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Evaluation of the Influence of the Macro-environment on the Social Innovation Activity of Enterprises

Liliya SATALKINA, Nestor SHPAK

Lviv Polytechnic National University, Lviv, Ukraine,
liliya.o.satalkina@lpnu.ua (corresponding author)

Background: Nowadays the emphasis on social components in the general mainstream of innovation activity is one of the strongest grounds for the successful functioning and development of enterprises. In several countries, social innovation activity is becoming a product of business in general, with associated expectations regarding profit.

Objectives: The goal of the article is to develop a toolkit for the evaluation of the influence of the macro-environment on the social innovation activity (SIA) of enterprises.

Method: The methodology includes elements of theoretical and empirical research with the implementation of methods such as a literature review, all types of analysis, and methods of aggregation and integration. Questionnaires were used as a means of data collection.

Results: The general methodological framework of diagnostics of the SIA macro-environment is distinguished. Based on a theoretical analysis of the SIA ecosystem and the experience of operating enterprises, the main factors of SIA macro-environment are determined. The general integrated index and its five-level interpretational model are proposed as a measure for the evaluation of the SIA macro-environment.

Conclusion: The results presented provide data necessary for the argumentation of SIA strategy and tactics, as well as investment policy in this sphere.

Keywords: *enterprise; social innovation activity; diagnostics; macro-environment; factors*

1 Introduction

For a significant period of time, the innovation activity of enterprises has been considered the basis of a competitive economy. Conducting innovative activity in the production enterprises is the basic condition in the struggling for the competitive position (Ślusarczyk & Kot 2016) and innovations are an important tool for increasing competitiveness of companies (Lendel et al. 2015). Together with the concept of corporate social responsibility it is perceived as a competitive advantage (Válová & Formánková 2014). However, today's economic environment is extremely dynamic - for this reason, innovation activity also gets new emphasis. Hence, the innovation strategy of today's enterprises should be oriented not only towards financial results but also upon the outcomes that it brings to society.

Typical example of such an innovative orientation of enterprise is implementation of environmental responsibility (Moravcikova et al. 2017). The growing role of social innovations is proved by current research which shows that social innovations rose to over £40 billion in 2015 (a £10 billion increase compared to 2014), giving impetus to the development of investment funds and attracting additional private capital. During the period of 2012-2015, the increase in the level of employment and turnover of socially innovative enterprises was approximately 11% (HM Government Report 2016; JP Morgan and GIIN 2015; Vaccaro 2014; Ethex 2015). Thus, it is clear that social innovation activity determines new possibilities in the qualitative development of the economy. Considering it as a tool in the transformation of the economy to a new level, it is important to note that one of the main elements in the general ecosystem of social innovations is enterprises. The reason

for this is that it forms the main linkage between government, non-profit organizations and society. Therefore the increase in the development of enterprise SIA may provide not only economic benefits for enterprise itself, but also positive social outcomes for business activity. According to Formánková et. al (2016), social responsibility may only be duly carried out and implemented in the organization activities on condition of favourable approach of the management understanding the need for its development.

It is worth noting that SIA is mostly correlated with social enterprise. Determining the enterprise as the main object of our research, we undertook a brief overview of existing approaches that have two general positions in terms of an understanding of “social enterprise”. On one hand, certain scientists consider it as an organization that takes the initiative to identify and address important social problems in their activity (OECD 2010; Corner & Ho 2010; Maclean et. al. 2012). On the other hand, there is a school of thought that “social enterprise” is the organizational model, that being chosen to solve a particular social problem focuses on achieving both economic and social value objectives (e.g. employing market-based strategies that accomplish social or environmental missions and can provide goods or services) (Landabaso & Liesbet 2013; Volynets 2015; Gidron 2014; Harji et al. 2014; Hardi et al. 2013; Vveinhardt et al. 2014). This approach is also proved through consideration of the economic benefits of investing in social innovations (Porter 2003; Brest 2013; Etzel 2015). Usually these benefits are not only distinguished for enterprises, but for investors as well. It is widely known that although investors may have different incentives for social innovation, more than 59% of them look for market rate return (GIIN 2015). Social businesses focusing on social goals make profit that is usually reinvested, either fully or partially, into the company. It is necessary to point out that we share the position of existing research which supports the dual character of social enterprise: the equalization of economic and social purposes and attention paid to societal outcomes.

Nevertheless, considering the popularization and spread of social innovations, as well as their impact upon the strategy of enterprise development, it is important to know how to measure the level of this activity and the impact thereof, as well as how to indicate its prospects and risks. This can give grounds for relevant strategy and tactics in terms of the appropriate development of social innovation activity. In addition, such measurement should be complex and include the following elements: an evaluation and analysis of the current state and effectiveness, the determination of problematic and prospective points, and the formation of conclusions and plans for further steps. The analysis in this sphere may be provided by the diagnostics of social innovation activity which will allow one to evaluate its effectiveness from the point of view of different dimensions. In addition, support for investment is

essential for social innovations, as with any other type of innovation activity. Therefore, the diagnostics of SIA that can determine its state, effectiveness, problems and prospects can give grounds for rational investment decisions.

Diagnostics in general is a process of the complex evaluation of the state of the object and an analysis of its tendencies, designed for the determination of the existing problems or positive aspects, and the development of further recommendations. Thus, the key elements in the mechanism of SIA diagnostics should correspond to the main principles of diagnostics in general. Compared to simple evaluation and measurement, diagnostics has several advantages, determined by four key features:

It has a complex character and provides a comprehensive analysis of SIA based on distinct metrics and indicators.

