2) *Parametric or Econometric Approaches*, that report statistical analysis based on known distributions and obey to certain parameters (*e.g.* linear regressions, correlation analysis, factorial analysis, among others); (3) *Non Parametric Approaches or Free Distribution Tests*, that do not obey to any particular distribution, but cannot be extrapolated from the context of analysis (they depend on the available data, on the evaluated units and/or on the period of analysis) (*e.g.* Benchmarking and DEA – *Data Envelopment Analysis*); and (4) *Integrated Systems for*

Performance Evaluation, that combine complementary methods and are based on a learning and constructivist perspective (*e.g.* BSC – Balanced Scorecard). A discussion of each of the four different categories characteristics and respective strengths and weaknesses falls out of this paper's scope. We are unaware of any existing literature using these methodological approaches that explicitly addresses bank branch potential attractiveness. However, there are some studies that had partially treated the bank branch potential attractiveness problem:

> Avkiran (1995) offers an interdisciplinary and multivariate perspective for an integrated analysis of bank branch performance. The author's contribution is, therefore, relevant in the sense that he aims to minimise the gap between current branch performance and branch potential. His use of econometric techniques is based on variables that are controllable by bank management. Thus, his study is considerably different than ours, not only in methodological terms, but also because we believe that there are several other variables that fall out the bank's sphere of control that may influence bank branch potencial attractiveness.
>
> Boufounou (1995) employs econometric models to produce a set of equations that predict the main dimensions of branch performance. He argues that external elements should be included in the decision making process, and regards *Volume of Deposits* as the major evaluation criterion measure of the branch performance. He then establishes causal relationships between this measure of performance and the *Number of Rentiers* in the branch trade area, *Branch Age*, *Number of Employees* (associated to the branch's size) and presence of *Night Deposit Facilities* (which represents an exterior attractiveness design feature, according to the author). Finally, he estimates branches' potential attractiveness by comparing each one of the branches' scores with the overall average.
>
> Ittner *et al.* (1997) develop a branch quality index based on the integrate use of BSC and metrics, and applied their framework on a group of branches of the USA Western region. By performing several interviews with senior executives, the authors recognise difficulties (and possible omissions) on the way that

evaluation criteria have been selected, disaggregated and explained. Despite the progress that has taken place in overcoming this problem (*e.g.* Kaplan and Norton, 2000; Suwignjo *et al.*, 2000 and Santos *et al.*, 2002 and 2008), it is recognised that there are still issues which deserve further research and discussion. The same thing is reported as far as trade-off procedures between criteria is concerned.

Manandhar and Tang (2002) present a study for incorporating intangible aspects into a DEA framework. Their interpretation of potential attractiveness is different from ours, since they focused on *Internal Service Quality* while we assume potential attractiveness results from the influence of external variables that fall out of the banks' sphere of control. Their contribution is important since it highlights the multiple-dimension of intangible aspects. Manandhar and Tang also highlight the fact that, in the DEA approach, homogeneity among the decision units is assumed. Nevertheless, differences in environmental factors such as neighborhood population and branches' age can introduce heterogeneity. In this way, the interest of this study is also concerned with the discussion of including environmental (*i.e.* external) factors in the decision making evaluation process.

Paradi and Schaffnit (2004) offer a DEA application where two production models are developed. In one of those models, an environmental factor is introduced with the scope of capturing the level of economic growth in each one of the geographical areas under study. Although this study does not offer much to the potential attractiveness context, it seems to be important in the sense that it tries to align bank managers' judgements with performance measures that support the strategic goals.

Zhao *et al.* (2004) explore the way in which geographical criteria and a more explicitly spatial approach can be used to identify branches as candidates for closure and to provide decision makers with a more formal approach to branch bank strategy planning. The contribution of these authors seems to be extremely important in the context of the present paper, because despite the fact that financial performance is typically seen as the most important in evaluating

branches' viability, they suggest that a number of more general factors should also be considered in assessing branch potential. Besides, their study is partially based on MCDM – Multiple Criteria Decision Making – techniques, which corroborate some of our orientations (for a deeper discussion on MCDM and MCDA, see *e.g.* Roy and Vanderpooten, 1997 and Belton and Stewart, 2002).

Globally, these studies provide significant contributions to the field, namely, they identify, discuss and utilize several key evaluation criteria such as: demographic and population characteristics, customer behaviour, physical location, accessibility, spatial competition, number of firms in the branches' areas, presence of competitors, annual family incomes' average, etc. Other studies, with different purposes, also offer important contributions for our branch evaluation study (*e.g.* Hartman *et al.*, 2001, make use of the DEA technique to deal, among other things, with the size of market potential; Davis and Albright, 2004, propose a comparative study to determine if the use of a BSC, as a performance measurement system, may influence the financial performance of bank branches; Barros *et al.*, 2007, based on a mixed logit approach, confirm country level characteristics (location and legal tradition), and firm-level features (bank ownership, balance sheet structure and size) as important determinates of bank performance; Hirtle, 2007, considers the bank overall strategy and studies the impact of network size on bank branch performance, and Bergendahl and Lindblom, 2008, highlight the need to consider the territory and neighborhood's developments where bank branches operate in).

