DIGIT-ME – Effective support of digitalization of small and medium manufacturing enterprises

DESIGN OPTIONS PAPER

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Project consortium:

Torun Regional Development Agency	Barbara Pasiut Piotr Józefiak
INOVAČNÍ CENTRUM ÚSTECKÉHO KRAJE	Petr Achs Tomáš Siviček
MACHINE TECHNOLOGY CENTER TURKU LTD	Jussi Karlsson Erkki Virkki

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Chapter 1. Introduction

JUSTIFICATION FOR THE CREATION OF THE DOCUMENT

This document is the result of the project "DIGIT-ME – effective support of digitalization of small and medium manufacturing enterprises". The main idea of the DIGIT-ME is to develop a new suitable and right approach to support and promote changes towards digital innovation exactly in companies acting in manufacturing business sectors. The assumption made by the partners of the project is that there is a too small awareness of existing solutions (i.e. connected with The Industry 4.0, Internet of Thing, AI etc.) and technological possibilities among targeted entrepreneurs. This problem can be solved by applying an eye opening policy.

The main goal is: development through the lifetime of the project basing on the SMEs analysis and the evaluation of current tools and services, recommendations for improvement of digitalization support among SMEs and effective preparation for Industry 4.0. The recommendations will concern policy makers and specialized business support organizations in order to better preparation for digital Europe challenges.

Specific objective 1: Rising the knowledge about current state of policies and services focusing on digitalization of SMEs present in countries and regions of Partners' origin.

Specific objective 2: Rising the awareness and knowledge about selected (at least 15) manufacturing SMEs needs in the field of digital innovation leading to better answering the challenges of Industry 4.0 implementation by creating the digital innovation support map and support programme

Specific objective 3: Exchange of experiences and knowledge regarding means of digital innovation support applied by each Partner and development of new solutions and approach

Specific objective 4: Dissemination of gained knowledge among policy makers and other business supporting institutions.

The project consortium

Three specialized business support organizations from Poland, Czechia and Finland are involved in the implementation of the project:

Torun Regional Development Agency - TRDA (Leader) – POLAND – since 1995 has actively supported local enterprises (mainly SMEs) and thus affects the economic development of the

Kuyavian and Pomeranian Region. It was established by regional and local authorities. Currently, the Agency is the biggest business support organization in the Kuyavian and Pomeranian Region and one of the strongest agencies in Poland. The Agency takes part in various events and consultations especially concerning SME support. The mission of the Agency is to contribute to the economic growth of the country and of the Region in particular, by developing the spirit of entrepreneurship, by integrating the business community and conducting educational plus advisory activities. The Agency implements its mission and conducts activities resulting from it on a non-profit basis, meeting development demands of enterprises and institutions. It gather together companies with great technological potential, giving the companies prestige and recognition and attracting people looking for innovation solutions.

Innovation Centre of the Usti Region – ICUK (Partner) – CZECHIA - is building an innovation ecosystem for the Usti Region and is working towards developing the region through independent projects designed to generate new economic opportunities, better conditions, and new tools and services for the people of the region. ICUK helps local companies kickstart their enterprise dream and grow beyond the borders of the region, and connect partners from the worlds of business, research, and education and make the region more attractive to investors with high added value. ICUK is closely connected to local universities – University of Jan Evangelista Purkyne in Usti and Labem – all faculties, Czech Technical University in Prague – detached workplace Decin. ICUK is valid member of various networks and cooperates with important organisations, for example Czech Smart City Cluster, which creates a unique partnership between businesses, government, self-government, knowledge institutions and city dwellers or NCP 4.0, which contributes to the implementation of Industry 4.0 principles in the Czech Republic with emphasis on SMEs. ICUK has 14 core employees and more than 30 external experts.

Machine Technology Center Turku Ltd – MTC (Partner) – FINLAND - is a non-profit research and development organization owned by public education organizations and 70 companies. MTC's goal is to support the development of manufacturing industry competitiveness, know-how and technology. The company was founded in 2005 and currently employs 12 people. It works closely with local vocational schools, polytechnics and universities (University of Turku and Åbo Academy) and with regional and national development organizations. Machine

Technology Center is involved in the development of regional strategies for manufacturing and operate close to companies. The idea behind the MTC is to bring together the modern technology needed by different training organizations under one roof and for everyone to use. Modern machines are very expensive and require efficient daily operation. At the same time, there was a desire for a more business-friendly environment for businesses in the economy, able to provide solutions to the challenges of manufacturing industry. Over the years, the Center has evolved into an important regional and national player capable of responding to the changing challenges of business.