It previews the formation of analytical conclusions about the state of SIA as well as any indication of main positive or negative tendencies which led to such a state. As a result, it determines the problems and prospects of SIA.

On the basis of such a complex analytical approach, it allows one to form recommendations for further SIA development within the context of the determined problems or prospects.

It requires a certain toolkit in order to provide complex evaluation, analysis, interpretation of the results, and the formation of recommendations.

The framework for SIA diagnostics is based on certain metrics, the evaluation of which can form a basis for distinct analytical conclusions. Hoelscher, Bund and Mildemberger (2015) proposed an approach within which such metrics are formed, the so-called “analytical level”. This is connected to six stages of the social innovation activity process (The Young Foundation 2012): 1) prompts resulting from a social need; 2) the actual starting point of the process, i.e. the generation of ideas designed to solve the need; 3) prototyping of the ideas; 4) sustaining a promising prototype; 5) scaling; 6) systemic change.

Nevertheless, as the diagnostics are themselves complex, this should be based not only on an analysis of those metrics that reflect the functional side or peculiar characteristics of social innovations. It should also include the diagnostics of an environment in which enterprise undertakes its social innovation activity. In this case, the environment itself should be considered from the macro- and micro- level.

In this article, we will focus upon the diagnostics of the macro-environment of enterprise SIA. Hence, the overall aim is to derive the methodical groundings for the diagnostics of the SIA macro-environment, based on the following: 1) development of interpretational metrics and indicators; 2) determination of the method of analysis itself; 3) interpretation of the results obtained. This part will refer to the first step in a complex multi-staged diagnostics of SIA.

The diagnostics of the macro-environment may achieve the following: determining the main prospects and risks of SIA realization; analyzing the effectiveness of the SIA of enterprises under the influence of the macro-environment; and evaluating the level of influence of the macro-environment on SIA. Implementing such diagnostics allows us to analyze those factors, which, not being under the control of enterprises, are still defining for further strategy in SIA.

2 Theoretical background

A review of the literature reveals that the concept of SIA diagnostics has not been investigated to this point. The majority of research refers to the question of social innovation evaluation, which is a much narrower concept. Bund et al. (2013) propose methods of measuring the social impact of innovation activity. Hardi et al. (2012) consider the CSR Index as a tool that can help to measure, manage and integrate responsible business practice. Nevertheless, they indicate the absence of a method that could allow for the measurement of the impact of social initiatives on the companies themselves, particularly their economic results. Castro Spila et al. (2016) developed a regional and organizational approach in measuring the capacity of social innovations, considering the interrelations between the context and dynamics of social innovation.

Nevertheless, evaluation and measurement is only part of the general process of diagnostics. Logically it takes place within the first step of the methodological model and may be based on relevant metrics and indicators. The Organization for Economic Co-operation and Development (OECD), on its Innovation Policy Platform¹, concludes that the metrics of innovation should include different dimensions of innovation (the degree of novelty; the type of innovation; the impacts; the source of innovation; socio-economic performance), as well as a range of factors that are considered as determinants for innovation (determined by the firm, industry, region and country levels). In the context of the stated approach, it is worth noting that the range of factors may characterize the macro-environment for SIA.

An analysis of the influence that macro-environment has on the SIA of enterprises should start with an understanding of the main directions. Hoelscher et al. (2015) proposed the following general dimensions of innovation metrics for social innovation activity:

- Knowledge (graduation rates at doctorate level, science/engineering graduates at doctorate level etc.);
- Innovation culture (popular attitudes towards scientific advancements etc.);
- Information or communication technology;
- Financial resources (business and enterprise expenditures, government funding etc.);

- Entrepreneurial activity collaboration (firms with (inter)national collaboration on innovation, cooperation on scientific articles etc.);
- Intellectual property rights and patents.

At the same time, according to the deliverables of the TEPSIE project, the evaluation of SIA is based on the dimensions and variables of different framework sublevels within three main groups (Bund et al., 2013):

1. General conditions:
 - Resources framework – financial resources, human resources, infrastructural resources;
 - Institutional framework – normative institutions, regulative institutions, cultural cognitive institutions;
 - Political framework – policy awareness of social innovation, political environment;
 - Societal and climate framework – social needs and demands, social engagement and attitudes;
2. Entrepreneurial activity:
 - Investment start-up collaboration – expenditure on innovation by the social economy, start-ups dedicated to social purposes, the appropriate environment for starting a company;
3. Societal outcome and output:
 - Education, health-care, employment – equal opportunities, quality of health facilities, earnings, social cohesion, preservation of natural capital.

The authors also analyze the possible metrics for the evaluation for each of the determined dimensions. For example, for the first group, the following indicators are the most relevant: the share of expenditure as a percentage of GDP; public social expenditure; private social expenditure as a percentage of GDP; citizens' attitudes towards entrepreneurship; memberships in civil society; organizations, political participation etc. In terms of entrepreneurial activity, the indicators are as follows: expenditure on innovation activities by firm size; early-stage social entrepreneurship as a percentage of the working population; enterprise death rate; days necessary to start a business etc. For the third group, the following metrics are indicated: educational attainment; the percentage of people aged 25 to 64 with at least upper-secondary education; share of foreign students etc. (Krlev, Bund & Mildemberger 2014). However, these metrics only work within the evaluation of social innovation activity on a national level. In other words, by using these metrics, it is possible to evaluate how the implementation of social innovations influences the national economy and society – the macro-environment. But these metrics do not allow one to analyze how the macro-environment influences the development of SIA. They cannot be used for the analysis of SIA development at the initial stage of the process (on the enterprise level) with reference

