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Sustainability-oriented Innovation: Crucial Sources to Achieve Competitiveness

Hana URBANCOVÁ* – PAVLA VRABCOVÁ**

Abstract

Innovation is an important part of a sustainable society and a prerequisite for the long-term competitiveness of organizations. Continuous innovation can support the sustainability of organizations, which represents an important area for every organization and for the entire society. This paper aims to identify the main sources of innovation that support sustainability and competitiveness in the organizations surveyed. The study is based on both quantitative and qualitative research (the questionnaire survey of $n_1 = 183$; the focus groups of $n_2 = 5$), using the tools of descriptive statistics and factor analysis by the method of principal components. The results have shown that the main sources of innovation are stakeholders involved in the sales chain, primary and applied research, innovation programmes focused on employees as well as customers, and benchmarking.

Keywords: *best practice, benchmarking, sustainable business, innovation potential, organizational culture*

JEL Classification: D83, O15, Q56

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Introduction

Innovation based on knowledge (Wu and Hu, 2018; Salunke et al., 2019; Hanaysha et al., 2021; Haichao et al., 2023) and sustainable development principles (Geissdoerfer et al., 2018; Pieroni et al., 2019; Ullah et al., 2021; Meadows et al., 2022) currently represents the areas on which business and the economy of individual organizations, as well as countries, should be based (Kiron et al.,

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2013; Grinza and Quatraro, 2019). Every organization must be resilient to negative influences from the external environment and build on the organization's strengths (Hanaysha et al., 2021; Vrabcová and Urbancová, 2021; Haichao et al., 2023), effectively using opportunities including the results of research and innovation capacity and with focus on digital trends in innovation (Cheng et al., 2021; Opland et al., 2022). This is also confirmed by the development of the COVID-19 pandemic, highlighting the economic, personnel, and process implications faced by organizations (Lee and Trimi, 2021).

Worldwide research shows that sustainability drives innovation (Saunila et al., 2018; Juntunen et al., 2019; Silvestre and Țircă, 2019; Elmo et al., 2020; Schäfer, 2021; Hanayshi, 2021), changes customer dynamics, and shifts organizational culture and workplace climate among employees (Acebo and Viltard, 2018; Chen et al., 2018; Geradt and Bocken, 2019; Jin et al., 2019; Chai et al., 2020; Meadows et al., 2022). Organizations need to realize how to support sustainability as well as satisfy growing customer expectations, emphasizing the fact that the sustainability of organizations is threatened by new risks associated with, for example, the COVID-19 pandemic, continuous legislative changes, business and financial risks, natural disasters resulting from climate changes, and many others. The majority of innovative organizations present sustainability as their competitive advantage and it enhances their competitiveness (Prokop et al., 2017; Liao, 2018; Grinza and Quatraro, 2019; Lenihan et al., 2019; Srisathan et al., 2020; Opland et al., 2021; Haichao et al., 2023). This is because innovation supports the improvement and efficiency of processes and products (Bocken et al., 2014; Adams et al., 2016; Corstjens et al., 2019; Grinza and Quatraro, 2019).

According to the research of Smurfit Kappa (2022), sustainability is motivation for all research and development (37%) as well as new product development (33%) in approximately one third of companies. In most cases, new product development is focused on innovative efforts in packaging and reducing the amount of waste, with 68% of organizations mentioning packaging materials as their greatest sustainability challenge, followed by collecting and recycling (59%). However, one must realize that improving the perception of sustainability is not only about good marketing and employer branding, but the economic aspect is also important. Almost half of the organizations surveyed in the Smurfit Kappa's research stated (46%) that the cost saving resulting from waste reduction efforts had been the most expected benefit of their sustainable practices. According to Chen et al. (2018), Geradts and Bocken (2019), Leopold (2019), Hitka et al. (2017), Cheng et al. (2021), Meadows et al. (2021), Ullah et al. (2021), Vrabcová and Urbancová (2021) a sustainable business strategy through innovation that creates a competitive advantage also has a positive impact on employee engagement and retention.

The main objective is to identify the crucial sources of innovation that support sustainability and competitiveness in the organizations examined. These research results present benefits not only at the theoretical level (filling the knowledge gap in the support of sustainability through innovation by identifying the crucial sources of innovation), but also at the practical level for the purpose of recommending the implementation of the proposed measures to the managers of organizations that need to respond adequately and compete in the market in the current highly competitive environment. We are not aware of any study in the last 5 years focusing on the theoretical definition of all the most important sources of innovation across sectors.

