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Modeling and simulation of Multi Criteria Decision Making (MCDM) towards human development projects

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Abstract: *In the current era of local development, the choice and planning of local development projects have become complex, due to the involvement of multiple benchmarks, such as political, technical, social, economic and environmental. This requires good collaboration between the populations benefiting from development projects, political decision-makers and technicians. And the Multi-Criteria Decision-Making tool (MCDM) is an adequate technical instrument capable of enabling the various actors involved to design and plan development models that meet the real needs of local populations. This article proposes a modeling and a theoretical simulation of the ELECTRE TRI technique (MCDM), likely to be applied in the process of choice, planning and evaluation of local development projects. The objectives of the study are to acquire mastery of the methodology, to assess its integration into the planning process and to study a concrete problem. Interest is particularly focused on the integration of human development criteria, depending on public policies, levels or areas of application, actors involved or stakeholders, the historical and cultural dimension of the local human group. We start by presenting the ELECTRE TRI method; we then formulate an ELECTRE TRI model in the context of the territorial division of Bantucracy (Boundja 2019); we finally show the simulation of a development project in this context.*

Key words: *Bantucracy, ELECTRE TRI, human development projects, local development, MCDM.*

INTRODUCTION

The issue of economic and social development is an urgent one in Africa. After the failure of development policies modeled on the Western model for more than five years, the trend is currently to promote endogenous economic development, which favors innovation at the local level. This quest for a new development paradigm calls for in-depth reflection and the development of decision support tools, to make local development projects operational and contribute to the well-being of populations.

Local development is a process through which the community participates in shaping its own environment, with the aim of improving the quality of life of its residents (Futó 2019). This requires a harmonious integration of the economic, social, cultural, political and environmental components (Gregory 2000). The economic component often becomes a priority, given the importance for everyone to be able to earn a living and provide for themselves and their loved ones. This approach is above all a human phenomenon where projects and action, more than institutions and policies, mobilize all the community stakeholders in each of the localities of the country. Public decisions generally have a planning horizon of several years, or even several decades (infrastructure decision, for example) and therefore uncertainty must be taken into account in the decision-making process.

This article focuses on the modeling and simulation of a multi-criteria decision support methodology for the planning process of local development projects. The objectives of the study are to acquire mastery of the methodology, to assess its integration into the planning process and to study a concrete problem. Interest is particularly focused on the

integration of human development criteria, based on public policies, levels or areas of application, the actors involved or stakeholders, the historical and cultural dimension of the local human group.

After having briefly explained what multi-criteria decision support consists of, we describe the context that prompted this study. The four stages of the application are then described: the identification of actions, the formulation of criteria, the modeling of decision-makers' preferences and multi-criteria synthesis. A short discussion ends the article.

MATERIAL AND METHOD

The model for evaluation

Decision analysis is a valuable tool in solving issue as characterized with multiple actors, criteria's, and objectives. MCDM problems generally comprises of five components which are: goal, decision maker's preferences, alternatives, criteria's and outcomes respectively.

Based on the number of alternatives under consideration, differences can be catered between Multi Attribute Decision Making (MADM) and Multi Objective Decision Making (MODM); else both share similar characteristics. MODM is suitable for evaluation of continuous alternatives for which we predefine constraints in the form of vectors of decision variables (Williams & Dickinson 2011 ; Robinson et al. 2012 ; Hanan et al. 2013).

We are interested in the case where the problem is posed in terms of ELECTRE TRI of the actions of ***A***, this sort consisting in distributing them between categories ***B, C, D,*** ... which we will define beforehand (Roy 1993; Belton & Stewart 2002; Bollinger & Pictet 2008; Bleicher & Gross 2010; Sorvari & Seppälä 2010; Dodgson et al. 2009). Assigning an action ***a*** to a category ***C*** means that we orient, in a well-defined manner, what should become ***a***. In other words, each category is characterized below, which is reserved for the actions assigned to it. Finally, it should be noted that, in this issue, the assignment of an action to a given category is done independently of the assignment of other actions to this category or to other categories. This means that the way in which the actions of ***A*** compare with each other has no influence on the affectation.