¹ Available at <https://www.innovationpolicyplatform.org/>

to the following: the conditions of enterprise SIA development (particularly in macro-environment); the relevant strategy of enterprise SIA within the determined conditions; key points during investment in SIA projects. The influence of the macro-environment on SIA is determined by those factors that form the relevant environmental dimensions; thus, the diagnostics of the macro-environment should include metrics of these dimensions. Antadze and Westley (2012) analyze methods of SIA estimation and propose measurement tools - and the limitations thereof - for the evaluation of social impact. In the authors' opinion, each of these methods used separately do not allow for a complete evaluation of the social and economic effect of social innovations; to that end, they propose to combine them into two groups:

1. *With single (economic) focus*: innovation index; cost-effectiveness analysis; stated preferences; revealed preferences; public value assessment; life satisfaction assessment;
2. *With multiple focus*: value-added assessment; government accounting measurement; social impact or social return on investment; quality-adjusted life etc.

Nevertheless, these methods, whether taken separately or even in combination, do not completely reflect the peculiarities of social innovations within entrepreneurial activity.

Patton (2011) proposed the concept of developmental evaluation of social innovations that covers five main tasks:

1. Adapting a social innovation that can be implemented in a project or program to conditions of complex dynamic systems.
2. Adapting effective general principles to a new context of ideas for social innovation.
3. Developing the ability to respond rapidly to different kinds of sudden changes or crises.
4. Development of the scalability of innovation, in order to adapt it to traditional formative and summative evaluation.
5. Major systems change and cross-scale developmental evaluation that, taking innovation to scale, can determine how an innovation is or may need to be changed and adapted to have a broader impact.

In the report "Strengthening social innovation in Europe", the metrics to support investment decisions on social innovations are determined (Reeder & O' Sullivan 2012). According to this approach, an evaluation of social innovation and following investment decision should be based on the following: strategic fit; outcomes; and efficiency. Each of these points has relevant metrics, based on which the evaluation should be completed. Thus, according to the approach, within the category of *strategic fit* the metrics should give an understanding of how the project matches its goals; if the project can have a positive effect on

other projects; and whether the project is characterized by a reasonable combination of risk and return. Within the category of *outcomes*, the general framework concerns the following: inputs, outputs and outcomes for the individual and for society. The metrics in *efficiency* should indicate how to calculate savings as a percentage of initial costs or inputs, and how to evaluate rates of return on the initial investment.

Within a strategy for scaling social innovations, four main steps can be indicated (Madeleine 2014): 1) goals for scaling; 2) objects of scaling; 3) main directions of scaling; 4) a mechanism for scaling. These stages partly determine the main steps in complex diagnostics of social innovation activity.

A review and analysis of existing research shows that the aspect of SIA on the level of enterprises has been underinvestigated to date. This increases the importance for the development of a multi-staged diagnostics framework for enterprise SIA that will provide a precondition for the relevant investment decision and the further development of SIA, based on a complex analysis of the environment.

3 Method

We consider the diagnostics of the SIA macro-environment as part of the general process of diagnostics, which includes three main steps: 1) interpretational metrics and indicators; 2) method of analysis; 3) interpretation of the obtained results. The place held by SIA macro-environment diagnostics in the general process is represented on Figure 1.

The logical structure of the article is divided into theoretical and empirical parts. Primarily, based on the results obtained in previous research, we have used the developed term "social innovation activity of enterprises" (Shpak et al. 2017). Analyzing the ecosystem of SIA in three countries which differ by geographical location and level of economic development, we formed groups of macro-environmental factors. In the empirical section, we have formed a framework for an expert evaluation of the SIA macro-environment. Concerning the experience of practicing enterprises, we determined the weighting factors for each factor group. At this stage, questionnaires with the description of factor groups and ranging rates were used as a method of data collection. We involved 45 Ukrainian enterprises of different size and type of activity for questionnaire research in order to avoid concentration on a certain domain and obtaining a generalized result, admissible for all types of enterprises.

The blanks on the questionnaire consisted of the list of factor groups with their descriptions. The respondents had to rank the factor groups based on their importance to SIA development and indicate the weighting rate of each (general coefficient 1). The blank questionnaires were sent by e-mail to directors of enterprises or to the managers re-

