Performance assessment model for bank client’s services and business development process: a constructivist proposal

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Abstract: The banking sector has been characterised by ongoing evolution in service rendering, driven by advances in technology, changes in client profiles, and susceptibility to political and economic issues. This article describes the development stages of a decision-aid system to manage the customer relations and business development process with bank clients, using the perceptions of both managers and clients. The investigation was conducted through a case study, using the constructivist MCDA. The elaborated model allowed for the structured identification and evaluation of 99 descriptors. Through use of the model, managers gained focus and confidence, customers reacted with gratitude and loyalty, and stakeholders realised the importance of the approach as they had a clear understanding of the goals.
Performance assessment model for bank client’s services

Keywords: bank assessment model; multi-criteria methods; decision aid; bank client services; constructivist MCDA.


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1 Introduction

For the last two decades, Brazilian banks have been under pressure from the government and, especially, society to provide more and better service to clients and customers in general, taking a more global perspective. Consequently, bank managers are under increasing pressure to develop new, more creative and effective procedures to meet customer requirements. Most of them are based on the experience, others in realistic approaches (Carvajal et al., 2011). Thus, the sector is desperately seeking innovative and effective ideas (Albertazzi and Gambacorta, 2009; Carvajal et al., 2011; Cebenoyan and Strahan, 2004; Crook et al., 2003; De Jonghe and Vennet, 2008; Elyasiani and Goldberg, 2004; Froot and Stein, 1998; Laeven and Levine, 2009; Sweeney and Swait, 2008).

The complexity of the banking scenario requires quick and innovative capacity to react to events in the market, politics, and the economy. This is only possible with the use of management tools that allow weak points to be identified and minimised and competitive advantages to be leveraged on a continuous basis (Albertazzi and Gambacorta, 2009; Laeven and Levine, 2009).

The banking segment is characterised by intense competition and constant evolution of the products and services offered, and where the challenge lies in establishing a competitive position that is sustainable (Carvajal et al., 2011). In this regard, differentiated strategies generally aim to stimulate market competition as a whole and to provide a return to stakeholders (Albertazzi and Gambacorta, 2009; Carvajal et al., 2011; Cebenoyan and Strahan, 2004; De Jonghe and Vennet, 2008; Laeven and Levine, 2009; Sweeney and Swait, 2008).

Emphasis on relationships with customer’s is one of these strategies. It can be characterised as providing services with added value, a positioning that is focused on the client and client feedback and is in line with corporate objectives and needs (Dean, 2007). From this perspective, bank management is part of a singular, complex context, with conflicting objectives between managers and market needs, and that focuses on generating the best results. In scenarios such as these, Keeney (1992) and Ensslin et al. (2010) recommend performance evaluation as a method with the potential to provide managers with the best conditions for achieving their objectives.

The realistic approach is being applied in the social sciences with increasing success (Albertazzi and Gambacorta, 2009; Cebenoyan and Strahan, 2004; Crook et al., 2003; De Jonghe and Vennet, 2008; Elyasiani and Goldberg, 2004; Froot and Stein, 1998; Laeven and Levine, 2009; Sweeney and Swait, 2008). In social problems the formulation of problems, in the field of management as we envisage it here will not be based on a one-to-one relation with a statement referring unambiguously to such categories as those we call ‘data’, ‘unknowns’, ‘constraints’, ‘objectives’, etc. In social problems, in order to cope with a problem effectively, we need a sign of dissatisfaction, a judgment on something to be modified and a stake in which an actor feels involved (Landry, 1995; Roy, 1993). Over the last few decades, new forms and instruments have emerged to deal with the modelling of social problems where the main concern is focused on the understanding of the problem according to the perceptions of the actors involved (Bana e Costa, 1993; Ensslin et al., 2001; Keeney, 1992; Landry, 1995; Roy, 1993, 1996, Skinner, 1986).
Our research is based on a case study undertaken in a Brazilian public bank. The research adopts a constructivist approach to performance evaluation, which is used as a tool for aiding decision-making in the bank. As to the purpose of the research, this research is exploratory and descriptive. The research logic is inductive in the structuring of the evaluation model and deductive regarding the phase of the recommendations. Both primary and secondary data were collected, and the data were analysed using both the quantitative (or objective) approach and the qualitative (or subjective) approach. The results can be characterised as applied research.

Within this context and aiming to meet the needs of bank managers in the process of positioning themselves in relation to their clients, the question of this study is: How can performance evaluations, in terms of aiding decision-making, help enhance the process of managing a bank?

In order to answer this question, the general objective of this study is defined as the development of a model to support the management of customer relations and the business development process for private clients of a bank, from the perspective of the manager. To meet this objective, the following issues will be defined:

1. Identify the aspects (performance indicators, criteria) deemed critical for good customer relations and for business development.
2. Construct ordinal and cardinal scales for the indicators identified, outlining the performance profile in order to evaluate local and global performance.
3. Identify indicators that require enhancement measures.
4. Propose improvement measures for the indicators with poor results.

