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MULTI-CRITERIA DECISION ANALYSIS IN QUANTITATIVE RESEARCH

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Purpose: Paper provides an overview of the methodology and diverse applications of Multi-Criteria Decision Analysis MCDA. Also shows criteria and analytical activities in the process of quantitative scientific research. An approach to selecting the company's operating strategy and its strategic position in relation to the environment in which it operates is presented. A model approach to consumer behavior was assessed.
Design/methodology/approach: It provides insights into weighting criteria, aggregating preferences, and sensitivity analysis. During the analysis of criteria and analytical activities, a broad literature review was used, comparing the most popular and most effective methods of operation.
Findings: Verification problems of multi-criteria selection problems are the problem of practical identification of which elements of actual market behavior are equivalent to theoretical categories. It is also necessary to verify the regularities occurring in these behaviors by confronting them with the actual behavior of consumers and determining compliance with the regularities occurring in this course.
Practical implications: Decision analysis can be used directly in solving problems with various decision-making contexts and in analytical work related to organizing objects or building a multi-criteria ranking. As MCDA continues to evolve in the quantitative research landscape, it remains central to facilitating informed decisions, accommodating trade-offs between criteria, and strengthening the rigour of quantitative analysis.
Originality/value: The article defines the most important methods of consumer behavior and activities in enterprises, which behaviors and activities are conditioned by the external environment and market rules; highlights applications of MCDA in real-world problem solving.
Keywords: quantitative scientific research, multi-criteria analysis, consumer behavior, decision analysis, MCDA.

Category of the paper: literature analysis.

Keywords: decision analysis, quantitative research, analytical activities.

1. Introduction

According to T. Wachowicz (2016) a useful group of formal tools proposed by operations research, within the framework of multi-criteria problems, are methods of multi-criteria decision analysis (MCDA).

According to (Figuera et al., 2005; Aguinis et al., 2019; Aubert et al., 2023; Dyer, Nobeoka, 2000; Kogetsidis, 2023; Kharazishvili et al., 2020; Dźwigoł et al., 2021, 2023a, 2023b; Kwilinski, 2023; Kwilinski et al., 2020, 2022a, 2022b, 2023a, 2023b, 2023c, 2023d, 2023e, 2023f, 2023g; Moskalenko et al., 2023; Islam, Widen, 2023) MCDA focuses on decision-making problems in which the multiplicity of objectives makes it difficult for the decision-maker to decide on a particular solution - a decision option - on the basis of intuition. The burden of these problems is so heavy that there is no room for inefficient or erroneous decisions, which are the inevitable result of simplistic thinking patterns or quick heuristics (Gigerenzer, Todd, 1999). For this reason, the MCDA develops a number of analytical tools to help the decision-maker to define the decision problem accurately, determine its structure, organise information about the decisionmaker's own preferences, and build a system for evaluating decision options based on this information (Wachowicz, 2016, p. 403; Beach, Pedersen, 2016).

High-criteria methods can be used to analyse data that come from descriptive surveys and to generate multi-criteria rankings, sorting or classifying objects into predefined categories (Yin, 1984; Wachowicz, 2016, p. 403; Yin et al., 2024; Yang, Chen, 2023).

All multi-criteria decision-making problems are characterised by a certain fixed set of characteristics that make it possible to create a synthetic description of the phenomenon under study. These include (Wachowicz, 2016, p. 404):

- at least one decision-maker who is faced with a decision-making problem under investigation,
- a finite or infinite set of decision options that describe possible ways of solving a decision problem (the description or evaluation is of interest to the decisionmaker),
- the decision-maker's preferences, which constitute a system of externally and internally determined priorities in relation to the various possible levels of implementation of individual issues.

It is also necessary to define the analytical objective of the decision-maker's action, which allows the type of problem to be defined and then potential methods to analyse it to be identified.

