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Assessing the Influence of Science and Research Institutions on Innovation in Austrian Service SMEs

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Abstract
This article delves into fundamental aspects related to Austrian small & medium-sized service enterprises, and their impacts on the innovation capabilities of these entities. The study is based on Austrian small & medium-sized service enterprises in the service sector, focusing specifically on the intensity and effectiveness of their collaboration with business environment institutions in driving innovation. The research was guided by the objective of assessing how business environment institutions influence the innovation processes within Austrian small & medium-sized service enterprises. To explore this, a research hypothesis was formulated, suggesting that universities, as key business environment institutions, have the most significant positive impact on the innovation performance of micro, small, and medium-sized service enterprises. The research employed a questionnaire-based survey method to collect data from the participating small & medium-sized service enterprises, providing a comprehensive overview of their interactions with various business environment institutions. The results revealed a generally low level of cooperation between Austrian small & medium-sized service enterprises and business environment institutions, with such collaborations often being sporadic or occurring on an ad hoc basis rather than as part of a sustained effort. Most business environment institutions were found to have limited influence on the innovation activities of these enterprises. However, the study identified a crucial exception in the form of cooperation with institutions involved in science, research, and development. These specific collaborations were shown to have a notably positive effect on enhancing the innovation levels of the small & medium-sized service enterprises surveyed. This article underscores the critical role that science and research-focused institutions play in fostering innovation among service-oriented small & medium-sized service enterprises in Austria. It also highlights the need for more consistent and robust partnerships between small & medium-sized service enterprises and business environment institutions, particularly with universities and research institutions. The findings provide essential insights for policymakers aiming to strengthen innovation within Austria's service sector, emphasizing the importance of targeted support mechanisms to enhance small & medium-sized service enterprises competitiveness and innovation.

Keywords: Innovation, SMEs, Service Sector, Business Environment Institutions
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1. INTRODUCTION

The small and medium-sized enterprises (SMEs) sector plays an increasingly important role in the global economy, largely due to its ability to drive job creation and contribute significantly to gross domestic product (GDP). Across various economies, SMEs have become vital for maintaining economic stability and fostering growth. In Poland, for example, the SME sector has shown remarkable growth, with nearly 4 million SMEs registered in 2014. Their contribution to Poland's GDP was substantial, accounting for approximately 48% of the total economic output (Tarnawa and Zadura-Lichota, 2015). This illustrates the critical role SMEs play in sustaining the country's economic structure, reflecting similar trends seen in many other developing and developed nations. The employment impact of the SME sector in Poland is also significant, with about 69% of the workforce being employed by SMEs since 2003. This percentage is even slightly higher than the European Union (EU) average, underscoring the sector's central role in reducing unemployment and improving livelihoods (Tarnawa and Zadura-Lichota, 2014). This ability of SMEs to absorb large portions of the labor force has proven invaluable, particularly during periods of economic turbulence, as small businesses tend to be more adaptable and capable of creating jobs in response to changing market conditions.

However, while SMEs are undoubtedly a driving force in economic output and employment generation, their contribution to innovation can be somewhat limited, depending on the country and its broader economic environment. In Austria, for example, despite SMEs being the foundation of the national economy, their role in promoting innovation is notably less prominent. In Austria, innovation activities are dominated by larger enterprises, which typically have greater access to financial resources, advanced technologies, and specialized talent to engage in research and development (R&D) initiatives. Large Austrian firms exhibit high rates of engagement in innovative activities, with 63% to 65% of them investing in

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innovation projects, thereby driving technological advancement and competitiveness (Grego-Planer, 2016). By comparison, the innovative capacity of Austrian SMEs, particularly small businesses, is much lower. Only 17.4% of small enterprises in Austria are involved in innovative activities, which positions them last among EU countries in terms of innovation performance. This statistic highlights the disparity between small enterprises and their larger counterparts in terms of contributing to Austria's overall innovation ecosystem. Moreover, even medium-sized businesses in Austria struggle to keep pace with larger firms in innovation, with only 35.8% of them engaging in innovative activities. This places them second to last among EU member states (Zadura-Lichota, 2015). This underperformance in innovation within the Austrian SME sector can be attributed to several factors. First, smaller enterprises often face constraints in terms of financial resources, making it difficult for them to allocate significant budgets toward R&D or to invest in the latest technologies. Unlike large companies that can afford to create dedicated innovation teams or partner with research institutions, SMEs may lack both the internal capacity and external networks to foster innovation. Moreover, the limited access to advanced technological infrastructure and the high costs associated with acquiring cutting-edge tools and systems further exacerbate the innovation gap between small businesses and larger entities. Another contributing factor is the talent pool. Large firms generally have the resources to attract highly skilled professionals with expertise in R&D, innovation management, and product development, whereas smaller enterprises may struggle to compete for such talent. The absence of specialized knowledge within SMEs can restrict their ability to innovate, adapt to emerging market trends, or scale new ideas effectively. Additionally, the bureaucratic complexity and regulatory barriers that SMEs often face when applying for innovation grants or subsidies can disincentivize them from pursuing innovative projects.

