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Multi-criteria decision methods for CSR management – literature review

1. Introduction

Contemporaneously, a company's overall aspirations are comprised of a wide set of financial and non-financial goals. Managers striving for a firm's value creation face the challenge of aligning the conflicting goals of multiple stakeholders to maintain the firm's legitimacy to operate. Corporate Social Responsibility (CSR) is a concept that underlies a multi-pillar strategy where many quantitative and qualitative objectives of multiple stakeholders lever a company's success. CSR refers to the totality of a corporation's financial, social, and environmental performance in conducting its business. In the last decade, much has been done to make CSR practices accountable and transparent. However, even though numerous standards had been developed to support Corporate Social Responsibility, the need for tools and techniques necessary in improving managerial decision-making is urgent. Research into operations provides many interesting insights into multiple-criteria decision-making (MCDM) and multi-attribute decision tools, which then enhance decision rationality under circumstances where a number of heterogenic objectives must be achieved. The most-popular multi-criteria decision tools include AHP, PROMETHEE, ELECTRE, TOPSIS, and their families. The purpose of this article is to investigate if and how MCDM tools can be harnessed to operationalize CSR. Consequently, the financial and non-financial goals of enterprises are deliberated with respect to how goal-setting affects management practices. The method applied in the article is a systematic international literature review. The paper aims at detecting the main strands of the literature and their findings, which should inspire further research.

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2. Financial goals and value creation

The purpose of this section of the paper is to demonstrate a variety of approaches towards corporate financial performance in the context of value creation being a business goal. Advantages and limitations of value-based management (VBM) are presented, and the main approaches to VBM are briefly discussed.

Many believe that the sole responsibility of a business is to make a profit. The maximization of financial efficiency is considered to be the primary goal of an enterprise within the theory of corporate finance (Venanzi, 2012). In this case, financial goals constitute a common denominator for the evaluation of a firm's outcomes; by this, the integrity and purposefulness of a firm's management are safeguarded. Financial-goal orientation determines the related decision-making. However, as to how the financial goal is expressed and organized is of no importance from the perspective of a firm's financial and non-financial outcomes.

It is recognized that Economic Value Added (EVA) is the best available metric for measuring a firm's value. The basic formula for EVA is:

Formula 1.

$$EVA = (ROIC - WACC) \cdot IC$$

where:

ROIC – return on invested capital (EBIT/IC),

WACC – weighted average cost of capital,

IC – invested capital (total assets – current liabilities).

The important advantages of EVA are:

- the focus is on the value created for residual stakeholders (namely shareholders), which additionally brings in the ethical perspective;
- it incorporates the complexity of maximizing the net present value of the firm into a measure that can be used to evaluate current-year performance;
- it illuminates the causes for changes;
- it takes the level of risk into account (by referring to WACC);
- it eschews market inefficiency influence;
- it is a result of interrelated models of investment decisions: shareholders' decisions on investing in a company's stock with the expected risk-return profile of investment and a manager's decision to invest accumulated capital in tangible and intangible assets.

Other financial measures (for example, traditional income measures and earnings per share) are known from their significant drawbacks and offer an

unreliable guide to ‘shareholder value creation.’ Therefore, they will not be discussed in this paper.

Value Based Management (VBM), where the focus is on a firm’s value maximization, is widely believed to be the most-matured managerial approach within financial management (however, it should be stressed that, in any case, metrics are the means and not the goal of a VBM). Informative definitions of VAB are presented in Table 1.

The provided definitions of VBM highlight the following facets of VBM: the objective of management (creating value for shareholders), means (measuring, controlling), time scope (long-term, where short-term and medium-term goals are taken into consideration), transparency (measures), and finally the objective of VBM (reducing agency costs).

Table 1
VBM definitions

No.	Definition	Authors
1	Value-based management is a management control system that measures, encourages, and supports the creation of net worth	Ameels et al., 2002
2	The value-based management approach builds on the preceding practices to provide an integrated framework for measuring and managing businesses, with the explicit objective of creating superior long-term value for shareholders	Ittner and Larcker, 2001
3	Value-based management systems (VBM) provide an integrated management strategy and financial control system intended to increase shareholder value by mitigating agency conflicts.	Ryan and Trahan, 2007

Source: Author’s own elaboration

VBM frameworks generally include six basic steps (Ittner and Larcker 2001):

- choosing specific internal objectives that lead to the shareholder’s value enhancement;
- selecting strategies and organizational designs consistent with the achievement of the chosen objectives;
- identifying the specific performance variables, or “value drivers,” that actually create value in the business given the organization’s strategies and organizational design;

- developing action plans, selecting performance measures, and setting targets based on the priorities identified in the value-driver analysis;
- evaluating the success of action plans and conducting organizational and managerial performance evaluations;
- assessing the ongoing validity of the organization’s internal objectives, strategies, plans, and control systems in light of current results, and modifying them as required.

