
Digital Entrepreneurship Ecosystem Infrastructure - Business Environment Institutions: The Case in Poland

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Abstract:

Purpose: The article aims to analyse the process of digitisation of support services provided to small and medium-sized enterprises (SMEs) by selected business environment institutions (BEIs), particularly focusing on e-services and mobile services.

Design/Methodology/Approach: The research seeks to answer specific questions regarding the form and extent of support and the impact of funding from, inter alia, European Union programmes on the investment of BEIs and the correlation with the development of the digitalisation of the support provided and the expansion of the markets served. The study utilizes a combination of CAWI and CATI methods. Purposive sample - n=238, return rate in the first stage = 42%, in the second stage = 75%. The study employed a statistical test for two structure indicators to assess the significance of the effects resulting from the relationship between the examined features. The research aimed to determine whether the value of a structure indicator, representing the percentage of entities providing e-services or mobile services, differed significantly between groups categorized based on a binary feature related to the use of funding in a specific manner or to a specific extent.

Findings: The study provides empirical evidence of the importance of funding and cooperation for digitisation efforts in the provision of services by BEIs. Furthermore, it highlights the significant role of mobile and e-services in expanding into trans-regional markets, emphasising the mutually beneficial relationship between digitalisation and market expansion for SMEs. The results of the research allowed the identification of initial assumptions for supporting the digitisation of services provided by BEIs to meet the changing expectations and needs of SMEs.

Practical Implications: The research contributes to the discourse on the current role of BEIs in providing support to SMEs, particularly in the rapidly changing business environment, and highlights the significance of fostering innovation, cooperation, and networks in supporting SME development.

Originality/value: This study's originality lies in its examination of the evolving relationship between BEIs and SMEs, particularly in the context of online and mobile services. It seeks to verify the hypothesis that the form of support and communication through digital channels are crucial elements of cooperation between BEIs and SMEs.

Keywords: Entrepreneurship, business services, enterprise policy, digitalization.

JEL classification: L26, L53, L84.

Paper Type: Research study.

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1. Introduction

Analysing the evolution of the institutional business environment that took place in the last century, four main stages should be pointed out: (I) sector-oriented institutions providing "protective" services (support for traditional sectors) and managed at the national level - the 30s to the mid-60s (II) institutions focused on supporting innovative activities of the SMEs sector and its cooperation with the sphere of R+D - from the mid-60s to the end of the 70s (III) decentralization management of business environment institutions from the national to the regional level and a turn towards activating activities undertaken by units from various sectors that can contribute to the development of the region – the 80s (IV) institutions operating within the network focused on supporting interdisciplinary projects key to the long-term development of the region – from the beginning of the 90s to now (Matusiak, 2007; Velinov *et al.*, 2022).

The current situation is not the basis for observing the next stage in which each entity included in the institutional business environment "must enter", only this observation accelerated and escalated its importance.

According to how it defines the support provided by business environment institutions (abbr. BEIs) Matusiak: "Supporting entrepreneurship and innovative processes includes providing specific services and shaping a favourable entrepreneur and undertaking an independent economic and social environment" (Matusiak, 2007, p. 204), the indicated provision of specific services is crucial.

So, what should be done? Implement policies decisively and ruthlessly, including instruments that will support the activities of SMEs. Therefore, in addition to the actions taken by the government as part of fiscal and monetary policy, it is necessary to implement structural policy solutions in the field of support for SMEs by BEIs, both at the level of their operational and strategic activities.

The currently indicated provision of specific services involves their transfer to the network, i.e., the fifth stage of evolution predefined as: (v) BEIs creating and implementing support-oriented e-services and newly created and functioning SMEs, looking for an online and / or mobile offer – digitization of the services provided by BEIs.