Despite these challenges, SMEs remain critical players in the broader economic framework, and their potential to drive innovation should not be underestimated. In many countries, policymakers have recognized the need to create a supportive environment that enables SMEs to overcome the barriers to innovation. Efforts to enhance access to funding, streamline regulatory processes, and provide incentives for innovation are essential for encouraging greater participation of SMEs in R&D activities. For instance, initiatives such as innovation vouchers, tax incentives for R&D expenditure, and government-backed funding programs specifically tailored for SMEs can significantly improve their ability to engage in innovation. Additionally, fostering closer collaborations between SMEs and research institutions or universities can provide smaller businesses with access to the knowledge, expertise, and resources they need to innovate. Through partnerships, SMEs can tap into new technologies, benefit from knowledge spillovers, and contribute to the development of innovative products and services that enhance their competitiveness both domestically and internationally. Furthermore, the growing trend toward digitalization presents an opportunity for SMEs to level the playing field in innovation. The digital economy offers a range of tools and platforms that can reduce the cost of innovation, allowing even small firms to participate in global markets and scale their innovative ideas. SMEs that embrace digital technologies can enhance their operational efficiency, expand their customer base, and innovate in ways that were previously out of reach.

In conclusion, while SMEs are fundamental to economic growth and job creation, their contribution to innovation, particularly in countries like Austria, remains limited when compared to larger enterprises. To fully unlock the innovative potential of SMEs, it is crucial to address the financial, technological, and regulatory challenges they face. By fostering an enabling environment through targeted policies and support mechanisms, SMEs can be better positioned to contribute to national and regional innovation ecosystems. As global competition intensifies, boosting the innovative capacity of SMEs will be key to ensuring their long-term sustainability and their continued role in driving economic development. This article, however, focuses on the innovation challenges faced by a specific subset of businesses: small and medium-sized service enterprises. As noted by Glabiszewski (2016), services play a fundamental role in the modern world. The dynamic growth of the service sector, both in terms of quantity and quality, demonstrates a stable upward trend. This sector can no longer be seen as merely supporting production processes; it has evolved into a central driver of economic activity in its own right. In regions like Western Europe and the United States, the service sector has become dominant, employing approximately 80% of the workforce and contributing more than 50% of these economies' gross domestic product (GDP) (Tidd and Bessant, 2011).

In Poland, while the service sector has not yet reached the levels seen in Western economies, its importance has increased considerably over recent years. The service sector within the small and medium-sized enterprises (SMEs) category contributes, on average, 30% to the country's gross value added (Tarnawa and Zadura-Lichota, 2014). Although this figure is lower than in more developed economies, it reflects the growing role of services in Poland's economic structure.

This shift toward a service-dominated economy highlights the need for innovation within the SME service sector. As economies become more service-oriented, the ability of service SMEs to innovate will play a crucial role in maintaining competitiveness and driving future growth. Traditionally, the service sector has been perceived as less innovative compared to manufacturing industries, but this perception is changing. Innovations in technology, customer experience, and operational processes are increasingly being implemented in service industries, enhancing their efficiency and value proposition. However, service SMEs face unique challenges in fostering innovation, including limited financial resources, difficulty accessing technology, and the need for specialized skills. These constraints make it harder for them to engage in research and development (R&D) or to implement disruptive innovations. Despite these barriers, service SMEs must continuously adapt to market changes, consumer expectations, and technological advancements to remain competitive in a rapidly evolving

