Social Innovation as a Paradigm of Change in Organisational Management

Anna Rybak
University of Technology, Czestochowa, Poland
Anna.rybak@pcz.pl

Abstract: The paper contributes to the debate on the future of social innovation (SI). The aim of the research was to determine the influence of the subsidy market leader on the valuation of SI by organizations participating in the PROO and NEWFIO competitions. The Stackenberg leadership model was used for this purpose. The research has shown that organisations applying for grants, in most cases, follow the leader, regardless of the competition that sets the price (maximum grant value) for SI. In the future, use of game theory to describe the role of a leader allows for the strengthening and better adjustment of competition offers to future social and technological challenges, e.i. “Green Deal” for Industry 5.0.

Keywords: Social Innovation, Green Deal, Industry 5.0, non-profit organisations.

1. Introduction

Social innovation (SI) has become an issue of great interest to researchers and scientists. The tasks that are set for SI include practical solutions to social problems such as access to education, culture, health care, but also protection of the natural environment or professional and environmental integration of excluded people (both in terms of where they live, the environment they come from, or whether they are an ethnic and/or national minority). Such a wide range of tasks to be solved by SI poses a colossal challenge for actors and organisations working for the benefit of society. The debate on the paradigms of exchange related to the “Green Deal” within Industry 5.0, or Green Industry (European Commission 2022, 2021), forces innovators to align society and the integration of people with industry so that the challenges of sustainable development, resource-efficiency or the circular economy do not negatively impact and reinforce divisions within economies and nations. As Banholzer (2021) stated, society, and thus also politics, are in the midst of a shift that, given the crisis phenomena caused by pandemics, climate change, as well as foreign policy conflicts between the economic and technological blocs of the US, Russia, China and Europe, at the same time highlights the need to prepare society for the coming changes. To this end, SI should be used as an incubator to support government agencies in improving various stakeholders’ social and organisational integrity so that the coming changes are socially acceptable while not expanding the number of socially excluded groups. This paper is framed within the issue of SI leadership’s role as a facilitator of change in organisational management. The research hypothesis put forward by the author is: H: Organizations are following the donation leader in order to evaluate the amount of SI.

The Stackelberg and Nash models will be used to verify the hypothesis.

The notion of paradigm is ambiguous and has been so since the beginning of Kuhn-inspired discussion on this topic. A paradigm is assumed to be a particular set of general, coherent cognitive assumptions shared by most researchers in a given scientific discipline. In the contemporary definition of a paradigm, it is often emphasised that it is a set of beliefs, theories, and empirical research methodologies shared by the scientific community. These communication practices serve as a basis for future research efforts of scientists in a given discipline (Faria et al.2011).

The paradigm provides a framework for knowledge growth and theory refinement in cumulative, incremental development periods. However, there are also revolutionary, discontinuous changes in science caused by the mismatch between theory and researched reality. According to Kuhn (1970), a manifestation of revolution is a paradigm - shift, replacing the “old” with a “new” paradigm (Czkan 2011).

The theme of paradigm shifts in organisational management undertaken is a consequence of the introduction, Industry 5.0, based on three main pillars, namely (Buchinger 2021):
- People-oriented: Encourages diversity, diverse talents and empowerment;
- Resilience: Organised adaptability and the ability to cope with uncertainty and change;
- Sustainable development: Environmental responsibility and preserving the ecological niche people need for future generations.
The formulated new paradigms are a “response” to these often breakthrough changes, which in turn imply revolutionary changes in the principles of functioning and tools used in managing organisations. Characteristically, regardless of the author proposing a new paradigm (Lies 2020, Howald et al. 2016, Bathelt and Glückler 2011), it most often emphasises the role of flexibility, the need to react quickly to changes, to improvement or simply the need for innovation. The organisational paradigm determines a specific model of the organisation’s functioning. If it undergoes radical changes, it entails changes in many areas of activity (if not all), including - in the processes of generating product, process and management innovations, or market positioning (changes resulting from social expectations and environmental challenges). We are dealing with such radical changes concerning the organisation paradigm in the introduction of Industry 5.0. The unique role of innovations also lies in the fact that they may not only imply a specific stream of innovations of other types but also change the model (and philosophy) of the activity itself (Kraśnicka 2018). The inclusion in the SI change paradigm stems from the conviction that social sensitivity is an essential element in creating a new organisational culture in contemporary organisations, especially in terms of the concept of the “Green Deal” for Industry 5.0.