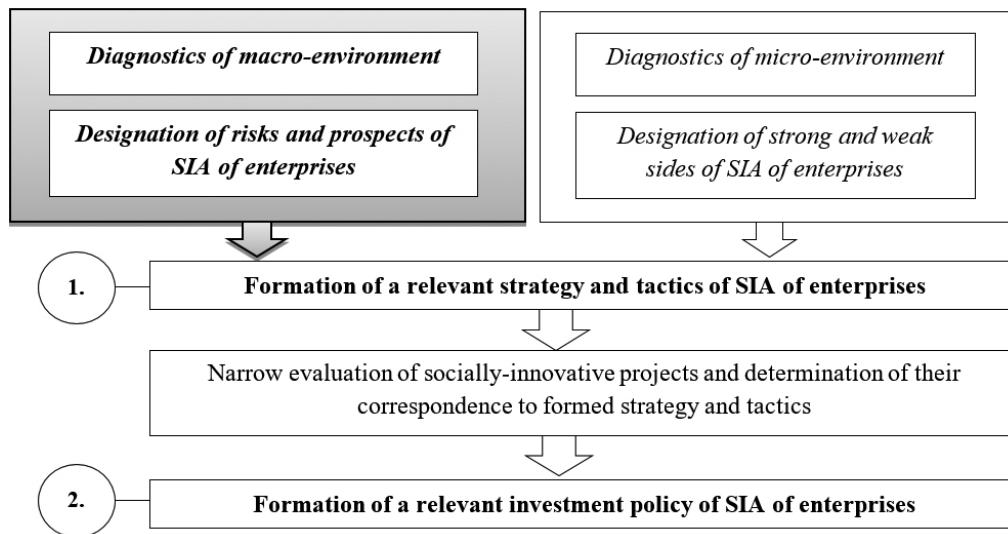


Figure 1: Place of SIA macro-environment diagnostics in general process

responsible for such matters according to their recommendation. The reasoning behind the questionnaire was that the questions were pre-formulated, which prevented misunderstandings and allowed us to keep control over the order of the questions.

4 Results and discussion

4.1 Main elements of the SIA macro-environment

Mulgan et al. (2007) define social innovation as “innovative activities and services that are motivated by the goal of meeting a social need and that are predominantly developed and diffused through organizations whose primary purposes are social”. In general, social innovations are characterized by the following criteria: novelty; multiple dimensions of improvement; sector neutrality; urgency of social needs; engaging beneficiaries; and the transformation of social relations (Howaldt & Schwarz 2010; Lindhult 2008; Krlev et. al. 2014; Varmus & Lendel 2015; Vveinhardt & Kuklytė 2016). The main spheres of social innovations are new services and products; new processes; new rules; new practices; markets; organizational forms; business models (Landabaso & Liesbet De Letter 2013; Krlev et. al. 2014; Dainienė & Dagilienė 2015). Mostly, the dimensions of social innovation implementation are as follows: demography; environmental trends; community trends; poverty-related trends; trends in health and well-being; trends in ethical goods and services (Landabaso & Liesbet De Letter 2013; Androniceanu 2013).

On the basis of the results obtained in previous research, we propose the following definition of the term

“social innovation activity of an enterprise” as a special component of the innovation activity of an enterprise that is characterized by an improvement in the social factors for interested groups (consumers, employees etc.) that concern the environmental sphere, ethical responsibility for production and, in part, aspects of health and well-being as well as other spheres through the interaction with other participants in the social innovation ecosystem (non-profit organizations, government etc.) (Shpak et al. 2017).

The existing approach to the concept and the ecosystem of social innovations comprises four elements: the private sector, the public sector, the research sector, and the non-profit sector (The Young Foundation 2012). The ecosystem and the interrelation of its main elements may characterize the macro-environment of SIA through the following benefits: support for public and non-profit organizations; funding opportunities; and research support. The level of expenditure on research and development may be considered an initial point in a general ecosystem of SIA. Figure 2 represents the part of gross domestic spending on research and development in several countries relevant to three different European regions (Northern Europe, Central Europe, and Western Europe).

Three countries located in different parts of Europe were selected for a detailed analysis of all elements of the SIA ecosystem: Sweden (271 social enterprises), Austria (200 social enterprises), and the Slovak Republic (96 social enterprises). The choice of country was determined based on the availability of relevant data by all elements of the ecosystem. Table 1 and Figures 3-4 represent a more detailed analysis of the expenditure on R&D in the three designated countries.

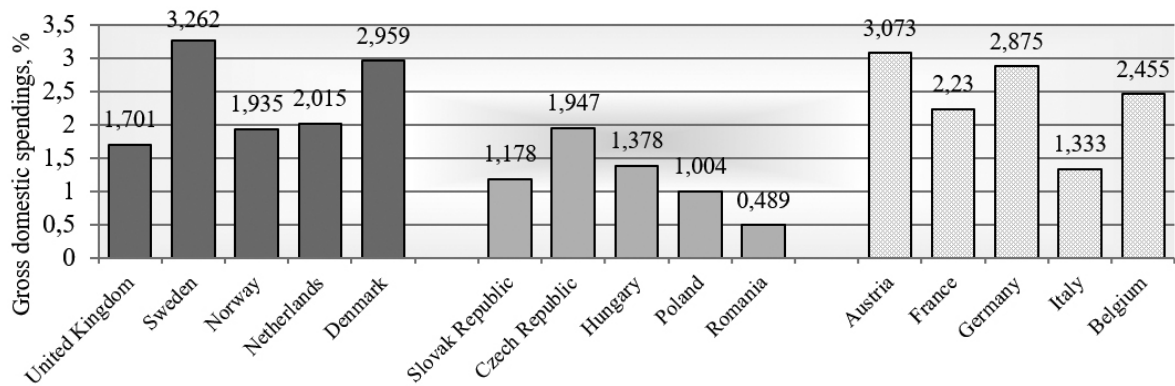


Figure 2. Gross domestic spending on R&D by three European regions, 2015. Source: OECD Data n.d.

