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Is CSR embedded in the system of corporate innovation objectives? Evidence from Poland

Abstract

The purpose of this article is to investigate the positioning of CSR-related objectives within the structure of corporate innovation objectives of firms. The study is based on firm level data from Polish wave of Community Innovation Survey for 2008-2010. Analysis shows that CSR-related innovation objectives are aimed at building cost-based competitive advantage. Moreover, we show that better performing innovators indicate higher importance of CSR-related objectives than less successful innovators. Finally, we argue that the lowest importance of CSR-related objectives in whole structure of innovation objectives for all studied Polish innovating firms indicates that CSR is still not fully embedded in their corporate strategies.

Keywords: corporate social responsibility, innovation objectives, competitive advantage, sustainable innovation, strategic CSR.

JEL classification: L21, O3.

Introduction

Growing global acceptance of the sustainable development (SD) and corporate social responsibility (CSR) ideas results in modifications in corporate and business strategies. Engagement in SD/CSR activities affects also firms' innovation strategies. Many scholars argue that the environmental and social challenges offer new opportunities for innovative firms, and that innovation is one of the important means by which firms can achieve both competitive advantage (necessary to achieve firms' strategic objectives) and sustainable growth. However, other studies on SD/CSR policies provide evidence that many firms approach the

sustainability with unclear strategies, and implement CSR activities if it results in higher profitability and improved reputation.

Poland is still ranked low (25th) among EU member states in terms of propensity to innovate and belongs to the group of the moderate innovators with a below average innovation performance [IUS 2014]. Moreover, the results of Eco-Innovation Scoreboard (Eco-IS), the tool to assess eco-innovation performance, show that like in the case of general innovation performance derived from Innovation Union Scoreboard (IUS), there are striking differences between the EU15 and the New Member States in the overall eco-innovation performance. Poland is ranked nearly the lowest, gaining 42 points, whereas the average for EU15 is 100 points [Eco-IS 2013].

It is to note, that SD/CSR concepts gain on popularity in Polish firms. Vast majority of large and medium-sized firms believe that it is the responsibility of the business sector to respond to social and environmental challenges. The awareness that doing business in line with the CSR concept has a good effect on performance is growing in last decade, but these opportunities are not fully exploited, and financial effects of CSR activities are usually not measured. The most frequently reasons for engaging in CSR activities declared by firms are the improvement of firm's reputation and relations to local community [*Responsible Business in Poland...* 2015].

In this context, the purpose of our article is to identify the innovation objectives declared by Polish large and medium-sized innovative firms, and to assess the level of integration of CSR-related objectives into the structure of corporate innovation objectives. Our study is based on firm-level data from the Polish wave of the Community Innovation Survey (CIS), for 2008-2010. Based on results of statistical analyses, we revealed the statistically significant differences in declarations regarding innovation objectives among three clusters of firms (distinguished by CIS), depending on their innovation performance. Analysis of the position of CSR-related innovation objectives shows that they are linked to activities aiming at building cost-based rather than differentiation-based competitive advantage. Moreover, we show that the better performing innovators indicate higher importance of CSR-related objectives than firms less successful in innovation. Finally, we argue that the lowest importance of CSR-related objectives in whole structure of innovation objectives for all clusters of Polish innovating firms indicates that CSR is still not fully embedded in corporate strategies of Polish firms.

To our knowledge, not many studies address the SD/CSR issues based on CIS data [Leiponen and Helfat 2010], and the studies on relationships between CSR and innovation analyzed from managerial perspective are scarce [Öberg 2015],

and the studies covering linkages between CSR and innovation objectives are in Poland non-existent. Thus, we intend to fill this gap.

The paper is organized as follows: in the next section we discuss theoretical context and propose a set of hypotheses to be tested empirically. Then, we describe our sample, methods of analysis and findings. Final sections provide a discussion of these findings, conclusions, and points to further research.

1. Theoretical background and hypotheses

1.1. Innovation in CSR/SD context

Literature provides evidence that innovation is one of the most important drivers of firms' competitiveness [e.g. Burns and Stalker 1961; Kay 1993; Utterback 1994; Besanko et al. 2007]. From this perspective the ultimate goal of innovation activities is to improve firm's performance by increasing and sustaining its competitive advantage.

Growing acceptance of the sustainable development (SD) idea results in modifications in corporate and business strategies, including the innovation strategies. SD as a broad concept viewed from the firm perspective is closely related to the idea of corporate social responsibility (CSR). The CSR concept emphasizes firms' obligations to the society that go far beyond making a profit and obeying the law [Carroll 1999] and views firms as social institutions which must consider public interests by engaging in sustainable business practices [Shaw 2007].