The concrete situation in which decision support is approached according to this problem is the selection of a local development project capable of improving the well-being of the populations. The actions here are the different projects proposed (solutions) and the categories correspond to the different situations of discomfort (problems) listed; the choice of the best project, by affecting a situation of discomfort in a category, leads to prescribe a well-defined treatment, namely the best project.

This selection problem leads to the establishment of an allocation procedure. This is based on a preference model not to compare the actions of ***A*** with each other, but to compare them to standards which serve to define the conditions that performance must meet:

$$g_1(a), \dots g_n(a)$$

So that action ***a*** is assigned in category ***B, C,*** or ...

We will assume here that such standards can be defined in terms of reference actions b^n characterizing the central actions or even the limiting actions that it seems justified to have to assign in a given category C^h.

Whether the reference action b^n appears to characterize a central action or a limiting action of class C^h, it is always defined by the performances it obtains on the ***n*** criteria of

$$\boldsymbol{F}\colon (b^n) = \left(g_1(b^h), \dots, g_n(b^h)\right).$$

Also called reference profile b^h (central or limit).

The allocation is therefore based on the way in which the preference model leads to comparing the actions of A with the different actions or reference profiles.

We will begin by recalling the natural and classic way of proceeding to the allocation when we rely on a single synthesis criterion. We will then examine why there is no longer any natural procedure when the system of preferences, always b^humed to be of type (***S, R***), involves a relation ***S*** which is not necessarily transitive and complete as well as profiles which cannot be reduced to a single number.

Assignment in the presence of a single true synthesis criterion g

At the end of a school exam, for example, it is usual to assign the candidate to one of the categories "admitted without mention", "mention good enough", "mention good", "mention very well" by comparing its performance ***g(a)*** (weighted average of the performances obtained in various disciplines) to standards such as 10/20, 12/20, 14/20, 16/20. This comparison of ***g (a)*** to norms $g^0, g^1, \dots, g^n$ to assign ***a*** to a category among ***k*** is found in many other fields (credit scoring in particular), always with the same rule assignment (at the location near the wide inequality),

$\forall$ ***h*** $\in \{1, 2, \dots, k\}$ ***a*** is assigned in category $C^h \Leftrightarrow g^{h-1} \leq g(a) < g^h$.

The scale $[g^0; g^k]$ of variation of the single criterion ***g*** is therefore divided into ***k*** intervals on the basis of the limit values $g^1, \dots, g^{k-1}$ and we assume that the actions (objects, individuals, ...) leading to values of the same interval of the synthesis criterion deserve the same further treatment and must, therefore, be assigned to the same category. This calls for three remarks.

1- The categories in which we are interested are naturally completely ordered from that C^1 called to receive the most "bad" actions until C^k intended to receive the "best" actions. This assumption is not suitable for the selection of a human development project that concerns us.

2- The generally vague idea of what actions that are assigned to the same category must have in common is understood in close relation to the allocation procedure since each category C^h is characterized by the two limit values g^{h-1} $\wedge$ g^h of the synthesis criterion.

We can justify this way of doing things by considering reference actions $b^0, \dots, b^h, \dots, b^k$ such as

$g^h = g(b^h)$.

The category C^h is then intended to group all the actions ***a*** such that ***a*** is preferred to $b^{h-1} \wedge b^h$ is preferred to ***a***.

On the basis of the relation ***S*** associated with the criterion ***g***, what has just been stated is written:

$[aSb^{h-1} \wedge -(b^{h-1}Sa)] \wedge [b_nSa \wedge -(aSb^n)] \Longrightarrow a \in C^h$.

3- The assignment of an action a indifferent to a reference action, for example,

b^h $(g(a) = g^h)$, must be fixed, by convention, either in the lower class noted here C^h , or in the upper class C^{h+1}. The latter party is adopted here. We will translate this convention by saying that each category is closed at the bottom. The opposite convention would lead to closed categories at the top.