business environment. The service sector, particularly among small and medium-sized enterprises, has become an increasingly vital component of modern economies. Its contribution to GDP and employment is substantial, both in advanced economies and in emerging markets like Poland. For SMEs in the service sector, innovation is not only necessary for growth but also essential for survival in a competitive global marketplace. Policymakers and industry leaders must prioritize support for innovation in this sector to ensure its sustained development and integration into the broader economic landscape. As the generation of wealth in industrialized countries increasingly shifts from production to service activities, there is a growing and diverse interest in the service sector. However, as noted by Flipo (2001), services are still an area that remains underexplored by specialists and scientists, particularly in the field of management. This gap in attention is notable given the growing importance of services in contemporary economies. One of the key challenges that service companies face is the intangible nature of their offerings, which leads to unique difficulties when it comes to innovation. Unlike tangible products, services are often harder to standardize, measure, and innovate, adding complexity to the process of enhancing or developing new service offerings. The non-material nature of services has significant implications for companies that operate in this sector. It creates hurdles not only in the delivery and management of services but also in their capacity to innovate effectively. Service innovation often requires rethinking business models, customer interactions, and operational processes in ways that are distinct from product-based innovation. This adds another layer of difficulty for small and medium-sized service enterprises (SMEs), which often lack the resources and support systems that larger firms can rely on to drive innovation. To help address these challenges, various types of Business Environment Institutions (BEIs) exist with the purpose of supporting entrepreneurs, especially SMEs, in overcoming difficulties related to the implementation of innovations. These institutions are designed to provide resources, guidance, and expertise to help SMEs navigate the complexities of innovation in the service sector. However, whether these institutions are truly effective in assisting SMEs in the service industry remains an open question. To explore this issue, the authors conducted empirical studies on a sample of over two hundred and sixty SMEs operating in the service sector. The aim was to determine the extent to which these businesses actually benefit from the support of BEIs. Specifically, the research sought to understand how frequently and intensively SMEs collaborate with BEIs, and whether this cooperation leads to measurable benefits in terms of innovation. The research also posed the question of whether these institutions are genuinely helping service SMEs to implement innovative practices, or if their support is more theoretical than practical. The central research objective of this article is to assess the impact of Business Environment Institutions on the innovation capacity of Austrian small and medium-sized service enterprises. By evaluating the role of BEIs, the article aims to shed light on whether these institutions effectively contribute to fostering innovation within the service sector, or whether there are gaps in the support they provide. Understanding this relationship is crucial, as innovation is increasingly recognized as a key driver of competitiveness, growth, and long-term sustainability for SMEs in the modern economy. The findings of this research will have important implications for policymakers and industry leaders seeking to improve the innovation ecosystem for service-based SMEs.

2. BUSINESS ENVIRONMENT INSTITUTIONS AND INNOVATIVENESS OF ENTERPRISES

The basic classification of support instruments for small and medium-sized enterprises (SMEs) can be divided into two categories: direct and indirect support. Indirect instruments are those aimed at creating a favorable environment for business development. These include measures such as reducing bureaucratic barriers, improving road and transport infrastructure, and other general initiatives that enhance the business landscape. While these forms of support do not directly target specific enterprises, they contribute to a broader, more conducive environment for SME growth and development. On the other hand, direct support instruments involve the provision of tangible financial or advisory resources to businesses. This includes subsidies, grants, or other forms of financial assistance that are provided to enterprises that meet certain eligibility criteria. Such financial support is often aimed at helping businesses overcome specific challenges or invest in growth and innovation. Additionally, direct support can also take the form of free consultancy services provided to entrepreneurs, offering them expert guidance on business operations, strategy, and innovation (Filipiak and Ruszała, 2009). This type of direct intervention is critical in helping SMEs access the resources they may lack, whether financial or knowledge-based, to expand and thrive in competitive markets.

Both types of instruments play important roles in supporting SMEs, but their impact differs. Indirect support tends to address broader systemic issues that affect the business environment, whereas direct support offers more targeted aid to businesses, helping them meet immediate needs and improve their capabilities. All types of support instruments for small and medium-sized enterprises (SMEs) are offered by a wide array of Business Environment Institutions (BEIs). According to R. Lisowska (2013, p. 192), these institutions encompass entrepreneurship support centers, business organizations, service companies, and financial institutions. Regardless of the specific classification of BEIs, the crucial aspect is the kind of support they offer to entrepreneurs. Typically, this support includes initiatives to foster academic entrepreneurship, improve company management, provide information and advisory services, establish connections with foreign contractors, enhance competitiveness, facilitate technology transfer, and offer pro-innovation services (Lisowska, 2014). In the context of the modern knowledge-based economy, innovation has become one of the most critical components of this support. Among the various forms of assistance provided by BEIs, promoting innovation is increasingly recognized as essential for enterprise development. Innovation is seen as a fundamental driver of a company's competitiveness, requiring businesses to engage in