The argumentation for extending the firms' social and environmental responsibility is embedded i.a. in general stakeholder theory, competitive advantage and cluster theories, and resource-based theory of the firm [Martinelli and Midttun 2010]. According to the stakeholders approach [Freeman (ed.) 1984], the firm must consider in its strategies interests and pressure of various external stakeholders, who can also provide resources and ideas that contribute to firms' competitive advantage. The demand and pressure on business bounded with SD principles offer new opportunities for firms. More efficient use of resources, stronger incentives to develop and launch innovative products, or implement new environmentally or socially acceptable processes, reduce risks of conflicts with stakeholders, improve firm's image and enhance human capital for new strategic opportunities of firm's differentiation, thus contribute to competitive advantage [see, e.g., Donaldson and Preston 1995; Porter and van der Linde 1995; Senge and Carstedt 2001; Quairel-Lanoizelee 2011].

Basing on the competitive advantage and cluster theories, Porter and Kramer [2006, 2011] argue that the firm should chart all the social and ecological consequences of its value chain activities, thereby creating a list of challenges and opportunities that need to be addressed in order to undertake social initiatives with the greatest shared value, i.e. that produce maximum social benefit as well as gains for the firm.

Resource-based view of the firm suggests that CSR activities can lead to the development of firm-specific capabilities based on intangible resources (e.g. innovative capabilities) that are sources of competitive advantage [e.g. Surroca, Tribó and Waddock 2010].

Attempts to find the right balance between business objectives and SD/CSR concepts raise the issue of the relationships between firms' innovation and environmental and social demands.

SD is often operationalized at the firm level as meeting "the triple bottom line" (TBL) principle, which requires measuring the business results not only in terms of economic performance, but also in terms of firm's social responsibility and firm's influence on the environment [Elkington 1994]. TBL approach is reflected in the concept of sustainable innovation. Sustainable innovation has been defined as the development of new products, processes, services and technologies that contribute to the development and well-being of human needs and institutions while respecting the worlds' natural resources and regenerative capacity [Gerlach 2003]. This definition reflects the CSR approach and is consistent with the definitions of SD that emphasize the integration of ecological, social and economic dimensions along with a sense of responsibility to existing and future generations.

Linking CSR and innovation, the one stream of research describes CSR as the innovation driver, and suggests also that innovation may lead to social, ethical and/or eco-friendly solutions [Öberg 2015]. Authors that analyze CSR as an innovation driver argue that firms that apply CSR principles often have to introduce changes in products, technological processes or organizational solutions [e.g. McWilliams and Siegel 2001; Bansal 2005; Husted and Allen 2007]. Literature suggests that CSR is an investment in product differentiation that triggers both product and process innovations [McWilliams and Siegel 2001; McWilliams, Siegel and Wright 2006]. Firms can build their differentiation-based advantage by developing products' innovative features (e.g. by improving product functionalities, its technological sophistication, increasing product durability, reliability, energy savings, compliance with technical, safety, and ecological standards ("green" products), operating comfort, serviceability, etc.), by achieving better customer service. Some of those activities result from social or ecolog-

ical pressure and application of CSR practices. Besides, product or brand differentiation may be based on firm reputation as a socially and environmentally responsible actor. Building such reputation requires marketing communication (through branding/labeling, advertising or PR), introducing marketing innovation aimed at raising the awareness of CSR-sensitive customers [McWilliams and Siegel 2001; Boehe and Cruz 2010]. A CSR-based reputation can be perceived as an intangible resource difficult to imitate. In addition, it increases the value that customers perceive [Bhattacharya, Korschun and Sen 2009], and increases customers' loyalty. Reputation of responsible firm improves its attractiveness for investors, business partners and employees [Boehe and Cruz 2010].

Firms are also introducing CSR-oriented innovation in manufacturing and/or logistical processes in order to maintain cost-based competitiveness by reducing consumption of materials and energy, reducing emissions and/or lowering waste disposal costs [e.g. Gonzalez-Ramos, Donate and Guadamillas 2014]. CSR innovations can be motivated by the legal (e.g. environmental) regulations or social pressure, as well as by firm CSR commitment. Firms primarily focused on cost-cutting innovation can also achieve SD/CSR-related objectives resulting from process or product innovation. For instance, application of new cost-efficient new technology may bring reduction material and energy costs or improvement of work place safety. Redesigning of the product to cut manufacturing costs may also result in environmental benefits (e.g. lower consumption of materials and energy).

Studies focused on reverse relationship, i.e. on innovation as a driver of CSR/SD solutions indicate i.a. that firms' supply chains absorb innovation potential that may lead to sustainable solutions [Isaksson, Johansson and Fischer 2010]. Jamali et al. [2011] argue that innovation may lead to new forms of cooperation with CSR perspective. Gallego-Alvarez et al. [2011] tested two models: one in which is a function of CSR activities, and the another model explaining the reverse relationship. The results of both models show that the bidirectional relationship between these two variables is negative; however the effect of CSR practices on innovation is statistically less significant. Their study suggests that, in general, firms do not engage in innovations related to SD/CSR issues, and there is an incompatibility between R&D investment and the propensity to undertake sustainable activities. Hence, although the research on relationships between SD/CSR and innovation, and their impact on firms' performance do not result in clear conclusions, many empirical studies conducted in mature economies recently show a positive relationship between CSR and innovation in a context of the firms' competitiveness [e.g. Lopez-Perez, Perez-Lopez and Rodriguez-Ariza 2007; Wagner 2010; Surroca, Tribó and Waddock 2010; Gonzalez-Ramos, Donate and Guadamillas 2014].