RESULTS AND DISCUSSION

Context and objectives

This section first presents the context of public policies of a Bantucracy regime (Boundja 2019), in which the decision support tool is in place, then it describes the objectives that the central actors must define for the tool. This paragraph presents various contextual elements. We will start by identifying the actors involved in the evaluation of the performance of local development projects.

The case concerns the 4 territorial counties located in Congo (Boundja 2020). In the following, these counties are noted:

$C_i \; with \; i \in \{1, \dots, 4\}$.

For each of them, 5 types of actors are involved in the process of evaluating the performance of local project development, namely:

-Representatives of the governorate: 5 (3 men and 2 women minimum)

-Representatives of the Comtoise assembly: 5 (3 men and 2 women minimum)

-Representatives of professional chambers: 12 (8 men and 4 women minimum)

-Representatives of development associations: 12 (6 men and 6 women)

-Representatives of Mbonguis from the provinces: 12 (6 men and 6 women)

To assess the impact of human development at the local level, the performance of a development project is assessed using 4 types of noted well-being indicators:

$W_b \; with \; b \; \in \{1, \dots, 4\}$.

These are the following indicators:

- Housing indicator, measuring the improvement in the living conditions of local populations;
- Nutrition indicator, measuring the level of food security;
- Health indicator, measuring the improvement of the health conditions of local populations;
- Education indicator, measuring the improvement of education conditions at the local level.

These indicators measure the performance of projects:

$P_h \; avec \; h \; \in \{1, \dots, 4\}$, so that:

- P_1 : habitat
- P_2 : nutrition
- P_3 : health
- P_4 : education

We will note $W_b(C_{iy})$ the annual average *y* for the local development project P_h to be carried out in the locality or county C_i.

For each of these projects, there is quality performance specific to each of the localities noted $Q_h \; (C_i)$: (quality plus

for the project P_h for locality C_i.

In order to define the needs of the populations and plan their satisfaction, the Local Economic Council decides to launch a five-year action plan (5 years), evaluated at the end of each year. It is in the context of the five-year action plan that the central players use the decision support tool that we are proposing. The following paragraph details the goals they should set for themselves.

The decision support tool is used to select the best development projects and monitor the results of the five-year action plan. To this end, the central players must have a summary indicator allowing the performanc$\left(C_{iy}\right)$ch of the 4 counties or localities to be assessed every year. The evaluation must therefore relate to the entities : County *i* during the year *y*.

The implementation of the assessment tool should take into account the following aspects:

- relative dissatisfaction with the execution of existing local development projects
- the duration, insofar as the five-year plan is planned over a period of 5 years
- adaptation to a multi-locality environment (4 counties)
- taking into account the different actors.

Finally, once the tool is in place, the tool should allow, in addition to the production of the summary indicator, to:

- set targets for this indicator as part of the county budget
- formalize a report analyzing the performance and the deviation from the objective
- propose action plans as soon as the performance deviates significantly from the set objective.

After presenting the context and the objectives defined for the evaluation of the performance of local development projects, we will now present the evaluation tool with emphasis on the method of calculating the summary indicator.

Presentation of the tool and the summary indicator

From the basic indicators, the evaluation tool defines a summary indicator based on a procedure which assigns the entities $\left(C_{iy}\right)$ to categories designed to assess the impact of projects on the well-being of populations during the year *y*.

We first present the principle of this summary indicator, then the allocation method. We conclude by presenting the characteristics of the evaluation tool chosen to be the subject of a concertation process.

The decision was made to use an ordinal verbal scale to express the result of the synthesis of the various elementary indicators. This scale has 3 categories (see *Figure 1*) indexed by :

k = 1,…, 3.

The number of categories has been set at 3 in order to have levels that are both detailed enough to account for developments (see *Figure 2*) and simple enough to be understandable by all. Each category must represent a concrete, well-defined situation in each of the localities studied. In particular :

- Poor must correspond to a situation requiring the immediate implementation of actions whose results are expected in the short term;
- Correct must be understood as a signal encouraging vigilance.