The main objective of the study is to analyse the form of support provided to SMEs by selected business environment institutions, including in the field of e-services and mobile services. To achieve this goal, the following research questions were posed:

- What form of support does the BEIs provide to SMEs, with particular emphasis on online and mobile?
- What is the coverage of the support provided by BEIs to SMEs?
- Are BEIs active in obtaining financial support for business development?

- To what extent does the use of co-financing from European Union programs affect the effectiveness in acquiring new clients – SMEs, the quality of services provided by BEIs and the range of their operation?
- Do BEIs invest in development and cooperation as well as appropriate organization of cooperation (including online and / or mobile) to improve the quality of services provided, increase efficiency in acquiring new customers – SMEs and increase the range of operations.

The answer to the research questions is to provide a basis for verification of the research hypothesis, which was formulated as follows: Forms of providing support and communication between BEIs and SMEs using online and/or mobile services (channels) are becoming an important element of cooperation between these entities, and their development by BEIs may be a necessary condition for the long-term continuation of this cooperation due to changes in the expectations and needs of SMEs, especially in a situation where the conditions of functioning of entities change rapidly as a result of changes in the external environment.

The hypothesis refers directly to cooperation between science and economy, including the BEIs line with SMEs. Within which there can and should be an intensification of development activities, including the creation of innovations. The hypothesis is closely related to the adopted definition of BEIs support, according to which the key role of BEIs is to stimulate pro-development activities of SMEs, support the innovation transfer process and create cooperation networks (Cooke and Schartz, 2007).

Confirming or denying the hypothesis will therefore be tantamount to stating whether BEIs activities for SMEs can be considered as occurring at all, or whether they are only superficial, including in the field of digitization of services for SMEs (use of online channels or mobile activities). The adoption of such a perspective is justified primarily by the fact that the concept of support infrastructure in general, as well as in the context of changes, is currently used in many contexts and meanings, even abused.

Determining the determinants of the "form of organization of cooperation between SMEs and BEIs will therefore have a dimension organizing the discourse on the current role of BEIs in providing SMEs support, including online and/or mobile support, necessary in conditions of rapid change.

2. Literature Review

2.1 From System to Entrepreneurial Ecosystem

Over the last decade, the concept of entrepreneurial ecosystems has become an area of both intensified research and the use of its assumptions in the decision-making process of both governments and practitioners – entrepreneurs. It should be noted,

however, that its etymology has a longer history referring to concepts created in the 90s, defining entrepreneurial systems as actors with roles and environmental factors who cooperate to achieve the goal of increasing entrepreneurship in each area - usually a region (Spilling, 1996).

Cohen (2006) was the first to define the entrepreneurial ecosystem, which developed it with a component of benefits generated not only for the entrepreneurs themselves, but for all actors included in it. And he defined it as a diversified set of interdependent actors in each region who influence the shaping and final trajectory for the entire community, and consequently determine the potential of a given region economy. Thus, the concept of an entrepreneurial ecosystem refers to connecting stakeholders who often have different goals and expectations, while pursuing a common vision – the development of an environment that supports the creation of new ventures in each region (Gibson, 2000).

Audretsch and Belitski (2017) point to three essential features of the entrepreneurial ecosystem: (i) limitation to geographical location; (ii) a collection of many diverse institutions, organisations, businesses and even individuals who are members of the entrepreneurial ecosystem, and (iii) however, in order to be considered part of the ecosystem, an entity must contribute to its development and not just be a "roommate".

Thus, an entrepreneurial ecosystem is a collaboration of many diverse actors – not roommates, that contributes to the development of entrepreneurship in each region, which in turn benefits these actors and the regional economy.

The entrepreneurial ecosystem is a complex system in which individual actors – a.o.: customers, suppliers, universities and research centres, social and cultural actors, institutions and decision-makers, large companies, start-ups and entrepreneurs, experts and professionals, investors, and talented people – self-organise, create sustainable and interactive environments that engage entrepreneurial attitudes and abilities to support and develop entrepreneurship.