The studies on this issue in transition economies are not developed. Aiming at filling this gap, we formulate the following hypothesis regarding Polish innovative manufacturing firms:

H1. *CRS is related to (H1a) firms' differentiation-based competitive advantage, as well as of (H1b) cost-based competitive advantage.*

The determination to build innovation-based advantage pushes firms to explore innovation sources and opportunities, such as coming from CSR [D'Amato and Roome 2009]. Research shows that adoption of CSR practices may become a source of continual innovation [González-Moreno, Sáez-Martínez and Díaz-García 2013]. Adopting CSR approach can help to improve firm's innovative capacity, e.g. through retaining the most qualified, creative employees needed to gain or maintain innovation leadership [e.g. Porter and Kramer 2006; Surroca, Tribó and Waddock 2010; Guadamillas and Donate 2011]. Moreover, responsible behavior can help to build firm's legitimacy with regard to their stakeholders and encourage them to involve in innovation cooperation. Research suggests that the CSR efforts depend on the firm's technological proactivity. Less proactive firms (especially in CSR sensitive industries) are unable to exploit all opportunities from innovation as they do not perceive the CSR practices as an important source of technological changes [Guadamillas and Donate 2011]. Gonzalez-Ramos et al. [2014] revealed in their study of Spanish firms that technological leadership, proactive innovation strategies lead firms to engage in higher CSR commitment. They argue that technology leaders (innovative first-movers) are more active (than the firms with more reactive/defensive innovation strategies) in improving relationships with their main stakeholder through CSR activities. CSR activities are positively related to innovation performance, which suggests that the higher the level of a firm's engagement in CSR activities, the greater the possibility of achieving further innovation derived from the exploitation of its stakeholders' knowledge.

All this leads us to the next hypothesis regarding Polish innovative firms in manufacturing sector:

H2. *Firms that seek leadership in technological innovation indicate higher importance of CSR-related objectives than less successful innovative firms.*

Literature on links between CSR/SD and innovation indicates the importance of the firm's strategic approach to CSR. As compared to "traditional" innovation, the sustainable innovation must deal with stakeholders' much bigger complexity and ambiguity, which results in higher risk in innovation. Therefore, a holistic approach to innovation exploiting also the societal and environmental

needs is required to gain competitive advantage [Hall and Vredenburg 2003]. In order to reach this outcome, an appropriate level of stakeholder cohesion is needed [Minoja, Zollo and Coda 2010].

Porter and Kramer [2006] distinguish between proactive and reactive strategies and their potential (distinct) effects on innovation and subsequent value creation. Strategic CSR is associated with proactive behavior, and requires an alignment between CSR and the firm's growth strategy, which then creates a virtuous circle that allows innovation activities to develop. Porter and Kramer [2006, 2011] also argue that poor alignment between firms CSR approach and business strategies obscures the opportunities for firms to gain a sustainable competitive advantage and create shared value that also benefits society. In contrast, responsive CSR corresponds to the most basic level of CSR, which is, acting as a good corporate citizen and mitigating existing or anticipated adverse effects from business activities. The implementation of best practices, applied in responsive CSR, may contribute to continuous improvement, but they are often separated from the firms overall strategy [Bocquet et al. 2013]. These authors revealed that firms with strategic CSR profiles are more likely to innovate in both products and processes. Strategic CSR better fits the socio-economic context. Findings of Bocquet et al. [2013] study suggest that a firm with strategic CSR can sustain a competitive advantage and ensure better, longer-lasting economic performance than a firm with responsive CSR. Boehe and Cruz [2010] argue that strategic CSR seeks to create competitive advantages by positioning a firm's products in the minds of its customers by building a reputation as environmentally or socially responsible. Firms can achieve this by a total quality management approach, active stakeholder management or by CSR marketing.

As to managerial implications Vilanova et al. [2009] show that when CSR is embedded in business practices and is managed appropriately, a learning process generates innovative activities. Scholars argue that to foster product and process innovations, firms should apply formalized CSR practices and establish procedures aligned with their corporate and business strategy [e.g. Bocquet et al. 2013; Jhunjhunwala 2014]. This also implies the coordination of CSR objectives with innovation objectives. Gonzalez-Ramos et al. [2014] argue that from managerial perspective CSR should be seen as an essential part of innovation and business strategies, which implies integration of objectives set in all dimensions.

It is to note, that the context the firm is embedded in reflects firm's perception of the sustainability-related responsibilities. Various external country or industry specific factors and internal forces affect the structure of innovation objectives and relative importance of CSR/SD-related innovation objectives in a firm [e.g. Dos Santos, Svensson and Padin 2014]. Barkemeyer [2011] revealed

different priorities of sustainability-related issues between firms in developed and developing countries. The former appeared to emphasize the environmental aspects, whereas the latter emphasized relatively stronger the socioeconomic dimensions in sustainability.