A survey of the literature Dezem (2015) indicated that there is a scarcity of publications that consider the cognitive factors – such as scientific knowledge and experience inherent in the everyday lives of decision-makers – that will influence performance evaluation. Through an analysis of the literature on bank management in the web of science (ISI) and scopus databases, Dezem (2015) found that, although much has been written and published, there are no studies that establish criteria that can be used to build a model of customer relations and the business development process for a financial institution. Thus, the importance of this study can be confirmed as:

1. A scientific contribution through the construction and application of a performance evaluation model using the constructivist multi-criteria decision aid (MCDA-C) method in a financial institution.
2. The use of the study results to assess those managing activities related to customer relations and business development in a banking organisation.

This article is organised into six sections. After the introductory remarks, Section 2 contextualises banking management and Section 3 delineates the background to performance evaluation. Section 4 discusses the methodological framework of this study. In Section 5, the phases of the case study and the results are detailed. Lastly, Section 6 presents the final considerations, stating the limitations of the study and recommendations for future research.
2 Bank management

The financial scene has been undergoing changes. Such changes in the service channels are forcing modifications to the offerings and provision of financial services, thus affecting the bank-client relationship. Fama (1985) asserts that clients of banks are willing to pay a certain price as long as they have a long-term relationship with an institution they can trust.

Degryse and Ongena (2007) suggest that there is no consensus on the impact of the bank-client relationship in the bank management process. Even so, the banking segment is characterised by the constant interaction between clients and service providers (Ribeiro et al., 2010). If this relationship is handled inadequately, there is the possibility of losing a client to the competition (Sweeney and Swait, 2008).

De Jonghe and Vennet (2008) propose that one of the strategies inhibiting the bank management process is focus on the client. It can be characterised as providing high-quality services oriented towards the clients, their corporate objectives and their needs, and with a focus on the feedback they provide (Dean, 2007).

According to Ensslin et al. (2015), the banking sector is one of the pioneers in adopting strategies that focus on understanding client behaviour. Studying the behavioural patterns of clients and attributing value to the bank–client relationship can create situations that are favourable to building customer loyalty and thus to improved business efficiency and growth.

In this regard, public banks stand out in the use of countercyclical credit policies. Such policies can interfere with the market structure of the banking sector and, thus, in the dynamics of profitability growth in the long-term. This is due to the fact that when public banks adopt a credit expansion policy in a scenario where there is increased preference by banks for liquidity and increased pessimism, state involvement, aside from reheating the economy through the traditional Keynesian channel, forces a reaction from private sector banks as a result of market share loss that they will be subject to if they do not accompany the expansion of the public banks (Dezem, 2015).

3 Performance evaluation

Performance evaluations and the associated indicators have been used since ancient times. However, the first traces of their existence were documented in Tractatus XI de computis et scripturis: summa de arithmetica, geometria, proportioni et proportionalità, a work from 1494 by Fra Luca Bartolomeo de Pacioli, which contains descriptions of the accounting methods of Venetian merchants (Ensslin et al., 2015).

The use of science as an instrument to assist individuals and organisations was first proposed by Francis Bacon (Novum Organum, 1620). Later, with the advent of the industrial revolution in the 18th century, the contribution of scientific knowledge was confirmed, and evaluation of performance began to formally support production processes, initially through quality control, which, by reducing costs, led to improved competitive conditions.
The contribution of performance evaluation was further consolidated in the 20th century with mass production in the corporate environment and scientific administration theory in the academic environment. The principles of management theory and the realistic models in areas such as physics and mathematics quickly followed, culminating in the contributions of the constructivists in recent decades (Della Bruna et al., 2011; Ensslin et al. 2017; Keeney, 1992; Landry, 1995; Longaray and Ensslin, 2014; Roy, 1993; Saunders et al., 2009). The significance of evaluation of performance to researchers and managers has therefore long been recognised (Longaray and Ensslin, 2015; Longaray, et al., 2015).

The multitude of definitions of performance evaluation and the gaps in existing knowledge concerning its role as a decision aid were such that Ensslin et al. (2010, p.130) proposed the following conceptualisation for performance evaluation, as an aid to decision-making:

“Performance evaluation is the process by which decision-makers construct knowledge concerning the specific context to be evaluated, based on the perceptions of decision-makers themselves through activities that allow the impact of measures and how they are managed to be identified, organised, measured ordinarily and cardinaly, integrated, and viewed”.

In this definition, performance evaluation is understood as a management tool used to construct, establish, and disseminate knowledge so as to allow the context that decision-makers wish to manage to be monitored and improved (Della Bruna et al., 2011; Ensslin et al., 2015; 2017; Longaray et al., 2017). Figure 1 illustrates the process of performance evaluation from a constructivist perspective.

Figure 1  Performance evaluation process

Source: Lacerda et al. (2014a)
By building a decision aid model, according to the constructivist view of performance evaluation, a process showing the different phases is developed; it integrates subjectivity and objectivity into the decision-making context, initially including the structuring of the problem to be approached, by means of identifying the main concerns and objectives of the decision-maker, a definition of scales that will measure these concerns, and their levels of performance.