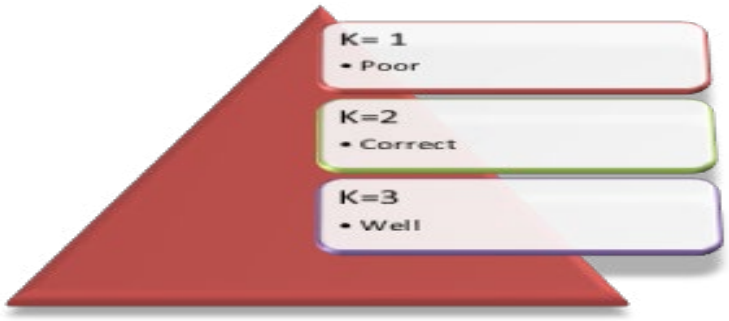

Figure 1: 3-category ordinal scale used for the summary indicator.

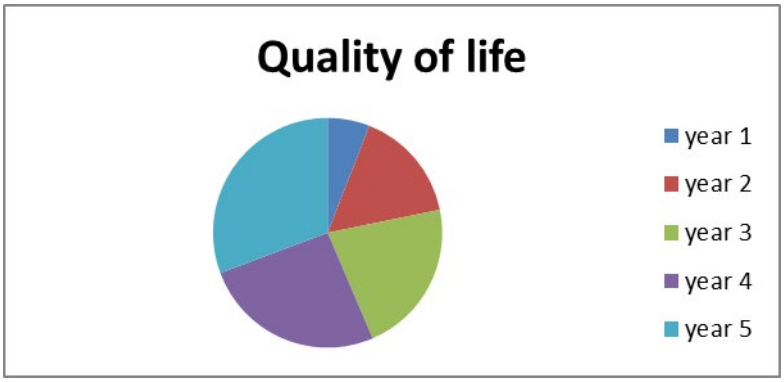

Figure 2: Illustration of the graphical representation of a summary indicator.

An ordinal scale of this type has three advantages over a numerical scale:

- It is easy to grasp, both internally and externally of the county's economy.
- It limits the misunderstandings associated with a numerical scale when it is not a ratio scale
- It can account for the local aspects of the performance of the development project: elements in terms of *quality of life* / *year* can be judged good in one local ecosystem and only mediocre in another.

The evaluation tool will therefore consist in assigning each of the entities (C_{iy}) to a single category ***K***. The broad outlines of this assignment procedure are given below.

Assignment procedure

The ELECTRE TRI method was chosen as being the most suitable for performing the assignment. Its purpose is to determine the most justified category to which each (C_{iy}) entity should be assigned. This category must be such that, on the one hand, there is a sufficient majority of elementary indicators (taking into account their qualities) which are favorable to the assignment of (C_{iy}) to category ***K*** and that, on the other hand, among the minority of elementary indicators opposing this allocation, none of them veto. We explain below how this method should be implemented and what quality and veto mean.

Remember that $W_b(C_{iy})$ is the annual average *y* for the local development project P_h to be carried out in locality . For each of these projects, there are quality performances specific to each of the localities noted $Q_h\ (C_i)$: quality plus

(high quality) for the project P_h for the locality C_i.

Let the project P_h of locality C_i.

So that its level of impact on local human development can be qualified as

"Poor" (k = 1),

"Correct" (k = 2)

or "Well" (k = 3).

We note :

- $(n_{ih1}, \dots, n_{ih3})\ with\ n_{ih1} < \dots < n_{ih3}$.
- n_{ihk} is the norm between impact levels *k* and *k+1* for the locality *i* , for the project P_h.

These standards are expressed in quality of life / year provided by the project :

- $n_{ihk} = \alpha_{ihk} * Q_h(C_i)$ quality of life of the project P_h for the locality C_i

and α_{ihk} is the percentage entered to be a data of the project evaluation tool.

The allocation will be based on how the quantities $W_b(C_{iy})$ compare to these different standards. To avoid playing too large a role on small deviations, ELECTRE TRI gives the possibility of introducing thresholds.