Some studies only address the impact of organizational culture on innovation potential in an organization (Aksoy, 2017; Jin et al., 2019; Kampf et al., 2019; Opland et al., 2021; Meadows et al., 2022), others only examine specific types of innovation (Dimircioglu et al., 2019; Elmo et al., 2020; Cheng et al., 2021). In the context of sustainability-focused innovation, the existing studies tend to concentrate on the stronger integration of circularity and sustainability (Smol et al., 2017; Pieroni et al., 2019; Hysa et al., 2020; Suchek et al., 2021), the performance of economic and sustainability innovations (Provasnek et al., 2017; Rauter et al., 2019), the typology of innovations for sustainable development and bioeconomy (Silvestre and Țîrcă, 2019; Bröring et al., 2020), the evaluation of eco-innovative activities (Smol et al., 2017; Mazzanti, 2018; Pichlak and Szromek, 2021), or the setting of strategies and business models (Evans et al., 2017; Pieroni et al., 2019; Van Holt et al., 2020). A comprehensive view on the sources of technological innovation is offered, for example, by Hervas-Oliver et al. (2021), who, while defining the important types of internal and external sources, only concentrated on small and medium-sized enterprises in the context of technological innovation. The study also contributes to and develops theoretical knowledge on supporting innovativeness through innovation in terms of collaborative innovation development, which is in line with, for example, the research by Melander (2018), Kurdve et al. (2020).

1. Theoretical Background

Innovation is an indisputable part of modern society and a prerequisite for the long-term competitiveness of organizations, which is in line with the research results of Kiron et al. (2013), Grinza and Quatraro (2019). An innovation is a deliberately designed change with which, to a larger extent, employees come up in organizations, as reported by Hitka et al. (2019), Vrabcová et al. (2021).

The change that an organization focuses on depends on employee abilities and relates to products and services, production processes or management methods used in the organization for the first time.

According to Tidd and Bessant (2009), innovations in organizations are pursued at the technical (product and process) and non-technical (marketing and organizational) levels. Another source of innovation can be competitors, suppliers and customers who provide relevant feedback to the management of organizations on how to proceed with further innovation and how to support sustainability (Stankiewicz and Lychmus, 2017; Stachová et al., 2017; Srisathan et al., 2020). Based on the literature review of current research, the research questions of the research can be summarized:

Research question 1 (hereafter RQ 1): *What must be ensured in the organization in terms of management systems to achieve sustainable innovation and competitiveness?*

Research question 2 (hereafter RQ 2): *What are the main sources of innovation supporting sustainability and competitiveness?*

It can be summarized that continuous innovation means not only product and process innovations, but also the development of the human potential of the organization as well as the competencies of the organizations' management. An important element of developing innovation potential to enhance sustainability is the appropriate setting of organizational culture in order to support knowledge and skills not only in the domains of innovation and sustainability or competitive advantage (Acebo and Viltard, 2018; Chen et al., 2018; Geradts and Bocken, 2019; Jin et al., 2019; Leopold, 2019; Chai et al., 2020).

Universities are also a major source for the development of future creative organizations (Fischer et al., 2018; Kurdve et al., 2020) and are involved in research and knowledge transfer activities in other sectors. Collaboration between universities, colleges and organizations is essential (Tseng et al., 2020) to create added value for all involved, i.e., not only organizations, but also universities and the entire society. In recent years, we have witnessed the increasing popularity of open sources with information freely available (de Lorenzo and Schmidt, 2017; Liu et al., 2017; Zhou et al., 2020) resulting from publicly funded research. Specialized incubators supporting start-ups are also being established (de Lorenzo and Schmidt, 2017). Table 1 summarizes the most crucial sources of information for innovation implementation in 8 areas, which is based on stakeholder theory.

With respect to the existing studies carried out in the Czech Republic and Slovakia (Hitka et al., 2019; Zygmunt, 2019; Vrabcová et al., 2021) or abroad (for example Hanaysha et al., 2021; Haichao et al., 2023), it can be concluded that the most important source of information for innovation activities in organizations

is information from employees, followed by that from customers, competitors, suppliers, and purchasers. It is somewhat surprising that despite the growing influence of universities, colleges, and research organizations in the field of innovation and innovation practices, the management of organizations only slowly begins to collaborate with scientific institutions and increase their involvement in innovation. However, such collaboration can exploit synergies of capacities, not only material, and financial, but also personnel. Research questions will be answered on the basis of evaluated data from primary research.