The main goal of the entrepreneurial ecosystem is to create and develop an environment in which entrepreneurs can more easily launch and conduct their business activities, as well as implement innovative projects. Activities undertaken within the entrepreneurship ecosystem are aimed at, m.in ensuring access to financing, mentors, advisors, specialists in various fields, as well as connecting entrepreneurs with potential partners.

The entrepreneurial ecosystem is crucial for economic development, innovation and increasing the competitiveness of enterprises operating within it (Berger and Kuckertz, 2016; Lindholm-Dahlstrand, Andersson, and Carlsson, 2019; Malecki, 2018).

2.2 The Structure of the Digital Entrepreneurial Ecosystem

The terminology of the digital ecosystem emerged at the beginning of the twenty-first century and referred to a self-organizing and sustainable system composed of heterogeneous digital actors and their interconnections, focusing on interactions to increase the usability of the system, promote the exchange of information, internal cooperation, and the development of innovation within the system.

It is an ecosystem in which digital technologies (e.g., mobile search) can be seen as an inanimate component, and the people who use these technologies (e.g., anyone who uses Google) are a living component and their interactions with each other and the resulting dynamic and continuous create ecosystem behaviour (Sussan and Zoltan, 2017).

The digital entrepreneurial ecosystem in general is therefore a network of digital tools, resources and services that support entrepreneurs at all stages of the organisation's life cycle, i.e., from the pre-incubation phase to the phase of decline or transition to re-incubation. The tools and resources included in the structure of the digital entrepreneurial ecosystem include the following elements (Kelly, 2017; Michna and Kaźmierczak, 2020; Fidali, (ed.) 2021; Moczyłowska, 2023):

- E-commerce platforms that allow you to sell products or services with a global reach and without specialization (e.g., Amazon or eBay), or more specialized ones, such as m.in.: Etsy for handicrafts or their domestic equivalents, which also undertake activities in the field of internationalization m.in. Allegro or DecoBazar. And, platforms created by SMEs, using available tools (e.g., WooCommerce, Magento or Shopify) or designed individually.
- Business management software, including, accounting, payments, human resources management or contact with customers.
- Data analysis tools m.in such as web analytics, market research tools and financial analysis tools (e.g., Google Analytics or Adobe Analytics).
- Software for automating business processes such m.in as customer service, order processing or inventory management (e.g., Zapier or IFTTT).
- Digital marketing tools such m.in as search engine ads, social media ads and marketing campaigns (e.g., Google Ads or Facebook Ads).
- Customer relationship management tools, including m.in CRM (Customer Relationship Management, e.g., Salesforce, HubSpot or Zoho) systems.
- Payment processing tools such as payment platforms and payment terminals.
- Inventory management tools such as m.in warehouse management systems and production planning software.
- Website builders like WordPress, Wix, and Squarespace.
- Mobile applications that allow you to communicate with customers and manage your business using smartphones and tablets.
- IoT (Internet of Things) technologies that connect devices to the Internet,

- allowing remote monitoring and management and collection of data on product usage and environment.
- Cloud resources, including tools for storing and sharing data in the cloud, e.g., Google Drive or Dropbox.
 - Resources on social networks within the created groups that share their experiences and knowledge on diversified topics, e.g., groups on Facebook, Messenger, or discussion forums, e.g., on Reddit.

To sum up, the tools and resources included in the structure of the digital entrepreneurial ecosystem enable entrepreneurs to launch and conduct business online. With these tools and resources, entrepreneurs can sell products and services online, manage customer relationships and projects, analyse data, promote their online business, store data in the cloud, automate business processes, and share knowledge and experience in business communities. SMEs can use them free of charge or with partial or full fees, but thus gaining access to tools and resources tailored to their needs and requirements.

However, one cannot ignore an important observation that results from the literature on the subject, namely the shortage of tools and resources. Although digitalisation pushes the boundaries of seeking business opportunities and reduces the importance of location, external specialised resources, such as m.in business environment institutions and specialised human capital, remain to some extent site-specific, e.g., due to language or area-specific behaviour.