There is a consensus in theory, that to achieve corporate sustainability, managers need to integrate economic, social and ecological objectives in all their business decisions. However, analyses provide evidence that many firms approach the sustainability with unclear strategies [e.g. Baumgartner and Ebner 2010]. Often the attitude to SD is corporate-centric, oriented on achieving corporate objectives, and implementing the SD/CSR activities only if they result in higher profits [Reich 2008], and integrating economic, social and ecological performances is seen as an additional management burden [Venkatraman and Nayak 2015].

In this context, taking into account the relatively low level of advancement of CSR practices in Polish firms [*CSR w Polsce 2010; Responsible Business in Poland...* 2015], we posit the following hypothesis:

H3. *CSR-related innovation objectives are not perceived as strategic components of innovation strategies in Polish manufacturing firms.*

1.2. Innovation objectives' setting – methodological aspects

From the managerial perspective, motives for innovative activities should be expressed as innovation objectives. A critical issue is how to position innovation objectives in the structure of corporate (or business unit) strategic objectives and how to achieve a consistency of objectives' structure both vertically (to keep appropriate hierarchy of objectives) and horizontally (coordinating objectives in each unit of a firm).

Several dimensions of innovation should be considered in the innovation objectives' setting, e.g.: type of innovation (process, product, marketing or organizational innovation – as defined by OECD in Oslo Manual [2005] and scope of its differentiation effect: pioneering – “first mover” vs. imitative innovation; radical vs. incremental [see Quintane et al. 2011 for classifications of innovation outcomes]. A specific question in innovation objectives setting is a difficulty of measuring the relative impact and importance of various innovations [Drucker 1973]. Moreover, various innovative activities may contribute to given outcome (therefore a complementarity and substitutability effects of innovation activities should be considered). Besides, the planned innovation can result in unexpected both positive and negative outcomes. Nowadays, firm's innovation decisions result from the pressure of various external stakeholders [Frooman 1999], which is also the case of sustainable innovation.

Oslo Manual [2005, pp. 107-109] distinguishes between innovation objectives, which concern firm's motives for innovating, and effects that concern actual observed outcomes of innovations. The same factors may play a role in both objectives and effects of innovation. In our view the innovation objectives are the required outcomes – direct, declared or actual observed (often unexpected) effects of innovative activities. These outcomes of innovation activities are the vehicles to achieve strategic business and SD-related objectives of the organization, such as: increasing the resource/competence base of the firm; gaining and maintaining competitive advantage (necessary to increase sales, open up and enter new markets, increase market share); improving corporate image and relationships to firm's stakeholders. These strategic objectives of the firm and external pressures and opportunities (competition, demand, technology advances, legal and social pressures etc.) are the drivers of innovation that affect setting of both business and CSR-related objectives.

2. Research data and methodology

The data are based on firm level data from the Polish wave of the Community Innovation Survey (CIS), for 2008-2010, conducted in 2011 by GUS (Central Statistical Office). The preliminary sample (N=7783) consist of Polish medium size and big sized enterprises from NACE sections B-E. The Community Innovation Survey is a survey on innovation activity in enterprises covering EU member states, EU candidate countries, Iceland and Norway, based on a common survey questionnaire and methodology, with reference to the third edition of Oslo Manual [2005], in order to get comparable, harmonized and high quality statistical results.

Due to its construction, where majority of questions refers to innovative enterprises, we will assume, like other researchers [Veugelers and Cassiman 2004; Mothe and Nguyen 2010], as filter variable indication of whether the company introduced new or significantly improved products or processes in 2008-2010. Within the sample of innovative firms (n=2820; 36% of the preliminary sample) 72.9% of them declare introduction of product innovation, 76.9% – the introduction of process innovation, 39.4% – marketing innovation and 47.9% – organizational innovation. Medium-sized firms constitute 67.6%, and large firms – 32.4% of the sample. The share of high tech firms amounts to 4.4%, medium technology firms – 55.8%, and low tech – 30.1% of the sample. The share of firms belonging to Polish owned capital groups accounts for 17.0%, whereas of firms – members of foreign capital groups amounts to 22%. The remaining 61.0% firms in the sample are independent firms. The most important target markets are:

domestic – for 72.2% firms, EU markets – for 23.5% firms, and other markets – for 4.3% of the firms in the sample.

In order to verify hypotheses, we apply: Chi-square with column proportions (Bonferroni method); exploratory factor analysis (Varimax rotation); One-way ANOVA (Scheffe post hoc), One-Sample T Test and GLM Univariate Analysis (Bonferroni post hoc).

3. Analysis and findings

Polish CIS 2010 survey distinguishes three clusters of innovative firms: *Current Innovators* (firms that introduced process or product innovation in 2008-2010, n=2024); *Unfulfilled Innovators* (firms that disrupted or abandoned process or product innovation in 2008-2010, n=243) and *First Mover Innovators* (firms that in 2008-2010 introduced product innovation that was first on the Polish market, first in Europe or first in the world, n=553). The proposed clustering reflects differences in level of innovation engagement and effectiveness of innovation activities.

