MODELING OF INNOVATIVE PROJECTS FUNDING
SMEs IN SLOVAKIA UNDER THE PROGRAM
HORIZONT 2020

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ABSTRACT

Purpose: This paper aims to break down barriers to implementation and provide
the methodical instruction to business practice in Slovakia for options and
opportunities of the realization of environmental innovation through the
European program HORIZON 2020 with an emphasis on the financing of SMEs
in specific conditions.

Methodology/Approach: Based on the analysis of social strategic framework of
the EU for research and innovation have been identified target groups that are
eligible for support of their environmental innovations and significantly
determined opportunities and barriers to SME participation in the program.
Synthesis of knowledge has been created and decomposed the model for quality
processing of enterprise applications for financial support facilitating the project
approval.

Findings: The involvement of SMEs in Slovakia in the program HORIZON
2020 is a great innovative opportunity and this program also provides high
financial support for various areas of economic activities and new opportunities
for the development of environmental quality of business. Only well prepared
application and the sequence of steps in relation to financial resources of
enterprise may result in approval of the project and its successful solution in
time.

Originality: Processed model for financing eco-innovation projects of SMEs in
Slovakia is original and in terms of the time SMEs offer two also economically
different pathways for processing the high-quality application solutions leading to
the approval and financing of the project.
Research limitation: The results of research within the paper could also affect still little tested and generalized foreign methodologies and practices in this area and complete novelty in the specific SME in Slovakia, particularly in relation to current legislation.

Keywords: innovation; Horizont 2020; SME; financing instruments, modelling

1 INTRODUCTION

Importance of innovation for economic growth has been recognized in the scientific literature ever since Schumpeter (1932) considered the process of industrial innovation to be important to the economy to the present days when innovative activities are recognized as an important factor for economic growth, Maryška, Doucek and Kunstová (2012), Maxwell (2009) Delina and Tkáč (2010). Horizont 2020 is the largest research and innovation program of the European Union with almost 80 billion € in funds available for more than 7 years (2014-2020) – except private investments that will be attracted participating in it (ec.europa.eu). For enterprises, it is more accessible due to a simpler program structure, a uniform set of rules and bureaucracy of a lesser extent, introducing a single flat rate for indirect costs for research and only two funding rates for activities related to market and the only access point for participants. One of the key changes is a shortening of the period for receiving funds in average by 100 days after the decision to grant, which means that projects can begin earlier (Straka, 2013). According to Szabo, Ferenc, Pucihar (2013) an important role to achieve prosperity through innovations provides just consumer confidence. Horizont 2020 will bring a simplification SMEs will in particular benefit of, as they often lack the resources to deal with the high administrative burden.

2 METHODOLOGY

This article is processed in the form of case studies for SMEs that are interested in participating in the program Horizont 2020, as the applicant for the project under the call for SMEs. The article is based on available relevant resources and procedures verified and approved by the EU.

2.1 Operational Programme Horizont 2020 - Research and Innovations

European operational program Horizont 2020 in Slovakia presents a common program document of the Ministry of Education, Research and Sport of the Slovak Republic and the Ministry of Economy of the Slovak Republic to implement the support from European structural and investment funds. Its priority is aimed at creating a stable socio-economic environment conducive to innovation for all relevant entities and support to increase the efficiency and
performance of research, development and innovation as a fundamental pillar for increasing competitiveness, sustainable socio-economic growth and employment. The program is the main implementation instrument of the research and innovation Strategy for “intelligent” specialization of the Slovak Republic, but does not cover all activities of the strategy, but only those, which are suitable for the implementation of European structural and investment funds for research, development, innovation and SME support.

The program also focuses on meeting strategic thematic development goals, relevant to the support of environmental management in the EU of EMAS III scheme:

- strengthening research, technological development and innovation (Priority Axis 1 and 2);
- increase the competitiveness of SME (Priority Axis 3 and 4; Through the activities defined under the priority axes and their specific targets, this development program will support:
  - in the case of projects of research and development - individual research centers not conducting economic activities and industrial research centers and long-term strategic research projects (7-10 years) and priority areas of research and innovation Strategy for intelligent specialization SR;
  - in case of projects of innovative activities – innovation processes and capacities in enterprises especially in the priority and prospective areas of economic specialization;
  - in case of projects directly not linked to areas of smart specialization – support of activities whose implementation will contribute to the objectives of the strategy (demand projects based on the innovative needs of enterprises, national projects of a horizontal nature, international projects where topics are defined by European programs and initiatives of research, development and innovations.