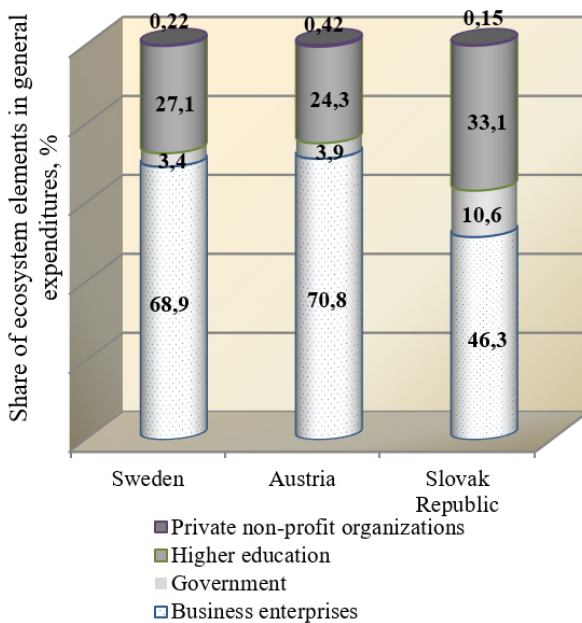


Figure 3. The structure of expenditures on R&D for social objectives by elements of the ecosystem
Source: OECD Data n.d.

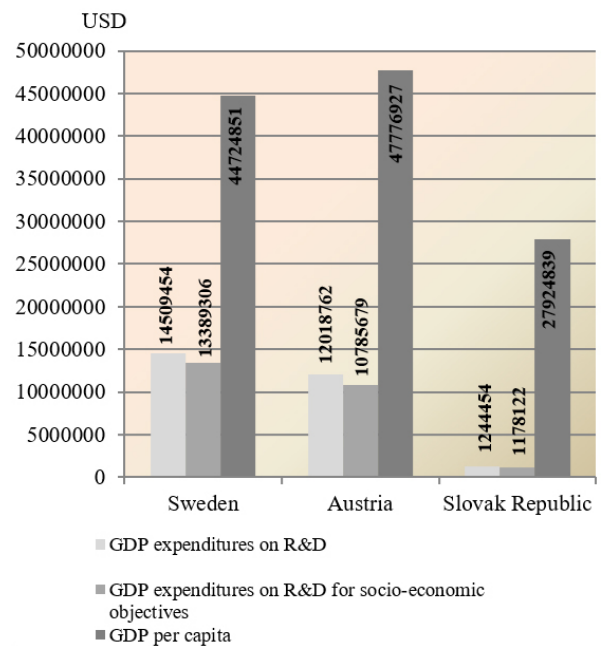


Figure 4. The expenditures on R&D in a general structure of GDP
Source: OECD Data n.d.

Table 1: Gross domestic expenditures on R&D for socio-economic objectives, by sector of performance, 2013.
Source: OECD Data n.d.

Countries	Elements of SIA ecosystem				Total (USD)
	Business enterprises (USD)	Government (USD)	Higher education (USD)	Private non-profit organizations (USD)	
Sweden	9 231 729	492 988	3 634 401	30 08	13 389 306
Austria	7 638 461	478 794	2 623 098	45 326	10 785 679
Slovak Republic	545 033	241 316	389 995	1 778	1 178 122

Table 2: Main features of the social innovation ecosystem in Sweden, Austria, and the Slovak Republic

Source: European commission. (2014). Country report: Slovakia; European commission. (2014). Country report: Austria; European commission. (2014). Country report: Sweden

Country	Ecosystem of SIA from the perspective of supporting mechanisms
Public support for SIA	
Sweden	There are no ministries which are specifically responsible for social enterprises, but there are a number of government agencies for supporting the development of the social enterprise market: the Swedish Agency for Economic and Regional Growth (Tillväxtverket), the Swedish Agency for Youth and Civil Society and the Swedish Public Employment Service.
Austria	State support for social enterprises consists primarily of financial support. Business support schemes also exist.
Slovak Republic	There are no public support schemes targeting social enterprises or social economy organizations apart from subsidies that cover a certain proportion of salaries of personnel hired in social enterprises.
Support of non-public organizations	
Sweden	There are developed networks and mutual support structures for social enterprises: The Partnership for the Development of Social Enterprises – facilitates collaboration, networking and social franchising, provides education and training programs in social entrepreneurship; The Swedish Association for Non-Profit Health and Social Service Providers – supports non-profit health and social service providers; The National Association for Social Work Cooperatives – provides training for social cooperatives, and creates the conditions for starting social work cooperatives.
Austria	The organization HUB Vienna brings together people who are striving for social change and provides social enterprises with both physical infrastructure and a community network. Ashoka is a global support network of social entrepreneurs. There are also two main networks in Austria that represent social services providers.
Slovak Republic	Provida Foundation and NESsT Slovakia aim to provide financial and business support for the social enterprise sector in order to develop sustainable business plans and to provide start-up and incubation support. Currently, there is no social enterprise or social economy network in the country, although there are networks which bring together those who are concerned with the idea of the social economy: the Slovak Union of Production Cooperatives, the Slovak Union of Housing Cooperatives, the Union of Agricultural Cooperatives of the Slovak Republic or the Slovak Union of Consumer Cooperatives.
Funding opportunities	
Sweden	The most common source of finance is project funding, provided by the Swedish Inheritance Fund, municipalities and other public agencies. Financing is also obtained through public grants and subsidies, private and public foundations (such as the Swedish Inheritance Fund). In the ranking of sources for external finance, public funding is in first place, followed by grants from private and public foundations. Municipalities also act as guarantors and can supply loans.
Austria	The federal bank promotes businesses in Austria, and offers a wide range of support tools, although not specifically designed for social enterprises. Social enterprises receive financial support from the Public Employment Service to cover the costs incurred by hiring disadvantaged workers. Co-financing is also provided by the European Social Fund.
Slovak Republic	The major sources of financing and investment support are state and tax assignment by individuals and EU funds. There are also grants provided by the governments of Norway, Iceland and Liechtenstein in order to support the development and sustainability of non-profit organizations.
Research support	
Sweden	Research support includes the provision of education and training and support structures such as incubators. Inkludera Invest provides non-monetary support and guidance for social enterprises. The first incubator for social entrepreneurship is located at the Centre for Social Entrepreneurship in Stockholm, and Social Initiative helps social entrepreneurs to create operational business models. Some universities and higher education institutions provide incubator support for social innovation and entrepreneurship as well as Swedish folk high schools and study associations.
Austria	The Competence Centre for Non-profit Organizations of WU Vienna carries out teaching and research activity in the relevant field. Institut für Arbeitsmarktbetreuung in Carinthia and Institut für Ausbildungs- und Beschäftigungsberatung in Upper Austria provide consulting services for people wanting to run social enterprises and undertake relevant research projects or evaluation studies, e.g. to identify what the success factors are when running a social enterprise.
Slovak Republic	Some aspects related to social entrepreneurship are researched at the University of Comenius, although the university does not offer a degree. Matej Bel University has conducted research on social entrepreneurship.