Analysis shows statistically significant differences as far as their selected characteristics are concerned. Product innovation is declared most frequently by *First Movers*, followed by *Unfulfilled Innovators*; process innovations – by *Current Innovators* and *First Movers*, and marketing and organizational innovations – indicated most frequently by *First Movers* and *Unfulfilled Innovators*. Medium-sized firms prevail in each cluster; the highest percentage of big firms appears in *First Mover* cluster. Firms in medium and low technology industries prevail in each cluster (with the highest percentage of medium technology firms in *First Mover* cluster). The *Unfulfilled Innovators* gain the highest share in high-tech industries. Firms – members of foreign owned capital groups prevail over firms that belong to Polish capital groups in all clusters. It is to note, that the highest percentage of firms – members of foreign capital groups is identified in the *First Mover* cluster. Independent firms dominate in the *Current Innovators* and *Unfulfilled Innovators* clusters. *First Movers* declare the sales on local markets less frequently than the other clusters, whereas they indicate –more frequently than other firms – “the other markets” (i.e. other than domestic and remaining EU markets) as the most important target markets. The importance of EU markets for the entire cluster does not differ significantly (see Table 1 for details).

Factor analysis of innovation objectives, applied in order to reduce the number of variables, using Varimax rotation (KMO=0.887; $\chi^2(153)=5444.09$; $p<0.001$) allowed us to determine 4 underlying factors which explain 59.556% of the Variance. The first factor named “process and CSR innovation objectives” ex-

plains 21.386% of the Variance (Crombach's $\alpha = .895$), the second one – “organizational innovation objectives” explains 15.782% of the Variance (Crombach's $\alpha = .791$), the third one – “product related market objectives” explains 11.601% of the Variance (Crombach's $\alpha = .636$), and the fourth one – “marketing innovation objectives” explains 10.786% of the Variance (Crombach's $\alpha = .694$).

The factor “process and CSR innovation objectives” consists of 6 items: improvement of safety and hygienic of workplace, reduction of consumption of materials and energy, reduction of environmental impacts or improvement of health and safety, reduced unit labour costs, improved flexibility of production or service provision, and increased capacity of production or service provision. The factor “organizational innovation objectives” comprises 5 items (as an organizational innovation outcomes): improvement of quality of goods and services, improved flexibility of production or service provision, reduction of time to respond to customer needs, reduced costs per production unit, and improved communication and interaction among different business activities. The factor “product related market objectives” consists of 3 items: an increased products' range, new markets entry, and improved quality of goods and services. The factor “marketing innovation objectives” comprises 3 items: introduction of products for new segment of customers, new markets entry, and increase or maintaining of market share (as marketing innovation outcome) – see Table 2 for details.

In the second step in rotated factor analysis ($KMO=0.858$; $\chi^2(15)=10132.99$; $p<0.001$) we have determined two additional underlying factors (within the factor “process and CSR innovation objectives”), namely: “process innovation objectives” with the explained Variance of 39.095% (Crombach's $\alpha =.831$), and “CSR-related objectives” with the explained Variance of 38.791% (Crombach's $\alpha=.856$). The factor “process innovation objectives” comprises 3 items: improved flexibility of production or service provision, increased capacity of production or service provision, and reduced unit labour costs. The factor “CSR-related objectives” consists of 3 items: reduction of consumption of materials and energy, improvement of safety and hygienic of workplace, and reduction of environmental impacts or improvement of health and safety (see Table 3).

Analysis of declarations of process innovation objectives shows statistically significant contrasts for all clusters of innovative firms. The highest mean is observed for *First Movers* and the lowest for *Current Innovators*.

As for CSR related objectives, the highest mean is observed for *First Movers* and the lowest for *Unfulfilled Innovators*. There is no significant difference between *First Movers* and *Current Innovators*, whereas statistically significant contrast exists between those two clusters and *Unfulfilled Innovators*. We also

observe significant difference between the declarations of CSR related objectives by *First Movers* and the whole sample ($p < 0.001$).

In case of marketing and organizational innovation objectives, the highest indications for importance are revealed for *First Movers*, however no significant differences are observed among all three clusters. As for product related market objectives, the highest mean is observed for *First Movers* and the lowest for *Current Innovators*. There is no significant difference between *First Movers* and *Current Innovators*, whereas statistically significant contrast exists between those two clusters and *Unfulfilled Innovators* (see Table 4 for details). We also observe significant difference between the indications of market objectives by *First Movers* and *Current Innovators* and the whole sample ($p < 0.001$).

GLM Univariate Analysis allowed us to address the issue of innovation objectives hierarchy for all investigated clusters.

Analysis of *Current Innovators* shows that the most important innovation objectives are product related market objectives, process innovation and organizational innovation objectives. For all revealed innovation objectives, the hierarchy is characterised by statistically significant differences.