Table 1

Information Sources for the Implementation of Innovation

Information sources for the implementation of innovation	Notes	References
Employees	Employees are knowledge bearers and have creative potential. The focus is on talent management as the core source of innovation.	Mohammed et al. (2018), Hitka et al. (2019), Chai et al. (2020), Vrabcová et al. (2021)
Suppliers	It involves the development of external and internal capabilities to develop collaboration with suppliers, which works within a partnership network (not separately).	Melander (2018), Yan et al. (2018), Ma et al. (2021), Haichao et al. (2023)
Purchasers	Buyers, i.e., customers, are the impetus for change management.	Drobnyazko et al. (2019), Meadows et al. (2022)
Competitors	Targeted innovation to increase competitiveness.	Corstjens et al. (2019)
Customers	Innovation based on Corporate Social Responsibility (CSR).	Melander (2018), Geradts and Bocken (2019), Meadows et al. (2022)
Experts and specialists	The role of specialists, consultants, and experts is irreplaceable in knowledge transfer. Building effective relationships with these stakeholders is a key prerequisite for the sustainability of organizations.	Kayser et al. (2018), Pershina et al. (2019), Bessant and Rush (2019), Opland et al. (2021), Ullah et al. (2021)
Primary research in organizations	Innovation culture and sustainability. Currently, the focus is on community sources across communities, with an emphasis on cooperative or collaborative innovations.	Liu et al. (2017), Jin et al. (2019), Hanaysha et al. (2021)
Universities and research organizations	It also includes research centers focusing on collaboration with businesses.	de Lorenzo and Schmidt (2017), Lee and Miozzo (2019), Tseng et al. (2020)

Source: Own survey.

2. Research Methodology

The quantitative data ($n_1 = 183$) was obtained through a questionnaire survey using a Google form, which was completed by the middle or senior management of organizations or, in the case of smaller organizations, by the owner. The survey was carried out during 2021. A preliminary survey ($n_3 = 10$) was carried out before sending the actual one to verify if the questions were understandable. To

avoid duplication, the IP addresses were tracked and the questions that showed compliance were completely excluded from the survey. The survey is comprised of seven questions focused on innovation and achieving competitiveness in the organizations and five identification questions (sector, size, majority ownership, type, and annual turnover).

In total, 850 Czech organizations were contacted (based on a random selection, 70% from the tertiary sector, 20% from the secondary one, and 10% from the primary sector according to the recommendation of the Czech Statistical Office from database ALBERTINA). The respondents confirmed that by participating in the survey they agree to the use of their answers for the purposes of evaluating the survey. The questionnaire survey was created in accordance with ethical codes of research in the Czech Republic (Ethical framework for research, Resolution of the Government of the Czech Republic dated August 17, 2005 No. 1005, as amended).

The basic identification questions of the questionnaire survey include the following variables:

- the business sector of the organizations (4.4% fall under the primary sector, 41.5% fall under the secondary one, and 54.1% under the tertiary one),
- the organization's size by the number of employees (26.2% fall under the category of fewer than 50 employees, 28.4% under the one with 51 – 249 employees, and 45.4% fall under the category of more than 250 employees),
- the majority ownership (45.4% have Czech owners and 54.6% have foreign owners),
- the type of the organizations (there are 85.8% of private organizations, 11.5% of public ones, and 2.7% of non-profit organizations), and
- the annual turnover (38.3% fall under the category of less than EUR 10 million, 37.7% under the category of EUR 11 – 50, and 24% fall under the category of over EUR 50 million).

The purpose of exploratory factor analysis is to reduce the number of variables (to decrease the data dimension) and also to determine the relationships between variables. The calculation of factor analysis is based on the intermediate result, which is the correlation matrix (1).