In order to obtain a valid and reliable assessment of a company's strategic position, it is necessary to choose the right research method. One such method is the SPACE (Strategic Position and Action Evaluation) (Becker et al., 2021; Dul, Hak, 2008; Dźwigoł, 2001, 2003, 2009, 2018, 2019a, 2019b, 2020, 2021a, 2021b, 2022a, 2022b, 2023; Dźwigoł, Wolniak, 2018;

Dźwigoł et al., 2019a, 2019b, 2019c, 2020a, 2020b; Dźwigoł, Trzeciak, 2023; Dźwigoł-Barosz, Dźwigoł, 2021).

Issues relating to consumer behaviour in the marketplace are becoming increasingly important in the global economy, which is linked to the strong increase in market competition and the rapidly changing patterns of consumer behaviour and decision-making (Smyczek, 2016; Ares, Varela, 2018; Trushkina et al., 2020; Rezaei, 2016; Meißner, Oll, 2019).

This paper presents the criteria and analytical activities in the quantitative research process. Through the use of the SPACE method, it presents an approach to the selection of a company's operating strategy and its strategic position in relation to the environment in which it operates.

It evaluates the model-based view of consumer behaviour, which entails many limitations and many advantages.

2. Multi-criteria problems and analytical activities

Decision theory presents a simple classification of multi-criteria problems taking into account the criterion of the type of analytical problem, i.e. (Roy, 1996):

- descriptive problems - the decision-maker is not interested in finding a specific solution to the problem that is in line with his or her preferences (acceptable, sufficient, quasi-optimal or optimal) or that meets quantified requirements,
- selection problems - the decision-maker's actions are directed towards analysing a set of decision options and selecting from among them those which, in the light of the adopted evaluation criteria and subjectively identified preferences, will prove to be good enough - satisfactory,
- sorting (classification) problems - the decision-maker's objective becomes to assign the options to categories or similarity classes previously identified,
- ranking construction problems - the decision-maker aims to build a complete or partial order on the set of options analysed.

According to T. Wachowicz (2016) an analysis of the literature makes it possible to conclude that more and more often a specific algorithm of analytical action is assigned to a particular multi-criteria method, which takes into account the technical nuances of the method. At a certain level of generality, however, a universal procedure pattern is proposed. A proposal for such a procedure is the PrOACT algorithm (Hammond, 2002) (Problem, Objectives, Alternatives, Consequences, trade-offs), which synthetically describes the tasks aimed at structuring, describing and solving a multi-criteria decision problem.

The analytical action procedure within the PrOACT algorithm consists of the following of the following steps (Wachowicz, 2016, pp. 408-413; Barnes, 1984; Gilovich et al., 2002, p. 513; Keeney, Raiffa, 1976, p. 367):

- formulation of the decision problem - an important element of decision analysis is the correct definition of the problem faced by the decision-maker (creativity, a certain systematicity of action is important). The starting point is formed by the identification of a first, intuitive definition, followed by a thorough presentation of this definition. Once the decision-maker has formulated the problem individually, he or she should also consult other people: colleagues, experts, acquaintances, potential stakeholders in the case, as well as those who are substantively uninterested in the problem - this will allow gaining a new perspective on the issue under analysis;
- defining the assessment objectives/criteria - it is very important to define them properly, as they directly determine the criteria that the decision-maker will use when assessing potential solutions to the formulated problem and during the search for different solution options itself. In addition, they indicate what information the decision-maker should seek about the options in order to be able to carry out a reliable and credible analysis;
- search for decision options - these represent alternative solutions to the decision problem under consideration by the decision-maker. Their identification is not a difficult process, however, it requires time and focus. The most common mistakes in identifying decision options are those that result from schematic thinking and the application of various heuristics, e.g. availability heuristics;
- identification of the consequences of the options in the light of the adopted evaluation criteria - in order to make a decision on the most advantageous solution to the problem, it is necessary to know how the identified decision options satisfy the objectives adopted by the decision-maker. The decision-maker's task is to specify precisely, by means of the form of description adopted, the consequences of accepting each option for each of the assessment criteria. The formal point of this step is the consequences table;
- carry out a compensation/preference analysis - if the decision-maker has defined the problem in terms of a selection, sorting or ranking task, he/she must make a comparison of the options specified in the consequences table. Such a comparison is not straightforward, as the defined objectives are generally conflicting in nature. The task of the multi-criteria comparison is to answer the question of how the poor performance of the options for some of the criteria can be compensated for by exceptionally good levels of achievement of the other objectives, and how, in such an overall compensation, the option compares with the others. Such a comparison is carried out on the basis of the individual, subjectively defined preferences of the decision-maker and is called a compensation analysis, or in general terms a *trade off* analysis.