Source of project financing

The project was financed from the resources of the Horizon 2020 programme within the INNOSUP 5 scheme: peer learning for innovation agencies.

Design Options Paper object and target group

The document gathers all data obtained during the project (peer learning meetings, researches, exchange of experience between Partners). It includes recommendations to improvement of digitalization support among SMEs and effective preparation for Industry 4.0.

THE STRUCTURE OF THE DOCUMENT

The authors of this study intended it to fulfil the role of guide and even to serve as an instrument to be used to analyse and develop the services provided, whose recipients are to be firstly manufacturing companies.

Chapter 2 contains information on the current state of art in the field of digital innovation support for manufacturing companies.

Chapter 3 contains a summary of the research on digital innovations needs and stage of development provided with the use of IMP^{3}rove Digital Innovation Quotient form among manufacturing companies. This chapter also includes digital innovation support map in manufacturing SMEs.

Chapter 4 contains recommendations worked out during the project, which are a response to the issues identified in Chapter 2 and Chapter 3. There is also a Support programme for efficient innovation through digitalization actions addressing to the business support organizations and to policy makers.

TWINNING ADVANCED METHODOLOGY AND PROJECT IMPLEMENTATION SCHEME

Twinning Advanced (Twinning +)

Twinning Advanced is an extension of the original IPF twinning method. It is not limited to transferring good practices among agencies, but it provides the opportunity to design and implementation of better practices. The basic idea of Twinning Advanced is to have innovation support organizations collaboratively address a common innovation support challenge. By using their collective experience and knowledge, the idea is to develop and test an approach to address the support challenge in a new and better way. The result of the effort is documented in a Design Option Paper that identifies and documents the implementation options, guidelines and implementation alternatives that the partners in the challenge have experienced and would recommend an agency that is interested in implementing the proposed better practice.

The Partners worked to promote and stimulate innovation using diverse approach and experience. Such a project consortium provided suitable conditions not only to exchange knowledge and experience, but also provided a broad perspective on the problems to be solved and at the same time will improve the quality of recommendations for creating effective instruments to support digital innovation in manufacturing SMEs. Thanks to the DIGIT-ME project the number of innovation agencies engaged in peer learning activities was increased and the results of the project disseminated among regional and national entities will enable them to offer new, more suitable and valuable innovation support programmes for manufacturing SMEs.

Project implementation scheme

In order to achieve the main and specific objectives the project was divided into 3 main phases:

1. **Project research.**

At first Partners provided inventory which focused on the current state of art in the field of digital innovation support for manufacturing companies. The next step was the research provided in each Partners' region among manufacturing companies on digital innovations needs and stage of development provided with the use of IMP^{3}rove Digital Innovation

Quotient form. The result of this study was a digital innovation support map in manufacturing SMEs.

2. **Peer learning.**

While implementing the project, a total of 4 meetings were held, 3 of them (each partner was responsible for the preparation of one meeting) concerned work on the project, while the last one was the event summarizing the project, during which the results of the project were presented.

Due to the COVID-19 pandemic 2 project meetings were held on-line and one – on-site (in Finland).

The **first meeting** was organized on-line by Torun Regional Development Agency between 29th-30th June 2021. Responsible for the organisation of the **second meeting** was Innovation Centre of the Usti Region. The meeting took place on-line on 25th and 26th November 2021. The **third project meeting** was organized on 15th-16th March 2022 by Machine Technology Center Turku in Finland.

In the last month of the project (April), a meeting summarizing the project was held. Addressees of the recommendations was invited to participate in this meeting. They had the opportunity to submit their comments and observations to the draft Design Options Paper.

3. **Dissemination of Design Options Paper and project results.**

Once the substantial operations were completed, the partners started to disseminate Design Options Paper, presenting the project results achieved.