ongoing learning, market adaptation, and the continuous modification of their offerings (Sudolska, 2010). Many scholars adopt a broad view of innovation, treating it as any change occurring across different areas of a company's operations. This includes modifications to products or processes, new forms of distribution, or novel management concepts (Haffer, 1998; Porter, 1990; Janasz, 2003). As companies face increasingly competitive and dynamic markets, the ability to innovate becomes a key determinant of their success. BEIs play a critical role in facilitating this innovation by providing the necessary resources, knowledge, and networks for companies to adapt and thrive in an evolving business landscape. By focusing on innovation and competitiveness, BEIs help businesses not only survive but also excel in a rapidly changing global economy. Innovation involves not only the development or enhancement of products and services but also encompasses improvements in markets, administrative techniques, and the technology used to carry out organizational functions. Additionally, it includes changes in strategy, organizational structures, and approaches to competition (Liczmańska-Kopcewicz, 2017). Consequently, innovation should not be narrowly defined as simply the introduction of a new product or the application of a novel technology. Rather, it must cover all aspects of a company's operations, regardless of the sector or industry in which the company operates.

In today's turbulent and constantly evolving business environment, the survival and competitive advantage of any organization depend on its ability to keep pace with the rapid changes happening around it. As Cyfert (2013) argues, an organization's success is increasingly tied to its capacity to adapt and innovate in response to external shifts. The companies that can react more quickly to these changes are better positioned to thrive in such an environment. Whether it's by adjusting strategies, adopting new technologies, or evolving their business models, enterprises that prioritize agility and innovation are more likely to maintain a competitive edge in an ever-changing market. In essence, innovation must be embedded in every aspect of an organization, from its internal processes to its engagement with external market dynamics. The ability to innovate continuously, in all spheres of the business, becomes a crucial determinant of long-term success. The companies that can align their operations with the fast-paced development of the external environment will have a significant advantage over competitors that are slower to adapt.

In Poland, support for fostering innovation within the SME sector is primarily facilitated through Innovation and Entrepreneurship Centres (IECs). These centres aim to address the specific needs of entrepreneurs, focusing on promoting innovative entrepreneurship, encouraging experimentation, facilitating technology transfer, and advancing the commercialization of knowledge. Additionally, they play a crucial role in improving the competitiveness of small and medium-sized enterprises (SMEs). IECs are categorized into entrepreneurship centres, innovation centres, and non-bank financial institutions, each offering tailored services to support the innovation process (Bąkowski and Mażewska, 2014). In a similar vein, Austria has developed a robust infrastructure for supporting innovation. According to data from 2014, there were 176 institutions managing innovation centres and business incubators, operating within 137 parent institutions across the country. These centres serve as crucial platforms for startups and SMEs to access resources, mentorship, and networks that facilitate the development and commercialization of new ideas and technologies. Such institutions play a key role in the broader ecosystem of innovation, helping businesses navigate the challenges of market entry, growth, and competitive positioning through innovative strategies and solutions. This network of support systems in both Poland and Austria highlights the importance of institutional backing in driving the innovation potential of SMEs, which are critical to the economic vitality and technological advancement of their respective countries.

The vast majority of institutions supporting innovation offer entrepreneurs a wide range of services aimed at fostering growth and development. These include assistance with grant applications, collaboration with local loan funds, business angels, or venture capital funds, conducting technology audits, consulting on innovative ideas, and developing plans for the implementation of new technologies. Additionally, these institutions provide valuable opportunities for companies to rent space within innovation centres, particularly in technology parks, under favorable conditions. This physical presence in innovation hubs can further facilitate access to networks and resources, crucial for technology-driven growth. Moreover, the institutions that promote innovation offer an extensive array of consultancy services specifically targeted at enterprises. For example, according to the State Agency for Enterprise Development, over 4,250 consultancy services were provided to support SMEs' innovation in 2013 alone, with more than 770 of these classified as pro-innovative services. These services ranged from strategic consulting to detailed guidance on the development and commercialization of innovative products or services. While this data highlights the significant role that Business Environment Institutions (BEIs) play in supporting the SME sector, it raises important questions regarding the inclusiveness and scope of this support. Are BEIs attempting to support the entire SME sector, or are their efforts concentrated on certain parts of it? Furthermore, to what extent is this support directed toward the service sector, which increasingly dominates modern economies? Another crucial consideration is how small and medium-sized service enterprises perceive and evaluate the support they receive. Understanding whether these companies find BEI assistance effective in addressing their specific needs is essential for assessing the overall impact of innovation support services. These questions point to a need for further investigation into how BEIs distribute their resources and whether they adequately cater to the diverse needs of different sectors, particularly the service-oriented SMEs. Given the distinct challenges that service enterprises face in innovation, such as the intangibility of their offerings and limited R&D capacity, it is critical to evaluate whether BEIs are offering the necessary tailored support to this vital segment of the economy.