The scarcity of resources for new ventures is therefore more pronounced in emerging economies than in developed economies, making access to a certain proportion of resources more important for ventures operating in these countries (Cao and Xianwei, 2021). However, the development of digital entrepreneurial ecosystems has a positive impact on the gradual closing of the existing gap in tools and resources in emerging economies.

2.3 Actors in the Digital Entrepreneurial Ecosystem

A digital entrepreneurial ecosystem can also be defined in terms of participating actors and stakeholders/agents who, through different roles and responsibilities, contribute directly or indirectly to the objectives of the digital entrepreneurial ecosystem. Due to the generic analogy, one can use the definition of four groups and their roles developed by the team of Dedehayir, Mäkinen, and Ortt (2018), which distinguished:

- ecosystem leaders (leadership role);
- suppliers, general partners and users (direct ecosystem value creation role);
- expert/agent (role supporting ecosystem value creation);
- entrepreneur, regulator, sponsor (entrepreneurial role in the ecosystem).

In the case of the digital entrepreneurial ecosystem, these entities are identical in type and perform analogous roles, but to a greater or full extent their interactions in the ecosystem are based on digital technologies and their application to the continuation or implementation of new ventures.

An entrepreneurial ecosystem can be at the same time a digital ecosystem, as it can use digital technologies, at every stage of entrepreneurial activities and by aggregating a heterogeneous and geographically dispersed network of entities (Elia, Margherita, and Passiante, 2020).

Due to the subject of the analysis, it is necessary to consider what role and whether business environment institutions can and do play in individual groups of the digital ecosystem. While recognizing that digital technologies are becoming more service-oriented, socially embedded and burdened by intense human interactions, moreover, digitization connects systems and networks at global, national, regional and industry levels, which are subject to constant change due to the diverse base of installed digital technologies and the users who are designers or operators of these systems (Tilson, Lyytinen, and Sorensen, 2010; Michalak, Nowakowska, and Antczak, 2022). And therefore, the overarching one.

The role of business environment institutions is to create flexible conditions conducive to the development of entrepreneurship in the digital space, especially in the SME sector.

Business support institutions play an important role in the digital entrepreneurial ecosystem. Their aim is to support SMEs in participating in the digital transformation and digitization of their activities. These activities can be supported by access to digital databases, the creation of dedicated platforms, integrated mobile development environments, big data and cloud computing infrastructure, cybersecurity and Blockchain infrastructures or MOOCs (Vinogradov, Leick, and Assadi (eds), 2021; Richter, Kraus, Brem, Durst, and Giselsbrecht, 2017; Kraus, Palmer, Kailer, Kallinger, and Spitzer, 2018; Shen, Lindsay, and Xu, 2018).

To support the development of competencies and learning processes of individuals and teams involved in the development of existing or newly established enterprises. In addition, they allow new ways of collaborating, collecting, sharing, and organizing resources, with the goal of providing comprehensive support for the innovation process in the digital space.

3. Research Methodology

The surveys were carried out between September and October 2022 by the Department of Entrepreneurship and Industrial Policy of the Faculty of Management of the University of Łódź. The survey was carried out using a mixed method, i.e., CAWI, which was additionally supported by the CATI method.

The aim of the research was to obtain information on the form of support provided by BEIs to SMEs, with particular emphasis on the online and mobile form; coverage of the support provided by BEIs to SMEs; activity in obtaining financial support for the development of BEIs activities in the field of digitization of services provided.

The selection of centers for the trial was deliberate. For the purposes of the study, a database of Business Environment Institutions was developed, which have websites of 238 centers operating throughout the Polish, divided into entrepreneurship centers, innovation centers, non-bank financial institutions and agencies, including those divided into voivodships.