From this perspective, performance evaluation is understood as a management tool to assist decision-makers in the construction of knowledge so that they understand what their current level of performance is and can themselves propose improvement measures and understand the consequences of their possible choices. This is the main premise behind performance evaluation systems with this focus (Ensslin et al., 2010, 2013, 2017; Longaray et al., 2017).

4 Methodological framework of the study

Regarding the methodological framework, this study can be classified by the scientific paradigm adopted, the research approach used, the research logic employed, the research strategy established, the research objective delineated, in addition to the object of study and the instrument of analysis and data interpretation elected. Figure 2 illustrates methodological aspects followed in this study.

Figure 2 Synthesis of the methodological aspects (see online version for colours)

Based on the representation in Figure 2, a constructivist scientific paradigm is used, the product of the analysis being conceived as the result of a mutual influence, between the characteristics of the phenomenon studied and the understanding of the researcher, by means of a system of value, convictions, and objectives, that is, the inter subjectivity (Ensslin et al., 2010).

In terms of the research approach, we opted for both the qualitative and quantitative approach due to the wealth of information made available and the deeper insight the researcher is able to achieve regarding the phenomenon.
As to its logic, there is a trend in studies that proposes to develop multi-criteria evaluation models that use inductive logic, which is concerned with studying a specific situation, or organisational context, in which the phenomenon or event takes place, and has the objective of enabling a theoretical generalisation based on the data collected (Saunders et al., 2009). This phenomenological analysis essentially attempts to make sense of complex social phenomena (Yin, 2015). According to Triviños (2011), a case study has the following characteristics:

1. Its statistics are simple and elementary
2. It is not typical of the positivist model due to the lack of quantified information
3. It is an important expression of a trend in research.

The need for knowledge on the topic in question is the exploratory objective of the study, and is also appropriate for the initial stages of the investigation when the familiarity, knowledge, and understanding of the phenomena are limited or non-existent (Saunders et al., 2009). For this purpose, data were collected in two ways: primary (through semi-structured interviews) and secondary (based on an analysis of documents and sites, and checking the status quo profile of the descriptors obtained) (Richardson, 2008).

The instrument selected for constructing the model was the constructivist multi-criteria decision aid (MCDA-C). This method met the requirements needed to build the model; that is, in circumstances when decision-makers did not clearly understand what the problem was they were facing and also did not know what the objectives were that should be evaluated (Montibeller et al., 2008; Montibeller and Belton, 2008, 2009; Lacerda et al., 2011, 2014a).

One of the principles of the MCDA-C method consists of incorporating the objective and subjective elements that are present in the decision-making process (Azevedo et al., 2013; Della Bruna et al., 2011; Ensslin et al., 2001; Lacerda et al., 2014b). Subjectivity is inherent in the decision-making process and the situations involved in it. From this perspective, a certain decision-making context should not be analysed based on the objects and facts as they appear, but on how they are perceived by the actors. Rather than placing emphasis on ontological analysis (knowing what reality is), the focus of the MCDA-C method is on epistemological analysis (how reality is perceived and understood) (Micheli and Mari, 2014).

The MCDA-C method aims to generate knowledge for those involved in the process, which can be represented in a performance evaluation model – the decisions made using this model will be the most adequate for the situation (Roy, 1993).

5 Case study

This section presents the performance evaluation model for the customer relations and business development process of a bank, based on the values, interests, and preferences of the decision-makers, taking into consideration the requirements of the stakeholders.

The case study was undertaken following the three phases that comprise the MCDA-C method, that is, structuring, evaluation, and recommendations (Figure 3). Implementation of each of the three phases of the MCDA-C will be detailed in the description of the case study below.
Figure 3 Phases in the multi-criteria decision aid – constructivist (MCDA-C) method

5.1 Structuring phase

The structuring phase initiates the decision aid process (Longray et al., 2015). The following are identified in this phase:

1. contextualisation
2. understanding the essential points of view
3. building the descriptors and their reference levels.

This stage establishes the context of the problem for the actors, and identifies the factors that explain the problem and how they are measured ordinarily (Azevedo et al., 2013; Ensslin et al., 2013; Lacerda et al., 2014b).

5.1.1 Contextualisation

The contextualisation phase considers the values and preferences of the decision-maker(s). The importance of appreciating the subjectivity of the actors, by acknowledging the internal and external particularities of the context and the motivations and preferences of the manager, is of paramount importance (Roy, 1993). The actors are those involved in the decision-making process, and are classified as decision-makers, interveners, demandeurs, and facilitators.
The case study was carried out in a Brazilian public bank. This bank is national in reach and has over 4,000 branches across the country. The unit of analysis selected was a branch located in the south of the country, responsible for approximately 30,000 private clients. There were around 2,000 business transactions with clients each month, including financing contracts, investments, and securing funds from third parties.