Whilst important advances have been made, a review of the literature allows us to conclude that these approaches are not without their own weaknesses, namely the way that evaluation criteria are selected and the way trade-offs between them are calculated. Therefore, it is our believe that the integrated use of cognitive mapping and the MACBETH approach can bring new insights to inform and support the development

of more effective performance systems in a bank branch potential attractiveness context. In particular, cognitive maps might reduce the rate of omitted criteria and promote a deeper understanding of the relationships between those criteria (Eden, 2003). On the other hand, by generating cardinal value functions capable of representing the decision makers' semantic preferences, MACBETH tends to facilitate the process of calculating trade-offs between criteria, while it adds simplicity and transparency into the process.

Another unique characteristic of our framework is that a branch's attractiveness is based on the banker's point of view and not on the costumers' assessment of potential attractiveness. Thus, our framework, based on possible competitive and demographic changes, is also designed to support a bank in establishing and/or adjusting performance objectives for each of its branches allowing them to periodically track their progress.

2. A MULTIPLE CRITERIA SYSTEM FOR POTENTIAL ATTRACTIVENESS EVALUATION

As previously mentioned, we find no prior literature reporting the integrated used of cognitive mapping and the MACBETH approach as applied to bank branch potential attractiveness. Thus, we discuss how these techniques may facilitate the process of selecting assessment criteria and the trade-offs among these criteria.

Cognitive maps are important tools used for structuring and clarifying complex problems (see, *e.g.* Eden, 1995 and 2003; Ackermann and Eden, 2001; Eden and Banville, 2003 and Eden and Ackermann, 2004) mostly because of their interactivity, versatility and simplicity. Cognitive maps may be used to: (1) promote discussion between the decision makers involved in the decision aid process, (2) reduce the omission rate of important criteria and (3) lead to an increasing learning based on a deeper understanding of the causal relations between criteria. As for MACBETH, it is

an interactive technique that supports the construction of numerical scales of intervals based on the decision makers' semantic judgements (for further details, see Bana e Costa and Vansnick, 1994; Belton and Stewart, 2002 and Bana e Costa *et al.*, 2005), which seems to be useful in dealing with trade-off procedures in a bank branch potential attractiveness context, where most of the variables under discussion are qualitative. In the following sections, the way that the decision process was carried out is presented. Advantages and shortfalls are also discussed.

2.1 The Structuring Phase

The problem's structuring phase was developed in several work sessions over a two-week period. During this time, several issues were addressed, including: decision makers' selection and actors involved, "trigger question" definition, cognitive and strategic maps design, criteria definition, performance evaluation tree design, among others.

2.1.1 Decision Makers and Actors Involved

Selection of decision makers is an important step in the structuring process of a complex problem because it will allow the facilitator (*i.e.* scientist, researcher or group of researchers) to define a panel of experts capable of assisting in the design and implementation of the performance evaluation system. For our study, two main problems were observed when deciding on the dimension of the panel of experts (or decision makers): (1) difficulties in getting the entire team together at the same time and in the same place and (2) limited availability of the top directors to participate in the group sessions. Given these constraints, we composed a panel of six members, most of whom are responsible for bank branch coordination functions. Despite the necessity of

convenience for the panel of experts, we were able to form a panel from the five largest banks that are operating in the Portuguese banking system. This allowed us to collect, confront and manage different strategic opinions and orientations for a large portion of the Portuguese banking system. In addition, a psychologist (responsible to assist the facilitator/s in conducting the sessions) and a communication technician (responsible for registering the results achieved in each session) also participated in the work meetings.

2.1.2 Problem Definition

As previously discussed, our decision framework aims at integrating both cognitive maps and the MACBETH approach in order to add value and increase effectiveness for each bank's branch potential attractiveness evaluation. Again, we emphasize that our concept of "potential attractiveness" includes all variables that fall out (totally or partially) of the banks' sphere of control but create differentiation among bank branches. Those variables do this by imposing strict constraints on their performances and, consequently, influencing their profitability. Therefore, the analysis of the problem consists of conceiving a model through the identification of multiple evaluation criteria and their interrelations which are considered important in: (1) assessing bank branches potential attractiveness; (2) allowing comparisons between those branches under analysis and (3) (if possible) providing improvement suggestions. Although rankings are presented, they are not the major aim of the proposed framework.