Although, in the case of *First Movers* the hierarchy for the most important innovation objectives is slightly different than in the previous cluster, the differences between process innovation objectives and product related market objectives are not statistically significant. Moreover, differences between marketing innovation objectives and CSR related objectives are not statistically significant. We observe differences among those four innovation objectives and organizational innovation objectives.

For *Unfulfilled Innovators* the most important innovation objectives include process innovation, product related market objectives and marketing innovation objectives. There are no significant differences between importance of process innovation objectives and product related market objectives, as well as among three remaining objectives. The only differences are revealed between product related market objectives and marketing innovation objectives (see Table 5 for details).

4. Discussion

Based on the obtained results we reveal that product related market objectives and process innovation objectives are ranked the highest for all clusters of firms. This ranking may support the opinion that Polish innovative firms still rely to big extent on process innovation in order to maintain the cost advantage

in their competitive strategies, though differentiation objectives turn out to be equally important [Stojcic, Hashi and Telhaj 2011].

The findings of the study indicate that the CSR-related innovation objectives are linked to process innovation objectives, which suggests that CSR is related to the cost-based competitive advantage rather than to differentiation-based advantage of Polish firms in manufacturing sector. The CSR-related innovations are oriented towards reduction of consumption of material and energy, which reflects attempts to build both cost advantage (a business objective) and to achieve ecological goals. SD challenges are addressed by other significant CSR-related objectives: improvement of safety and hygienic of workplace, and reduction of environmental impacts or improvement of health and safety. Indications for those objectives may suggest that Polish firms intend also to build a positive image, a reputation of socially and ecologically responsible organizations, which may also be perceived as a firm differentiating factor. However, basing on our findings we are not able to reveal the direct links between CSR-related innovation objectives and differentiation-based competitive advantage. Thus, we conclude that our findings support hypothesis **H1b**: CSR is related to cost-based competitive advantage. We reject, however, hypothesis **H1a** assuming links between CSR and firms differentiation-based competitive advantage. The stated earlier, the latter is advocated in studies conducted in mature market economies.

We revealed that indications of importance of all five groups of innovation objectives are the highest in *First Movers* cluster, which is not surprising, as business strategies are based on innovation performance. The declared importance of process innovation objectives, CSR-related innovation objectives and product related market objectives is significantly different from those in remaining clusters. The declared importance of CSR-related innovation objectives is definitely higher in first-mover firms oriented towards technology leadership than in technologically less advanced innovative firms grouped as *Current Innovators* and *Unfulfilled Innovators*. Therefore, our findings support the hypothesis **H2** suggesting that firms seeking a leadership in technological innovation indicate higher importance of CSR-related objectives than less successful innovative firms. This research outcome is in line with results of studies that revealed positive relationships between technological leadership (proactive innovative strategy) and CSR engagement of firms [e.g. Guadamillas and Donate 2011; Gonzalez-Ramos, Donate and Guadamillas 2014].

Our study shows that CSR-related innovation objectives are ranked the lowest for all clusters of innovative firms. Moreover, looking at the differences between declared importance of innovation objectives in analyzed clusters of firms, we revealed a relatively higher degree of internal consistency of innova-

tion objectives for *First Movers* and *Unfulfilled Innovators* than for *Current Innovators* (the by far largest cluster in the sample). In the *First Movers* cluster, where the CSR-related objectives are ranked the highest in the whole sample, those objectives are relatively stronger linked to marketing innovation objectives than to process- and product-related market innovation (the latter indicated as the most important). In *Unfulfilled Innovators* cluster CSR-related objectives are closer linked to marketing and organizational innovation objectives than to process- and product-related innovation objectives.

All this shows a rather low level of integration of CSR-related innovation objectives with innovation objectives aimed at building the firms competitive advantage. These results lead us to the conclusion (supporting hypothesis **H3**) that CSR-related innovation objectives are not perceived as strategic components of innovation strategies in Polish manufacturing firms. Hence, Polish firms do not exploit all opportunities to build competitive advantage from the appropriate combination of CSR and innovation [Porter and Kramer 2006, 2011; Bocquet et al. 2013].

The latest report on SD/CSR in Poland [*Responsible Business in Poland...* 2015] provides additional support for hypothesis H3. Report reveals that 96% of Polish large and medium-sized firms believe that it is the responsibility of the business to respond to social and environmental challenges. This view is commonly shared irrespective of the current level of CSR commitment. Among firm's SD/CSR responsibilities, the respondents recognized environmental protection, support for the development of local communities as well as the issues of science and education as the most important topics. Although, 77% of the respondents admitted that doing business in line with the CSR concept had a good effect on financial performance, the effects of CSR activities are usually not precisely measured. It is also to note, that improvement of the firm's image on the market (52%) is a top rated benefit of incorporating CSR in business activity. On the other hand, Polish firms are among worst performers as far as the disclosing of basic information on their impact on society is concerned. These paradoxes provide additional arguments for the opinion of lacking strategic approach to CSR in Polish firms.