In this case study, the following actors were identified:

- decision-maker: branch general manager
- intervener: private client relationship manager of a bank
- demandeur: bank clients
- facilitator: researcher.

The aim was to devise a “support model for managing customer relations and business development for private clients of a bank”.

5.1.2 Determination of the FPVs

Determination of the fundamental points of view (FPVs) is preceded by identification of the concerns, desires, and motivations associated with the values and objectives of the decision-maker when dealing with a decision-making context.

Bana e Costa and Vansnick (1995) define these aspects as primary assessment elements (PAEs). In the present case, the PAEs were identified by means of open interviews with the decision-maker, a manager from the bank, during which he was encouraged to detail the problem (Ensslin et al., 2001; Lacerda et al., 2014a, 2014b; Longaray and Ensslin, 2015).

For this study, three structured interviews were held to obtain the PAEs of the decision context. Once the PAEs were identified, further understanding was sought, using the means-end approach proposed by Eden (1988), which transformed each PAE into a concept. From the PAEs, the MCDA-C methodology recommends expanding understanding by identifying the direction of preference represented by each element, as well as its psychological opposite, in order to understand the minimum degree of acceptability of the underlying goal. This evolutionary form of presenting the PAE is called a concept or action-oriented concept (Eden, 1988; Ensslin et al., 2010; Montibeller and Belton, 2006). Each PAE may generate more than one concept. This occurs when there is more than one objective related to each element of concern.

Figure 4 demonstrates the first five concepts associated with the first five PAEs identified in the case study. Ellipses (…) in the concepts should be read as ‘is preferable to’ or ‘instead of’.

Based on the decision-maker’s initial understanding, along with the knowledge generated through identification of the PAEs and the construction of the concepts, the facilitator held interviews with the decision-maker in order to establish the major areas of concern noted by the latter in the context of ‘managing customer relations and business development for private clients’. From this top-down process, a preliminary version of the hierarchical structure of value emerged (Belton and Stewart, 2002; Ferretti and Montibeller, 2016; Marttunen et al., 2017).
Subsequently, the facilitator tested the necessity and comprehensiveness of the FPVs, associating the concepts with them. If each concept had a corresponding FPV, it indicated that the model was comprehensive (complete in the understanding of the decision-maker). If any concept could not be assigned, the need to create a new FPV is discussed with the decision-maker. If any FPV had no concepts associated with it, the necessity of the FPV to explain the context is discussed with the decision-maker and is eliminated if its context is not explained. In this case, the decision-maker should identify the PAEs and the concepts associated with it. The resulting structure of this process is hierarchical, as shown in Figure 5.

The last phase in structuring the MCDA-C consists of organising and hierarchising the concepts of each FPV according to their relations of influence, with the objective of building ordinal scales (Belton and Stewart, 2002; Marttunen et al., 2017).
5.1.3 Construction of the descriptors

The FPVs are used to begin the process of building maps of the means-end relations. The objective of these maps in the MCDA-C is to expand understanding of each FPV in order to allow for its implementation and measurement (Longaray et al., 2015; Montibeller et al., 2008).

Construction of the means-end maps began by requesting the decision-maker to discuss each concept, including how the underlying idea behind it could best be achieved, (Montibeller et al., 2008). This procedure allowed chains of concepts to be created, as well as new concepts to support lines of argumentation, from the strategic concepts to the more operational concepts. Figure 6 illustrates one of the cognitive maps for FPV1: ‘business-customer loyalty area’.

Figure 6  Cognitive maps for FPV1 – ‘business-customer loyalty area’

Once the maps of the means-end relations were finalised for all the strategic objectives of the hierarchical top-down structure, according to the MCDA-C method, in the process of creating knowledge, the structures of causal relations could be transformed and transported to the hierarchical structure of value (Figure 5).
Each of the cognitive maps was associated with an FPV, generating a set of clusters that represent the sub-areas of interest in the context. These clusters were transported to the hierarchical structure of value, and where called elementary points of view (EPVs) (Bana e Costa, 1993; Bana e Costa and Vansnick, 1995). After this transition phase, the hierarchical structure of values could be finalised, with the FPVs decomposed into EPVs and sub-EPVs, in the following distribution:

- 99 first-level EPVs
- 17 second-level EPVs
- 25 third-level EPVs
- 7 FPVs.

The hierarchical structure of value, or tree structure, covers all the points of view (FPVs, EPVs, and sub-EPVs). They should be decomposed to a level where it is possible to measure them; that is, their ordinal measurement scales, the descriptors, should be established. Normally, these descriptors are implemented at the level of EPVs or sub-EPVs.

Some precautions should be taken when selecting what to measure to ensure that the property that is being measured represents that indicated by the decision-maker. Thus, each descriptor should be tested to ensure that it is essential, controllable, complete, measurable, operational, decomposable, non-redundant, concise, and understandable (Longaray et al., 2015; Micheli and Mari, 2014).