2.1.3 Individual Cognitive Maps

Following the SODA I approach – *Strategic Options Development and Analysis* – (Eden and Ackermann, 2001a and 2001b), the structuring process begins with individual work sessions. At the beginning of each session, basic concepts related to the

structuring and cognitive processes are carefully explained to the decision makers. Thorough explanations of our interpretation of "potential attractiveness" are also accompanied by a detailed discussion with decision makers to avoid misunderstandings between the research team and the decision makers.

In order to begin the operational phase of the process and to promote discussion among the actors involved, a "trigger question" was presented: *"From a bank's standpoint, and based on your values and experience, what are the main characteristics of an attractive bank branch?"* (Again, decision makers were asked to reply according to the definition of the concept of "potential attractiveness" previously presented). For practicality, we used a table (130 cm x 80 cm), especially designed for the study and applied the "post-its technique" (see Ackermann and Eden, 2001). That technique consists of writing what is considered, by the decision maker, as a relevant criterion on a post-it. This process is repeated until the decision makers recognize that there are no more criteria to be revealed. At this stage, the post-its are organized on the table by areas of concerned with additional discussion regarding their significance.

2.1.4 Linkages between Criteria

Based on earlier discussion regarding the areas of concern and respective clusters of criteria (represented by post-its), an internal analysis of each cluster's homogeneity and how it is differentiated from other clusters occurs. This analysis aims to identify and better understand the relationships among identified criteria. Once this interactive process between decision maker and facilitator is concluded, the communication technician registers all links (as arrows) in each one of the individual cognitive maps and, at the end of each session, each decision maker is given the opportunity to reflect, reshape and/or restart the entire process (for further details, see

Ferreira, 2008).

2.1.5 The Strategic Map

The preliminary version of the collective map (or "strategic map") is proposed by the research team and it is based on the analysis of the previously formulated six individual maps. Aggregating all concepts developed during the previous individual work sessions is a very difficult and challenging task, not only because some criteria were often associated with different lines of thinking for different individual decision makers, but also because similar terms and definitions were given to different criteria. It is important to clarify that this procedural step is often more of an art than a science and strongly depends on the facilitator/s' skills (see *e.g.* Cossette and Audet, 2003). Despite the difficulties of aggregating all concepts developed by individual decision makers in the previous step, a preliminary version is presented to the collective panel of decision makers, during a group workshop. The map representing the aggregation of all concepts is presented to panel members to promote discussion and to serve as a negotiation tool to reach a compromise solution for the problem. Following SODA I guidelines, the process is conducted in an interactive form and, despite the difficulties in achieving convergence in some situations, it only concludes with the decision makers' agreement on the form and content of the final map. A small part of the strategic map is presented in *Figure 1*.

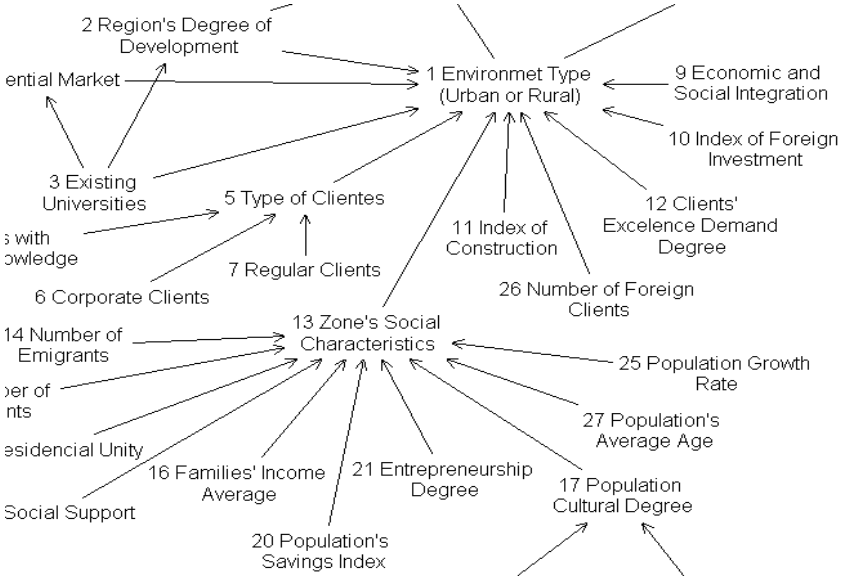

Figure 1 – Part of the strategic map

The collective map represents the result of the negotiation and agreement reached by decision makers. Importantly, however, this conception relies on several factors, such as, session duration, facilitator skills, people involved, circumstances undertaken, etc. Thus, the collective map should be interpreted as a tool to provide consolidated information on decision issues based on perceptions of a certain group of decision makers.

2.1.6 Criteria, Descriptors and Impact Levels

From the discussion with individual and among decision makers during the group session, it was possible to identify some critical bank branch potential attractiveness concepts, such as: *Location*, *Environment* and *Strategic Dimension*. Thus, based on the agreed upon collective map and following Keeney's (1992) methodological guidelines, it was possible to identify key performance indicators (*i.e.* evaluation criteria or points of view, represented by CRT_n) to assess bank branch potential attractiveness.