Conclusions

Literature that combines a perspective on SD/CSR and innovation is scarce [Öberg 2015]. Moreover, the studies devoted to this issue based on CIS data are uncommon [Leiponen and Helfat 2010], and the research on relationships between CSR-related objectives and firms' innovation objectives in Poland is still

missing. To our knowledge, this is the first study SD/CSR and innovation based on latest available CIS micro-data for Polish firms. Research results have the advantage that they are derived from a large representative sample of big and medium-sized firms.

Our analysis contributes to the discussion on relationships between SD/CSR and innovation, as we reveal the links between CSR-related objectives and process innovations leading to cost-based rather than differentiation-based competitive advantage. The latter is stressed in the literature discussed earlier in the paper. In this context, we show the specific feature of CSR in technologically less advanced and less innovative economies. We show that the better performing innovators indicate higher importance of CSR-related objectives than firms less successful in innovation, which may also suggest that for innovation leaders it is easier to achieve synergistic effects in their innovation strategies. Finally, we argue that CSR is still not fully embedded in corporate strategies of Polish firms. Hence, those firms are still not able to use the opportunities for increasing their competitive advantage resulting from strategic CSR.

We are aware that the study is not free from limitations. The first one is the structure of CIS questionnaire itself, which does suggest the linkages between certain types of innovation and their outcomes to the respondents. Secondly, it may not be clear for the respondents to identify outcomes directly related to product innovation. Moreover, the list of innovation objectives proposed by OECD does not distinguish between direct innovation outcomes and broader strategic objectives.

Scope of this article does not allow us to present the differences in firms' declarations on innovation objectives, including CSR-related ones, influenced by various characteristics of firms mentioned earlier. Further research to explore relationships between innovation objectives and firm size, capital group membership, firms' industry affiliation, technological intensity, new product sales intensity, and firms' target markets would add value to the research. In fact, we intend to undertake this study.

Table 1. Sample characteristics

Sample characteristics	Clusters						Total	
	Current Innovators		First Mover Innovators		Unfulfilled Innovators			
	n	%	n	%	n	%	N	%
<i>I</i>	2	3	4	5	6	7	8	9
Introduction of product innovation	1318	65.1a	553	100.0b	184	75.7c	2055	72.9
Introduction of process innovation	1584	78.3a	418	75.6a. b	167	68.7b	2169	76.9
Introduction of marketing innovation	680	33.6a	319	57.7b	111	45.7c	1110	39.4
Introduction of organizational innovation	887	43.8a	344	62.2b	121	49.8a	1352	47.9

Table 1 cont.

	1	2	3	4	5	6	7	8	9
Firms size	Medium	1442	71.2a	305	55.2b	158	65.0a	1905	67.6
	Large	582	28.8a	248	44.8b	85	35.0a	915	32.4
Technology level	Not classified	250	12.4a	6	1.1b	18	7.4a	274	9.7
	Low technology	664	32.8a	120	21.7b	65	26.7a. b	849	30.1
	Medium technology	1048	51.8a	394	71.2b	132	54.3a	1574	55.8
	High technology	62	3.1a	33	6.0b	28	11.5c	123	4.4
Capital group	Polish capital group	307	15.2a	124	22.4b	47	19.3a. b	478	17.0
	Foreign capital group	416	20.6a	153	27.7b	50	20.6a. b	619	22.0
	Independent firm	723	64.3a	277	49.9b	97	60.1a	1097	61.0
Share of new product sales in total sales	Low share	693	52.9a	240	43.5b	94	51.6a. b	1027	50.3
	High share	616	47.1a	312	56.5b	88	48.4a. b	1016	49.7
Target markets	Domestic market	494	24.4a	40	7.2b	45	18.5a	579	20.5
	EU	544	26.9a	111	20.1b	63	25.9a. b	718	25.5
	Other markets	986	48.7a	402	72.7b	135	55.6a	1523	54.0
The most important target market	Domestic market	1484	73.3a	369	66.7b	183	75.3a	2036	72.2
	UE	474	23.4a	139	25.1a	49	20.2a	662	23.5
	Other markets	66	3.3a	45	8.1b	11	4.5a. b	122	4.3

* Each subscript letter denotes a subset of cluster categories whose column proportions (Bonferroni method) do not differ significantly from each other at the .05 level.

Source: Own calculations in SPSS 21, based on results of CIS 2008-2010 for Poland.

Table 2. Rotated Component Matrix^a, step 1

Innovation objectives	Factor			
	Process and CSR innovation objectives	Organizational innovation objectives	Product related market objectives	Marketing innovation objectives
1	2	3	4	5
Improve safety and hygienic of workplace	.808	–	–	–
Reduce consumption of materials and energy	.771	–	–	–
Reduce environmental impacts or improve health and safety	.757	–	–	–
Reduce unit labour costs	.750	–	–	–
Improve flexibility of production or service provision	.626	–	–	–
Increase capacity of production or service provision	.624	–	–	–
Improve quality of goods and services (as organizational innovation outcome)	–	.731	–	–
Improve flexibility of production or service provision (as organizational innovation outcome)	–	.722	–	–
Reduced time to respond to customer needs (as organizational innovation outcome)	–	.714	–	–

Table 2 cont.