According to Bortoluzzi et al. (2010), the measurement scale of each descriptor associates abstract values from the decision-maker, with one or more properties of objects contained in the context.

Once the scales of each descriptor are constructed, the reference levels for the scales should be established (good and neutral) in accordance with the nomenclature proposed by Bana e Costa et al. (1999). At the end of this stage, the following number of descriptors for each FPV was identified:

- **Business**: 21 criteria
- **Personnel management**: 19 criteria
- **Risk**: 14 criteria
- **Credit**: three criteria
- **Securing funds**: 12 criteria
- **Branch management**: 15 criteria
- **Portfolio management**: ten criteria.

In order to better understand the descriptors and their levels of measurement, Figure 7 presents some descriptors of the EPV ‘customer relations and its levels of performance’.
5.2 Evaluation phase

The MCDA-C method aims to answer the question: what consequences of the possible decision could be relevant to the value and preference system of the decision-maker? The ‘structuring phase’ in identifying the FPVs and their operationalisation through the descriptors or attributes was able to explain the consequences of the possible actions in the values system in an ordinal way. Whenever, using the ‘constructivist’ perspective of the MCDA-C, the decision-maker wants to further expand his understanding so as to incorporate the intensity of the consequences he will have in order to transform the descriptors/attributes into value functions. This was done in the ‘evaluation phase’, the purpose of which was to develop the understanding of the decision-maker of the consequences of changing from one action to another (Ensslin, et al., 2013; Roy, 2013). As can be observed, the ‘constructivist perspective’ also applies to the cardinal stage of problem understanding.
Measurement of performance in the structuring phase was essential to the management of the values of the context, since it identifies and establishes the metrics for measuring the operational aspects that explain the strategic objectives. This phase is, however, limited by two aspects: it does not allow the strategic objectives to be cardinally measured; and it uses an ordinal scale, even though most of the descriptors/attributes consist of numbers, they do not meet the principle of unity (for equal increments of the value function, the increase in attractiveness must also be equal), and, thus, cannot be an interval or ratio scale. In addition, as the scales do not have an absolute zero, they cannot be converted into a ratio. Thus, when information is based on the difference between the descriptor levels, transforming the descriptor into a criterion (value function) and meeting the principle of unity, the resulting scale will be of intervals (Barzilai, 2001, 2002; Roberts, 1979).

MCDA-C proposes that the process of transforming the ordinal model into a cardinal model should take place in four stages: analysis of

1. preferential independence
2. cardinal scales and local preference
3. rates of compensation
4. global evaluation.

5.2.1 Analysis of preferential independence

Unique synthetic aggregation models employ additive compensatory models, consisting of the weighted sum of the explanatory points of view of the context. Thus, to ensure that the compensation rates remain constant, the respective points of view must be preferentially independent (Longaray et al., 2015). Therefore, as MCDA-C uses unique synthetic aggregation models (additive compensatory models), the preferential independence between points of view must be tested (Keeney, 1992; Keeney and Raiffa, 1993). To proceed with this step, each point of view was tested as to the isolability of its performance for the interval between the established reference levels (good and neutral) when there was a variation in performance from the other points of view for the interval between its reference levels (Keeney, 1992). This test ensured that the tested point of view was not affected by the performance of others and was performed for all the points of view, confirming that they were all mutually and preferentially independent, both ordinally and cardinally, and, thus, that their rates of compensation were constant for the conditions set.

5.2.2 Cardinal scales and local preferences

Once it was confirmed that all of the descriptors were preferentially independent for the established reference levels, the following phase was that of transforming the ordinal scales into cardinal (interval) scales.

There are a number of methods for building value functions. According to Longaray et al. (2015), the main ones include: the direct scoring method, bisection method, and semantic judgment method. For this study, the measuring attractiveness by a categorical based evaluation technique (MACBETH) semantic judgment method was selected (Bana e Costa et al., 2012a, 2012b) due to its scientific recognition and operational coherence.
MACBETH compares the difference in attractiveness between the scale levels so that the decision-maker explains the intensity of his preference for one level as opposed to all the others.

During this process, the facilitator requests the decision-maker to indicate, for a certain descriptor, the attractiveness of going from a certain level \( x \) to another level \( y \), opting for one of the semantic categories from the following scale: null, very weak, weak, moderate, strong, very strong, and extreme (Bana e Costa and Vansnick, 1995). This process is repeated for all the pairs of descriptor performance levels, resulting in a judgment matrix by means of the M-MACBETH software program (Bana e Costa et al., 2012a).

Once the matrix is complete, this method proposes a numeric scale that meets all the semantic conditions of the decision-maker, as well as the conditions required by a value function (Longaray et al., 2015). In the MCDA-C, the value functions are anchored in the reference levels established when the descriptors were constructed, receiving a score of zero for the lower level (neutral) and 100 for the upper level (good). This procedure allows a clearer visualisation of performance at poor levels (below the lower reference level), at the market level (between the two reference levels), and performance at an excellent level (above the upper reference level).