The process allowed the group to construct a tree of criteria, which has proven to be extremely important in the structuring process of our framework. This results not only because it improved the problem's clarification but also because it allowed the actors to have a better understanding of the relationships among identified criteria. Again, it should be clarified that this structuring procedure is very subjective, not a smooth transition, and it depends strongly on the facilitator/s' skills. However, based on the high volume of information discussed and presented, the structuring task demonstrated that the construction of a tree of evaluation criteria becomes easier when based on a strategic map. Finally, with the support of the M-MACBETH software, a preliminary version of the tree is presented to the decision makers for discussion.

Following the same constructivist approach adopted during the conception of the strategic map, the decision makers are strongly encouraged to discuss the tree and the meaning of each evaluation criteria. Decision makers are also allowed to introduce changes based on their collective perceptions, and the tree's proprieties are tested (see Ferreira, 2008). *Figure 2* illustrates the tree's final structure, which represents the decision makers' interpretation of the problem. Evaluation criteria are marked in bold.

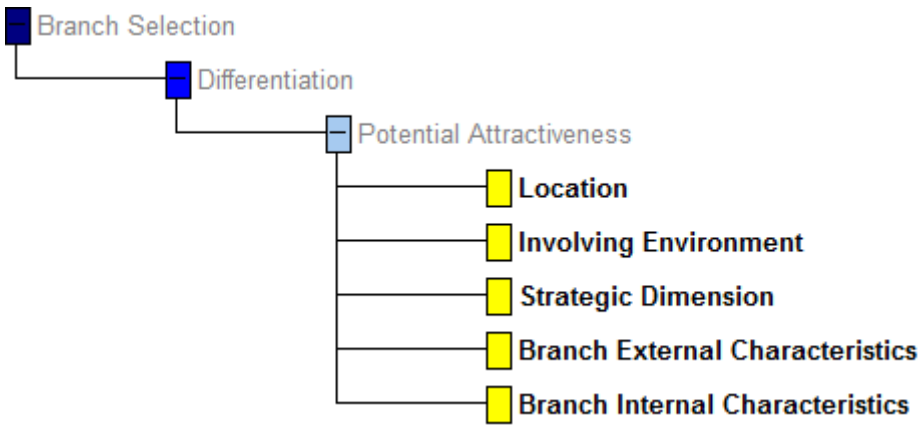

Figure 2 – Tree of criteria

In practical terms, and according to the decision makers, CRT_1 (*Location*) is designed to assess a bank branch's potential attractiveness based on its location. Location will be considered good or bad depending on variables such as: degree of isolation, accessibilities and possibility to implement business protocols; CRT_2 (*Involving Environment*) is defined to reflect the environmental characteristics of the area where the branches are located. It seeks to introduce variables into the evaluation process such as construction index, foreign investment index and market potential; CRT_3 (*Strategic Dimension*) is defined in order to introduce strategic concerns into the model. Variables such as the bank's prestige and the branch's antiquity (associated to tradition and/or potential growth) are introduced in the evaluation model by this criterion; CRT_4 (*Branch External Characteristics*) addresses issues related to the branches' external layout. Although the external layout may not be a strong reason for a costumer to begin or cease his/her relationship with the bank, it undeniably increases, based on the decision makers' opinion, the possibility of attracting new potential customers. Finally, CRT_5 (*Branch Internal Characteristics*) concerns the branches' internal layout and highlights the importance of the branches' interior and physical infrastructures to increase (or not) the branches' potential attractiveness.

The two last criteria, according to the decision makers, are rarely taken into account in a bank branch potential attractiveness evaluation process. However, the use o cognitive mapping allowed their identification. Once the tree of criteria has been discussed and accepted, the next step consisted of eliciting from the decision makers the construction of descriptors and the respective impact levels for each criterion. Once again, based on the direct involvement of the decision makers, the structuring procedure allows them not only to establish the proper basis of their judgement values but also to clarify how each branch's characteristics are assessed.

For example, criteria CRT_1 (*i.e. Location*) becomes operational by applying a descriptor, composed of eight ordered reference levels (L_i with i =1, 2, ..., 8), that assesses the degree of isolation of a certain bank branch, while it balances several aspects, such as: accessibilities and proximity to economic agents (*Table 1*).

Impact Levels	**Reference Levels**	**Description**
L_1		Close to economic agents; Good accessibilities (*i.e.* parking and public transportation); Good possibilities to implement business protocols.
L_2	Good	Close to economic agents; Good accessibilities (*i.e.* parking and public transportation); Lack of possibilities to implement business protocols.
L_3	Neutral	Close to economic agents; Poor accessibilities (*i.e.* parking and public transportation); Good possibilities to implement business protocols.
L_4		Close to economic agents; Poor accessibilities (*i.e.* parking and public transportation); Lack of possibilities to implement business protocols.
L_5		Far from economic agents; Good accessibilities (*i.e.* parking and public transportation); Good possibilities to implement business protocols.
L_6		Far from economic agents; Good accessibilities (*i.e.* parking and public transportation); Lack of possibilities to implement business protocols.
L_7		Far from economic agents; Poor accessibilities (*i.e.* parking and public transportation); Good possibilities to implement business protocols.