The model of the factor analysis describes the observations by the following equations (1):

$$\begin{aligned} X_1 &= a_{11}F_1 + a_{12}F_2 + \dots a_{1m}F_m + U_1 + \mu_1, \\ X_2 &= a_{21}F_1 + a_{22}F_2 + \dots a_{2m}F_m + U_2 + \mu_2, \\ X_p &= a_{p1}F_1 + a_{p2}F_2 + \dots a_{pm}F_m + U_p + \mu_p \end{aligned} \quad (1)$$

where

X_1, \dots, X_p – observed variables,

F_1, \dots, F_m – latent common factors,

a_{11}, \dots, a_{pm} – factor loads,

U_1, \dots, U_p – specific factors representing random deviations,

μ_1, \dots, μ_p – constants.

In theory, the cleanest result was provided by the rotated Varimax factor analysis solution, which comes closest to satisfying the condition of mutual uncorrelation, i.e., the independence of common factors in the factor analysis model. The principal component method was the factor analysis technique used. All the core prerequisites for conducting an exploratory factor analysis were met (the sufficient size of the sample, the null hypothesis of Bartlett's test of sphericity was rejected, the quantitative variables, the Kaiser-Meyer-Olkin measure of sampling adequacy (*KMO*) was greater than 0.7, and the intercorrelations of dependent variables were greater than 0.3).

The dependences between the selected qualitative and identification attributes are tested. Chi-square (χ^2) tests of independence in a combination table with $(r - 1)$ $(s - 1)$ degrees of freedom and Cramer's *V* at the significance level of $\alpha = 0.05$ are used to test the homogeneity and independence hypotheses. The results of the questionnaire survey were further discussed at a focus group, so-called mixed research took place, where the conclusions of the quantitative research were verified and complemented by qualitative research.

To verify the study results, follow-up personal interviews were conducted through focus groups ($n_2 = 5$), which were carried out with managers/directors from the organizations online (1 from the primary sector, 1 from the secondary one, and 3 from the tertiary sector) at the end of 2021. To avoid response distortions, the interviewers (the study authors) asked the interviewees what practices their organizations used in strategic management, innovation, and competitive advantage, without disclosing the results of the factor and dependence analyses to the interviewees. The maximum duration of focus groups was 90 minutes. After selecting the innovation and competitive advantage topics, the preparation and planning phase began, followed by the focus groups, of which detailed records were kept. Following the discussion, the interviewers (the authors of the manuscript) continued to ask questions about the specifics of particular areas, emphasizing especially the areas that had resulted from the focus groups, namely about organizational culture that supports innovation, including corporate social responsibility and sustainability.

Based on the evaluated data, the comparison of the conclusions of the study with the conclusions of foreign studies, the research questions were answered.

3. Results

In total, 99.5% of the organizations surveyed (excluding 1 large organization from the tertiary sector) believe that it is necessary for the organization to focus on innovation in any area. Considering the existing results in Czech organizations, innovative ideas most often come from employees themselves, which was also confirmed by the presented qualitative and quantitative research. The results of the focus groups have revealed that employees with a high level of involvement in the processes and functioning of the organization have a sense of belonging to the organization, they truly contribute to the success of the organization, and that their opinions are important to the management and are taken into consideration. Resulting from the outcomes of the focus group respondents, if employees consider to be valuable members of the team and receive feedback from their management, they are willing to do more than what is required in their job description and help the organization's innovative development. The results of the quantitative research on the sources of innovation supporting sustainability are presented in Table 2.

Table 2

Innovation Sources Supporting Sustainability Depending on the Organization's Size

Innovation source	Use	The size of organization (by the number of employees)			Total
		250 and over	51 – 249	under 50	
Employees	NO	18	14	15	18
	YES	65	38	33	65
Suppliers	NO	71	38	38	71
	YES	12	14	10	12
Purchasers	NO	64	34	29	64
	YES	19	18	19	19
Competitors	NO	36	24	31	36
	YES	47	28	17	47
Customers	NO	36	22	28	36
	YES	47	30	20	47
Experts and specialists	NO	35	29	29	35
	YES	48	23	19	48
Organization's own research department	NO	42	38	46	42
	YES	41	14	2	41
Cooperation with universities and research institutions	NO	70	47	46	70
	YES	13	5	2	13

Source: Own survey.

The results have clearly shown that the employees are a key source of information in the organizations surveyed, which was also confirmed by the results of the focus groups. Furthermore, the qualitative and quantitative research investigated the specific ways in which the employees of the organizations get involved in the innovation process. The results are presented in Table 3.