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Reduce costs per production unit (as organizational innovation outcome)	–	.688	–	–
Improve communication and interaction among business activities (as organizational innovation outcome)	–	.656	–	–
Increase range of goods and services	–	–	.792	–
Enter new markets	–	–	.713	–
Improve quality of goods and services	–	–	.554	–
Introduce products for new segment of customers (as marketing innovation outcome)	–	–	–	.785
Enter new markets (as marketing innovation outcome)	–	–	–	.780
Increase or maintain market share (as marketing innovation outcome)	–	–	–	.711

* Extraction Method: Principal Component Analysis.

^a Rotation converged in 5 iterations.

Source: Own calculations in SPSS 21, based on results of CIS 2008-2010 for Poland.

Table 3. Rotated Component Matrix, step 2

Innovation objectives	Factor	
	1a. Process innovation objectives	1b. CSR related objectives
Improve flexibility of production or service provision	.861	–
Increase capacity of production or service provision	.837	–
Reduce unit labour costs	.664	–
Reduce consumption of materials and energy	–	.897
Improve safety and hygienic of workplace	–	.840
Reduce environmental impacts or improve health and safety	–	.648

* Extraction Method: Principal Component Analysis.

Source: Own calculations in SPSS 21, based on results of CIS 2008-2010 for Poland.

Table 4. Underlying factors perception, by clusters

Underlying factors	n	Mean	Std. Deviation	95% Confidence Interval for Mean		
				Lower Bound	Upper Bound	
<i>1</i>		<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>
Process innovation objectives	<i>Current Innovators</i>	2024	1.94a	1.05	1.89	1.98
	<i>First Mover Innovators</i>	553	2.56b	0.65	2.50	2.61
	<i>Unfulfilled Innovators</i>	243	2.14c	0.98	2.02	2.27
	Total	2820	2.08	1.01	2.04	2.11
CSR related objectives	<i>Current Innovators</i>	2024	1.62a	0.98	1.58	1.67
	<i>First Mover Innovators</i>	553	1.85a	0.90	1.78	1.93
	<i>Unfulfilled Innovators</i>	243	1.54b	1.02	1.41	1.67
	Total	2820	1.66	0.97	1.62	1.70

Table 4 cont.

1	2	3	4	5	6	7
Marketing innovation objectives	<i>Current Innovators</i>	680	2.00	0.79	1.95	2.06
	<i>First Mover Innovators</i>	319	2.21	0.68	2.13	2.28
	<i>Unfulfilled Innovators</i>	111	2.09	0.71	1.95	2.22
	Total	1110	2.07	0.76	2.03	2.12
Organizational innovation objectives	<i>Current Innovators</i>	887	2.10	0.69	2.05	2.15
	<i>First Mover Innovators</i>	344	2.30	0.59	2.24	2.36
	<i>Unfulfilled Innovators</i>	121	2.09	0.63	1.97	2.20
	Total	1352	2.15	0.67	2.11	2.19
Product related market objectives	<i>Current Innovators</i>	2024	2.00a	0.93	1.96	2.04
	<i>First Mover Innovators</i>	553	2.51a	0.59	2.46	2.56
	<i>Unfulfilled Innovators</i>	243	2.12b	0.91	2.00	2.23
	Total	2820	2.11	0.89	2.08	2.15

* Each subscript letter denotes a subset of cluster categories whose column proportions (Scheffe method) do not differ significantly from each other at the .05 level.

** Respondents had to answer at three level scale from 3 ('very important') to 1 ('not much important').

Source: Own calculations in SPSS 21, based on results of CIS 2008-2010 for Poland.

Table 5. Innovation objectives hierarchy, by clusters

Innovation objectives hierarchy, by clusters		Mean	Std. Deviation	n
<i>Current Innovators</i> n=2024	Product related market objectives	2.39a	0.73	433
	Process innovation objectives	2.34b	0.83	433
	Organizational innovation objectives	2.22c	0.65	433
	Marketing innovation objectives	2.06d	0.79	433
	CSR related objectives	1.92e	0.88	433
<i>First Mover Innovators</i> n=553	Process innovation objectives	2.69a	0.56	245
	Market objectives	2.67a.b	0.49	245
	Organizational innovation objectives	2.37c	0.57	245
	Marketing innovation objectives	2.27d	0.66	245
	CSR related objectives	2.15d.e	0.76	245
<i>Unfulfilled Innovators</i> n=243	Process innovation objectives	2.48a	0.68	74
	Market objectives	2.45a.b	0.60	74
	Marketing innovation objectives	2.12c	0.76	74
	Organizational innovation objectives	2.06c.d	0.64	74
	CSR related objectives	1.89c.d.e	0.82	74

* Each subscript letter denotes a subset of cluster categories whose column proportions (Bonferroni method) do not differ significantly from each other at the .05 level.

** The last column in Table 5 shows the number of firms from each cluster that indicated all the objectives from all innovation categories. The ranking is based on their indications.

Source: Own calculations in SPSS 21, based on results of CIS 2008-2010 for Poland.

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