3. COOPERATION OF SMALL AND MEDIUM-SIZED SERVICE ENTERPRISES

The empirical study described was part of a research project titled "Innovation of Small and Medium-Sized Enterprises," conducted by the Department of Enterprise Management at the Faculty of Economic Sciences and Management at Nicolaus Copernicus University in Toruń, Poland. The research aimed to assess the innovation activities of SMEs and was carried out between October and December 2017. The study encompassed a total of 261 entities spread across all regions of Poland. The primary data collection method was a direct survey, using a structured questionnaire that contained questions regarding the companies' innovation-related activities. The study sample consisted of various sizes of enterprises. Micro-enterprises, defined as businesses employing up to nine employees, made up 31% of the respondents. Small enterprises, with employment levels of up to 49 people, represented nearly 38% of the sample. Medium-sized enterprises, which employ up to 249 people, accounted for the remaining 31%. In terms of business structure, the majority of respondents were sole proprietors (42%) or limited liability companies (34%). The rest were partnerships, joint-stock companies, or other types of firms, with limited partnerships being the most common among the latter group. The surveyed businesses were primarily involved in service-related sectors, including catering, telecommunications and information technology, real estate services, transport, finance, law, accounting, advertising, and construction. These sectors represent a diverse cross-section of Poland's service economy, with varying degrees of innovation potential.

Importantly, the survey responses were provided by individuals in top management positions. In most cases, the respondents were either the owners of the company or members of the company's board of directors. This ensured that the insights gathered reflected the strategic decision-making and perspectives of those directly responsible for steering the company's innovation efforts. This focus on management-level respondents adds depth to the findings, as it highlights how decision-makers view the role of innovation within their enterprises and the challenges they face in implementing new ideas or processes. The surveyed enterprises were asked to evaluate the extent of their cooperation with various business environment institutions (BEIs) using a scale from 0 to 4, where 0 represented no cooperation, 1 indicated sporadic cooperation, 2 meant periodic cooperation, 3 referred to ongoing informal cooperation, and 4 signified permanent formalized cooperation. The findings from the survey were, unfortunately, not encouraging. Over 55% of the respondents reported no cooperation with government institutions, while 63% indicated a lack of cooperation with scientific, research, and development institutions. Similarly, 60% of the enterprises had no cooperation with institutions directly involved in business support. For those companies that did engage in some form of cooperation, it was typically sporadic, most often involving state administration offices, higher education institutions, consulting firms, internet portals, local government administration offices, training and consulting centers, employers' organizations, regional trade fairs, local media, and insurance companies. The median response across these categories was 1, indicating that most cooperation was infrequent and not deeply embedded in the operations of the companies.

On average, only about 10% of the surveyed enterprises reported periodic cooperation with any business support institution. Informal, ongoing cooperation was slightly more common, with 20% of enterprises maintaining such relationships with tax offices, 10% with universities, 13% with internet portals, 17% with local government administration offices, and 12% with banks. Permanent formal cooperation was more limited, but it did occur in specific areas. For instance, 20% of respondents reported permanent cooperation with the Social Insurance Institution, 10% with customs offices, 17% with insurance companies, 13.8% with credit and leasing institutions, 34.5% with banks, and 10.3% with loan and guarantee funds. The highest level of ongoing formal cooperation was reported with tax offices (M = 3, D = 4), highlighting the regular and institutionalized nature of this relationship compared to other forms of collaboration. These findings reveal a concerning lack of integration between SMEs and BEIs, especially in areas related to innovation, research, and direct business support. Despite the existence of various support mechanisms, the surveyed enterprises generally did not take full advantage of these resources. This gap suggests that either the available support is not well-suited to the needs of SMEs, or that there is a lack of awareness or accessibility that prevents more meaningful collaboration. Strengthening these relationships could be key to fostering innovation and business development in the SME sector, but the current state of cooperation remains far from optimal.