Operational Programme Research and Innovation provides the possibility of obtaining financial resources for the activities related to the provision of consultancy in the field EMAS for SMEs as a first priority through priority axis 3 and 4, which aim to strengthen and develop the competitiveness of SMEs by creating a system of support for the specific needs of SMEs, while said support comprises three basic pillars:

- creation of a business environment and shaping relevant supporting capacities (incubators, accelerators, innovation platforms, etc.).
- through repayable forms (microcredits, loans, venture capital, for example combined with counseling);
- through non-repayable forms (counseling and information programs, training programs.
An available allocation of funds for the priority axis 3 represents a total of €592,529,412 while there was the value allocated from the resources of the EU of 336 million €. To finance fund activities under priority axis 4 has been allocated a total of €49,968,300. To fund activities under priority axis 4 has been allocated a total of €49,968,300 while the financial resources of the EU represent 50% share.

2.2 SME instrument as an instrument of financing SMEs in the program Horizon 2020

Under the program Horizon 2020 is represented (SME I) a new specialized tool aimed at innovative projects of SMEs with an ambition to development, growth and internationalization, regardless they are research or non-research, social or engaged in services (ec.europa.eu). Its aim is to fill the gap in financing in an early stage of high-risk research and innovations of SMEs, as well as stimulate breakthrough innovations (www.7rp.sk). Its uniqueness is targeting only SMEs with the possibility of the support of only one participant, what means for SMEs the possibility to create a project without creating a consortium and transnational cooperation what presented one the biggest barriers of SMEs participation in the 7th Framework Programme (Filus, 2013). The new tool will integrate specific measures for SMEs from 7th Framework Programme into one comprehensive, simple and easily accessible system. SMEI provides support for the whole innovation cycle in three stages, from the stage of business idea concept and planning (phase I), through the implementation of the business plan and demonstration (Phase II), to the placing on the market (Phase III). Since the end of 2013 after the announcement of the challenges was possible to submit applications for funding and in the first round was submitted 2,666 applications, and after the evaluation of the first phase obtained 155 SMEs from 21 countries (EU Member States and countries associated to Horizon 2020) 50,000 € to finance studies of feasibility for the development of their innovation strategy. Most successful in the first round were Spanish SMEs with 39 proposals selected and they were closely followed by SMEs from the UK and Italy. Concrete names of topics under which SMEs could also apply with a specified number of approved projects are summarized in the Table 1.

Applications are submitted continuously and are rated four times a year. In 2014, around 645 projects should be funded (in the 1st and 2nd phase) and in 2015, their number should be increased to 670. For SMEs in Slovakia in the first round was not submitted any project!
Table 1 – Projects selected for funding submitted to the first closing date for the first phase of grants (June 18, 2014) within 13 topics

<table>
<thead>
<tr>
<th>Subject</th>
<th>Submitted projects</th>
<th>Approved projects</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue growth</td>
<td>48</td>
<td>3</td>
<td>France, Ireland, Norway</td>
</tr>
<tr>
<td>Biotech</td>
<td>74</td>
<td>3</td>
<td>Israel, Portugal, Spain</td>
</tr>
<tr>
<td>Green transport</td>
<td>227</td>
<td>26</td>
<td>Austria, Bulgaria, Denmark, Finland, France, Germany, Italy, Netherlands, Spain, UK</td>
</tr>
<tr>
<td>Nanotech</td>
<td>310</td>
<td>17</td>
<td>Denmark, Germany, Italy, Spain, Sweden, UK</td>
</tr>
<tr>
<td>Eco-innovation</td>
<td>248</td>
<td>12</td>
<td>France, Germany, Ireland, Italy, Netherlands, Spain, UK</td>
</tr>
<tr>
<td>Food production</td>
<td>125</td>
<td>7</td>
<td>Hungary, Ireland, Italy, Spain</td>
</tr>
<tr>
<td>Low carbon energy system</td>
<td>374</td>
<td>23</td>
<td>Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Slovenia, Spain, Sweden, UK</td>
</tr>
<tr>
<td>Space</td>
<td>61</td>
<td>4</td>
<td>Germany, Italy, Spain</td>
</tr>
<tr>
<td>Urban critical infrastructures</td>
<td>41</td>
<td>6</td>
<td>Estonia, Ireland, Italy, Norway, Spain</td>
</tr>
<tr>
<td>Diagnostic devices and biomarkers</td>
<td>208</td>
<td>44</td>
<td>Austria, France, Germany, Hungary, Ireland, Israel, Netherlands, Spain, Sweden, Turkey, UK</td>
</tr>
<tr>
<td>Open disruptive innovation</td>
<td>886</td>
<td>30</td>
<td>Austria, Denmark, Finland, France, Ireland, Latvia, Poland, Slovenia, Spain, Turkey, UK</td>
</tr>
<tr>
<td>Mobile e-government applications</td>
<td>(2015 only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SME business model innovation</td>
<td>(2015 only)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.3 The definition of the criteria for defining an enterprise as SME