Figure 8 presents the construction of the cardinal scale for the descriptor ‘To have processes’, also showing the result obtained with the semantic judgment matrix.

Figure 8  Value function generated by m-Macbeth for the descriptor ‘to have processes’

With the value function built for each of the 99 descriptors, the phase of constructing the cardinal scales of the criteria is complete.
5.2.3 Compensation rates

The compensation rates, as used in this study, are used to convert local values into global values, taking into consideration any compensation attributed by the decision-makers (Roy, 1996). The substitution rates are the parameters that decision-makers deem adequate to aggregate the local performance levels (in the criteria) to a global performance level in a compensatory manner (Ensslin et al., 2000).

The main methods for establishing the compensation rates are: trade-off, swing weights, and pairwise comparison, all based on the concept of compensation (Ensslin et al., 2000; Longaray et al., 2015).

This study uses the pairwise comparison method, as it is scientifically recognised, objective, and easier to use with decision-makers. Pairwise comparison consists of creating fictitious measures for the points of view for which compensation rates will be established. The fictitious measures simulate performance on the upper reference level (good) for a certain FPV, with performance at the lower reference level (neutral) for all others. The next step of the process involves ordering the alternatives, which can be accomplished through a Roberts sorting matrix (Roberts, 1979). Subsequently, the decision-maker indicates the difference in attractiveness between levels using the MACBETH method. M-MACBETH calculates the compensation rates that numerically represent these judgments (Bana e Costa et al., 2012b, 2012a; Bana e Costa and Vansnick, 1995).

Figure 9 and Figure 10 illustrate the composition of the rates for the EPV of the FPV: ‘credit’.

Figure 9 Generating alternatives to sort EPVS from FPV 4: ‘credit’
Based on an analysis of Figure 9, a set of alternatives (A0, A1, and A2) is identified. The decision-maker identifies which of these is the preferred alternative. To facilitate the process, a Roberts matrix can be used in order to establish an order of preference between them. Later, the differences in attractiveness between the alternatives is judged using M-MACBETH how Figure 10 is showing (Bana e Costa et al., 1999; Bana e Costa et al., 2012a, Bana e Costa et al., 2012b; Bana e Costa and Oliveira, 2012; Rodrigues et al., 2017).

**Figure 10**  Formation of compensation rates for FPV 4: ‘credit’

Based on the order of the alternatives and new judgment of the attractiveness levels, the compensation rates of the model are obtained. It is worth stressing that the importance of the criteria, quantified by the compensation rate, will always be relative and associated with the reference levels of the scale. If the levels change, the compensation rates change (Keeney, 1992).

5.2.4 Global evaluation

To proceed with the global evaluation using the evaluation model developed, the model’s compensation rates and the local performance of the potential measure are needed. From there, the additive aggregation formula can be used to determine global attractiveness (Longaray et al., 2015).

The current performance profile for each descriptor (status quo) was obtained by collecting data *in loco* at the unit of analysis and by querying the computerised management systems. With the data collected and inserted into the model, the current performance profile was obtained.
Figure 11 illustrates the performance of EPV 3.1: ‘analysis and approval’ in the global evaluation. The score of 28.05 corresponds to performance at the market level. With this information, the decision-maker established the goal of reaching the upper reference level in all the descriptors, at which point the score would reach 100 points and performance would be at the beginning of the zone of excellence.

Figure 11  Global evaluation score for EPV 7.2: ‘client dissatisfaction’

With the status quo determined for each descriptor, it was possible to obtain an overview of which elements from the model showed opportunities for improvement, by directing the strategic actions to increase the performance of the context.

After the MCDA-C evaluation phase is complete, the global evaluation of the model must be performed using the additive aggregation equation, which determines the sum of partial values obtained from the current performance in each criterion, weighted by the substitution rates (Keeney, 1992; Longaray and Ensslin, 2015), as shown in equation (1):

\[ V(a) = w_1v_1(a) + w_2v_2(a) + w_3v_3(a) + ... + w_nv_n(a) \]  

\[ (1) \]

where
$V(a)$ is the global value of the status quo; where $a$ represents the status quo

$v_1(a), v_2(a), ... , v_n(a)$ are partial values in criteria $1, 2, ..., n$

$w_1, w_2, ..., w_n$ are substitution rates in criteria $1, 2, ..., n$

$n$ is the number of criteria in the model.

With the finalisation of the procedures from the evaluation phase, criteria with poor performance levels and their impact on the global score of the model are revealed. Thus, the need for improvement measures emerges, which should be carried out in the recommendations phase.

### 5.3 Recommendations phase

The last phase in the MCDA-C, the recommendations phase, consists of analysing the current performance profile of the factors that the decision-maker considers necessary and sufficient to manage the context in the model represented by the criterions, taking into consideration the gap in relation to the need for improvements (raising performance).