The expenditures are analyzed from the point of four sectors of performance, which refer to the elements of the SIA ecosystem: the business sector, government, the non-profit sector, and the research sector. The expenditures for socio-economic objectives include the exploration and exploitation of the Earth; the environment; the exploration and exploitation of space; transport; telecommunication and other infrastructures; energy; industrial production and technology; health; agriculture; education; culture; recreation; religion and mass media; political and social systems; structures and processes; the general advancement of knowledge; and defense. Table 2 represents a detailed analysis of the supporting mechanism of SIA by each component of the ecosystem.

Summarizing the results obtained in this paragraph, it is possible to say that the main elements of the ecosystem interrelate and form a macro-environment of SIA by means of four components: public support; research support; financing opportunities; and business support.

4.2 Staged model of diagnostics of the enterprise SIA macro-environment

According to the analysis of relevant literature and based on the results obtained during the survey, it is possible to conclude that *diagnostics of the SIA macro-environment* is a process of complex evaluation and analysis of the influence that the elements of the macro-environment have

on enterprise SIA. The main *aim* of the process is to determine the level of public, research, and business support and financing opportunities and, as a result, adapt a strategy of SIA development in terms of the conditions determined. Diagnostics of the macro-environment of SIA is based on three stages (metrics and indicators for analysis; methods of analysis; interpretational support for relevant analytical conclusions) and hence includes the following key elements:

1. Complex analysis of the SIA macro-environment from the perspective of public, research, and business support, as well as financing opportunities.
2. Determination of risks and potential.
3. Adaptation of a strategy of SIA development in terms of determined risks and potential.
4. In order to define the main steps in the mechanism of SIA macro-environment diagnostics, we propose a three-stage model (Figure 5).

4.3 Factors of the SIA macro-environment

Based on an analysis of the literature and the main findings in part 4.1 concerning the social innovation ecosystem, we determined the list of factors of the macro-environment that influence the SIA of enterprises (Table 3). All factors are grouped according to the character of their influence. In order to determine the priority and significance of the

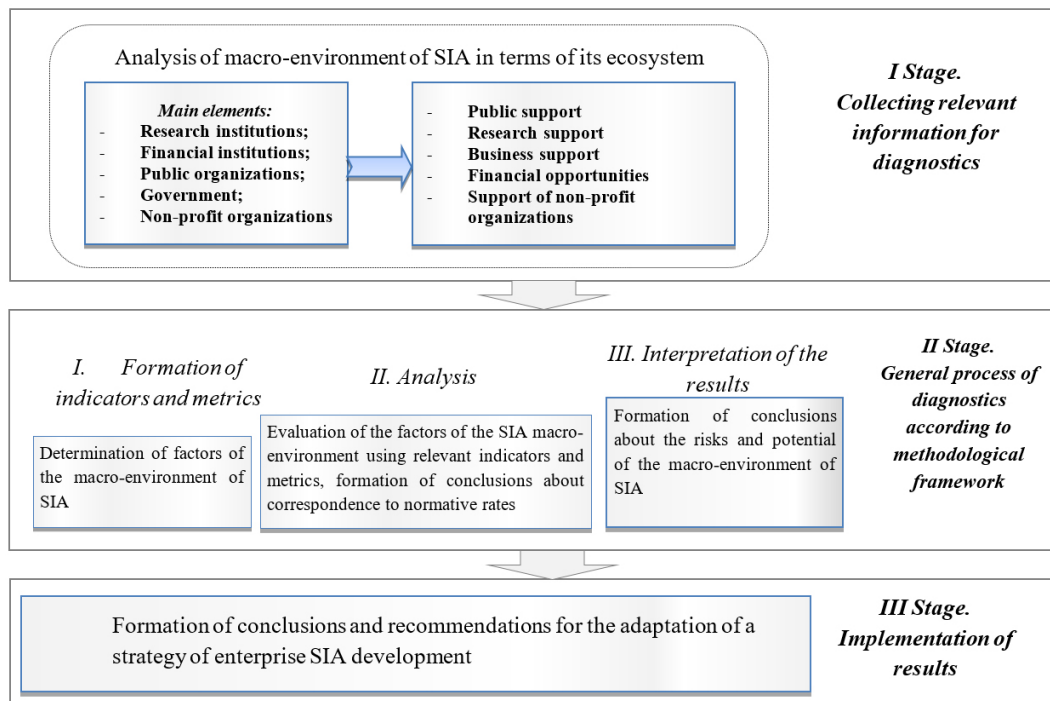


Figure 5. Three-stage model of diagnostics of the enterprise SIA macro-environment

influence, each group is classified within two categories to direct and indirect factors.

