

MAPPING THE INNOVATION CAPABILITIES OF SMES IN RURAL AREAS BASED ON COMMUNITY-LED LOCAL DEVELOPMENT SUPPORT

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Abstract

Innovations provide businesses with opportunities for growth and increased competitiveness. However, SMEs operating in rural areas are often less innovative due to limited financial and human resources. Supporting the innovation capabilities of these enterprises is therefore crucial, as it strengthens their technological level and long-term viability in relevant markets. To this end, the Technologies for SME-CLLD call was launched under the Operational Programme Technology and Applications for Competitiveness 2021–2027. The call supports SMEs in acquiring new machinery, technological equipment, software solutions, IT infrastructure, and related services. These investments aim to promote digitalization and automation of production, streamline service delivery, or create the necessary conditions for such improvements. The specific focus of the call targets innovation implementation and the development of innovative potential in SMEs. In the Czech Republic, Local Action Groups (LAGs), which are key actors in community-led rural development, play a significant role in fostering these innovation capabilities. The aim of this paper is to use an empirical survey conducted through the national network of Czech LAGs to map the innovation capacity of rural SMEs implementing projects under the Technologies for SME-CLLD call, and to determine the structure of supported projects according to CZ-NACE classification, substantive focus, and project activities. The collected data will be evaluated using descriptive statistics.

Keywords: Innovation Capabilities, Small and Medium Enterprises, Rural Areas, Community-Led Local Development

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Introduction

A significant role in supporting the innovation capabilities of SMEs in rural areas is played by Local Action Groups (LAGs) through the mechanism of Community-Led Local Development (CLLD). One of their core functions is the active acquisition and redistribution of subsidy funds from various operational programmes to ensure their effective and targeted use at the local level (NS MAS, 2024). In the previous programming period 2014–2020, LAGs drew resources from programmes such as Enterprise and Innovation for Competitiveness or the Rural Development Programme.

In the current programming period, the Operational Programme Technology and Applications for Competitiveness (OP TAC) 2021–2027 places a stronger emphasis on innovation, particularly through the Technologies for SME-CLLD call.

The aim of this paper is to use a questionnaire survey to map the innovation capabilities of small and medium-sized enterprises operating in rural areas that implement projects under the Technologies for SME-CLLD call, and to determine the structure of these projects according to CZ-NACE classification, their substantive focus, and implemented activities.

Theoretical Background

The definition of rural areas used in this study reflects the classification applied by Local Action Groups. LAGs operate on the principle of community-led local development, anchored in Commission Regulation (EU) No. 651/2014. Under this framework, LAGs define SMEs as enterprises with fewer than 250 employees and either an annual turnover not exceeding EUR 50 million or a balance sheet total below EUR 43 million.

In practice, however, LAGs also consider requirements of other operational programmes and calls when determining eligibility.

Rural areas are defined as territories composed of multiple municipalities grouped under a single LAG, with a population between 10,000 and 100,000 inhabitants. Each municipality included in a LAG must have fewer than 25,000 inhabitants and may belong to only one LAG (MMR ČR, 2025). In the Czech Republic, the National Network of Local Action Groups currently has 177 members, with three additional LAGs functioning outside this network: MAS Český les, Karlštejnsko, and Rozvoj Kladenska a Praha–západ. LAGs cover approximately 91% of the Czech territory; the remaining 10% consists primarily of military zones and cities with more than 25,000 inhabitants (NS MAS, 2024). Comparable structures operate in other V4 countries.

Innovation is essential not only for the survival of SMEs in rural areas, but also for the development of rural territories themselves. Recent studies show that innovation capabilities of rural SMEs tend to be weak and are significantly constrained by limited resources and unstable market conditions (Steinerowska-Streb, Peterková and Steiner, 2024). The adoption of digital technologies is similarly limited and closely connected to the quality of the local business environment (Holl and Ráma, 2023). Nevertheless, IT implementation has a demonstrably positive effect on rural firm performance and helps mitigate disadvantages linked to geographical remoteness (Ekeoma, 2024).

Although innovation is a key driver of growth and competitiveness, rural SMEs face a number of barriers such as insufficient infrastructure, limited access to customers, or scarcity of skilled labour. On the other hand, factors that support innovation include the use of local natural resources, strong traditions (Gamito, Madureira and Santos, 2021), a clear strategic vision, and an innovative mindset of business owners. These drivers often operate through a combination of pull factors (opportunities) and push factors (pressures for change) (Steinerowska-Streb, Peterková and Steiner, 2024).