Chapter 2. Research on digital innovation support policies and instruments for SMEs realized by regional and national agencies and policy makers

In this chapter we present the results of inventory which focused on the current state of entrepreneurship policies and servicing supporting digitalization among SMEs (in particular manufacturing) provided by policy makers consortium Partners and other specialized entities. The main goal of the inventory was to verify the quality and quantity of the support innovation instruments.

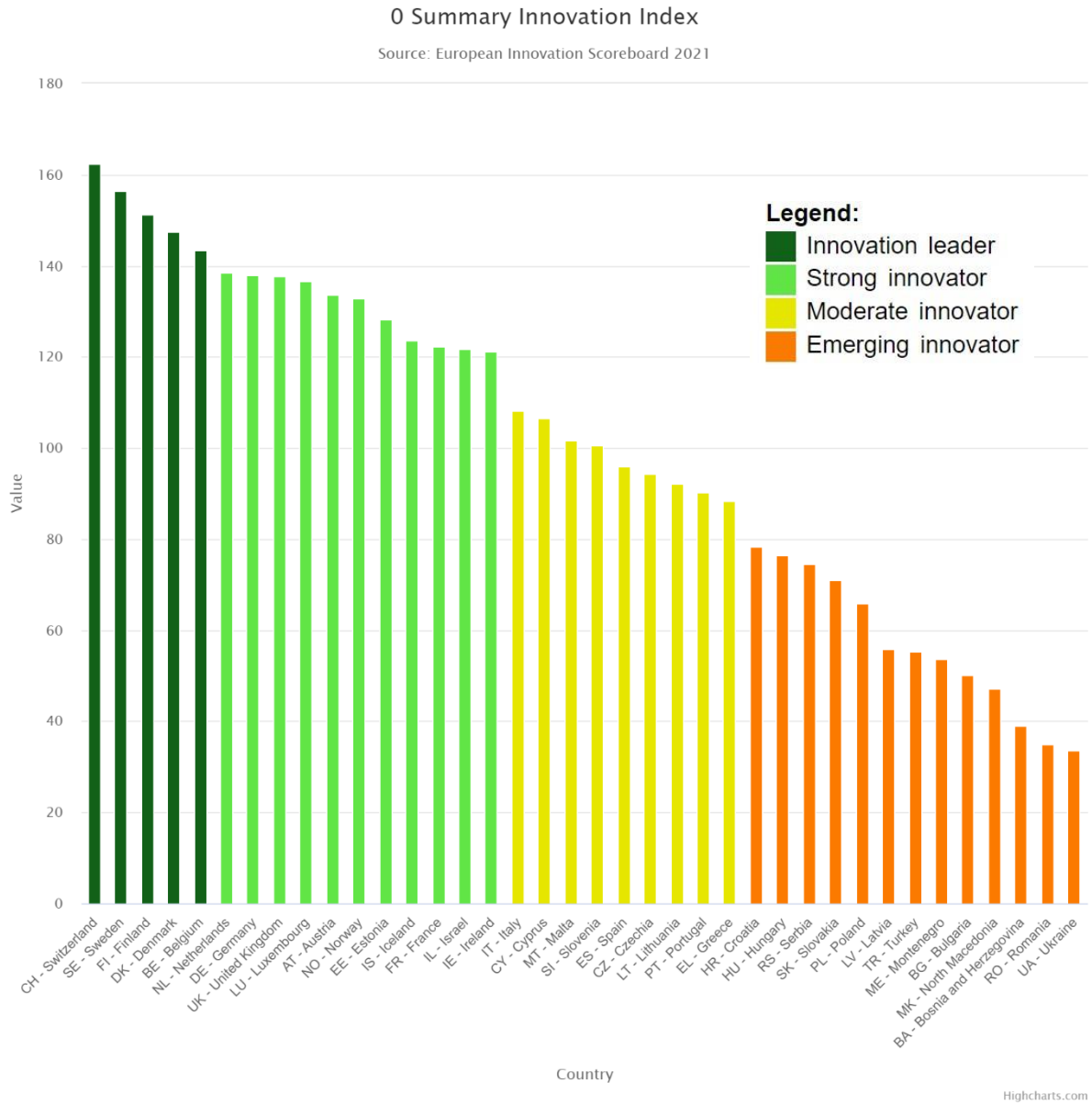
FRAMEWORK CONDITIONS

DIGIT-ME is a project dedicated to small and medium manufacturing enterprises facing issues with Industry 4.0 and overall digitalization processes whose key benefit will be new quality of digital innovation support approach.