The framework of VBM presented above eventually sheds light on both tangibles and intangibles being “value-drivers.” The set of value-drivers as well as their importance is usually recognized under strategic planning. Harnessing value drivers requires the development of action plans and selection of performance measures appropriate for each value driver. A balanced scorecard is a popular and useful method for mapping interrelated quantitative and qualitative factors affecting a firm’s value. It allows for mixing and linking financial and non-financial data items.

Under VBM, diverse monitoring and incentive mechanisms are used to align divergent interests between shareholders and managers. VBM should be acknowledged not only as a financial control system but also as a corporate governance mechanism as well.

Financial management focused on value-creation benefits from very-well-developed, sophisticated, and goal-oriented tools. The financial toolkit includes planning, evidence, analysis, and controlling within numerous fields: capital structure, asset management, liquidity, profitability, risk management, tax planning, etc. The comprehensive architecture of decision support comprises data-driven and model-driven decision support in VBM (Hahn and Kuhn, 2012). VBM should lead to improved decision-making within the company with respect to decisions made at different levels of an organization.

VBM is not an ideal solution; its shortcomings include (Kasiewicz, 2009):

- difficult forecasting;
- significant difficulties in the accurate estimation of WACC;
- difficult translation of metrics covering intangible value drivers (i.e., customer value) onto financial metrics;
- managerial costs of implementing VBM;
- complicated implementation of VBM and its tools;
- difficulties in balancing short-term objectives and long-term value creation;
- incomplete link to the realm of capital markets;
- managers may be over-incentivized towards value-creation;
- risk-management structure is unformed.

The number of listed disadvantages are related to decision-making when intangibles play a role. The totality of the mentioned disadvantages of VBM to-

gether with the inappropriate approach of managers (lack of corporate-culture development, short-termism, focus on inappropriate measures, neglecting important value-drivers) cause VBM not to be applied as comprehensively as suggested in the normative literature. In practice, VBM is by no means a heterogenic phenomenon. In some organizations, the application of VBM is restricted only to the highest levels of hierarchy, whereas it covers the whole organization in others (Malmi and Ikäheimo, 2003). Institutions (particularly, the intra-organizational process by which the institutionalization of management accounting systems shapes organizational change) play a significant role as contingency factors for VBM's impact on a firm's performance (Firk et al., 2016). External institutions constituting part of the business environment affect VBM adoption and its effects (Lueg and Schäffer, 2010). The cognitive styles of CFOs (educational background in business) have a substantial impact on VBM-sophistication (Burkert and Lueg, 2013). Other VBM contingencies suggested in the literature include agency conflicts (Karlik et al., 2016) and uncertainty or strategy (Chenhall, 2006). Therefore, it is possible to offer a number of classification criteria for VBM.

For the purpose of the study, it is important to focus on how the role of financial performance is approached as a value to be created and distributed by the company. Such approaches may differ; therefore, it is possible to recognize a continuum of VBM models reflecting different status of financial performance compared to the outcomes of other firms.

The first VBM model is a “narrow-view model.” In this model, financial performance prevails over any other firm outcome. VBM can be used as an excuse to act unethically or to the detriment of certain stakeholder groups, especially when financial performance metrics are set improperly and when executive compensation schemes enhance risk-taking (Hagendorff and Vallascas, 2011) and/or unethical behavior (Harris and Bromiley, 2007) – both resulting in significant externalities. Consequently, the value created for shareholders may be coupled with the destruction of values created for other stakeholders.

The second VBM model is strongly rooted in the tradition of corporate finance. M. Friedman, who coined the famous phrase “the business of business is business,” pointed to the fact that enterprises should always follow ethical norms and legal rules (Friedman, 1970). In this model, managers strive for superior financial performance; however, ethical and legal criteria are always met. The value for shareholders is created without harming values for other stakeholders.