Networks, chambers of commerce, and rural business centres help reduce barriers to innovation (Tiwasing and Sawang, 2021; Merrell *et al.*, 2022). Local action groups likewise create a participatory platform that brings together citizens, public administration, NGOs, and local businesses, effectively acting as territorial development leaders (Šaradin and Zapletalová, 2022).

Across EU countries, innovation performance is monitored through statistical sample surveys aligned with the Oslo Manual (2018), developed under OECD. The aim is to collect internationally comparable data on innovation activities. According to the Oslo framework, innovations are categorised into product innovations and business process innovations, the latter further divided into internal process, marketing, and organisational innovations. In the Czech Republic, these surveys are conducted by the Czech Statistical Office in two-year cycles, with the most recent data available for 2020–2022.

Methodology

The mapping of innovative capabilities was conducted among SMEs in rural areas. According to Commission Regulation (EU) No. 651/2014, SMEs are defined as enterprises with up to 250 employees and an annual turnover not exceeding 50 million EUR or a balance sheet total not exceeding 43 million EUR. The definition of rural areas is based on the definitions used in the operational programmes and calls for the support of Community-Led Local Development (CLLD), where it is assumed that a single Local Action Group may encompass several municipalities, with the population in the LAG's territory ranging from 10,000 to 100,000 inhabitants. It is also stipulated that each municipality within the LAG's area of operation must have no more than 25,000 inhabitants and can be a member of only one LAG (MMR ČR, 2025).

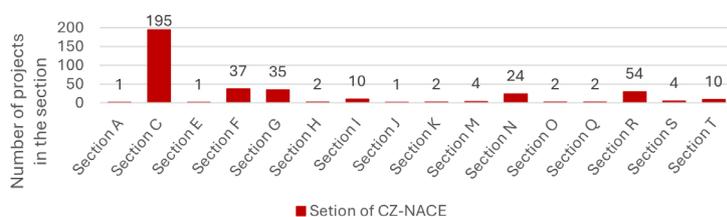
The mapping of innovative capabilities was carried out through a research survey, which was conducted using an online questionnaire created in Google Forms in cooperation with the NS MAS. The questionnaire was distributed to LAGs involved in the Operational Programme Technology and Applications for Competitiveness, specifically in the “Technology for MSI-CLLD” call. A total of 163 LAGs were approached. Data collection via the questionnaire took place over 10 days.

The following questions were posed within the research survey:

1. What will be the prevailing project focus according to CZ-NACE?
2. What substantive focus of projects will be most represented?
3. To which supported activities are the projects most tied?

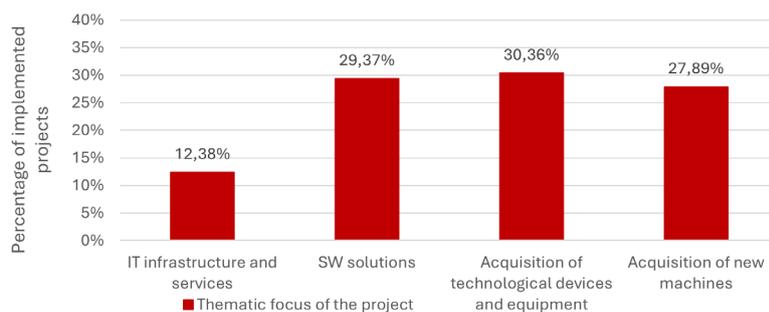
Results

In the research survey conducted via the online questionnaire, 163 LAGs were approached, with 92 LAGs completing the online questionnaire. The response rate for the questionnaire is 56%. It was found that the 92 participating LAGs have already implemented a total of 384 projects (see Fig. 1). The highest number of projects, according to the CZ-NACE classification of economic activities, was implemented in manufacturing (Section C), totaling 195 projects. The second-highest number of projects was achieved in the field of human health and social work activities (Section R), and the third-highest number was achieved in construction (Section F).



1: Number of implemented projects in individual CZ-NACE sections

Source: own elaboration



2: The number of implemented projects with regard to the thematic focus of the project

Source: own elaboration

The fewest projects were implemented in Sections A (Agriculture, forestry, and fishing activities), E (Water supply; sewerage, waste management, and remediation activities), and J (Information and communication activities), with one project each. In six sections (B, D, L, P, U, V), no projects were implemented.