From the point of view of the decision-maker's choice of a particular method, their two typologies seem to be the most relevant, which relate to the way in which preference information is processed and the generation of the results of the compensation analysis (Wachowicz, 2016, p. 413). The first typology relates to the distinction between methods based on a synthetic criterion (they aim to determine a scalar evaluation of multi-criteria options,

using a scoring system or individual evaluation, utility or value functions) and synthetic superiority methods (they refer to a relational system of preferences, in which the existence of superiority relations or the degree of this superiority is examined for the variants being compared with each other) (Wachowicz, 2016, p. 414).

The second division relates to techniques for conducting the decision-maker's preference analysis process. Three groups of methods can be distinguished here (Wachowicz, 2016, p. 415):

- pair-wise comparison methods (the decision-maker describes his/her preferences by comparing them for each criterion separately with the results proposed by the other solutions identified in the consequences table),
- direct assessment methods (which involve analysing the levels of achievement of each criterion separately and in isolation from the options that both create and generate a rating scale for that criterion. The single-criteria scores are aggregated to a scalar synthetic score),
- holistic methods (it is more convenient for the decision-maker to make a determination of his or her preference for certain sample decision options, not necessarily those that form an array of consequences).

As stated by D. Górecka (2011) there is no unambiguous algorithm for recommending a specific compensation analysis method for solving a specific decision problem with a specific type of problem and structure.

According to W. Edwards and F.H. Barron (1994), the SMART method is the simplest and most popular technique for conducting compensation analysis. In general terms, the SMART algorithm copies the SAI sum-of-importance method, however, it allows the decision-maker to freely shape the evaluations of the consequences of the decision options without imposing the need to model the decision-maker's preferences using linear evaluation functions (Churchman, Ackoff, 1954). The concept of hybridising the two concepts, i.e. SMART and SAI, is known in the literature as SMARTER. However, it absolutely assumes the use of the idea of SAI when generating evaluations of each decision criterion (Edwards, Barron, 1994).

The compensation analysis algorithm according to the SMART procedure, supplemented by solutions derived from the SAI approach, consists of the following steps (Wachowicz, 2016):

- Step 1. Determining the relevance of the evaluation criteria - the SMART method expects the decision maker to determine the relevance of the evaluation criteria (objectives) taking into account the weights (the weights must add up to some specific value, which is the rating point pool of the evaluation system being created - this is required by the algorithm). This pool is assumed to range from 1 or 100. This requirement is written as: $\sum_{j=1}^{m} w_j = 1$, where: w_j - the weight (relevance) of the j-th rating criterion; j = 1, ..., m is the number of the rating criterion (e.g. derived from the order of occurrence in the consequence table).

It should be noted that with this allocation principle the weights have a quotient interpretation. If the decision-maker finds the decisive allocation of weights difficult or unintuitive then he or she can use selected methods or supporting procedures, e.g. (Saaty, Vargas, 2012; Goodwin, Wright, 2011): the AHP method, the algorithm for generating spanning weights or selected verbal scales.

- Step 2. Determine the consequence score of each option for the decision criterion separately - the decision-maker's task is to assign each level of implementation of each criterion a score from the range of $\langle 0; 100 \rangle$ (the most favourable level of implementation of a given criterion receives a score of 100 and the least favourable one receives a score of 0 - the resulting scale is a range scale).