Figure 12 presents the criterions with poor performance levels (performance in the ‘compromising level’ area) and that need to evolve according to the perception of the decision-maker. So for the ‘spent time with clients’ criterion in the business FPV de status quo-SQ performance is $f(SQ) = -50$, as the contribution of every point in this criterion is of $0.021866$ (as the contribution of every point in this criterion is of $0.29 \times 0.29 \times 0.26 = 0.021866$) the overall contribution to improve performance to the neutral level is $\Delta f(a) = |f(\text{Neutral}) - f(SQ)| = 50$, so the contribution to global evaluation is $1.0933$ ($50 \times 0.21866$). Since the goal in this criterion is the good level ($f(\text{good}) = 100$ the potential contribution to this level is $2.19$ ($150 \times 0.21866$).

**Figure 12** Descriptors with poor performance levels

<table>
<thead>
<tr>
<th>FPV</th>
<th>Descriptor</th>
<th>Contribution to global evaluation</th>
<th>Contribution potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPV 1 Business</td>
<td>To have processes</td>
<td>2.08</td>
<td>3.13</td>
</tr>
<tr>
<td></td>
<td>Spend time with clients</td>
<td>1.69</td>
<td>2.19</td>
</tr>
<tr>
<td></td>
<td>Strategy</td>
<td>1.69</td>
<td>1.83</td>
</tr>
<tr>
<td></td>
<td>Product prioritization</td>
<td>2.34</td>
<td>1.56</td>
</tr>
<tr>
<td></td>
<td>Focus</td>
<td>0.55</td>
<td>0.55</td>
</tr>
<tr>
<td></td>
<td>Housing development</td>
<td>0.54</td>
<td>0.84</td>
</tr>
<tr>
<td></td>
<td>Learning paths</td>
<td>0.11</td>
<td>0.31</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>0.38</td>
<td>0.76</td>
</tr>
<tr>
<td></td>
<td>Assigning goals</td>
<td>0.52</td>
<td>1.55</td>
</tr>
<tr>
<td></td>
<td>Supervision</td>
<td>0.5</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>Disseminating goals</td>
<td>1</td>
<td>2.02</td>
</tr>
<tr>
<td></td>
<td>Measuring adequacy</td>
<td>0.25</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>Group integration</td>
<td>0</td>
<td>0.18</td>
</tr>
<tr>
<td></td>
<td>Training</td>
<td>0</td>
<td>0.26</td>
</tr>
<tr>
<td></td>
<td>Contributions</td>
<td>0.42</td>
<td>0.85</td>
</tr>
<tr>
<td>FPV 2 Personnel Management</td>
<td>Security deposit</td>
<td>0.09</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td>Offer selected fixed income products</td>
<td>0.96</td>
<td>0.56</td>
</tr>
<tr>
<td></td>
<td>Fixed income products</td>
<td>1.18</td>
<td>2.34</td>
</tr>
<tr>
<td></td>
<td>Hotes broker</td>
<td>0.24</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>Qualified investors</td>
<td>0.06</td>
<td>0.11</td>
</tr>
<tr>
<td></td>
<td>Training</td>
<td>0</td>
<td>0.94</td>
</tr>
<tr>
<td>FPV 3 Risk</td>
<td>Encourage benchmarking</td>
<td>0.95</td>
<td>2.85</td>
</tr>
<tr>
<td></td>
<td>Market knowledge</td>
<td>1.27</td>
<td>2.54</td>
</tr>
<tr>
<td></td>
<td>Share information</td>
<td>0.87</td>
<td>1.73</td>
</tr>
<tr>
<td></td>
<td>Inform the client</td>
<td>0.41</td>
<td>0.81</td>
</tr>
<tr>
<td></td>
<td>Understand competitors</td>
<td>1.25</td>
<td>2.51</td>
</tr>
</tbody>
</table>
To develop the enhancement strategies and measures, the criterion with poor performance levels were identified. These represent the primary areas of concern and correspond to 26% of the model presented.

A measure was outlined for each of these, which includes the following activity plan:

1. what is the critical performance factor to be improved-descriptor
2. the measure
3. what is the expected result
4. what are the resources needed
5. who is responsible
6 start date
7 end date
8 with what frequency will it be monitored
9 who will monitor it and how, as exemplified in Figure 13.

In addition to carrying out the action plans, the impact on the performance indicators and on the global evaluation should be monitored. The performance of each indicator should also be updated, thus establishing a management process with continuous evaluation cycles focused on results.

With the adoption of the improvement measures presented in this phase, the decision-maker identified the goal of increasing the score of the global model from 1.57 to 33.98 (poor level to market level) within a period of six months, in addition to updating the profiles and carrying out new measures.

The branch general manager saw the model as a powerful tool to justify his decisions concerning investment in improvements, and used it to formulate his annual plan of action.

6 Final considerations

Organisations generally sustain their competitive advantages in a reduced set of activities, which most often are those involving interaction with clients. Aware of the importance of ensuring a performance level that is recognised as high in these essential factors (or activities), organisations have encouraged their managers to develop constructivist performance evaluation models that allow them to explain the strategic objectives, tactical objectives, and key success factors that make them possible. Their dissemination by the managers to the actors involved encourages the actors to focus on these essential factors, showing where waste is occurring, monitoring facilities, and stimulating the generation of improvement measures.