From the perspective of enterprise innovation, the most concerning finding is that cooperation with research and development (R&D) units was rated the lowest among all forms of collaboration. The surveyed companies reported that their interactions with higher education institutions, R&D units, and consulting firms were largely sporadic. This is a critical issue, as these institutions play a vital role in fostering innovation through technology transfer, research partnerships, and the development of new ideas. The lack of sustained collaboration with these entities suggests that SMEs are missing out on key opportunities to enhance their innovation capacities. In fact, cooperation with most Business Environment Institutions (BEIs) was infrequent, with the majority of respondents indicating only sporadic interactions. Most SMEs reported more consistent cooperation only with institutions that support their day-to-day operations, such as tax offices and social security institutions. However, these bodies, though essential for business compliance, are not considered BEIs and do not directly contribute to fostering innovation. This highlights a significant gap in how SMEs engage with BEIs, particularly those that could help drive innovation and competitiveness. To further explore the impact of BEI cooperation on innovation, the surveyed enterprises were asked to assess the effect of their collaboration with individual BEIs. Their responses were rated on a scale

from -1 to 1, where -1 indicated a negative impact on innovation, 0 meant no impact, and 1 represented a positive impact.

Table 1: Business Environment Institutions and Innovation

	Impact on innovation			Numberof respon-	M*	D*
Business environment institutions	-1	0	1	dents		
Governmental institutions						
Legislative institutions	22.2	64.4	13.3	90	0	0
Public administration offices	34.9	48.7	15.3	162	0	0
Courts	46.3	44.4	9.3	108	-1	-1
Tax offices	59.5	35.7	4.8	252	-1	-1
Social Insurance Institution (ZUS)	22.2	73.6	3.1	126	0	0
Patent Office	18.5	64.8	16.7	54	0	0
Customs offices	19.8	61.7	18.5	81	0	0
Competition and consumer protection offices	19.8	74.1	6.1	81	0	0
Certifying institutions	19.7	49.4	30.9	81	0	0
Governmental institutions - average	29.2	57.4	13,1			
Units of the sphere of science, research and development (R&D)						
Higher education institutions	7.8	14.2	78.0	141	1	1
Institutes of the Austrian Academy of Sciences	22.2	66.6	11.1	9	0	0
R&D units	8.8	21.1	69.3	97	1	1
Development units	17.2	65.5	15.3	36	0	0
Research and development departments of large enterprises	9.8	28.5	61.7	81	1	1
Consulting companies	10.4	22.4	67.2	134	1	1
Scientific foundations	17.8	67.8	14.4	56	0	0
Internet portals	15.9	49.5	34.6	202	0	0
R&D	13.7	41.9	43.9			
Local government administration offices	17.2	66.3	16.5	218	0	0
Regional and local development agencies	9.8	28.5	61.7	81	1	1
Chamber of Commerce	20.5	69.2	10.3	78	0	0
Guilds	17.6	70.6	11.8	85	0	0
Training and consulting centres	22.6	51.6	25.8	155	0	0
Patent information points	22.4	67.1	10.5	67	0	0
Incubators of entrepreneurship	14.1	42.1	43.8	114	0	1
European information centres	18.9	63.2	17.7	79	0	0
Technology transfer centres	17.7	63.2	18.9	79	0	0
Technology parks	19.2	57.7	23.1	52	0	0
Employers' organizations	17.2	67.4	14.6	135	0	0
Economic associations	19.2	67.3	13.5	104	0	0
Economic foundations	20.0	71.4	8.6	35	0	0
Professional associations	18.2	51.5	30.3	66	0	0
Economic information centres	17.2	64.0	18.0	53	0	0
Regional trade fairs	12.0	11.3	76.7	176	1	1
Local media (TV, radio, press)	6.1	11.0	82.9	181	1	1
Venture capital funds	18.7	68.7	12.5	16	0	0
Insurance institutions	22.6	67.8	9.6	177	0	0
Credit and leasing institutions	13.5	67.3	19.2	104	0	0
Banks	2.7	4.6	92.7	211	1	1
Loan and guarantee funds	18.2	51.5	30.3	66	0	0
Regional funding institutions (RIF)	17.2	70.9	11.1	38	0	0
Investment funds	18.8	66.0	15.2	53	0	0
Business support institutions - average	16.7	55.0	28.1			