  Thus, to each level of realisation, i.e. the consequence of the *i*-th option for the *j*-th decision criterion x_{ij} , the decision-maker assigns a rating $v(x_{ij})$, i.e.: $x_{ij} \rightarrow v(x_{ij}) \in \langle 0; 100 \rangle$.
- Step 3. Calculation of the global rating of each option - is determined by an additive aggregation of single-criteria $v(x_{ij})$ ratings weighted by the importance w_j of objectives:

$$V_i = \sum_{j=1}^{m} w_j \times v(x_{ij})$$

  for each i = 1, ..., n, where n is the number of decision options in the consequence table. The evaluation system retains the properties of an range scale. It allows complete rankings of decision options to be made from a table of consequences and compared with each other. The most favourable option receives a score of 100 and the least favourable (with the worst consequences) is given a score of 0.

3. SPACE method

The most important decisions that companies take and that affect their development concern the strategic aspects of their business. The strategic decisions taken by enterprises should therefore be carefully analysed. The starting point for choosing a company's operating strategy is to assess its strategic position in relation to the environment in which it operates.

The SPACE method is one of the methods that makes it possible to analyse a company's development capacity, strategic positioning and evaluation of its activities (Krupski, 2009).

This method is based on the aggregation and balancing of internal and external dimensions determining the state of the company and its environment. The combination of these two dimensions enables the company to determine the "P" point, which defines the company's position, which is the starting point for the selection of strategic options (Stabryła, 2000).

The assessment of a company's strategic position and viability is done using a matrix consisting of two main dimensions:

- external,
- internal.

The external and internal dimensions of the matrix are described in terms of the aspects shown in the following table (Lisiński, 2004).

Table 1.
Dimensions of the SPACE matrix

Internal dimension	External dimension
Financial strength of the company	Strength of the sector (industry) in which the company operates
Competitive advantage of the company	Stability of the company's environment

Source: compiled on the basis of (Lisinski, 2004, p. 253).

The aspects of the analysis of the company and its environment presented in the table can be assessed and characterised by a variety of variables. These variables include (Moszkowicz, 2005):

- From the point of view of a company's financial strength, evaluation variables include liquidity, working capital, cash flow and decision risk, among others.
- From the point of view of a company's competitive advantage, evaluation variables include: market share, product life cycle, product quality, accessibility to distribution networks, customer loyalty, indigenous skills, environmental performance of technology, among others.
- From the point of view of the stability of a company's environment, evaluation variables include, among others: inflation rate, unemployment rate, intensity of competition, barriers to entry, stability of prices for final products and supply goods, volatility of demand.
- From the point of view of the strength of the sector (industry), evaluation variables include: growth potential, industry profitability, financial stability, among others.

Other variables assessing and characterising the dimensions of the SPACE matrix can also be found in the literature. These variables are presented in the following table (Drążek, Niemczynowicz, 2003).

Table 2.
Examples of variables characterising the dimensions of the SPACE matrix

Financial strength of the company	Industry stability
- profit rate indicator	- stage of development of the company
- production cost	- sectoral innovation
- return on capital	- the sector's dependence on the economic climate
- profit stability	- longevity of the sector
- return on investment	- inflation in the industry
- liquidity	- profit stability
- debt	- inflow of foreign capital into the sector
- ability to increase accumulation and acquisition	- competition in the sector

Cont. table 2.

Competitive ability of the company	Strength or attractiveness of the sector (industry)
- the market and its coverage - the company's market share in dynamic terms - assortment structure of production - marketing skills - the ability to actively influence price and cost levels - customer relations - profitability of sales	- characteristics of competition - industry life cycle phase - dependence of the development of the industry or sector on the economic situation - social attractiveness of the sector - the lifespan of an industry or sector - structure of applications of the choice of industry in other sectors of activity - profit stability

Source: compiled on the basis of (Drążek, Niemczynowicz, 2003, p. 186).

In applying the SPACE method and determining a company's strategy, it is necessary to present four assessment areas (financial strength - FS, competitive advantage - CA, industry stability - ES, industry strength - IS on a coordinate system). The coordinate system is shown in Figure 1 (Rowe et al., 1982).