Table 3

The Ways of Employee Involvement in the Innovation Process

The way of involvement	Absolute frequency	Relative Frequency
They are not involved in the innovation process at all.	5	2.8
Individuals and teams regularly work on innovations in a coordinated way with a focus on the strategic goal (without the management control).	22	12.0
Individuals and teams regularly work on innovations in a coordinated manner with a focus on the strategic goal (a specific innovation must be approved by the management).	101	55.2
Individuals regularly work on innovations without joint strategic coordination (a specific innovation must be approved by the management).	18	9.8
Occasionally, when errors occur in new processes or procedures (a specific innovation must be approved by the management).	37	20.2
Total	183	100.0

Source: Own survey.

The results have demonstrated that employees are most often involved in innovation on a regular basis (55%), individuals and teams work on innovations in a coordinated manner focusing on a strategic goal, however, every specific innovation has to be approved by the management that monitors whether the proposed innovation is in line with the organization's goals. Nevertheless, the focus groups have revealed that the adopted innovations proposed by the employees are not always also financially or non-financially rewarded, which reduces the willingness of the employees to come up with further innovations. Given the fact that there were differences in the use of innovation sources in the organizations examined, the results were further evaluated by the factor analysis, which clusters organizations according to their behavior, i.e., their access to innovation sources.

Thus, a total of 4 factors have been identified as the sources of innovation that explain a total of 34% of the resulting sample behavior. The first factor is the strongest (19%), see Table 4.

Table 4

Principal Component Method – The Factors in the Context of Innovation Areas

Factor	Total variance	% of variance	Cumulative % of variance
1	1.543	19.286	19.286
2	1.402	17.530	36.816
3	1.192	14.898	51.714
4	1.005	12.564	64.278

Source: Own survey.

The identified sources of information that support innovation are presented in Table 5, where the factors grouping the information sources according to their use by the organizations surveyed are defined using the Varimax method.

Table 5
Resultant Factors By the Varimax Method

Variables	Factor 1	Factor 2	Factor 3	Factor 4
From employees	-0.119	0.051	0.787	-0.054
From suppliers	0.816	-0.003	0.128	-0.225
From purchasers	0.763	-0.084	-0.162	0.343
From competitors	0.035	-0.022	0.131	0.877
From customers	0.136	-0.081	0.731	0.203
From experts and specialists	-0.176	0.558	-0.100	-0.171
From the organization's own research department	-0.271	0.610	-0.013	0.412
From cooperation with universities and research institutions	0.268	0.756	0.094	0.027
Total % of variance	19.286	17.530	14.898	12.564
Factor name	Sales chain	Primary and applied research	Employee and customer-oriented innovation programs	Benchmarking

Source: Own survey.

With regard to the organizations examined, it can be summarized that the first group of organizations focuses primarily on the setting of the supplier-customer relationship, the factor can therefore be called “Sales chain”, with the factor explaining almost 19% of the sample behavior. These organizations emphasize the effective setting of all sales processes with high quality and lowest cost, and they also support the brand of the organization. The second factor can be called “Primary and applied research”, where high correlation coefficients are found for the cooperation of the organizations with the scientific and research sphere. These are organizations that participate in national and international grant opportunities on an annual basis, they are engaged in cooperation with other research institutions, and create synergies in the collaboration of research teams (professionals and academics). The third factor can be called “Employee and customer-oriented innovation programs” and describes the behavior of the organizations that emphasize influencing customers through the quality work of their employees in innovation. The emphasis is placed on strategic human resource management, where high employee competences are used in building the organization’s brand with customers, including the support of sustainability. The last factor can be called “Benchmarking”, when the organizations are primarily concerned with continuously benchmarking themselves against competitors and coming up with innovations that will ensure their catching up with competitors or achieving market leadership and influencing their competitors.

Although the quantitative research and the results of the focus groups have shown that employees of organizations are the greatest source of information, it is important to identify which categories of employees are the key bearers of innovative ideas. The results are presented in Table 6.