It is important to note that these responses were provided only by companies that had reported some level of cooperation

with BEIs in the previous question, thus scoring at least 1 on the scale of cooperation frequency. The findings reflect that, in general, SMEs perceive little to no significant positive impact from their cooperation with BEIs when it comes to innovation. This raises critical questions about the effectiveness of BEIs in facilitating the innovation processes of small and medium-sized enterprises. The low levels of engagement with institutions focused on R&D and other innovation-related activities suggest a need for better alignment between the services offered by BEIs and the specific needs of SMEs. These insights point to a broader issue: while BEIs are designed to support enterprise development, their current interactions with SMEs—especially regarding innovation—are insufficient. Strengthening the relationship between SMEs and innovation-focused BEIs, such as R&D centers and higher education institutions, could provide much-needed support for the development of new technologies, products, and processes. However, without more proactive engagement and better-targeted support, SMEs may continue to struggle in leveraging the full potential of BEIs to boost their innovation performance.

The table presents data on the impact of various business environment institutions on innovation, categorized into three main groups: governmental institutions, units in the sphere of science, research and development (R&D), and business support institutions. The impact is quantified using three levels: -1 (negative impact), 0 (neutral impact), and 1 (positive impact), with corresponding percentages indicating the proportion of respondents in each category. Additionally, the total number of respondents and summary indicators (M* and D*) are provided for each institution. For governmental institutions, the average impact is predominantly neutral (57.4%), with negative impacts (29.2%) outweighing positive ones (13.1%). Institutions like tax offices and courts are perceived more negatively, with significant proportions (59.5% and 46.3%, respectively) indicating a negative impact on innovation. In contrast, institutions such as certifying bodies and the Patent Office have a higher share of neutral impact perceptions (64.8% and 64.8%, respectively).

In the category of R&D units, the overall perception is more favorable towards innovation, with a considerable average positive impact (43.9%). Higher education institutions, R&D units, and research departments of large enterprises are particularly noted for their positive influence, with percentages of 78.0%, 69.3%, and 61.7%, respectively. The presence of neutral responses remains significant in some cases, such as with the institutes of the Austrian Academy of Sciences (66.6% neutral). However, this group generally leans towards fostering innovation, as reflected in the higher proportion of positive responses and the positive indicators (M* and D*) in many instances. Business support institutions exhibit a more mixed perception regarding their impact on innovation, with 16.7% negative, 55.0% neutral, and 28.1% positive responses on average. While some entities, such as regional and local development agencies, regional trade fairs, and local media (TV, radio, press), show a strong positive impact on innovation (over 60% positive for some), other institutions like local government administration offices and various chambers exhibit a majority neutral impact. Institutions like banks are seen as highly supportive of innovation, with 92.7% positive responses, indicating their crucial role in facilitating innovation through financial services. Overall, the data suggests a varied landscape where R&D-focused units and some financial and advisory institutions play a key role in promoting innovation, while other governmental and business support entities are perceived as more neutral, with some leaning towards a negative impact. The influence of these institutions varies significantly based on their function and engagement with innovation-related activities.

The survey responses provided insights into how different types of cooperation with institutions impact the innovation activities of small and medium-sized enterprises (SMEs). These responses were categorized based on cooperation with government institutions, science and R&D entities, and business support institutions. In the first group, which included government institutions such as tax offices, the Social Insurance Institution, courts, and the Patent Office, the findings were less optimistic. Nearly 30% of the surveyed companies felt that cooperation with these government institutions had a negative impact on their innovation efforts. A significant portion, 57.4%, stated that cooperation with these governmental units had no impact on their innovativeness. Only 13% of SMEs recognized a positive influence from this type of collaboration. These results suggest that, for many SMEs, the administrative and regulatory interactions with government bodies may not contribute meaningfully to fostering innovation, and in some cases, might even hinder it. The second group, which included institutions representing the spheres of science, research, and development, was assessed much more positively. As many as 44% of the surveyed SMEs reported that cooperation with these entities positively affected their innovation efforts. The most significant benefits were derived from collaboration with higher education institutions, research and development units, R&D departments within large enterprises, and consulting companies. This demonstrates that SMEs recognize the value of tapping into scientific and research-based institutions to enhance their innovation capabilities, whether through technology transfer, joint research, or expert consulting.