The ELECTRE TRI method gives the possibility of associating with each elementary indicator a quantity and a veto threshold in order to take into account the fact that the different projects presented may not have the same development impact on a given locality.

The quantities allow in particular to give an order of importance between the different projects (example: on locality C_i, the impact is more beneficial than that of the others). The veto thresholds give each elementary indicator the possibility of opposing the assignment of a locality C_{iy} to a category ***k***, even if all the other elementary indicators agree with this assignment (example: a lack of qualified personnel in a local health center can prevent the summary indicator from being "Well" even if all the others, such as equipment or the technical platform, basic indicators have a level of impact "Well").

Thus conceived in principle, the evaluation tool gives rise to a concerted approach for its implementation.

Characteristics Object of the Consultation (COC)

To set up this assessment tool, it remains to be determined:

- COC n° 1: the elementary indicators selected for each of the localities (list of P_h selected);
- COC n° 2: the standards associated with each elementary indicator on each site (values of the percentages α_{ihk};
- COC n° 3: the values of the indifference thresholds and preferably around each of the standards.
- COC n° 4: the plus quality and the veto associated with each elementary indicator.

The integrated concertation approach that we are proposing is organized around the four COCs (characteristics subject to concertation). This section presents the way in which this consultation should be organized according to four stages then details each of these stages.

- Step 1 - Framing of COCs (characteristics as objects of consultation)

- Step 2 - Discussion on COCs with local actors
- Step 3 - Definition of COCs for all localities
- Step 4 - Commissioning of the evaluation tool

The progress of these stages requires the establishment of working groups. The first discussions should show that to ensure the smooth running of stage 2, it is better to take at least two pilot localities with actors capable of carrying out a new type of approach.

To support all these stages, a project team must be assembled. Once the working group had been set up and the pilot localities designated, the process could begin.

The concern of the central actors is that concertation takes place in a framework making it possible to guarantee the consistency of the result with the monitoring objectives of the action plan "Five-year plan". The COCs had to be defined so as to take account of local specificities, but also to present a common base large enough to allow a comparison of localities. During this stage, particular attention is paid to the fact that this framing should not block the debates, but encourage them in a constructive and coherent logic.

It should be limited to existing basic indicators. On the one hand, they are subject to a formal procedure (definition, reporting method, existence of a history) and, on the other hand, are known to the operational staff.

Standards associated with elementary indicators (COC n ° 2)

These standards could be determined based on several parameters:

- legal requirements;
- past and present performance;
- the best recognized codes, standards and practices;
- data and information relating to performance, produced by organizations in the sectors concerned;
- the views of external actors;
- scientific research.

We propose to the two pilot localities a logic of interactive questioning for the definition of standards associated with elementary indicators.

Example of questions for the "Well" standard:

- Based on your experience, below what limit do you consider the performance as "Well", taking into account the optimal functioning of the project facilities and the limit of measurability of quality of life indicators?
- Do you consider that the summary performance can be excellent if an indicator exceeds the regulatory limit?

Questions to ask when presenting results?

- Do the results thus obtained formalize your idea of performance?
- Do you find the impact of major environmental events that you have experienced?

Questions to ask when presenting results?

- Do the results thus obtained formalize your idea of performance?
- Do the localities have all the capacities to reach the best categories on each of the projects.

Thresholds of indifference and preferably around each of the standards (COC n° 3)

For simplicity's sake, let's set an indifference threshold at 3% of the legal quality standard plus, a preference threshold at 6%.

Plus qualities and the veto associated with each elementary indicator (COC n° 4)

Local players confirm the option of weighting.

Correct = Veto if 1 elementary indicator > 3 x legal quality.

Well = Veto if 1 elementary indicator $>$ legal quality.

SIMULATION

Basic indicators and associated performance

For each locality C_i, a series of elementary indicators, each linked to a project deemed relevant for assessing the impact of local development in successive years is introduced.

Note : W_{bh} , the elementary indicator, also called criterion, associated with the project

$P_h\ (h = 1, \dots, P_i, with\ P_i = number\ of\ projects\ selected\ for\ C_i)$.