Table 6

Categories of Employees with Innovative Ideas in the Organization Depending on the Size of the Organization

Innovation source	Use	The size of the organization (by the number of employees)			Total
		250 and over	51 – 249	Under 50	
Managers	NO	12	14	16	42
	YES	71	38	32	141
Specialists	NO	22	25	31	22
	YES	61	27	17	61
Administrative staff	NO	58	39	39	58
	YES	25	13	9	25
Manual workers	NO	40	37	24	40
	YES	43	15	24	43
Handling workers*	NO	40	37	24	40
	YES	43	15	24	43

Note: * Handling workers (excluding production) perform tasks such as packing, carrying, loading and unloading furniture and other household items, loading and unloading shipping and air cargo, and carrying and storing goods in various warehouses.

Source: Own survey.

One half of the managers who come up with innovative ideas are from the large organizations, 27% are from the medium-sized ones and 23% are from the small organizations. In total, 58% of the managers with suggestions for innovation work in the tertiary sector. The specialists mostly come up with innovation ideas in the large organizations (58%) in the tertiary sector (51.4%). The administrative staff are also most innovative in the large organizations (53%) within the secondary sector (53%). As for the manual workers, they mostly come up with innovations in the large organizations (52%) from the tertiary sector (52%) and this is the same for the handling workers (most from the large organizations in the tertiary sector). At the same time, the statistical dependences between the category of employees coming up with innovative ideas and the qualitative variables of the organizations surveyed (sector and size) were investigated, which, according to the research of Jin et al. (2019), are the most influential sources of innovation. The results of the statistical testing are presented in Table 7.

The results indicate that the size of the organization plays a major role in the source of information from the employees of the organization, namely in the category of managers, specialists, manual and handling workers, where the strength of the dependence is found to be weaker to medium for the specialists (Cramer's $V = 0.306$). It has been demonstrated that the larger the organization

is, the more innovative ideas come from the managers and specialists. There was no relationship between the innovation potential of the administrative staff and the size of the organization (p -value = 0.354). In contrast, the sector does not affect whether the employees in different positions come up with new innovative ideas. Other statistical correlations in the sources of innovation leading to sustainability are presented in Table 8.

Table 7

Categories of Employees with Innovative Ideas in the Organizations

Variable	Sector p -value / Cramer's V	Size p -value / Cramer's V
Managers	0.059/–	0.034/0.189
Specialists	0.631/–	0.001/0.306
Administrative staff	0.240/–	0.354/–
Manual workers	0.505/–	0.023/0.199
Handling workers	0.505/–	0.023/0.199

Source: Own survey.

Table 8

Correlations between the Source of Innovation Supporting Sustainability and Qualitative Attributes

Variable	Sector p -value / Cramer's V	Size p -value / Cramer's V
From employees	0.385/–	0.469/–
From suppliers	0.152/–	0.202/–
From purchasers	0.150/–	0.103/–
From competitors	0.797/–	0.054/0.176
From customers	0.642/–	0.185/–
From experts and specialists	0.383/–	0.092/–
From the organization's own research department	0.316/–	0.001/0.373
From cooperation with universities and research institutions	0.016/0.231	0.119/–

Source: Own survey.

Given the results, it can be summarized that neither the organization's size nor the sector influences the source from which innovative ideas come into the organization to support the sustainability of the organization. One could conclude that of all the organizations surveyed, the most suggestions come from the employees of large organizations, primarily in the secondary sector. It is also important to highlight that the tertiary sector (54% have their own research department as the most important source of innovation) carries out the most innovations from their own research, namely in the large organizations (72%). The organizations operating in the tertiary sector (65%), which are the large organizations by size (65%), collaborate with universities most.

In line with the results of the focus groups, it can be concluded that innovations and innovation potential supporting sustainability form an integral part of the development of any competitive organization. However, it is necessary that all activities and expenditures on such innovation are directed towards areas that can really lead to the competitiveness of the organization, i.e., towards areas that are priorities for them in terms of their orientation and organizational potential.

4. Discussion

In the globalized environment, which is characterized by strong competition, not only organizations, but also entire countries compete with one another, and their competitiveness depends not only on material resources any longer, but mainly on the knowledge of employees (Vrabcová et al., 2021), whom they use to make new innovations for the development of the entire organization. Continuous development, increasing individual knowledge, skills, qualifications, and experience will improve the innovation potential of individuals, teams, and organizations in all types of innovation, which is confirmed by the authors (Cerne et al., 2013; Bocken et al., 2014; Hollensbe et al., 2014; Stachová et al., 2017; Leopold, 2019).