The third model is a “state-of-the-art” VBM where managers use strategic planning tools to discover a full picture of the value drivers, including finding how acting in the interest of stakeholders can enhance a firm's value. The focus is on value-creation, and stakeholders are recognized as important value-driving factors. This approach is called “strategic CSR” (Srisuphaolarn, 2013). The value

created for shareholders is enhanced by creating value for other stakeholders (value co-creation within a complex system of business and its environment).

The fourth model of VBM is referred to as enlightened shareholder maximization. This is a revised, integrated role of a corporation that encompasses the financial and social obligations of firms as its core strategy, a strategy with one emphasis: long-term wealth creation for shareholders (Jensen, 2002). In this model, value creation for shareholders is seen as a prerequisite for creating value for other stakeholders. Managers aim at achieving value for all stakeholders.

Each model may eventually fail to meet its purpose due to VBM disadvantages as well as the contingencies mentioned above. Differences in the use of VBM and EVA may have important implications for shaping the long-term results of VBM or EVA.

Despite the variety of its approaches, VBM is sometimes accused of being a source of financial crisis, as it generates significant externalities. It is claimed that VBM is ultimately a microeconomic concept, where priority is given only to shareholder interest (Kasiewicz, 2009). Such a warning is not surprising in the case of “narrow-view” VBM. In the case of “traditional VBM,” it is possible to argue that, as far as legal norms and ethical norms are followed, it is the responsibility of the government to introduce macroeconomic policy to reduce negative externalities by the appropriate legal norm enforcement. Social and cultural institutions create social norms strong enough to complement legal norms. In this case, engaging a firm’s resources in managing externalities would result in excessive transaction costs, and the desired Pareto-improvement would be lost.

When the “state-of-the-art” or “enlightened” VBM is blamed to be “only microeconomic concepts,” one may ask what the business is ultimately expected to be. In any case, this requires the proper recognition of business, social, and ethical obligations.

3. Corporate social responsibility challenge

Contemporaneously, the business landscape is being re-oriented and faces managerial transition to adapt new decision-making criteria and a course of action; namely, “corporate sustainability.” The consciousness-of-business impact on society and the natural environment has evolved rapidly. The following building blocks of the perspective on a firm’s non-financial outcomes are most important:

- the contracts with stakeholders are incomplete (Asher et al., 2005);
- governments fail in meeting social needs (due to collective decision-making shortcomings, rent-seeking, inefficient management, etc.);

- enterprises create significant negative externalities (in terms of pollution, risk, poverty, health problems, etc.) (Grinols and Mustard, 2001; Kudełko, 2013) that harm stakeholders;
- social norms evolve, and sanctions are visible (Ostrom, 2014);
- enterprises can efficiently provide public goods (Braat and de Groot, 2012);
- asymmetry of information can be easily used to exploit some groups of business stakeholders (as was the case of the recent financial crisis) (Flannery et al., 2013);
- competition failure undermines welfare;
- humanistic management contributes to enriching the conceptualization of the shareholders' profiles as well as manager's profile (Pirson, 2013);
- value shift towards post-materialistic values and non-anthropocentric values is observable (Callicott, 1984);
- the idea of stakeholders is being extended (not only shareholders, clients, employees, and local communities, but global communities, NGOs, minorities, and even future generations are believed to constitute a group of legitimate stakeholders).

Corporate legitimacy, which is understood as the conformation with social norms, values, and expectations (Oliver, 1996) and constitutes a prerequisite for company's survival (Palazzo and Scherer, 2006) became a pressing problem.

From the perspective briefly described above, companies have started to see their ethical commitments in a wider context. Consequently, the concept of Corporate Social Responsibility [CSR] has gained an unprecedented attention among scholars and practitioners. So, far more than 10,000 scientific papers on corporate social responsibility have been published according to the Scopus database (the yearly number of papers on CSR is on the increase). Contemporaneously, 93% of the biggest world companies publish social responsibility reports (in Europe, 80% of large companies publish these types of reports; in Poland, that number is 56%) (KPMG, 2013). Additionally, the quality of CSR reporting is improving (KPMG 2011, 2013). At the stock exchanges, new indices devoted solely to responsible corporations have been introduced (for example, the Domini 400 Social Index, FTSE4GOOD Index, Dow Jones Sustainability, or WIG Respect).