SMEI is designed for businesses that are categorized as SMEs according to the recommendation of the European Commission (2003/361/E), which entered into force on 1 January 2005 and relates to all policies, programs and measures carried by Commission for SMEs. Criteria for determining both SMEs and thresholds are in the Table 2.
Table 2 – Criteria for the determination of SMEs in the European Commission recommendations in 1996 and 2003

<table>
<thead>
<tr>
<th>Type of enterprises</th>
<th>Number of employees</th>
<th>Total annual sales in mil. €</th>
<th>Total annual balance sheet in mil. €</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium-sized enterprises</td>
<td>&lt; 250</td>
<td>&lt; 250</td>
<td>≤ 40</td>
</tr>
<tr>
<td>Small enterprises</td>
<td>&lt; 50</td>
<td>&lt; 50</td>
<td>≤ 7</td>
</tr>
<tr>
<td>Microenterprises</td>
<td>-</td>
<td>&lt; 10</td>
<td>-</td>
</tr>
</tbody>
</table>

For calculating the number of employees and financial indicators in accordance with Art. 3 of Annex 1 (2003/361/EC) three types of enterprises are distinguished, autonomous enterprise, partner enterprise and linked enterprise (Table 3).

Table 3 – Types of enterprise taken into consideration when calculating staff numbers and financial indicators

<table>
<thead>
<tr>
<th>Type of enterprises</th>
<th>Characteristics</th>
<th>Example of calculating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomous enterprise</td>
<td>Owns less than 25% of the capital or voting rights in only or several companies and/or other companies do not have 25% or bigger capital share or voting rights in the enterprise</td>
<td>To verify if it meets the threshold values specified for SMEs, an enterprise should use only data on the number of staff and financial indicators of its Annual Accounts.</td>
</tr>
<tr>
<td>Partner enterprise</td>
<td>Owns in another company more than 25% and at the same time less than 50% of the capital or voting rights or another enterprise owns in a given enterprise owns more than 25% but less than 50% of the capital or voting rights</td>
<td>Company A owns 33% of C and 49% in the enterprise D, while the company B has a 25% stake in the company A Total = 100% for A + 25% for B + 33% for C + 49% for D</td>
</tr>
<tr>
<td>Linked enterprise</td>
<td>Owns more than 50% of shareholder or member voting rights in another enterprise and/or another entity owns more than 50% in your enterprise</td>
<td>Our company A owns 51% in the company C and 100% in the company D, while company B has a 60% stake in our company A Total = 100% for A + 100% for B + 100% for C + 100% for D</td>
</tr>
</tbody>
</table>

Participation is open to individual firms or consortium, other partners (university research providers, research institutes, and large companies) may be included as third parties (subcontractors). Start-ups, so companies without a history and turnover are not formally excluded, but SMEI is not aimed at the creation and...
establishment of the company, but at the increase the growth potential within the established firms, therefore not only research and development is assessed, but the impact, implementation and business plan showing the growth of companies.