Considering the research results, i.e., the identification of the 4 basic sources of information for the development of sustainable innovation, there is an agreement with the world literature to a considerable extent; however, those sources are, in many cases, discussed only separately. In this respect, the significant contribution can be seen within the theoretical underpinnings of innovation sources across sectors. The source of information within the sales chain is addressed, for example, by Trautrimis et al. (2017), Yan et al. (2017), Sikombe and Phiri (2019). Primary and applied research is highlighted in the context of its impact on the innovation activity of organizations by Akcigit et al. (2021) and Pfister et al. (2021). Employee- and customer-oriented innovation programs represent opportunities for organizations to develop in communication, raising employee interest in innovation, building sufficient organizational capacity, etc., which is extended by the research of Aksoy (2017), Acebo and Viltard (2018) or Chen et al. (2018). Badir et al. (2020) as well as our results emphasize external and internal sources of knowledge from customers and employees. Benchmarking contributes to the increase in productivity of organizations and helps them to innovate and change themselves, which is in line with the research of Vrabková (2012) or Scuotto et al. (2017).

RQ 1: Identification the crucial resources and processes of organizations are important for achieving sustainable innovations.

RQ 2: There are 4 crucial sources of information, namely stakeholders in the sales chain, primary and applied research, employee-oriented and customer-oriented innovation programs, and benchmarking. The cooperation with all stakeholders influenced setup of the sustainable business.

In the present competitive environment, innovation trends supporting sustainability should primarily focus on:

- supporting applied research in organizations (Liu et al., 2017; Jin et al., 2019);
- improving innovation funding through collaboration with colleges and universities (Abdelaal, 2019; Demircioglu et al., 2019; Lee and Miozzo, 2019; Tseng et al., 2020) and submitting joint applications for domestic and international grants under specific research directions across the EU (Bruhn and McKenzie, 2019);
- implementing innovated technologies in small and medium-sized organizations (Aksoy, 2017; Scuotto et al., 2017);
- supporting the research and development of organizations in line with the EU strategic vision for innovation and research (Smol et al., 2017).

The future research will be of a longitudinal nature with regard to evaluating the impact of innovative behavior of the organizations examined using quantified financial indicators. Last but not least, the intention is to investigate selected characteristics of managers and internal relations in facilitating or hindering innovation activities. The conclusions based on this study can further expand the areas of research at the theoretical and practical levels.

We can summarize that the article fills the identified knowledge gaps summarized in theoretical background, e.i. presented new results in comparison across sectors and different organizations together. Only on primary survey in organizations can answer the question about differences in sustainability-oriented innovation nowadays through different organizations in the past several years and set up usage crucial sources to achieve competitiveness. Therefore were identified new main factors in different types of organizations help to the setup usage sustainability innovation in general. These results make the theory wider and were confirmed by qualitative research by the focus group method with representatives from different sectors of the economy.

Conclusion

The competitiveness of organizations and their sustainable development based on innovation depend on adapting their leadership to changes in the external environment, primarily to changes in digitization and innovation. The results have shown that there are 4 crucial sources of information, namely stakeholders in the sales chain, primary and applied research, employee-oriented and customer-

oriented innovation programs, and benchmarking. The innovations are created and implemented regularly, the employees are motivated to develop and supported by mentors from senior and experienced colleagues. The practical implication consists in the identification of sources and innovation trends affecting sustainability on the basis of quantitative, qualitative research and analysis of the current state with the help of foreign studies.

This study has several limitations. In particular, it focuses only on the organizations in the Czech Republic and the results cannot be generalized to the entire population; nevertheless, it is an important sample of organizations across sectors and sizes. The results are also very valuable for managers looking for sources of information to enhance an organization's innovation potential. This emphasizes the managerial role of being aware of the high value of internal knowledge and being able to keep and use it appropriately. We are so aware that the study has theoretical methodological limitations which may affect the validity of this study's findings. It can be considered as a limitation of the research that the results come from the data and answers provided by the representatives of the companies in the questionnaire survey. For that reason, it is necessary to interpret the observations in the context of the mentioned research sample. Respondents may have tended to create a better image of their business and appear more rational. Nevertheless, the questions were asked in a non-leading manner and in compliance with the rules of social science research. The results of research presented in Web of Sciences until 2022 were analysed, when we checked the research on Google Scholar and their citation tracking to reduce these limitations.

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