This article aimed to build a decision-aid system to evaluate customer relations and the business development process in a specific public bank in Brazil, within a specific context, and for a set group of actors. The objective was a better understanding of performance evaluation and supporting its monitoring, establishing goals, and creating a process to manage improvement measures. The instrument of intervention used to construct the model was the MCDA-C approach, due to its potential to structure complex contexts and identify and measure the factors deemed by the decision-maker as necessary and sufficient to construct and support competitive advantage. The model was validated by the decision-maker at each step of its construction and, through its use, the decision-maker began to count on it as an instrument that allows performance standards to be established and that constantly improve.

The main scientific contribution of this research is related to an understanding, in the academic world, of what are the entities involved in a social problem. The ideas, formulations, models and procedures used in management science, unlike their precursors in the natural sciences, can scarcely claim to represent social realities without the active participation of the observers and other actors involved. In most social contexts, like the
one presented in this research, we have various participants in the process interacting with reality – as much through the judgments they bring to bear as through their behaviour – and who contribute to creating what we would like to describe as an external object. The problems have no ‘physical existence’ but are, on the contrary, ‘conceptual entities’, ‘personal constructs’, and they are the mental representations of the actors involved. With these reflections in mind, we can ensure, and this research evidences, that social problems have at least three main entities involved: the actors; the physical environment; and the miscegenation of the actors’ value with the physical environment properties. Ignoring one in the process of modelling could lead to the wrong problem being assessed.

The practical contribution to the bank mainly concerned the change in the manager’s perception, from an attitude of distrust towards the social science community to an attitude of recognition and respect for science and its potential to deal with real-world problems.

The main focus of this study was how can performance evaluation, in terms of decision aiding, help enhance the process of managing a bank, on which the objective of this research was formulated. This consisted of developing a model to support the decision-making process in the customer relations and business development process for private clients of a bank, using the perception of the manager to do so. Its scope was defined when the three objectives specified below were reached:

1. Identify and organise the aspects (performance indicators, criteria) deemed critical for the performance of the customer relations and business development process. Seven strategic objectives were identified, which were put into practice through the 99 descriptors with their respective ordinal scales and reference points.

2. Construct cardinal scales for the indicators identified. This process began with the development of
   a. cardinal scales
   b. compensation rates
   c. the global evaluation, where the performance of the descriptors that might be improved through enhancement measures was identified.

   The decision-maker then indicated the differences in attractiveness between the descriptor levels considering the fictitious alternatives created to inform the contribution of passing from the lower reference level to the upper level for each point of view. This information allowed the descriptors to be transformed into criteria (interval-valued functions), as well as the compensation rates to inform the contribution of each point of view, from the FPV (strategic objectives) to the EPV. This evolution allowed the performance of each point of view to be measured, and also allowed the FPVs to be integrated and the global evaluation to be performed, which resulted in a global performance of 1.57 in an interval where zero represents the transition from ‘compromising performance’ to ‘market performance’ and 100 represent the transition from ‘market performance’ to ‘excellence performance’. This score was influenced by the 28 criteria with poor performance, which had a negative impact.

3. Propose measures to improve the indicators at lower levels. It was possible to assertively manage the decision-making context, and the improvement process
focused on the descriptors with the highest negative impact on the global evaluation. Based on the global evaluation model, it was possible to identify measures for improvement. If the expected results from applying these measures are achieved, the global score of the model could be increased from 1.57 to 33.98. One of the actions for improvement used is illustrated in Figure 13 improvement measure template for the descriptor: ‘spend time with clients’, which led to an overall improvement of 3.28 for the scale built.

Currently, the bank that was the unit of analysis for this case study uses a computerised measuring system that attributes scores to the organisational units. This software was developed in line with the objectives defined in the strategic planning of the company. The objectives are established generically, and do not take into account the particularities of each context, in particular the preferences of the decision-makers and the value judgments of the actors in the decision-making processes. The existing metrics do not have the scientific properties required for a performance indicator, which should be essential, controllable, complete, measurable, operational, decomposable, non-redundant, concise, and understandable. This limits the scope of action of the computer system used currently, and, in particular, does not clarify what needs to be done in order to for the bank evolve. The manager’s innovative idea of building a model to support customer service decisions has introduced a system in which the bank can evolve and where there is clear understanding of, and confidence in, the goals.

As a limitation of this study, we stress that, despite the generic character of the process, the model constructed is customised, and is not recommended for use in other contexts, since it was prepared based on the values and preferences of one decision-maker and a specific context. Another limitation of the MCDA-C approach is that the process is lengthy.

For future research, we suggest:

1. applying the process to other branches with other decision-makers
2. analysing this model against other models used for the same purpose
3. monitoring the model’s performance, in light of the suggestions for improvement proposed in this study.

References