Digital innovations specified by Industry 4.0 have overwhelming impact on EU position on the global markets. Improving regional economies based on different industries (including manufacturing) demands effective drivers to go for digital innovativeness effecting in increased capability which eventually leads to lower overall costs.

The effort of the EU to strengthen the competitiveness of European economy has two strong priorities - to build a greener and digital economy and thus to become a leader and a trend setter in digitalisation and sustainability. This creates a lot of opportunities for the most ambitious countries, regions, institutions and companies. On the other hand, it might create risks and challenges for those, which are more dependent on traditional industries, are still in the process of transformation, or which struggle with competitiveness. For this purpose, the Just Transition Mechanism has been introduced, which should help e.g. old mining regions, like the Usti region. JTM complements the Digital Europe Programme, which provides financing in the following capacity areas: supercomputing, artificial intelligence, cybersecurity, advanced digital skills, and ensuring a wide use of digital technologies across the economy and society (this includes also Digital Innovation Hubs - DIHs). Above mentioned priorities are cross-cutting, and are present also elsewhere, e.g. in the Recovery plan for Europe (NextGenerationEU), which should help to boost and transform economies after the COVID19 pandemic.

From the perspective of macroeconomic concerns most of Central Europe countries stay below EU27 average of innovation, including digital innovations among manufacturing SMEs. According to the Summary Innovation Index (source: *European Innovation Scoreboard 2021*), which shows the results of the analysis of innovation performance in EU countries, the Partners of the Consortium, which come from Poland, Finland and Czechia, fall into different performance groups: Poland is Emerging Innovator (in 2020 – Moderate Innovator), Czechia is Moderate Innovator and Finland belongs to Innovation Leader. Index for Innovative SMEs cooperating with others is increasing and it is supported by increasing index for SMEs innovating in-house.



Presented data shows that there is a huge gap in general innovation performance among the actors of highly developed Finnish economy, Czech and Polish economies. Most probably it is caused not only by low innovation activity of SMEs but also by unsuited policies and also insufficient engagement, lack of knowledge and skills among business support organizations with different types of innovation agencies on the first place.

McKinsey in its study (*The rise of Digital Challengers*) showcases how digitalisation is the key answer for competitiveness and sustainable growth of Czechia and other CEE countries. For example, it can bring up to €26 billion to Czech gross domestic product (GDP) by 2025, higher productivity growth by 70 % (compared to previous ten years) and increase of digital economy from 8 % to 16 % (by 2025). The study suggests that almost 52 % of current workplace activities are prone to automation, or 66 % in manufacturing. Although manufacturing has a higher rate of digitalisation in comparison to EU BIG5, accelerated and collaborative effort is needed to avoid negative impacts or utilise opportunities from digitalisation.

For Poland, the potential economic and developmental benefits of digitization can reach up to €64 billion in additional gross domestic product (GDP) by 2025. This would lead to increased global competitiveness and prosperity for the country's 38 million people and allow Poland to join the most digitally advanced economies in Europe.

RELATED NATIONAL / REGIONAL POLICY BACKGROUND

Poland

Strategy for Responsible Development until 2020 (with a perspective until 2030)

The Strategy includes recommendations for public policies. It is also the basis for changes in the development management system, including binding strategic documents (strategies, policies, programs). Currently, work is underway on the preparation of new, integrated development strategies that will be used to achieve the assumed goals and detail the provisions of the SRD (e.g. *The Productivity Strategy 2030*).

The strategy defines the basic conditions, goals and directions of the country's development in the social, economic, regional and spatial dimensions in the perspective of 2020 and 2030. The new development model assumes abandoning the current support for all sectors / industries in favour of supporting strategic sectors that may become the engines of the Polish economy.

The strategy aims to change the structure of the economy in order to make it more innovative, efficiently using resources of physical and human capital.