At the core of the CSR concept is the idea that it reflects both the social imperatives and social consequences of business success and that the responsibility accordingly falls upon the corporation; however, the precise manifestation and direction of the responsibility lies at the discretion of the corporation (Matten and Moon 2008). Many definitions of CSR are based on two fundamental ideas. The first is that companies have responsibilities beyond their profit-making activities and mere legal liability (Carroll, 1999; Crespo et al., 2005). The second is that

these responsibilities apply not only to shareholders but also to a broader group of stakeholders (Freeman, 1984). In their in-depth analysis of CSR definitions, Maon et al. (2010) observed that the nature of CSR commitment can differ from a voluntary practice to a moral obligation for the company and that different CSR definitions reflect different kinds of considered stakeholders (internal stakeholders, external stakeholders, or the overall society).

Generally, under the CSR concept, the role of business today is being extended. It is claimed that business is not only responsible for business but should meet the highest ethical standards. A corporation should be responsible as a social actor and citizen, and it should even re-embed the role of the government by taking responsibility for macroeconomic balance, public goods provisioning, and asymmetry of information reduction. Consequently, business context today revolves around the following (Liyanage and Kumar, 2003):

- economical values that rest on the degree of financial accountabilities displayed;
- social values that rest on the degree of social equity displayed;
- environmental values that rest on the degree of environmental care displayed.

Garriga and Melé (2004) indicate that four basic underlying concepts foster CSR theorizing:

- any supposed social activity is accepted if and only if it is consistent with wealth creation (instrumental theories of CSR);
- special power of corporations leads the corporation to accept social duties and rights or participate in certain social cooperation (political theories);
- business depends on society for its continuity and growth and even for the existence of the business itself (integrative theories);
- the relationship between business and society is embedded with ethical values (ethical theories).

Under the instrumental theories of CSR, the role of the business complies with what traditional VBM prescribes. CSR levered by integrative theories generally overlaps with enlightened VBM. In this context, the decision environment is extremely complex and far-reaching. The most-compelling task is to accurately plan and forecast, including linking financial and non-financial data and items.

When CSR is fuelled by an ethical perspective, it can fit traditional VBM. However, it should be stressed that ethical concerns are nowadays seen in a much-more-complex and comprehensive way than some decades ago. This can result in taking excessive burden by corporations (for example, expanded charity programs or inflated ethical standards for suppliers), resulting in unexcused losses in shareholder wealth. Here, the most-compelling task is finding the right balance.

Political theories of CSR bring about a completely new perspective. Many business firms have started to assume social and political responsibilities that go beyond legal requirements and fill the regulatory vacuum in global governance (Scherer and Palazzo, 2011). Political theories of CSR can be in accordance with the assumption that firms should maximize shareholder utility when the utility function is compound (depending on shareholder financial and non-financial goals). Shareholders may wish to use their “corporate vote” and exploit firm’s resources just as their private resources (i.e., giving donations to the poor) – to fight social problems. However, a political approach towards CSR may lead to allowing managers to use a firm’s resources for purposes contrary to the shareholders’ goals. In this case, the expenditures on CSR as well as the foregone profits are simply agency costs. Consequently, the most-compelling task is the accurate recognition of shareholder preferences and appropriate understanding and fulfilment of fiduciary duties.

Despite the numerous publications, best practices, and standards for CSR, there is still no agreement on what companies should be responsible for and how. A number of new metrics of corporate social performance (CSP) have been proposed and discussed (Epstein and Buhovac, 2014), and a number of CSR strategies have been tested. So far, a large number of standards, codes of conduct, and guidelines have been created in response to the necessity to appraise business impacts on society and the natural environment. By the end of 2009, there were about 300 CSR standards, such as the UN Global Compact, ILO Standards, OECD Guidelines for Multinational Enterprises, ISO 14001, GRI (Global Reporting Initiative, 2006), Global Sullivan Principles, SA 8000, and AA1000 (Koerber, 2009). Most of them are under criticism because they inhibit innovation and enhance conformity (Colle de et al., 2014).

In practice, CSR may be used in an opaque manner. Some companies proclaim a policy of “caring for the world” by making small donations or taking very small-scale initiatives (which may cost very little); by doing such things, they effectively put a fig leaf over the serious negative externalities they create. Such practices are called “windowdressing.” Based on the growing number of reports of corporate hypocrisy, consumers have become inherently skeptical when evaluating CSR information (Connors et al., 2015).