L_8		Far from economic agents; Poor accessibilities (*i.e.* parking and public transportation); Lack of possibilities to implement business protocols.

Table 1 – Impact levels of the descriptor of the CRT_1 (*Location*)

In line with the decision makers' interpretation of this descriptor, the lower the degree of isolation the higher the branch's partial score. Obviously, an upper and a lower impact levels, as well as a good and a neutral levels, had to be considered for each criteria. This procedure allowed sorting the impact levels in order to obtain value functions in each evaluation criteria. Note that the evaluation phase only begins after a complete definition of all impact levels in each criterion is considered.

2.2 The Evaluation Phase

The evaluation phase was conducted mainly during a group work session to obtain the trade-offs between decision makers' value judgements and the model's evaluation criteria. Each group work session also consisted of testing the performance of four bank branches and in the analysis and discussion of the results.

2.2.1 Value Judgements and Local Preferences

To analyze local preference scales for the evaluation criteria and to obtain a cardinal value function for each of the descriptors it was necessary to construct value judgement matrices. To assist in filling in the matrices, the MACBETH approach was applied based on predefined categories of semantic differences of attractiveness: *null*, *very weak*, *weak*, *moderate*, *strong*, *very strong* and *extreme* (see Bana e Costa *et al.*, 2005). *Figure 3* exemplifies the technical procedures used to achieve the CRT_1 value

function. Nevertheless, it seems opportune to bear in mind that the process was repeatedly executed until each descriptor's local preference scale was defined.