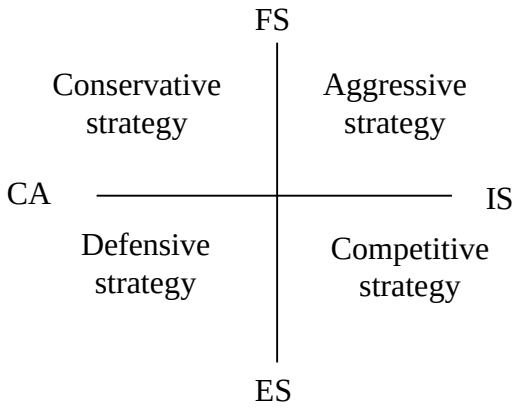

Figure 1. Coordinate system of the SPACE method.

Source: compiled from (Rowe et al., 1982, p. 756).

The ordinate (y+) axis denote the financial strength of the company, on the (y-) side the stability of the industry is presented. On the abscissa axis, on the other hand, (x+) denotes the strength of the sector, the (x-) side competitive advantage. Each quadrant of the system is furthermore associated with the choice of a different operating strategy and is characterised by different features:

- aggressive strategy - the company has a good financial position in a given environment and a high position in an industry with medium attractiveness.
- conservative strategy - the company has a good financial position in a given environment, but a low competitive position in an industry with at most average attractiveness, or it operates in an unattractive industry and has at most an average competitive position.
- defensive strategy - the company has a weak financial position in the environment in which it operates and at the same time has a low competitive position in a moderately attractive industry, or operates in an unattractive industry and has a medium competitive position.

- competitive strategy - the company has a weak financial position in the environment in which it operates, but has at least an average competitive position in a moderately attractive industry, or operates in a moderately attractive industry but has a high competitive position.

4. Models of consumer behaviour in the market

Economic phenomena, including aspects related to consumer behaviour, are complex and difficult objects to model. This is because, when analysing consumer behaviour, it is necessary to take into account the rapid changes occurring in the environment in which these changes take place. Furthermore, when analysing consumer behaviour, it is necessary to consider it at a higher level (not only in terms of the consumer's reaction), but also to take into account the whole sequence of behaviour, i.e. the activities preceding the purchase, the purchase itself and the activities following it (Smyczek, 2016).

A model is a representation of reality in a simplified way that shows, at the same time, the relationships that exist between the different elements of a given system, after having first analysed it (Schiffman et al., 2018). Applying this definition to issues related to consumer behaviour, it can be postulated that models of consumer behaviour are a simplified representation of actual behaviour, which is intended to show the relationships between the various elements of a process or system after an analysis of the problem. They refer to a systematic selection of features that represent the interrelationships and theoretically capture the coming to fruition of a specific action (Swiatowy, 2006, p. 41).

Models of consumer behaviour are often equated with patterns of behaviour. However, this is not correct, as consumer behaviour patterns are a holistic reflection of current regularities and patterns of consumer behaviour (Nowak, 1970; Peffers et al., 2007; Raich, 2009). Patterns of consumer behaviour are not uniform and fixed (Solomon et al., 2010; Meißner, Oll, 2019; Patil, 2016; Rajesh, 2023), they are applied to currently observed consumer behaviour and mean socially recognised and respected patterns and realised patterns, i.e. functioning and real (Smyczek, 2016; Hryhorak et al., 2021; Sieklicki, Tanev, 2021; Silverman, 2008).

A model of consumer behaviour, on the other hand, is a simplified diagram representing consumers' actual behaviour (Evans et al., 2009; Gephart, 2004; Graebner et al., 2012).

The aim of behaviour modelling should be to reproduce as faithfully as possible the structural features of the behaviour in question, if not in terms of the elements themselves, then at least in terms of their characteristics. In addition, any model should be based on the many constraints and assumptions made (Smyczek, 2016; Tight, 2017; Tandukar, 2018; Wątróbski et al., 2019; Xiang, Hou, 2023).

A model-based approach to consumer behaviour has many limitations, but there are also many advantages and areas of application of such models, e.g.: they help to develop theories, understand complex consumer-market relations and relationships, or explain consumer decision-making processes. They therefore have functions (Krzyżanowski, 1999, p. 87): explanatory, predictive, descriptive-analytical and utilitarian.