Since CSR overlaps with corporate finance theory prescriptions towards business goal-setting, the picture of objectives that should be achieved by exploiting a firm’s resources is incomplete and unclear. The scientific research is largely concentrated on tracing linkages between the enterprise’s engagement in social and/or environmental development and their financial performance (Tang et al., 2012; Flammer, 2015). These studies are mainly in pursuit of evaluating CSR by a neoclassical corporate-finance yardstick. The above-mentioned studies are very

intensive and differ significantly when it comes to choosing proxies for social performance, measures of financial performance, a model of regressing financial performance on the proxy for social performance, a time horizon, control variables, and finally a sample. Their results are inconsistent. This, however, is inevitable since, within a sample, it is not possible to define and unify: a) the intended time horizon of enterprises' CSR projects; b) motives that drove the enterprise's decisions; c) financial market efficiency in valuing the positive effects of CSR retaken by an enterprise; d) type of CSR projects; and e) possible heterogeneity of the effects of CSR projects retaken by enterprises resulting from differentiation in the reactions of the complex business environment to the CSR projects (Benabou and Tirole, 2009, pp. 12–13; Wood, 2010, pp. 60–62). Hence, it is not possible to establish an incontestable business case for CSR. However, although CSR does not always contribute to a firm's value, an increase in the firm's social and environmental activities can be value-enhancing (Malik, 2015). The requirement is as stated above:

- accurate planning and forecasting with a focus on transparency of linking non-financial items to financial items;
- finding the right balance between ethical commitments to diverse groups of stakeholders;
- right recognition of shareholder preferences and appropriate understanding and fulfilment of fiduciary duties.

Ultimately, since there is no single standard for a firm's goal-setting, it is solely up to the managers how to approach determining criteria for decision-making. Imperfect instrumentality in decision-making may lead to two serious undesirable consequences. The first would be the silent but definitive subordination of non-financial outcomes to financial outcomes, which may result in losing chances for the firm's sustainable growth as well as in the increase of negative externalities. The second would be the exploitation of the CSR idea to increase the power of managers over a firm's resources, resulting in an increase in agency costs. Both consequences would result in the erosion of CSR concept and of VBM concept. Therefore, there is an urgent need to improve the rationality of managerial decisions to foster the transparency and accountability of CSR practices.

4. Multi-criteria decision making for CSR – literature review

Multiple-criteria decision making (MCDM) has grown as a part of operations research, engaged with designing computational and mathematical tools for supporting the subjective evaluation of performance criteria by decision

makers (Mardani et al., 2015). Multi-criteria decision-making problems comprise of an underlying space of feasible solutions and several objectives that can be evaluated with regard to the feasible solutions. In general, a generic solution approach and unambiguous concept of optimality do not exist for this kind of problem, but different approaches depending on the viewpoint of the decision maker towards the underlying problem are applied (Buchert et al., 2015). Multi-criteria decision making (MCDM) is concerned with structuring and solving decision and planning problems involving multiple criteria. Both quantitative and qualitative factors can be included. The purpose is to support decision makers facing such problems. The MCDM methods helps to improve the quality of decisions by making them more explicit, rational, and efficient (Pohekar and Ramachandran, 2004).

A large number of approaches and techniques have been introduced in this area of research. Multi-criteria decision methods (MCDM) are a family of methods that includes several methods based on weighted averages, priority setting, outranking, fuzzy principles, and their combinations. The methods can also be classified as deterministic, stochastic, and fuzzy methods. The most-popular MCDM tools include a technique for order of preference by similarity to ideal solution (TOPSIS), elimination and choice expressing reality (ELECTRE), analytic hierarchy process (AHP), analytic network process (ANP), preference ranking organization method for enrichment evaluations (PROMETHEE), and their families (Zavadskas et al., 2014). Nevertheless, the basic working principle of any MCDM method is the same: the selection of criteria, alternatives, aggregation methods, and ultimately alternatives based on weights or outranking. MCDM can help making individual decisions as well as group (e.g., board) decisions, because all MCDM stages can be carried out individually or collectively.

The TOPSIS (technique for order preference by similarity to the ideal solution) selects the alternative closest to the ideal solution and furthest from the negative ideal alternative. The classical TOPSIS method is based on information about attribute from decision maker. The solution is aimed at evaluating, prioritizing, and selecting, and the only subjective inputs are weights (Roszkowska, 2011).