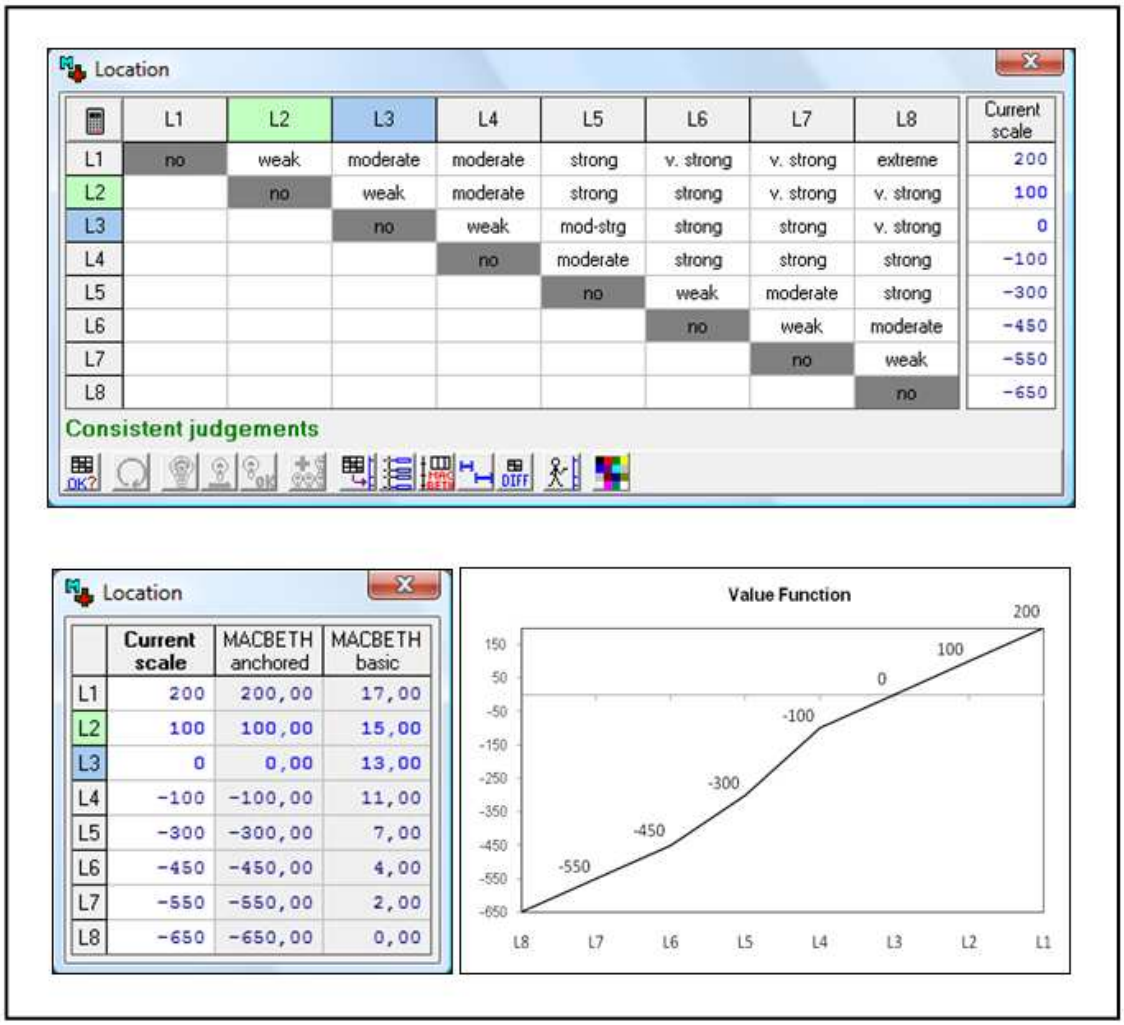

Figure 3 – Value judgements, proposed scales and value function of the CRT_1

It is also important to highlight the usefulness of the M-MACBETH software in resolving inconsistencies, since it offers opportunities for decision makers to reconsider their value judgements. Inconsistencies were promptly identified and addressed based on further discussion and/or value judgement reconsideration. Decision makers were given the opportunity to express their values using semantic judgements, which may be a more natural form of value projection (*cf.* Bana e Costa and Chagas, 2004).

At this stage, mutual preferential independence tests were also conducted, in

order to guarantee preferential independence among criteria (further details on this procedure are presented in Ferreira, 2008). Once cardinal value scales were obtained (*i.e.* local scales that allow the branches' partial assessment), the next step was to calculate the trade-offs between criteria (also known as weights or substitution rates). Those calculi were a pre-requisite to get an assessment of the bank branches.

2.2.2 The Trade-Offs Procedures

During this stage of the decision making process, decision makers were first asked to rank those criteria in terms of their overall attractiveness in order to obtain the trade-offs between criteria. This step used a matrix of comparisons to cognitively compare an alternative a_0 (composed of the worst impact levels) to an alternative a_n (composed of the best impact levels); for further details, see Bana e Costa and Chagas (2004). Decision makers were then invited to express semantic values regarding the difference of attractiveness between the ordered criteria. The technical procedure was the same as the procedure used for the local scales calculi (see again *Figure 3*) and, therefore, a MACBETH scale and respective trade-offs were proposed for discussion with and among decision makers (see *Figure 4*).