The concept of the paradigm of change adopted by the author is based on the following assumptions:

- The organisation’s environment is randomly disordered, but even an insignificant change caused by SI directly affects the entire environment - deterministic chaos;
- Networks of relationships determine the actions of entities, these networks are unstable, but some exert more influence than others hence the introduction of the SI Leader - the logic of relationships;
- Models of links between organisations depend on the degree of coordination and reciprocity of relationships - leadership models;
- Research methods refer to change, the depth and quality of change, and its impact on organisations and the environment, while being consistent and not mutually exclusive (complimentary) while adapting to unexpected changes.

It is clear from the above that radical changes are expected in management science due to a new understanding of the role an organisation should play in social life. In the following discussion, we will look at the role of the SI leader in this change.

2. Theoretical background

The topic of innovation has been introduced into the language through solutions in industry and services. A broad approach to innovation is a novelty in specific temporal and spatial conditions, presented in culture, economics, technology or nature. A narrow approach to the definition of innovation introduces a semantic framework for the concept of novelty in the form of subject restrictions (what they concern, e.g. the economy, society, or organisation), subject restrictions (what they include, e.g. the product, the environment, the members of the organisation), temporal limits (within a limited period of time, e.g. within the last 3 years, etc.), and uniqueness and discontinuity. (Stanisławski 2017) According to the above, innovation is a change that modifies activities of a permanent nature, transferring solutions to selected areas, constantly changing their usefulness, dependence or their perception. For an organisation to innovate effectively and sustainably, it must focus on four key factors to sustain change, namely: culture, collaboration, strategy and systems (Schröder 2013).

The concept of SI has become central to policy debates at national and supranational levels. In the United States, President Obama established the Office of SI and Civic Participation at the White House in 2009 to engage citizens and civil society in finding new ways to solve social problems. At the European level, SI covers a range of policy areas. Under the Social Innovation Initiative, it has been developed to mainstream SI policy in the Horizon 2020 Strategic Framework for Research and Innovation (Massey and Johnston-Miller 2016). SI is an innovation paradigm (Have and Rubalcaba 2016, Nicholls and Murdock 2012) that recognises that innovation is not only about developing new technologies and business models but also about ways of directly addressing social problems and grand societal challenges (Ghazinoory et al. 2020, Pol and Ville 2009). SI carried out within business organisations can be defined as the active contribution of actors to improving the governance capacity of society (European Commission 2011). Business organisations can thus be persuaded to abandon their belief in the market as the overarching mechanism for allocating resources efficiently and instead be persuaded to develop the capacity to identify and find solutions to solve or prevent future unmet social needs. Moreover, to improve existing solutions to achieve a transformative change in institutional contexts and social practices (Wijk et al. 2019, Cajaiba-Santana 2014) in order “to improve either the quality or the quantity of life,” especially for those living on the margins of society (Pol and Ville 2009.). If we focus on SI as a critical contributor to a better
contribution of business to society, some specifications and concrete proposals of what is meant by SI are necessary. (Martinez) According to researchers (e.g. Manning and Vavilov 2022, Wijk et al.2019, Cajaiba-Santana 2014), SI is a multi-level process of developing, implementing and scaling innovative solutions to solve social problems in specific institutional contexts. In contrast, Phillips et al. (2008) considers SI to be “a new solution to a social problem that is more effective, efficient, sustainable or equitable than existing solutions and for which the value created belongs primarily to society as a whole rather than to individuals”. As Cajaiba-Santana (2014) emphasised, “the outcomes of SI can be diverse, taking the form of new institutions, new social movements, new social practices or different collaborative structures”. The Locus SI is not a specific organisation but usually a social system where innovators live (Phillips et al.2015). When introducing SI, it is expected that all parties involved will be beneficiaries. Some organisations can play an essential role in mobilising and coordinating key socially engaged stakeholders. Such intermediaries can be government agencies (Audretsch et al.2021), non-profit organisations (Maclean et al.2013), social enterprises (Phillips et al. 2019), universities (Bellandi et al.2021; Arocena and Sutz 2021) and corporations (Mirvis and Googins 2018, Dionisio and Vargas 2020). They are motivated to engage in SI by their governmental mandates (e.g. development agencies), their social mission and responsibilities to supporters (e.g. NGOs) or stakeholder expectations (e.g. companies). Because government institutions tend to focus on creating social value for various disadvantaged beneficiaries, they are usually not designed to benefit the innovator primarily but the social groups with whom the innovator works. By introducing SI into an organisation, the very context in which collaboration based on engaging with social needs is changed, but also for the benefit of the innovators. Through its core purpose, SI changes the organisation itself, taking into account the social nature of its operations. Later in this paper, we will introduce a model describing the role of the SI leader in shaping change in organisational management.