The AHP (analytic hierarchy process) uses a multi-level hierarchical structure of objectives, criteria, sub-criteria, and alternatives. The pertinent data is derived by using a set of pair-wise comparisons. These comparisons are used to obtain the weights of the importance of the decision criteria (Triantaphyllou, 2013). This method entails mechanisms ensuring the consistency of pair-wise comparisons.

The AHP disadvantage is that many decision problems cannot be built as hierarchical because of dependencies (inner/outer) and influences between and within clusters (criteria, alternatives). Analytic network process (ANP) is the

development of AHP, which provides a general framework to deal with decisions without making assumptions about the independence of higher-level elements from lower level elements and about the independence of the elements within a level. The control hierarchy, critical for ANP analysis, provides overriding criteria for comparing each type of interaction that is intended by the network representation (Gencer and Gürpınar, 2007).

The PROMETHEE (preference ranking organization method for enrichment evaluations) methods belong to the class of outranking methods. Its descriptive complement is known as a geometrical analysis for interactive aid. The starting point of the PROMETHEE technique is the assessment matrix. In this matrix, the alternatives are assessed on the different criteria (evaluations involve numerical data). Implementation of the PROMETHEE requires additional information on the weights of the criteria and decision maker's preference function. Decision maker's weights and preference function when comparing the contribution of the alternatives with respect to each criterion (Mousavi et al., 2013).

ELECTRE is a method for dealing with the problem of ranking actions from the best option to the worst. Actions are evaluated (for at least one criterion) on an ordinal scale or on a weak interval scale. Preferences in ELECTRE methods are modeled by using binary outranking relations. The construction of an outranking relation is based on two major concepts: concordance and non-discordance. Through the use of probabilistic distributions and expected utility criterion, imperfect knowledge can be taken into account in ELECTRE methods (Figueira et al., 2016, pp. 2–10).

MCDMs are well investigated when it comes to the succour they provide to financial management (Steuer and Na, 2003; Spronk et al., 2016). However, there are no publications that provide bibliometric studies on how MCDM supports CSR. The purpose of this part of the paper is to find if, in the literature, MCDM tools are recognized as instruments that can be harnessed in CSR managing and if there are knowledge gaps in the area. To this end, an extensive search was carried out in December 2016 to find specified words in titles, abstracts, keywords, and research methodologies of the papers included in the comprehensive Scopus database. The specified words included: “corporate social responsibility” and “multi-criteria (multi-criteria) decision methods (tools, techniques)” or “technique for order preference by similarity to the ideal solution,” “analytic hierarchy process,” “analytic network process,” “preference ranking organization method for enrichment evaluations,” or their acronyms (respectively: TOPSIS, AHP, ANP, PROMETHEE, or ELECTRE). In the database, only 63 publications were found; however, after eliminating the non-relevant papers, 41 publications were included in the final analysis. The result of the analysis is presented in Table 2.

Table 2

MCDM in support for decision on CSR – application and key concepts – bibliometric study results

Way of using MCDM tools for CSR management	Key concepts	Publications	Type of MCDM tool used
MCDM tools as a support for managerial decisions (investment decisions, product decisions)	Defining the priority for managerial decisions Designating social/environmental goals particularly important for specific sectors Identifying stakeholders' goals Sustainable credit decisions Managing product life-cycle	Taylor, 2014 Sardinha et al., 2010 Dreyer et al., 2010 Esteves, 2008 Chang and Yeh, 2016 García-Melón et al., 2016 Petrillo et al., 2016 Zhao and Li, 2015 Manente et al., 2015 (p. 307–322) Zeidan et al., 2015 Jindal and Sangwan, 2016 Chang, 2015 Guoliand and Sijing 2010	AHP hybrid techniques in the field of MCDA fuzzy-based ANP, fuzzy TOPSIS, TOPSIS
MCDM used to evaluate CSR practices	Giving priority to indicators representing non-financial outcomes Internal and external evaluation of CSR policy Ranking companies with respect to their CSR policy Criteria for socially responsible investment Measuring CSR	Venturalli et al., 2016 Wang et al., 2015 Cuesta González de la, 2015 Costa and Menichini, 2013 Stankova, 2015 Shanmugam et al., 2015 Carnero, 2015 Zhao et al., 2015 Lamata et al., 2016 Doukas et al., 2014 Chen and Fan, 2011 Aravossis et al., 2006	AHP, Fuzzy AHP, Fuzzy-AHP-TOPSIS, 2-tuple TOPSIS
MCDM tools to support sustainable supply chain management being a component of firm's CSR policy	Setting criteria for supplier selection to meet CSR requirements Environmental management in the product lifecycle Managing supply chain risk and resilience Supply chain equilibrium with respect to externalities	Raut et al., 2015 Cruz, 2013 Zhen et al., 2012 Sivakumar at al., 2015 Karthik et al., 2015 Wang and Pan, 2014 Govindan et al., 2013 Huo, 2012 Jin, 2011 Cruz, 2009	AHP ANP and Decision-Making Trial and Evaluation Laboratory (DEMATEL) fuzzy TOPSIS