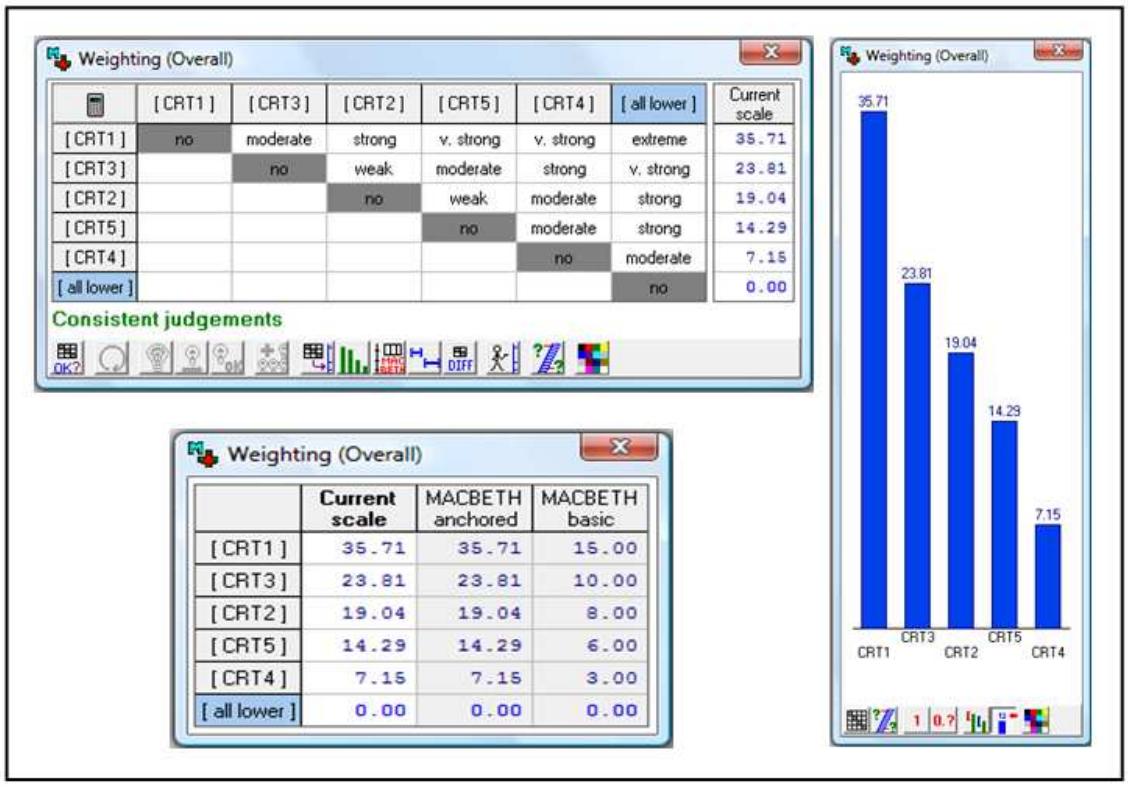

Figure 4 – Criteria weights

Once the trade-offs values were discussed and approved, it became possible to assess bank branches' partial and overall potential attractiveness.

2.2.3 Measuring Bank Branches Potential Attractiveness

Information on bank branches had to be requested before measuring bank branches potential attractiveness. In their reply to our request, information regarding four bank branches was randomly and anonymously provided by CGD – Caixa Geral de Depósitos – (one of the largest banks that operate in Portugal). Despite the low number of branches under evaluation, the limited time period of the information (*i.e.* September of 2006) and the fact that the branches' selection resulted from a CGD's administrative decision, it should be emphasised that the information given was extremely useful, not only to test the framework in a real context but also to increase the interest and the discussion between the decision makers.

Before evaluating the overall potential attractiveness, we first calculated partial attractiveness values for each bank branch. This was accomplished based on the descriptors and on the cardinal value functions previously obtained for each one of the criteria included in the framework (see again *Figure 3*). *Tables 2* and *3* show the partial attractiveness performances of the four bank branches under evaluation (called Alphas).

	CRT_1	CRT_2	CRT_3	CRT_4	CRT_5
Alpha 1	L_1	L_1	L_{11}	L_1	L_1
Alpha 2	L_1	L_7	L_7	L_4	L_7
Alpha 3	L_1	L_1	L_7	L_5	L_1
Alpha 4	L_3	L_6	L_7	L_2	L_7
Good	L_2	L_2	L_5	L_2	L_3
Neutral	L_3	L_4	L_8	L_3	L_6

Table 2 – Levels of partial attractiveness revealed by the evaluated branches

	CRT_1	CRT_2	CRT_3	CRT_4	CRT_5
Alpha 1	200	125	-83.33	216.67	140
Alpha 2	200	-87.5	33.33	-16.67	-20
Alpha 3	200	125	33.33	-133.33	140
Alpha 4	0	-50	33.33	100	-20
Good	100	100	100	100	100
Neutral	0	0	0	0	0

Table 3 – Values of partial attractiveness revealed by the evaluated branches

Based on the results presented in *Tables 2* and *3*, we should clarify that *Good* and *Neutral* are two fictitious bank branches that have been included in the framework

to facilitate the decision makers' cognitive comparisons. *Good* represents a branch that performs at a good level for all criteria involved, while the *Neutral* represents a branch that performs at neutral levels for all criteria and, therefore, is not considered attractive or unattractive. At this stage, it became possible to understand and compare the performance of the branches in accordance to each of the criteria. For example, Alpha 1 reveals the CRT_1, CRT_2, CRT_4 and CRT_5 best performance levels, but it also reveals the worst performance level of the criterion CRT_3, and this will influence its overall assessment. However, its performance on CRT_3 seems to be important from a constructive perspective, not only because it will enable decision makers or other actors involved to better understand the branch's performance but also because it will allow them to propose and, if possible, implement adjustment/improvement suggestions. Once this stage is completed, the branches' local ratings were aggregated based on a simple additive model. *Table 4* presents the branches' partial and global attractiveness values.

	Global	**CRT_1**	**CRT_2**	**CRT_3**	**CRT_4**	**CRT_5**
Alpha 1	110.88	200	125	-83.33	216.67	140
Alpha 2	58.65	200	-87.5	33.33	-16.67	-20
Alpha 3	113.63	200	125	33.33	-133.33	140
Alpha 4	2.71	0	-50	33.33	100	-20
Good	100	100	100	100	100	100
Neutral	0	0	0	0	0	0
Weights		0.3571	0.1904	0.2381	0.715	0.1429

Table 4 – Partial values and overall attractiveness revealed by the four branches

Once the overall performance scores for the four bank branches are calculated their ranking is revealed. From the values presented (see *Table 4*), Alpha 3 offered the

best performance with an overall score of 113.63, while Alpha 4 revealed to be the worst branch with an overall score of 2.71. However, as previously mentioned above (see *section 2.1.2*), rankings are not the major goal of the proposed framework. Instead, the emphasis should be put on a constructive discussion on adjustments/improvements that should emerge from the results.