The BEIs database was created based on Polish Business and Innovation Centers Association in Poland reports, Polish Agency for Enterprise Development, websites of Marshal's Offices, City Halls and other materials concerning the functioning of BEIs in Poland.

In the first phase of the CAWI study, it was planned to obtain 100 complete, verified questionnaires. Supplementing the CAWI research with the CATI method allowed to obtain 180 complete, verified questionnaires.

3.1 Description of the Statistical Methods Used

To assess the statistical significance of the effects resulting from the relationship between the examined features of the study, a test for two structure indicators was used.

In each case, the research problem concerns the assessment of whether the value of the structure indicator describing the percentage of data answers to a question related to the characteristic - the percentage of entities providing e-services or mobile services - differs significantly in groups separated due to the binary feature - between entities using and not benefiting from funding in a specific way or to a specific extent.

The binary characteristic creates two groups, the comparison concerns the value of the structure indicator associated with the feature A in both groups. The feature A is a characteristic with a zero-one distribution, and the true value of the structure indicator is the parameter of this distribution.

Let p_1 and p_2 denote the true values of the structure indicator in both groups (distribution parameters). The null hypothesis of the test is:

$$H_0: p_1 = p_2,$$

To the alternative hypothesis:

H1: $p_1 \neq p_2$.

Assuming the null hypothesis is true, the test statistic:

$$z = \frac{w_1 - w_2}{\sqrt{(\tilde{p}\tilde{q})/n}}$$

has an asymptotically standardized normal distribution $N(0,1)$ (Sobczyk, 2001).

The following markings were used in the design:

$w_1 = m_1/n_1$, $w_2 = m_2/n_2$ – empirical values of the structure index from the sample in both groups:

$$\tilde{p} = \frac{m_1 + m_2}{n_1 + n_2}, \tilde{q} = 1 - \tilde{p};$$

$$n = \frac{n_1 \cdot n_2}{n_1 + n_2};$$

m_i , n_i – the number of elements distinguished by feature A in the sample and the number of all observations in the sample for group i determined by characteristic B.

The test statistic has a bilateral area of rejection, the hypothesis was tested at the significance level $\alpha = 0.05$ (5%). The null hypothesis is rejected when $|z| > Z_{1-\alpha/2}$, where $z_{1-\alpha/2}$ is the corresponding quantile of the normalized normal distribution.

Rejection of the null hypothesis means finding the presence of a significant effect, i.e., a statistically significant difference between the values of the examined structure index in both groups.

In the study, the values of the significance limit (p value) are included as test results. In view of the assumed significance level of 0.05, those effects for which p value < 0.05 should be considered significant.

4. Research Results and Discussion

This analysis attempts to assess the diversity of measures describing the digitization of services provided by BEIs and the scope of their operation due to the scope of use of co-financing from EU programs, as well as some additional characteristics describing the activities of BEIs. The statement that some of these factors statistically significantly differentiate the achieved effects on digitization and coverage may be the basis for inferring the impact of these factors on the digitization of services and the scope of action.

The main aspect of the digitization of services that is of interest to the study is their provision in electronic and/or mobile form. Since the number of entities providing mobile services in the examined sample was very small, and the percentage of

entities providing e-services is not too large, it was decided to combine both categories.

Therefore, the percentage of entities providing e-services or mobile services (at least one of these two types of services) has been taken as a measure of digitisation.

The range of activity is assessed by the target market indicated by the entity. The study considers 4 types of markets: local, regional (province), national and international. As pointed out in the part of the analysis devoted to the issue of the target market, activity at the first 2 market levels concerns virtually all entities, so the measure of the effect regarding the scope of activity is entering the supra-regional market.

Thus, 2 measures of the effect on the range of action were used:

- weaker: identification of the supra-regional target market for services (i.e., national, or international);
- stronger: indication of the international target market for services.