The impact assessment is based on the number of quality of life / year elements of this project in an average year y by C_i.

Let $W_{bh}(C_{iy})$ that amount. It is called performance of C_{iy} according to the criterion W_{bh}. The higher $W_{bh}(C_{iy})$ the quantity, and the better the performance.

The information to be synthesized is characterized by:

$$W_b(C_{iy}) = \{W_{b1}(C_{iy}), \dots, W_{bh}(C_{iy}), \dots, W_{bp_i}(C_{iy})\}$$

$W_b(C_{iy})$ is called the performance vector of (C_{iy}).

Consider two situations :

in the first, A, $W_{bh}(C_{iy}) = a$;

in the second, B, $W_{bh}(C_{iy}) = b$.

1°) If the difference $a - b$y, although negative, is very high, it does not seem realistic to consider that the impact of human development of the project P_h is undoubtedly better in situation ***B*** than in situation ***A***. Indeed, ***a*** and ***b*** result from measurements which are not necessarily exact.

Definition:

the maximum difference that can exist between ***a*** and ***b*** without the benefit provided being judged to be significantly different is called the indifference threshold.

2°) When the difference $a - b$ exceeds the indifference threshold by a very high quantity, one enters a zone of ambiguity called preferably strong: the excess is too high for one to be able to affirm without ambiguity that the benefit brought by the project P_h project undoubtedly leads to prefer situation ***B*** to situation ***A***.

Definition:

The value of the difference $b - a$ called the preference threshold, from which it is judged that there is no longer any ambiguity. We then enter a so-called preferably strict zone.

Multi-criteria synthesis: credibility of the BSA assertion

Let us again consider two situations ***A*** and ***B*** characterized this time by their respective performance vectors:

$\{a_1, \dots, a_h, \dots, a_{p_i}\}\ for\ A$

$\{b_1, \dots, b_h, \dots, b_{p_1}\}\ for\ B$

Recall the upgrade relationship, with a concordance ratio C and a mismatch relationship D is :

$\big(S(a,b)\big)$: a is as good as b; $S(a,b) \Leftrightarrow C(a,b) \wedge -D(a,b)$

First, the method performs what is called a multi-criteria aggregation. It consists in operating a synthesis of the (possibly contradictory) ways in which situations A and B compare separately according to each criterion $W_{bh}(h = 1, \dots, p_i)$.

This overall judgment is then used to allocate the categories. In ELECTRE TRI, the result of the multi-criteria aggregation relates to the credibility of the statement "situation B is at least as good as (that is to say preferred or indifferent to) situation A". This statement is (in theory) usually denoted BSA, where S denotes an upgrade relationship. Its credibility is characterized by an index $\sigma(BSA)$ which, by definition, varies from 0 (assertion without any foundation) to 1 (assertion perfectly well founded). To assess this credibility, the method divides all the criteria into three groups:

- First group: set of criteria which contribute to unambiguously validating the B***S***A assertion.
- Second group: set of criteria which unambiguously oppose the validation of B***S***A.
- Third group: all the other criteria.

Note that if, for all the criteria, we set the preference threshold equal to the indifference threshold, the third group is empty.

The credibility $\sigma(BSA)$ is only equal to 1 if all the criteria are in the first group. It is equal to 0 if and only if all the criteria are in the second group. To modulate this credibility outside these extreme cases, the method involves, on the one hand, relative quantities associated with the different criteria and, on the other hand, possibilities of veto allocated to certain criteria.

The quantity associated with the W_{bh} criterion can be seen as the voting power (number of votes) which is attributed to it in a voting procedure the purpose of which is to decide whether or not the BSA assertion must be validated. His vote is counted with all of his voting power when he is in the first group but only with a fraction when he is in the third group. When he is in the second group, it is clear that he does not vote in favor of this validation. If veto power has been allocated to it, it can help reduce the credibility of this statement and even cancel it when the difference $b_h - a_h$ is too unfavorable for $b_h (b_h - a_h \geq veto\ threshold)$.