2.2.4 Analysing Results

The multiple criteria framework developed in this paper allowed bank decision makers to: (1) provide a ranking and discrimination among the bank branches studied according to a model that was constructed based on their own experiences and semantic judgements of value; (2) compare the relative positions of the branches based on cognitive comparisons with two cognitive references (*Good* and *Neutral*); (3) facilitate additional discussions regarding the results, that allowed an increase in transparency and, accordingly, of their knowledge on the decision making problem; (4) present and discuss well focused suggested improvements based on the lower performance achieved by the branches in some of the criteria and (5) demonstrate the practical applicability of the integrated application of cognitive maps and the MACBETH approach in a bank branch potential attractiveness evaluation context.

Based on the literature (*cf.* Ferreira, 2008), the evaluation phase may be considered completed once a final ranking is obtained, discussed and approved by the decision makers. However, additional analyses were conducted (*e.g.* sensitivity and robustness analysis), not only to validate the achieved results and determine the stability of the proposed framework but also to promote an additional discussion with and between decision makers to determine the basis for recommendations.

2.3 The Recommendation Phase of the Study

Although the *multiple criteria framework* allowed us to achieve encouraging results, namely based on the receptiveness and satisfaction expressed by decision makers, the major reason for success is the process itself. This is not an outcome-oriented study but a process-oriented application where a non-prescriptive position has been assumed since the beginning. Therefore, despite of the versatility and flexibility offered by the technical procedures, the present framework should be seen as a learning mechanism and not as an end in itself or a tool to prescribe optimal solutions. Thus, the achieved results are aimed at encouraging discussion among decision makers and promoting a better understanding of the criteria associated with branches potential attractiveness assessment. Because results are strongly dependent on the context of the analysis and on the actors involved, it is highly recommended that any generalization to other contexts or group of actors should be carefully analysed. Obviously, it may be argued that this may be one of the framework's weaknesses. However, the integrated evaluation methodology also offers adjustment possibilities (*e.g.* adjusting the weights in order to capture different strategic priorities and orientations). From this perspective, it seems also important to perform sensitivity and robustness analyses after any adjustment.

3. DISCUSSION AND CONCLUDING REMARKS

A multiple criteria framework has been presented and developed in order to support and evaluate bank branch potential attractiveness. The interpretation of "potential attractiveness" was clarified by rating external variables that fall out (totally or partially) of the banks' sphere of control but create differentiation among bank branches by imposing strict constraints on their performance and influencing their profitability. Special emphasis may also be given to the fact that the multiple criteria

framework resulted from professional bank decision makers perception of branch attractiveness and that it represents a process-oriented application. The main arguments in this paper are related to the fact that bank branch potential attractiveness evaluation is a multiple criteria problem, where decisions are not easily classified and are strongly dependent on several decision makers with different and (sometimes) conflicting values and perspectives. Therefore, searching for optimal solutions in this context is an unrealistic possibility. Despite the remarkable progress that has taken place in the performance evaluation field (*e.g.* Kaplan and Norton, 1992 and 2000), it is widely recognised that issues remain that need further clarification, namely the process that evaluation criteria are selected and the way that trade-offs among those criteria are explicit assessed. In our study, we use cognitive maps to support criteria selection and we apply the MACBETH approach to obtain the criteria relative weights. The integrated used of both methodologies allowed us to support the development of a multidimensional performance evaluation system that deal with the bank branch potential attractiveness problem. To the best of our knowledge this has not been done before in the literature. Along with possibly other applications, our framework may be useful to: (1) assist decision makers in better setting goals for the branches according to their local features; (2) track the branches' progress along the time and (3) possibly may identify actions that will improve bank branch attractiveness while considering local competitive and demographic factors. As an example, alternative branch locations may be compared to assess advantages and/or disadvantages of different locations. Although not an objective of this study, our framework, could also serve as a preliminary basis to select high potential service segments within the branch's current trade area. This framework may also be applied to decisions supporting branches' closure, selling or opening decisions. Conceptually, our framework provides a mechanism to incorporate

the decision makers' knowledge and preferences and enabled them to coordinate their decision making to achieve better solutions.

The multiple criteria analysis framework takes into account quantitative and qualitative criteria and reduces the problem of omitted criteria (by using cognitive maps). It also increases transparency in the way that criteria are selected and the way trade-offs among criteria are determined by using cognitive maps and the MACBETH technique, respectively. In line with what has been presented, the results of our framework are very encouraging. Nonetheless, its outcomes should be considered with proper reservation due to the strong dependence on the context of analysis and the actors involved. As such, future research on this methodology and more case studies are strongly encouraged in order to corroborate the potential of the approach proposed in this paper.

ACKNOWLEDGEMENTS

This paper was developed under a Post-Doctoral programme undertaken at the Department of Finance, Insurance and Real State of the Fogelman College of Business and Economics, University of Memphis, USA. The first author is grateful to *Calouste Gulbenkian Foundation* for the financial support [Research Fellowship 21-101425-B].

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