Taking into account the broadest criterion for the division of consumer behaviour models, i.e. the degree of their complexity, one can list: 1) simple models, which present and explain consumer behaviour in a general way, present only the main factors influencing their behaviour (Hawkins, Best, 2004), are simple and easy to apply, but are often of negligible use in the marketing activity of a company, 2) complex models, which more fully explain consumer behaviour in the market and focus on the decision-making process of the individual. The group of simple models can include: black box models, which do not include research into the internal decision-making processes of consumers, but are the result of direct reactions affecting the consumer and the reactions they elicit, decision-making process models, which represent the various stages of consumer decision-making and are very widely used in the marketing activities of companies, personal variable models, which focus on the internal factors shaping consumer behaviour and attempt to explain individual internal decision-making processes, and hybrid models, which attempt to combine the features of a decision-making model and a personal variable model. Consumer behaviour in the market is most fully reflected by decision process and hybrid models. Among the complex models of consumer behaviour, in turn, three types of models can be distinguished: structural models, which depict the key features and their interrelationships, through which the mental processes explaining how consumer behaviour comes to an effect are shown, e.g. the Howard-Sheth model, Nicossi model, Engel-Kollat-Blackwell (EKB) model, stochastic models, which attempt to predict by probability calculus the behaviour of consumers in a market, but do not reflect factors that are inside, e.g. Markov model, simulation models, which attempt to explain consumer behaviour by means of special simulation techniques under varying circumstances assuming specific entry points, e.g. Triandis model. Among the highest rated complex models of consumer behaviour are the Nicosia model, highlighting the relationship between consumers and companies, and the EKB model, which best demonstrates various aspects of customer behaviour in the market (Smyczek, 2016).

In addition to these models, it is also worth noting:

- The Sheth's model of family decision-making, which explains the processes within the family and their impact on purchasing decisions (Harris, 2010, p. 147).
- The Sheth-Newman-Gross model of consumption value, which explains the reasons for consumers' choices in the market and focuses attention on estimating the value of consumption (Sheth et al., 1991).
- The Dirichlet model, a stochastic model of buyer behaviour at the individual consumer level in markets that are unsegmented and stable (Ehrenberg, 1991).

- Markov model of consumer behaviour, i.e. a stochastic model that specifies that consumer behaviour in the market is a continuous decision-making process in which specific states are exchanged in successive units of time and in which the achievement of some state in a specific period t is conditional on the achievement of some state in the previous period t - 1 (Rudnicki, 1996).
- The Triandis model of consumer behaviour, a simulation model that is used when a system of structural and stochastic models cannot be solved mathematically and analytically (Smyczek, 2016, p. 341),
- The Bettman model, which depicts decision-making as information processing that follows a consumer-controlled, consciously defined programme (Bettman, 1979, p. 278).

Taking into account the models presented above, it is possible to conclude that many types of models, both simple and complex, can be used to show the behaviour of consumers in the marketplace (Smyczek, 2016) in detail.

A properly constructed model of consumer behaviour should (Phipps, Simmons, 2009, p. 215):

- be based on facts,
- explain how and why certain market behaviours occur,
- be characterised by simplicity - presenting different aspects of consumer behaviour in a clear and easily understandable way,
- be original - develop knowledge,
- identify new areas of research into consumer behaviour,
- be subject to verification,
- help predict how consumers will react to certain factors in the market,
- be logical - the model should be plausible and the phenomena it presents should be internally consistent and make sense.

It is difficult to meet the above criteria simultaneously, but they are worth considering as a useful framework for building and estimating the relevance of individual models (Smyczek, 2016, p. 242).