When it came to business support institutions, the feedback was mixed. On average, 55% of respondents felt that their cooperation with business support entities had no discernible impact on their innovative activities. However, 28% of SMEs viewed this cooperation as having a positive effect, while 16% perceived it negatively. Despite the mixed results, certain business support institutions were noted for their positive contribution to innovation. Specifically, over 90% of SMEs recognized that cooperation with banks had a positive impact on their innovation activities. This emphasizes the critical role of adequate financing in driving innovation, as access to financial resources is essential for the continuous implementation of new ideas and technologies. Further institutions that SMEs considered beneficial for innovation included local media, regional trade fairs, regional development agencies, and business incubators. These entities were noted for their ability to provide platforms for networking, knowledge sharing, and accessing market opportunities—all factors that can significantly

contribute to innovation. In conclusion, while cooperation with government institutions was often seen as neutral or negative, collaboration with scientific, research-based entities, and certain business support institutions, particularly banks, was perceived to have a more positive and direct influence on innovation activities within SMEs.

4. CONCLUSIONS

The research conducted revealed that the level of cooperation between Austrian small and medium-sized enterprises (SMEs) and business environment institutions (BEIs) is generally low. Most of this cooperation is sporadic or periodic, with only a small percentage of SMEs engaging in long-term, consistent partnerships with these institutions. The surveyed SMEs reported most frequent interactions with institutions such as state administration offices, tax offices, consulting firms, local media, banks, and insurance companies. However, these institutions, by the very nature of their functions, do not significantly influence the innovation activities of the surveyed companies. Their roles are more administrative, regulatory, or financial, which, while essential for daily business operations, do not directly contribute to the innovative capabilities of SMEs. As a result, the sporadic nature of cooperation with institutions that could directly enhance innovation, such as research centers, universities, and technology transfer organizations, highlights a gap in the support available to SMEs in Austria when it comes to fostering innovation. This lack of consistent engagement with innovation-driven BEIs may hinder the ability of SMEs to fully leverage external resources for technological and competitive advancement.

The surveyed entities also highlighted that cooperation with certain institutions, particularly public administration offices and tax offices, can often have a negative impact on the number of innovations they are able to implement. These institutions are perceived as barriers to development, with their bureaucratic processes and regulatory demands posing challenges that slow down or inhibit innovation efforts. This finding emphasizes the strain that administrative and regulatory requirements can place on small and medium-sized enterprises (SMEs), which can divert resources and attention away from innovation-focused activities. On a more positive note, the respondents indicated that cooperation with institutions representing the sphere of science, research, and development—key components of Business Environment Institutions (BEIs)—generally has a beneficial impact on their level of innovation. When SMEs do engage with these entities, such cooperation tends to enhance their innovation efforts. The most significant positive influence was noted in partnerships with higher education institutions, underscoring the value of academic-industry collaboration. This confirms the hypothesis that cooperation with science-based and research institutions can be a powerful driver of innovation for SMEs. Additionally, the respondents acknowledged the valuable contributions made by consulting companies, research and development units, and the R&D departments of large enterprises. These collaborations provide access to new knowledge, expertise, and resources that SMEs might otherwise struggle to develop internally.

The positive impact of these partnerships on innovation highlights the importance of fostering more consistent and long-term relationships with BEIs that are focused on research, development, and consulting. Such relationships can help SMEs overcome the limitations they face in innovation, improving their competitive edge and capacity for growth. The analysis of the results further confirmed the importance of cooperation between the surveyed companies and certain business environment institutions (BEIs), such as business incubators and regional development agencies, particularly in the context of implementing innovations. These institutions provide crucial support in terms of resources, networking, and expertise, which can help small and medium-sized enterprises (SMEs) overcome the challenges associated with innovation. However, despite the positive impact that BEIs can have on innovation, it was found that only a small portion of SMEs in the service sector actually engage in such cooperation. While BEIs do target the SME sector, particularly service-oriented enterprises, many businesses do not take full advantage of these opportunities. When cooperation does occur, it generally leads to positive outcomes, with surveyed companies reporting improvements in their ability to implement innovations. Unfortunately, the overall intensity of cooperation between BEIs and SMEs remains low. This lack of engagement means that many companies may be missing out on the potential benefits of collaborating with BEIs, which could significantly enhance their competitiveness and innovation capacity. In conclusion, while BEIs offer valuable support to SMEs, there is a clear need to increase the level of cooperation and encourage more companies to leverage the resources and expertise available through these institutions to boost their innovation efforts.

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