4.4 Indicators for diagnostics of the macro-environment of SIA

The analysis of factors forms a background for the diagnostics of the macro-environment of SIA. In order to avoid the difficulties connected with the interpretation of the influence level of each factor, we derived general indexes of SIA macro-environment, according to the number of factor groups. Within each group, all factors form the parameters for the aggregation of general indexes. All parameters can be measured by experts (analytics of enterprise) in a binomial manner after identifying either the correspondence (1) or disparity (0) of certain parameters to the expectations of experts. In Table 4 we propose the indexes and formulas for calculation.

For the calculation of the integrated index of the SIA macro-environment, we propose the weighting factors for each factor group. The rates for weighting factors were developed by generalizing the results obtained from the questionnaire (Figure 6).

We propose the following interpretation of the integrated index of the macro-environment, as a sum of aggregated indexes by each factor group. The integrated index shows a general distinct result in terms of the acceptability of the macro-environment of SIA:

$$IME_i = I_{je} \times \mu_{je} + I_{ira} \times \mu_{ira} + I_s \times \mu_s + I_{so} \times \mu_{so} + I_p \times \mu_p + I_c \times \mu_c + I_{it} \times \mu_{it} \tag{1}$$

where $\mu_{je}, \mu_{ira}, \mu_s, \mu_{so}, \mu_p, \mu_c, \mu_{it}$ – weighting factors of each factor group correspondently, $(\mu_{je} + \mu_{ira} + \mu_s + \mu_{so} + \mu_p + \mu_c + \mu_{it} = 1)$.

We propose to evaluate the general integrated index of the macro-environment of SIA according to a five-level interpretational scale which covers the interval [0 - 1] (see Table 5).

The proposed interpretational scale consists of five intervals for a general index of the SIA macro-environment. The higher the marginal rates of the interval, the more supportive and less risky the macro-environment of SIA. According to the proposed methodology, each enterprise provides diagnostics according to subjective expert evaluations. We propose the interpretation model that can be used by all enterprises in order to obtain a general vision of the obtained result and so have an understanding of the

Table 3: Factor groups of enterprise SIA. Source: author's research

Factor groups	Factors within groups
Direct factors	
1. Financial and economic factors	1) general state of the economy (growth, stagnation, recession, etc.); 2) absence of an economic crisis; 3) stability of the national currency, exchange rate fluctuations; 4) rate of inflation in the country; 5) level of business activity; 6) access to credits and their value; 7) stability and predictability of the economic situation; 8) tax policy and tax rates; 9) investment climate and incentives for investors etc.
2. Legislative, regulatory and administrative factors	1) normative and legislative acts that regulate social entrepreneurship, their stability/changeability and supporting character; 2) state policy in promoting social innovation activity of enterprises; 3) restrictive policy of the state for social innovation activity of enterprises; 4) variability of the legislative framework, 5) complexity and level of bureaucracy of administrative procedures; 6) corruption; 7) independence of judicial authorities etc.
3. Scientific factors	1) level of basic and applied sciences; 2) activity of innovation processes; 3) level of technological support industries; 4) programs for the stimulation and creation of innovation; 5) development of new technologies etc.
4. Social factors	1) level of income per capita; 2) development of the social security system in the country; 3) level of security for citizens; 4) quality of life; 5) level of unemployment; 6) democratic values in society; 7) public awareness etc.
Indirect factors	
5. Political factors	1) stability of the political environment; 2) political and military stability; 3) level of state regulation; 4) political risks; 5) openness of the authorities etc.
6. Culture factors	1) traditions; 2) rules of behavior; 3) moral values; 4) mentality of the population; 5) level of culture, etc.
7. International factors	1) trends of the world economy; 2) stability of the international financial and monetary system, 3) influence of international investment institutions, financial and investment funds; 4) impact of integration associations etc.

Table 4: Indexes of SIA macro-environment by factor groups. Source: author's research

Factor groups	Formulas	Explanation
Financial and economic (I_{fe})	$I_{fe} = \frac{\sum_{i=1}^n f_i}{n}$	I_{ma} – integral index of financial and economic factor group in the macro-environment of SIA, [0; 1]; f_i - indicator of correspondence of a certain parameter in the factor group to the expectations of experts (0 or 1); n – number of parameters (according to the determined number of factors in group $n = 9$).
Legislative, regulatory and administrative (I_{lra})	$I_{lra} = \frac{\sum_{i=1}^e l_i}{e}$	I_{lra} – integral index of legislative, regulatory and administrative factor group in the macro-environment of SIA, [0; 1]; l_i - indicator of correspondence of a certain parameter in the factor group to the expectations of experts (0 or 1); e – number of parameters (according to the determined number of factors in group $e = 7$).
Scientific (I_s)	$I_s = \frac{\sum_{i=1}^j s_i}{j}$	I_s – integral index of scientific factor group in the macro-environment of SIA, [0; 1]; s_i - indicator of correspondence of a certain parameter in the factor group to the expectations of experts (0 or 1); j – number of parameters (according to the determined number of factors in group $j = 5$).
Social (I_{so})	$I_{so} = \frac{\sum_{i=1}^m o_i}{m}$	I_{so} – integral index of social factor group in the macro-environment of SIA, [0; 1]; o_i - indicator of correspondence of a certain parameter in the factor group to the expectations of experts (0 or 1); m – number of parameters (according to the determined number of factors in group $m = 7$).
Political (I_p)	$I_p = \frac{\sum_{i=1}^q p_i}{q}$	I_p – integral index of political factor group in the macro-environment of SIA, [0; 1]; p_i - indicator of correspondence of a certain parameter in the factor group to the expectations of experts (0 or 1); q – number of parameters (according to the determined number of factors in group $q = 5$).
Culture (I_c)	$I_c = \frac{\sum_{i=1}^y c_i}{y}$	I_c – integral index of culture factor group in the macro-environment of SIA, [0; 1]; c_i - indicator of correspondence of a certain parameter in the factor group to the expectations of experts (0 or 1); y – number of parameters (according to the determined number of factors in group $y = 5$).
International (I_{it})	$I_{it} = \frac{\sum_{i=1}^z t_i}{z}$	I_{it} – integral index of international factor group in the macro-environment of SIA, [0; 1]; t_i - indicator of correspondence of a certain parameter in the factor group to the expectations of experts (0 or 1); z – number of parameters (according to the determined number of factors in group $z = 4$).