3. Research methodology

3.1 Research model

Management science is searching for an appropriate research model that can reliably represent and interpret the changes taking place. This paper uses the strategic games of the Stackelberg (2011) leadership model to describe behaviour in the SI market. On the one hand, the model features organisations that dispose of financial resources to implement SI-related projects, and on the other hand, organisations that implement them. The common market for these organisations is services and products that meet societal needs, which are a challenge for SI. The presented issues generate the problem of describing the model and trying and solving it using appropriate tools. These problems arise in situations that combine both the element of conflict, conflicting interests (the organisation that has the resources is interested in having as many problems as possible solved within the competition) and aspirations, as well as the element of cooperation, the need to cooperate and establish a common strategy. The model describes the phenomenon of duopolistic competition. The leader knows the follower’s potential response, and both players make a quantitative decision regarding the planned size of the maximum grant at a given level of demand. In the Stackelberg game model, the leader is always in a privileged position (first-mover advantage), being able to determine such a size, which will allow him to have a more significant influence on the market than the follower, whose (rational) response is somehow forced, by the initial decision of the leader.

Formally, this can be written as follows. Let $x_L$ and $x_F$ denote player A’s (leader) and B’s (follower) grant amounts. The functions $f_i(x_L, x_F)$ and $f_i(x_L, x_F)$ denote the market shares that players obtain due by setting the grant levels at $x_i$ and $x_F$. Player A, the leader, knows that as a result of setting his grant at the level $x_L$, player B will set such an amount of capital demand in response: $x_F = r_F(x_L)$, for which the follower’s market share function $f_F(x_L, x_F)$ will take the maximum value:

$$\max_{x_F} f_F(x_L, x_F) = f_F(x_L, r_F(x_L)) \quad (1)$$

in which $r_F(x_L)$ denotes the so-called follower response function to a specific decision $x_L$ by the leader. Knowing the nature of the follower’s response (by knowing his reaction function $r (%)$, the leader determines the value of the grant $x_L$ which, taking into account the response of the follower, will maximise his market share:

$$x_L = \arg \max_{x_L} f_L(x_L, r_F(x_L)) \quad (2)$$

The leader’s advantage is sometimes interpreted as an informational advantage: the leader knows what the follower’s response will be and has the possibility of communicating his decision or making an irrevocable commitment to make a specific move. With this interpretation, the leader, de facto, does not have to make a
move first but only makes an irrevocable and credible declaration of choosing a specific strategy (choosing such
determinants of the contest that the follower will match the offer). Then the follower's move, which is, in fact,
the first move in the game, must depend on the declared move of the leader. Hence the formulated
mathematical model of the two parties in the Stackelberg game. Both the resource of the leader and the
followers can continuously adjust their strategies to maximise their reward (a grant of an appropriate amount).
In particular, the goal of the Stackelberg game is to find a Nash equilibrium. Nash equilibrium is the optimal
outcome of a game in which no player has an incentive to deviate from his strategy. At the same time, no player
can unilaterally change his strategy without affecting the others, namely (Gintis 2009):

\[ u_i(\sigma_i^*, \sigma_{-i}^*) \leq u_i(\sigma_i, \sigma_{-i}) \text{ } \forall i = 1, \ldots, n, \forall \sigma_i \in \Sigma_i \]  

where:

- \( u_i : A \rightarrow R \) - payoff (payoff function) of player \( i \), \( i = 1, \ldots, n \);
- \( \sigma_i : \) Mixed player \( i \) strategy game \( \sigma_i = (\sigma_{i1}, \sigma_{i2}, \ldots, \sigma_{imi}) \);
- \( \sigma_{-i} = (\sigma_1, \sigma_2, \ldots, \sigma_i, \ldots, \sigma_N) \) - strategy profile of all players except player \( i \).

The Nash equilibrium creates a dependency between players - the leader has the resources, and he dictates the
game's rules. At the same time, the followers must adapt their resources and strategy to the declarative rules
of the market.

Selecting appropriate strategies where the payout \( (\sigma_{-i}) \) will be satisfactory for all players is a challenge for the
leader who, through the maximum value of the grant, forces the followers to adopt appropriate organisational
and management strategies. The inclusion of SI in the grant forces followers to adapt their strategy to social
needs so that these are best met. Such an approach will strengthen organisations, make them socially sensitive
and change the management of available resources. It is also important to remember the Nash equilibrium,
where all market (game) participants will be satisfied with the optimal solution.