The most numerous groups are projects with a substantive focus on the acquisition of technological equipment, including furnishings (30.36%), projects on software solutions (29.37%), and projects on the acquisition of new machinery (27.89%). In contrast, the least numerous group consists of projects with a substantive focus on IT infrastructure and services (12.38%). The percentage shares of projects by substantive focus are shown in Fig. 2.

The objective of the substantive focus of projects in the form of acquiring new technological equipment and furnishings, including the necessary infrastructure, is to support the technological level and competitiveness of SMEs. Simultaneously, the substantive focus of the project must be reflected in the supported project activities (see Fig. 3), where each project can be tied to one or more activities.

Based on the data, it was found that the majority of projects were tied to as many as three activities, with details provided in Tab. I.

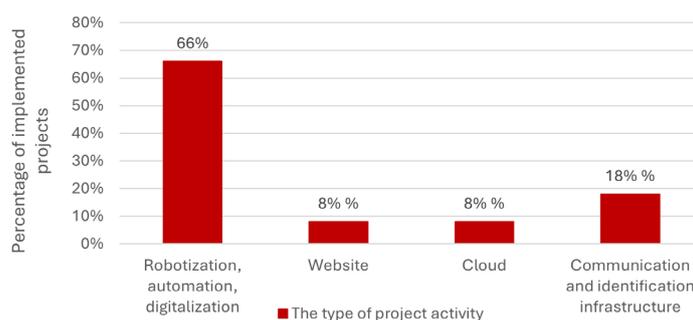
Based on the analysis of the project activities, it was found that the highest percentage of projects (66%) are focused on robotization, automation, and digitalization. This is followed by 18% of projects focused on communication and identification infrastructure (e.g., bar or QR codes, readers, RFID, CCID, portable terminals/tablets, etc.), 8% on cloud technologies, and an equal 8% on websites with e-commerce functionality. The analysis of project activities is presented in Fig. 3.

The most numerous group of projects, focusing on robotization, automation, and digitalization, encompasses the implementation of production and non-production technologies within the enterprise. Through the purchase of these technologies, the projects facilitate the integration of robotized manipulation

I: Number of activities related to the project

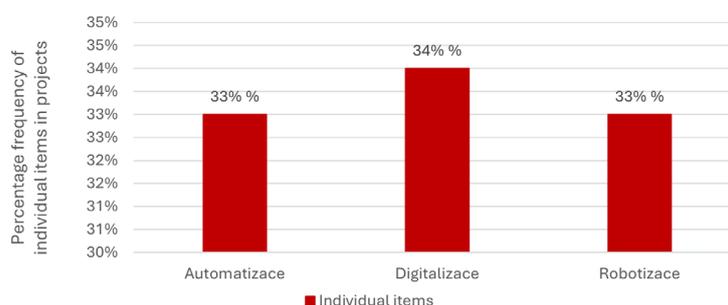
Number of activities	Number of projects
1 activity	34
2 activities	17
3 activities	241
4 activities	68
5 activities	21
6 activities	3

Source: own elaboration



3: The number of implemented projects with regard the type of project activity

Source: own elaboration



4: Percentage frequency of individual items in projects

Source: own elaboration

(e.g., robotic arms, automated warehouses, conveyors, etc.), the automation of internal production or non-production processes of the enterprise using computer systems (e.g., communication APIs, system automation, etc.), and the digitalization of internal company processes or product development. A more detailed analysis of this project group (see Fig. 4) revealed that 34% of projects target digitalization, 33% target automation, and 33% target robotization.

Discussion and Conclusion

Based on the research survey, the research questions were answered. It was found that most projects are solved in the manufacturing industry (research question 1), while most implemented projects are with a substantive focus on the acquisition of new technologies and equipment (research question 2). The projects are most closely tied to supported activities focusing on robotization, automation and digitalization (research question 3), with the projects most closely tied to digitalization.

With regard to the results obtained and taking into account the definition of innovation according to the Oslo Manual (2018), it can be said that the innovative capabilities of SMEs are applied primarily in the implementation of process innovations. Process innovation is understood as the introduction of new or improved business activities that differ significantly from those used by the company in the past. With the fact that they are mostly focused on internal process innovations, i.e. the introduction of a new or improved method of carrying out production or providing services, logistics activities, processing of corporate information, internal communication or their security; accounting, finance or other administrative activities (Oslo Manual, 2018).

Future research should aim to identify barriers and motivations of owners to submit innovative projects within the framework of community-led development through MAS.

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