The procedure for constructing models of consumer behaviour in the market is a five- stage process:

- defining the purpose of building the model, within which it is necessary to identify the research problem and to formulate the research hypotheses (Smyczek, 2016, p. 243);
- the collection of source material, where it becomes necessary to carry out research (of a secondary or primary nature) that identifies specific quantitative relationships, regularities and associations governing certain consumer behaviour in the market. This is possible with the use of appropriate patterns, i.e. formal records of the mapped regularities. Depending on whether the subject of the mapping is a process, a physical object or a structure, network systems, flowcharts or mathematical models are used (Mynarski, 1982; Lange, 1978, p. 105),

- identification of the types of variables underlying the models being built. This identification includes elements related to the consumer's environment and constituting the consumer's perceived capabilities, his/her motivation to engage in certain activities and the couplings occurring between the various elements of behaviour (Kahnenman, Tversky, 2000, p. 79). The source of identification is the environment of the system, i.e. the environment in which reactions and stimuli occur and the source of the external supply of information, energy and matter. Elements (e.g. energy processes, symbols, physical objects) and the couplings between them from the point of view of changes in environmental states are also the subject of identification. Each individual element is identifiable if it has at least one external input. Furthermore, it should be noted that an element coupled to an identifiable element is identifiable (Smyczek, 2016, pp. 344-345) and elements coupled both in series and in parallel with identifiable elements are also identifiable (Kiezel, 2010, p. 227). In addition to identifiable elements, weakly identifiable or unidentifiable elements are also indicated in the system. Identifiable elements are distinguishable in the system, while non-identifiable elements are not. Moreover, the important elements of a system built by consumer behaviour and the environment are also the couplings that make up a given structure and can take the form of dependencies, relationships, interactions and linkages. To the category of variables used in models of consumer behaviour, one should also add intervening variables that operate between responses and incentives modifying the relationship between them, but which cannot be directly observed and measured. This way, endogenous data is obtained, which can have an internal and external source. The traceability of a system is the basis for the cognisability of its elements and of the couplings that make up its structure, since the impossibility of identification does not allow the statistical determination of structural parameters and the judgement of whether there are distinct structures whose assessments with equal reliability can appear in the sample (Heesterman, 1975);
- modelling, i.e. the graphical representation of the elements of the whole system, where the key becomes capturing the relationships between the elements of the system that make up consumer behaviour and the links between these behaviours and the environment (Lambkin, 2001, p. 265);
- verification of the model, which in practice can only consist in verifying the theories and laws underlying the model under construction. In all cases of verification, the progressive concretisation must go so far as to allow confrontation with reality (Smyczek, 2007, p. 110).

5. Summary

According to T. Wachowicz (2016, p. 413), there are many methods of compensation analysis that differ in their formal assumptions or philosophy of aggregating single-criteria assessments into a multi-criteria evaluation.

In summary, the presented analytical approach and procedure for investigating multi-criteria selection problems are universal. They can be applied directly to support problems with different decision-making contexts and in analytical work related to the ordering of objects or the construction of a multi-criteria ranking on the basis of some resultant synthetic criterion (Wachowicz, 2016, p. 420).

The SPACE method is not one of the most popular analyses used, but it is an extremely valuable and helpful tool for selecting or revising a company's strategy. It makes it possible to identify strategic problems occurring in the area of company operation from the point of view of two objectives (Moszkowicz, 2000, p. 60):

- to assess whether or not the company's existing strategy needs to be changed,
- to decide what changes should be made.

The fundamental problems of the verification procedure are the problem of practical identification and the problem of the degree of correspondence required. Practical identification requires determining which elements of actual market behaviour are equivalent to the theoretical categories, i.e. it is necessary to identify those specific elements of reality that are recognised as equivalent to the theoretical categories of behaviour. Once the theoretical categories of consumer behaviour have been identified in practice, it is necessary to verify the regularities present in these behaviours, which is done by confronting them with the actual course of consumer behaviour on the market and by finding conformity with the regularities present in this course. However, this correspondence is never complete, as the practical identification of consumer behaviour is always only approximate, and theories of behaviour only show the relevant relations between theoretical categories, while the actual course of behaviour is always concrete (Raymond, 2003, p. 37). Verification of the regularity of consumer behaviour in the market is only possible when confronted with mass processes occurring in reality and not with individual cases (Lange, 1952, pp. 20-21).

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