3.2 Database

To test the Stackelberg leadership model, we will use the SI grant market, implemented in Poland by the National
Institute of Freedom - Civil Society Centre. It is a government executive agency responsible for supporting civil
society, public benefit activities and volunteering. It serves NGOs by directing substantive and financial support
programmes to them (Ustawa et al.2017). Two programmes were used for data analysis, namely: the
Government Programme for the Development of Civic Organisations (PROO) (Rzadowy et al.2018) and the Civic
Initiatives Fund Programme (NOWEFIO) (Program et al.2017). Both programmes are planned to be implemented
within 3 years, starting from winning the grant competition, with the organisations deciding on the project task's
length and implementation (Rzadowy et al.2021, 2022).

The main objective of PROO is to support the institutional development of civil society organisations and
increase their participation in public life and the dissemination of democratic norms of citizenship. The
competitions selected for analysis were PROO Priority 1a: Support for Mission Activities and Institutional

Tasks implemented under Priority 1a consist in increasing the participation of civic organisations in public life
and dissemination of democratic standards of citizenship, supporting the institutional development of non-
governmental organisations, including building stable foundations for their further functioning, creating
perspective action and financing plans, raising standards of work and organisation management. Priority 4 -
supporting initiatives for institutional development of think tanks - non-profit civic organisations with analytical
and research profiles, functioning parallel to formal political processes (both national and regional).

The NOWEFIO programme aims to increase the involvement of citizens and non-governmental organisations in
public life by improving social self-organisation, increasing the importance of the civic sector in public life and
institutional strengthening the civic sector in Poland. The following priorities were selected for analysis: Priority
2, within which social activity for the common good implemented by citizens acting in non-governmental
organisations is supported, as well as Priority 3: Social organisations in public life, and Priority 4: Strengthening
the competencies of civic organisations. Projects implemented under Priority 1 should enhance civic activity and
self-organisation, contributing to building and increasing social capital and contributing to social responsibility.
Implementation of Priority 3 aims to increase the presence of civic organisations in public life, support civic
dialogue and consultation processes, create a forum of public debate, and build the potential of organisations by shaping the image of civic organisations in public space. Under Priority 4, the implemented projects are to contribute to the improvement of management in civic organisations, building their structures, creating and improving of their resources, creating and developing strategies for their operation (Program et al 2020).

Both the PROO and NOWEFIO programmes support the implementation of social tasks within non-governmental organisations. The functions implemented under the Priorities are of an SI nature. They respond to social needs and force organisations to adopt an innovative approach to the objectives and strategy of their social activity. The selection of appropriate determinants during competitions allows for meeting present and future challenges related to social needs.

The research involves non-governmental organisations registered in Poland as associations, foundations, social enterprises, sports clubs, societies, voluntary fire brigades, and rural housewives’ circles. The sample selection is purposeful, as the respondents include representatives of all groups of non-profit organisations operating in Poland.

3.3 Results
The study used data from PROO and NOWEFIO competitions for the 2022 and 2021 editions. The amount of support in PROO and NOWEFIO programmes, as well as the marginal conditions (time and financial) of the grant, the leader set at different levels, which allowed to verify the hypothesis of the Stackelberg leadership model and the Nash equilibrium model.

Table 1: Amount of support and marginal conditions for the PROO Programme in 2022-2021 (thousand PLN)

<table>
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<tr>
<th>PROO</th>
<th>2022</th>
<th>2021</th>
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<tbody>
<tr>
<td></td>
<td>Total Grant Request</td>
<td>Total Grant per year</td>
</tr>
<tr>
<td></td>
<td>min</td>
<td>max</td>
</tr>
<tr>
<td>Priority 1a</td>
<td>150</td>
<td>600</td>
</tr>
<tr>
<td>Priority 4</td>
<td>150</td>
<td>300</td>
</tr>
</tbody>
</table>

Table 2: Amount of support and marginal conditions for the NOWEFIO Programme in 2022-2021 (thousand PLN)

<table>
<thead>
<tr>
<th>NOWEFIO</th>
<th>2022</th>
<th>2021</th>
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<tbody>
<tr>
<td></td>
<td>Total Grant Request</td>
<td>Total Grant per year</td>
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<tr>
<td></td>
<td>min</td>
<td>max</td>
</tr>
<tr>
<td>Priority 2</td>
<td>50</td>
<td>300</td>
</tr>
<tr>
<td>Priority 3</td>
<td>50</td>
<td>300</td>
</tr>
<tr>
<td>Priority 4</td>
<td>150</td>
<td>400</td>
</tr>
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Considering the grants market as the place where the strategic game is played, it is reasonable to assume that the followers’ behaviour will follow the leader, i.e. the grant amounts applied for by the organisations will be equal to the maximum values in each Programme.