Potential factors explaining the examined effects, i.e., differentiating the values of the above-mentioned measures, according to the content of the hypothesis are:

- about the use of the EU grant;
- use of co-financing of EU programmes (use of at least 1 grant/programme);
- active use of co-financing of EU programmes (use of at least 4 grants/programmes);
- use of co-financing for the development of infrastructure;
- use of co-financing for the retrofitting of institutions;
- using subsidies for training for employees;
- use of funding for the development of IT infrastructure.

As regards the use of EU funding, both the fact and intensity of use (the first 2 factors) and the use of the funds obtained were considered. Considering the method of use, the development of services provided was omitted, as it concerns virtually all entities raising funds.

In addition, going beyond the content of the hypothesis, the relationship between the type of services provided and the explained effects was also examined. The following types of services are considered, the provision of which differentiates the community, namely:

- training services;
- financial services;
- infrastructure services.

The difference between the percentage of entities providing online and/or mobile services in both compared groups (entities using and not benefiting from EU program co-financing) may indicate that a given factor (in this case the use of subsidies) is related to the effect in the form of digitization of services provided.

However, it does not answer whether the observed effect is large enough to be considered statistically significant, i.e., not explainable by random sample selection, and thus confirming the existence of a real relationship.

To assess the statistical significance of the observed effects, a test was used for two structure indicators (a test based on statistics with an asymptotically normal distribution) (Sobczyk, 2001).

The null hypothesis of the test assumes equality of indicators (percentages) in both compared groups, the alternative hypothesis – that the values of the indicators are different (bilateral rejection area).

The rejection of the null hypothesis means the finding of a statistically significant difference between the two compared groups and indicates the existence of a relationship between the factor under consideration and the effect under study (digitization of services).

The results of the statistical assessment of the significance of effects on individual factors are presented in the table. Table 1 contains:

- the value of the effects – if the percentage of entities providing innovative services is higher in the group of entities affected by the factor than in the group including other entities; a positive effect (difference) indicates that the factor in question is conducive to innovation in services;
- the results of the assessment of statistical significance of the effects by means of a test for two structure indicators, expressed using the significance limit (p-value).

Inference is carried out at the level of significance (with the probability of error of type I) 0.05 – the effect is considered significant when the p-value < 0.05.

The result of statistical inference shows that only a small part of the differences in the indicator values observed in the graph turned out to be statistically significant. However, it confirms the existence of a statistically significant link between both the use of funding (in specific areas) and the digitalisation of the provision of services (i.e., e-services and mobile services).

The statistical test confirms that the use of grants for the development of infrastructure and IT infrastructure, as well as cooperation with scientists, are positively linked to the digitization of the services provided.

However, no statistically significant relationship was found between quantitative activity (not related to the direction of use) in obtaining funds and the frequency of service provision. Similarly, there was no statistically significant effect for the type of services provided.

Table 1. *Use of subsidies by BEIs and digitalisation of services provided.*

Considered factors differentiating the value of the indicator	Value of difference (effect) [percentage points]	Assessment of the materiality of the difference (p-value)
<i>Using co-financing from European Union programmes</i>		
use of co-financing of EU programmes (at least one)	+1,6	0,638
active use of co-financing of EU programmes (out of 4 or more)	-4,6	0,143
using co-financing for infrastructure development	+14,9	0,000
using funding for the retrofitting of institutions	+3,3	0,291
using funding for training for employees	+2,3	0,526
using funding for the development of IT infrastructure	+10,1	0,008
<i>Provision of specific types of services</i>		
provision of training services	-1,8	0,580
provision of financial services	+0,7	0,825
provision of infrastructure services	-0,7	0,858

Note: Statistically significant effects at the 0.05 significance level are shown in bold.

Source: Author's calculations.

To assess the relationship between the innovativeness of services provided by BEIs and their effectiveness in conquering supra-regional markets, an analogous research approach was used as, the measure of digitization is the provision of e-services or mobile services, while when assessing expansion into supra-regional markets, the percentage of entities indicating any supra-regional market (national or international) and – as a narrower category, representing the highest level of expansion – the international market was taken into account.