Table 2 cont.

Way of using MCDM tools for CSR management	Key concepts	Publications	Type of MCDM tool used
MCDM tools for exploring firms environmental/ social consciousness	Corporate environmental/ social consciousness	Ceh and Bu, 2013	fuzzy AHP
MCDM tools to assess managerial competences necessary to perform within CSR policy	Managerial competences, human resources management	Asenjo and Bueno, 2015	AHP
MCDM tools used to assess the importance of CSR drivers	CSR drivers Stakeholders	Achabou et al., 2015	AHP
MCDM tools used for assessing the quality of CSR reporting	Communication of CSR	Manente et al., 2014 (pp. 234–285)	AHP
MCDM tools used for assessing the financial and non-financial firm's performance	Firm's value Value added Sustainable development	Huang and Quin 2010	AHP, TOPSIS
MCDM tools used to evaluate the quality of firm's management with respect to environmental outcomes	Corporate governance Environmental management	Merard et al., 2013	ELECTRE III

Source: Author's own elaboration

The literature on using MCDM to support CSR has been developing rapidly. All papers found under the study except for two were published in or after 2010. The most-often-exploited MCDM method used in the studies on CSR is

AHP and its developments. The reason can be its simplicity. The second-most-often-used method is TOPSIS. In studying MCDM exploitation to support CSR, two perspectives are used: the perspective of internal stakeholders and external stakeholders. MCDMs are suggested to support implementing the CSR concept in one management area (HR, credit decisions, reporting) or in a firm's overall management. Among the analyzed research papers, three important research avenues can be recognized.

The first strand (with respect to the number of publications – 13) is represented by publications where MCDMs are seen as tools that can support managerial decisions (investment decisions, product development decisions) when the responsibility for stakeholder interest is an important goal of a corporation. The key concepts of this strand in the literature are to define priorities, designate goals, and set criteria for diverse managerial decisions. The publications fueling the trend are the newest – most of them were published in 2015 and 2016. This can be a signal of developing a new trend in the research on MCDM for CSR. However, the number of papers is very small, and a comprehensive study is still needed. Then, sector-specific and country-specific investigations may reveal differences in goals prioritization. By this way, such studies may contribute to the improvement of CSR standards.

The second strand (12 publications, published mostly in 2015 and 2016) focuses on using MCDM to evaluate a firm's quantitative and qualitative outcomes in terms of the values created for multiple stakeholders. The key concept in the trend is communication (informing and reading) of a firm's heterogenic results. This requires prioritizing indicators reflecting business outcomes and ranking companies with respect to their social and environmental performance. One separate study uses AHP to evaluate the quality of CSR reporting (Manente et al., 2014). The communication's main purpose is to enable investors and other stakeholders to run models or make their own predictions about the future value creation potential of the organization. Since socially responsible investment market size is growing, this type of research is extremely necessary. Knowledge of the priorities of shareholders and stakeholders would enhance the transparency of CSR and fiduciary-duty fulfilment.

The third strand is represented by ten publications focusing on MCDM usage in green (or responsible) supply-chain management. MCDM tools are very popular in supply chain management, and thereof it is natural that new criteria for supplier selection are managed with tools already well-tested in the area. Knowledge on how MCDM can be used in managing relationships with suppliers can further inspire research on using MCDM in managing relations with other stakeholders.