3 MODEL OF INVOLVEMENT AND FINANCING SMES IN SLOVAKIA UNDER HORIZONT 2020

Writing applications and administration of projects aimed at drawing non-repayable contributions from EU programs is preceded by some very important steps. First of all, every business plan is based on the business idea. This idea must be suitable and meet the criteria set out under the Horizont 2020. The European Commission's website publishes the challenges in which you need to find the most appropriate call to a given project focuses. It is necessary to take into account the access “FIT to PROGRAM”. It means to seek such challenge your business idea fits into. Usually idea can fit into a number of challenges. Within the selected call is necessary in the attached documents to find key conditions, evaluation criteria and incorporate other information necessary for the production of high quality applications. After selecting the appropriate calls to a given project, it is necessary to register at a participating enterprise portal EK, where it will be assigned a 9 digit code PIC (Participant Identification Code). This code is important for further communication with the Commission. Consequently, it is necessary to process the request according to the manuals and sample document. After the registration, the company fills 2 administrative forms. The first includes basic information about the company. The second is slightly wider (max. 10 pages), and its task is to verify the quality of the idea. As a tool for verifying the uniqueness and quality of the ideas is used the triangle view (Fig. 1).

![Figure 1 – Triangle uniqueness of the project idea](image)

Under the “excellence” are defined the aims of the innovation project and results that are expected of it. There are characterized the specific objectives of the feasibility study and there is a business plan developed. The current state of
innovation development is assessed and the concept in the phase “from the idea to the application” is created. In the part “impact” are assessed impacts of the idea on the economy and public interest, its environmental and social impacts. Main economic benefits for users and growth potential of the given solution in terms of turnover, employment, return on investment and profit are assessed. Under the “Quality and Efficiency of the Implementation” are described the abilities of the working team to carry out the objectives of the project. It is necessary to consider the organizational structure including management of innovations and also the possible adoption of new employees with specific competencies (Burioni, 2014)

Figure 2 – Phases of project solutions SMEs within the SMEI

All applications and related documents are lodged electronically via the Participant Portal. The response to the e-mail questions is from a few minutes up to several days. Information sessions are organized in Brussels directly or through the national contact points. To enter the first phase is necessary a brief business plan based on an innovative idea. Successful applicants may receive a fixed sum of money (so-called lump sum) in the amount of €50,000. The first phase lasts max. 6 months and its purpose is processing a study testing the practical, economic and technological project sustainability.

An enterprise at this stage assesses implementation risks, creates a plan to maintain the intellectual property, develops a market study, plans innovative strategies, or looks for suitable partners for its project. The aim is to demonstrate the merits of the project and the potential for sustainable growth of society as a whole and the impact on employment growth. The conclusion of this phase is to develop a broader comprehensive business plan, based on which the company may enter into the second phase. In the second phase occurs an implementation of innovation activities.

The aim is to transform an innovative idea into a particular product or service. Entering the second phase is developed an extensive business plan and a detailed description of the innovation activities. The second stage can be entered by enterprises directly; therefore, it is not conditioned by completing the first phase. Businesses for example produce here prototypes, test, and create a design and so on. The period for this stage is 12 to 24 months. The contribution is between €0.5 – €2.5 million. Results of the 1st and 2nd phase should be a highly competitive
output that can be placed on the market. There is supposed a commercialization of innovative products and services.

This procedure can be represented by an algorithm into a model for participation and financing SMEs in Horizont 2020 (Fig. 3)

![Figure 3 – Modeling of innovative projects funding SMEs](image-url)
4 CONCLUSION

Within the paper, we have identified, characterized and shaped the steps of administering of projects of SMEs through the instrument SMEI. Advantages and simplification of this instrument of customized just for SMEs are clear: a simpler program structure, a single set of rules, less degree of bureaucracy and a single access point for participants. SME businesses may submit a proposal as individuals if they meet and fall under the criteria defining SMEs. The whole approval process of the innovation project and its financing is divided into three phases and it is not a condition for the company to participate in all three continuous, as well it is possible to start at the second phase. It turns out that all of these simplifications on applications are not sufficient for SMEs in Slovakia to be engaged and applying. The proof is yet a zero participation of Slovak SMEs in the first round of applications into the first phase. As a methodological tool for clarity and simplification of orientation of enterprises when administering projects we have created analgorised process respectively model of involvement and funding opportunities for SMEs under Horizont 2020. Through SMEI instrument, the model is the unification of sequential steps from business idea through the approval process of the project to finance and it can serves as a guide for applying an increasing percentage of a given project within the individual challenges.

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