The rationale for this approach is presented in the earlier part of the study.

The difference in the percentage of entities indicating a specified supra-regional target market between the group of entities providing e-services or mobile services and the group of entities not providing such services is shown in Table 2.

Table 2. Relations between the digitization of services provided by BEIs and their effectiveness in conquering supra-regional markets.

Concerns the indication of the target market:	Value of difference(effect)[percentage points]	Assessment of the materiality of the difference (<i>p-value</i>)
Any supra-regional market (national or international)	+28,7%	0,000
International market	+22,1%	0,000

Note: Statistically significant effects at the 0.05 significance level are shown in bold.

Source: Author's calculations.

The subject of the analysis is the assessment of whether the digitization of services and expansion into supra-regional markets can be described as coexisting phenomena, mutually favoring each other, or whether there are no dependencies between them or even concern different groups of entities.

The results presented in the table show that entities providing online and/or mobile services are much more likely to declare both the supra-regional market and the international market as the target market (in relation to entities not providing such services). The statistical test for the two means in both cases confirms the significance of the observed difference (effect).

P-values close to zero give a very strong statistical confirmation of the observed relationship. This means that the digitization of services provided and expansion into supra-regional markets in general, or into the international market, are indeed coexisting phenomena.

The provision of mobile and electronic services is a very important means of conquering sub-regional markets and a tool for operating in these markets. On the other hand, it can be presumed that the fact of conducting activities with a supra-regional range to a large extent forces or at least strongly motivates to use and develop such tools.

These theses are strongly confirmed statistically in the results of the analysis of data collected in the study.

5. Conclusions and Recommendations

The statistical analysis conducted in this study revealed several significant findings. Firstly, it was found that there is a statistically significant link between the use of funding, particularly in specific areas, and the digitalization of service provision, including e-services and mobile services.

The study identified that grants utilized for infrastructure development and IT infrastructure, as well as collaboration with scientists, have a positive correlation

with the digitization of services. However, no statistically significant relationship was found between quantitative activity in obtaining funds and the frequency or type of service provision.

Regarding the coexistence of digitization of services and expansion into supra-regional markets, the results indicate a strong relationship between these factors. Entities providing online and/or mobile services were more likely to target supra-regional and international markets compared to entities not offering such services. The statistical tests confirmed the significance of these observed differences, with very low p-values indicating a robust statistical confirmation of the relationship.

The provision of mobile and electronic services was identified as a crucial factor for entering sub-regional markets and operating effectively within them. It was also suggested that engaging in activities with a supra-regional reach strongly motivates the utilization and development of such digital tools. These findings were strongly supported by statistical analysis of the collected data.

In summary, the study provides empirical evidence supporting the importance of funding and collaboration for digitalization efforts in service provision. Additionally, it highlights the significant role of mobile and electronic services in expanding into supra-regional markets, underscoring the mutually beneficial relationship between digitization and market expansion.

Digital technologies are becoming increasingly service-oriented, socially embedded, and laden with intensive human interactions, moreover digitization connects systems and networks at global, national, regional and industry levels, which are in constant flux due to the diverse installed base of digital technologies and the users who are the designers or operators of these systems.

Thus, the overarching role of business environment institutions is to create a flexible environment conducive to the development of entrepreneurship in the digital space, especially in the SME's sector.

What role and if any Business Environment Institutions can and do play in the various groups of the Digital Entrepreneurship Ecosystem?

Support the maintenance and development of ecosystem functionality by:

- designing the roles of ecosystem participants (SME's) in terms of cooperation with the BEI's;
- supporting the coordination of internal and external SME's interactions.
- Infrastructure support for the ecosystem, through:
 - designing and building platforms for SME's, including in the use of BEI's services;
 - opening up platforms, data and infrastructure to build a community of users

- and increase their value;
- managing innovation in the context of the platform.

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