Additionally, a bibliometric study revealed that some proper publications covering MCDM and CSR exist. Selected issues include quality of CSR manage-

ment, competence evaluation, or environmental/social consciousness of the firms. The important study of Achabou et al. (2015) exploits AHP to improve the understanding of value drivers. This study links CSR to VBM.

Considering the fact that the literature on CSR is vast and the literature on multi-criteria decision methods is overwhelming (almost 15,000 papers solely on AHP and its applications), the collection of papers analyzed in the study may be seen as a harbinger for a new research avenue. The field is promising since it covers a number of today's managerial issues and provides a well-tested tool (MCDM).

Considering that the research strand is immature, it makes no sense to point to research gaps. The research perspectives are outlined. The integration of financial management in a strategy based on the CSR concept needs further investigation, because little has been done to evaluate CSR as value driver (except the study of Achabou et al., 2015) and nothing to assess its costs. Particularly linking financial and non-financial items at different levels of management (strategic, operational, tactic) is necessary. Then, more must be done to explore how to appropriately balance incentives for managers who are responsible for creating for and distributing among multiple stakeholders. The missing approach in the field is the macroeconomic perspective on priorities and outcomes. This, however, requires another theoretical framework.

5. Conclusion

When the maximization of financial efficiency constitutes a common denominator for the evaluation of a firm's outcomes, the integrity and purposefulness of the firm's management are safeguarded. However it is recognized that not only the creation of value for stakeholders is socially accepted and desirable. The maintenance of corporate legitimacy requires a new perspective on business commitments. Business today faces a managerial transition to adapt new decision-making criteria and a course of action; namely, "corporate sustainability." Corporate social responsibility can be embedded in (or fostered by) value-based management. In any case, adopting CSR as part of a firm's strategy and operations requires changed standards for decision-making. Decision-makers face the challenge of following tangible and intangible goals of multiple stakeholders. The imperfect instrumentality of decision-making may bring about two undesirable consequences. The first would be the silent but definitive subordination of non-financial outcomes to financial outcomes, which may result in losing chances of a firm's sustainable growth as well as in an increase of negative externalities. The second would be the exploitation

of the CSR idea to increase the power of managers over a firm's resources, resulting in the increase of agency costs. Both consequences would result in the erosion of the CSR and VBM concepts.

Multiple-criteria decision-making (MCDM) methods is the field of operational research that brings about a lot of insights into structuring and solving decision and planning problems involving multiple criteria (including qualitative and quantitative criteria). The MCDM methods helps to improve the quality of decisions by making them more explicit, rational, and efficient. This paper presents the result of a bibliometric study where the Scopus database was deeply searched to find all scientific papers devoted to CSR and Multiple-criteria decision-making (MCDM). To the author's best knowledge, this paper is the first where such literature review results are provided. 41 publications were included in the final analysis. It was discovered that papers aimed at using MCDM to enhance CSR management are mostly newer publications (most of them published in 2015 and 2016), which proves that the strand of the literature is emerging.

Among the analyzed research papers, three important research avenues emerged. In the first avenue, MCDMs are seen and used to enhance managerial decisions where a number of heterogenic goals must be achieved. The key concepts of this strand in the literature are to define priorities, designate goals, and set criteria for diverse managerial decisions. This corresponds with the problem described in the theoretical framework of the paper that there is a need for more-rational decisions in terms of heterogenic goals.

MCDM tools can be used by both internal and external stakeholders. The second avenue is where MCDMs are seen and used to evaluate a firm's quantitative and qualitative outcomes in terms of values created for multiple stakeholders. The key concept in the trend is the communication of CSR. Here, MCDMs reduce information asymmetry and enhance stakeholder's decisions. A more-transparent CSR enhances fiduciary duties fulfilment (for internal stakeholders) as well as portfolio management (for external stakeholders).

The third trend is a natural transfer road of MCDMs into the CSR field. Green supply-chain management as a research area fueled ideas on using MCDMs to manage the supply chain when CSR is adopted into the enterprise.

Other papers analyzed in the study represent proper ideas on using MCDMs to support CSR (e.g., competences evaluation, corporate consciousness examination, etc.). This indicates that there are many possible fields of harnessing MCDM in studying CSR's theories and practices.

Despite the fact that some studies focused on both CSR and finance, little is still known about how MCDMs can be used to integrate financial management and CSR. The important issue is to study compensation schemes where managers are required to achieve heterogenic goals.

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