We will be the first to analyse the PROO programme. The entities applying for grants had to adjust their projects to the values of the amount and time. During the analysed period in the PROO competition, the final criteria changed in particular priorities (Table 1). And so in 2022. In 2022 the requirements of minimum and maximum values were established for specific years of project duration, as well as extreme values for costs of the entire undertaking. In 2021 and 2020, the marginal criteria for the costs of tasks implemented under the projects had limits for the full grant, as well as minimum time limits. The distributions by year are shown in Figures 1 and 2.
Comparing the distributions of the PROO programme in 2021 and 2022, it can be seen that the majority of organisations chose the maximum grant amount for the given priorities. The distribution for the 2022 edition is interesting (Fig.1), as some organisations set the capital requirement at 200 thousand PLN, which does not coincide with the maximum grant value. This gives grounds to assume that other considerations guided these organisations. One of the reasons may be the desire to participate in the next edition, and it is conditioned by the end of the current project, which will allow these organisations to free up resources and prepare for the next competitions (in 2022, the leader did not set a time limit for the project). If time constraints were introduced (2021 edition), organisations unequivocally chose the maximum value option (Fig.2). Hence, the conclusion is that the organisations calculate project costs by considering the time and financial criteria. Leaders in subsequent editions should consider this when setting the requirements for competitions.

The PROO and NOWEFIO programmes differed in their approach to SI implementation. The PROO programme reinforces the organisation’s strategic goals, while the NOWEFIO programme focuses on realising SI tasks. It seems interesting to ask whether organisations have changed their strategy for determining the amount of capital required?

Figure 1: Distributions of requested grant amounts in the PROO Programme in 2022

Figure 2: Distributions of requested grant amounts in the PROO Programme for Priorities 1a and 4 in 2021
When analysing the number of grants from the NOWEFIO Programme (Fig. 3), both in 2021 and 2022, one can clearly see the limits between successive maximum values of grants. Thus, in 2022, three boundaries concentrated the values of maximum grants in the examined Priorities, namely PLN 150,000, PLN 300,000 and PLN 400,000. The value of PLN 150,000 is the maximum amount of grant one can apply for in a year (2022 edition). This gives rise to a suspicion that some organisations, as was the case in the PROO programme, applying for grants are planning to participate in the next edition of the competition (the condition for entering the next competition is completing the project from the previous edition). Such a strategy of entering the annual edition of the NOWEFIO contest increases the budget by 50% (instead of the maximum value of PLN 300,000, they will receive PLN 450,000). Such a conclusion can also be drawn from comparing the 2021 edition of the NOWEFIO contest, where there was no minimum value of the grant and only maximum values, i.e. PLN 300,000 and PLN 400,000, were clear boundaries. To sum up the research, the organisation announcing the competition for the SI behaves like a market leader who sets the price for the service (in the case of the SI, it is the cost of implementing social tasks). In contrast, the others act like followers, i.e. set the project costs in maximum values for particular Priorities. THEREFORE, the SI market leader should take care to introduce criteria in individual projects to strengthen the preparatory activities for future changes related to the “Green Deal” for Industry 5.0 and force organisations applying for grants to take an innovative approach to social problems.

4. Conclusion

SI researchers often focus on how social problems are solved, the measures of innovation, or innovation vehicles. This paper focuses on using the lead as a facilitator of change in managing organisations. Organisations applying...
for grants from PROO and NEWFI0 programmes were used for the study. The Stackelberg game leadership model was applied. It was found that organisations applying for grants, in most cases, follow the leader, regardless of the competition that sets the price (maximum grant value) for SI. It was also taken into account that every Stackelberg game strives for Nash equilibrium, which was also the case in our sample. The consequence of our research is a new approach to how SI is implemented as a new paradigm of change in the management of organisations, forced by market leader behaviour. Our findings make it possible to minimise the adverse impact on change resulting from the ‘Green Deal’ for Industry 5.0 in the future by using the market leader. The article does not end the debate on the role and importance of SI in contemporary and future societies. Still, it allows us to see and use the role of leaders in creating change in all organisations.

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