Category boundary profiles

ELECTRE TRI is not used to directly compare the C_{iy} entities but to compare them to typical situations called *limit profiles*. Each boundary profile is used to characterize the border between a category and the immediately higher category.

Let us recall that, to each county C_i and to each project P_h, standards $n_{ih1}, n_{ih2}, n_{ih3}$ have been associated in order to delimit, for this county and for this project, impact levels, "Well", "Correct", " Poor". The intervals thus defined are taken into account in the method taking into account the indifference and preference thresholds and in a qualitative way: we do not consider that the impact is halved when the number of qualities / years is.

Definition:

The boundary profile between the categories is called, for the county:

Well and correct : the whole $\{n_{i5}, \dots, n_{ih3}, \dots, n_{ip_i3}\} = N_{i3}$,

Correct and poor : the whole $\{n_{i4}, \dots, n_{ih2}, \dots, n_{ip_i2}\} = N_{i2}$,

Each of these profiles can be seen as the performance vector of a C_{iy} county which could be located indifferently in one or the other of the two categories which it aims to separate.

More generally, it is important that these profiles are designed in such a way that, in the very specific cases of unanimity envisaged below, the allocation seems to have to conform to that indicated (taking into account the way in which the categories are designed and of the role assigned to them). If, for each criterion, the performance is: $W_{bh}(C_{iy})$

– at least as good as the standard n_{ih3}, then good category,

– worse than the standard n_{ih3} but at least as good as the standard n_{ih2}, then correct category,

– worse than the standard n_{ih2} but at least as good as the standard n_{ih1}, then poor category.

Starting from simple logical principles, ELECTRE TRI makes it possible to define the category to which each entity should be assigned (C_{iy}) in all other cases where there is not this unanimity of criteria.

Assignment procedure to categories

Considered alone, the performance $W_{bh}(C_{iy})$ makes it possible to associate, with (C_{iy}), the category k (k=3 for Well,…, k=1 for poor) such that :

The performance $W_{bh}(C_{iy})$ is worse than the standard n_{ihk+1} and at least as good as the standard n_{ihk}

In a very pessimistic conception, one could think of assigning (C_{iy}) to the worst of the categories thus associated.

Let us denote here by B_{iy} the situation characterized by the vector-performance $W_b(C_{iy})$ and by A_{ik} that defined by the limiting profile N_{ik}, $\sigma(B_{iy}SA_k)$ then translates the credibility of the statement :

"the impact of local human development of (C_{iy}) *is no more beneficial than that characterized by the limiting profile ".*

This credibility is based on the proportion of favorable votes that this assertion received in the voting procedure, proportion possibly reduced by taking into account veto effects. To decide whether or not this statement is validated, the method involves a level λ of majority which must be reached or exceeded.

On these bases, we successively examine whether :

The statement $B_{iy}SA_{i3}$ is validated. If yes, (C_{iy}) is assigned to the Good category (the procedure stops) ;

If not, we examine whether the statement $B_{iy}SA_{i2}$ is validated. If yes, (C_{iy}) is assigned to the correct category ;

and so on, ..., which may lead to examining the statement $B_{iy}SA_{i1}$ which, if not validated, leads to assignment to poor categories.

Finally, let us point out that the higher the majority level λ required, the more demanding the procedure. For 1 = λ (unanimously), we find the very reduction assignment mode presented at the beginning of this last section.

CONCLUSION

In this article, we have shown that, for the particular case presented, the multi-criteria decision support tool which is used for the choice, planning and evaluation of local development projects is implemented in a consensus between all the actors involved, namely the populations benefiting from local development projects, political decision-makers and technicians. This consensual collaboration, between all the actors, should make it possible to lay the foundations of a long-term evaluation system, that is to say used in the field to pilot the performance of local human development, and achieve the objectives.

Although this analysis was limited to the internal actors of the county, we do not exclude that the COCs (characteristics being the subject of the consultation) are discussed with certain external actors. In the latter case, it would be possible to initiate in parallel the stages of using this same multi-criteria decision-making tool, within the framework of another synthetic indicator directly involving external actors, at the broader level of a country.

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