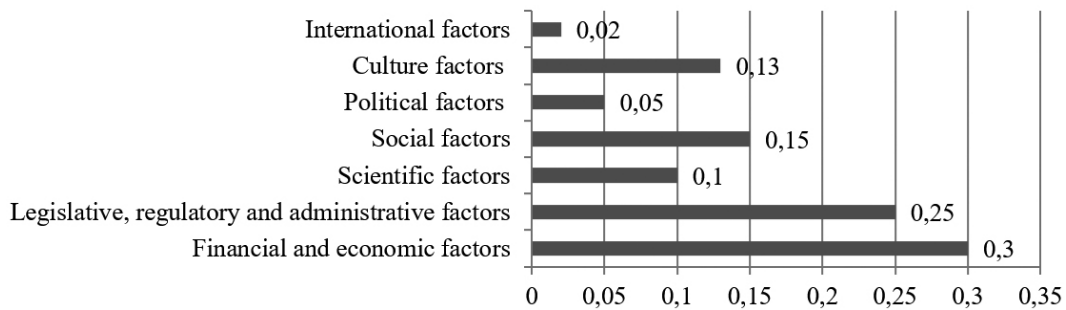


Figure 6: Weighting factors of factor groups of the SIA macro-environment. Source: author's research on the basis of the generalization of questionnaire results

Table 5: Interpretational scale for the general index of the SIA macro-environment. Source: author's research

Level	Description	Interval
Negative	Any supporting mechanisms are unacceptable, no possibilities for development, very high level of risk. Environment unacceptable.	(0-0,15)
Low	Risks outweigh potential. Supporting conditions almost entirely absent. Environment negatively unstable.	(0,16-0,25)
Satisfactory	The environment is equally supportive and risky.	(0,26-0,5)
Good	Several supporting mechanisms are indicated, low level of risk. Environment acceptable.	(0,6-0,75)
High	Numerous prospects and possibilities, absence of risk, low probability of occurrence. Very stable environment.	(0,76-1)

conditions of the SIA macro-environment. Nevertheless, the spectrum of values for the levels of the general integrated index may change according to the particular country in which an enterprise functions.

5 Conclusions

The research concerns the stage of general SIA diagnostics, particularly its macro-environment, and represents the finished toolkit for diagnostics at this stage. We predict that in subsequent research we will consider the diagnostics of the micro-environment partly using the obtained results, methodology and experience of current research. In turn, the analysis of the microenvironment will allow researchers to analyze the potential of enterprises for social innovation activity, its strengths and weaknesses, as well as all components of enterprise social innovation activity itself (technical, economic, environmental etc.).

The importance of these achievements is determined by outputs for the practical activity of enterprises which develop SIA. The influence of the macro-level is not under the control of the enterprise, but it forms the platform of SIA. Managers that are involved in the development of SIA may use the indicators of diagnostics for an analysis of the platform and evaluate the main external condi-

tions for SIA. This can help to predict the possible risks or supporting conditions for SIA from the perspective of the macro-environment and all the elements therein. Using the proposed toolkit with relevant indexes may facilitate this process and make it easier to justify. This can form arguments for the strategy and tactics of enterprise SIA. The results of this article may contribute to a discussion of the SIA investment policy of enterprises.

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- Liliya Satalkina** works as an Assistant Professor of the Department of management and international business in Lviv Polytechnic National University. In 2016 obtained the degree of Ph.D in Economics. The professional experience and qualifications refer to scientific researches and teaching activity. Published 28 publications, including articles in international peer-reviewed journals. Provided such courses as: Social responsibility, Investment and innovation projects of enterprise, International economics, Management, Global economics. Areas of scientific interests: Innovation and investment activity of enterprises, Social responsibility of business.
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- Nestor Shpak** is a Full Professor of the Department of management and international business, Lviv Polytechnic National University. Takes post of Associate Professor of the Department of Management and International Business. In 2012 has finished Doctoral Programme and defended thesis work for obtaining the degree of Doctor of Science. Has published 170 of scientific publications, including those in international peer-reviewed journals. Teaching activity concerns the following disciplines: Economics and management of enterprises, Intellectual property, Transfer of technologies, Communicative management, Management of Projects. Areas of scientific interest: sustainable development, innovative management, commercialization of intellectual property, informational communications, social innovations.