The Strategy also lists specific objectives: Sustainable economic growth based more and more on knowledge, data and organizational excellence (areas: Reindustrialization, Development of innovative companies, Small and medium-sized enterprises, Capital for development, Foreign expansion):

A more competitive industry is an industry based on innovation - creating it and using it in production processes, an industry based on digitization and advanced automation, operating in intelligent chains connecting suppliers, producers, recipients and consumers. As a result, the industry becomes more efficient, flexible and competitive. The effect of measures taken for intelligent reindustrialization will be the saturation of the industry with high-value services (R&D, design, ICT). This will increase the share of innovative products manufactured in industry and will be a lever for increasing productivity. Basic activities will focus on creating conditions for the emergence and implementation of innovative solutions in industry, including through organizational and financial support for research and business projects implemented by domestic economic entities within national key clusters, platforms, agreements, etc. They will be supported by the development and wider use of new breakthrough products and technologies. The inevitable process of digitization of industry, driven by IT solutions, especially big data, the Internet of Things or cyber-physical systems, is the basic challenge for the development of technical infrastructure and competences for Industry 4.0. The essence here is the reconstruction and integration of technical infrastructure and the implementation of large-scale production of sensors and control systems, enabling the emergence of new management and production models.

Productivity Strategy 2030 (SP2030)

The main goal of this strategy is to increase productivity in a low-carbon, circular and data-driven economy. The strategy provides for the implementation of the assumptions indicated in the three detailed objectives of the *Strategy for Responsible Development until 2020.*

As part of the Productivity Strategy 2030, it has been assumed that digitization and Industry 4.0 are the key areas of industrial transformation in Poland in the coming years. It is connected with the necessity to prepare the economy and employees for the changes taking place by

implementing solutions in the field of automation and robotization with the use of artificial intelligence, dissemination of systems based on the analysis of information from big data sets, development of coherent data formats to ensure system interoperability and constant development of digital competences of the society.

On February 2, 2022, the Economic Committee of the Council of Ministers gave a positive opinion on the draft Productivity Strategy 2030.

Policy for the development of artificial intelligence in Poland from 2020

The document describes the activities that Poland should implement and the goals that it should achieve in the short-term (by 2023), medium-term (by 2027) and long-term (after 2027), aimed at the development of Polish society, the Polish economy and science in the field of Artificial Intelligence ("AI"). They are divided into six areas: AI and society; AI and innovative companies; AI and science; AI and education; AI and international cooperation; AI and the public sector.

National Smart Specializations (NSS)

These are industries whose development will ensure: creating innovative socio-economic solutions, increasing the added value of the economy and increasing its competitiveness on the international arena.

13 smart specializations were selected. From the perspective of the DIGIT-ME project, the most important is NSS 11: Automation and robotics of technological processes. It includes:

- process design and optimization,
- technologies for automation and robotization of processes,
- diagnostics and monitoring,
- control systems,
- machines and automation devices.

Strategy the development of the Kuyavian-Pomeranian Voivodeship until 2030 - Strategy for Acceleration 2030+

The development strategy is the most important document prepared by the Voivodship Self-government in order to set the directions of the voivodeship development for the coming years (the strategy covers the period until 2030, although some activities will also be continued after this year, hence the symbolic "+" sign has been added to its name). These

directions are implemented through very different activities of the authorities, but also other entities interested in the development of the region.

The region's economy is facing challenges typical for the whole of Poland - on the one hand, it is the need for reconstruction after the COVID-19 epidemic, and on the other, a series of inevitable processes that may be delayed due to the epidemic, but will certainly occur in the future. The strategy indicates the increasing role of information technologies, the transition to Economy 4.0, and the need to compete in more and more demanding global markets.

One of the basic activities for qualitative changes in the economy of the voivodeship is to improve its innovativeness, increase its modernity and support the transformation towards Economy 4.0. Four main areas of development have been planned in this area. The first one is a continuation of the idea of special support in the regional policy of entities operating in the area of regional smart specializations. The second area is the development of scientific research and the transfer of its results to the economy. Another area is the development of business support organizations specialized in supporting the development of innovative enterprises, and another area is promoting pro-innovative attitudes and encouraging the implementation of innovative solutions among the inhabitants and business entities of the region. New clusters should be developed on a larger scale and existing clusters should be supported, which are treated as specific innovation hubs linking science with business, creating new solutions that support companies in their development.

Smart specializations of the Kuyavian-Pomeranian Voivodeship

Smart specializations are those areas of the economy and science that are the most important from the point of view of the region's development potential and have been selected in order to target certain activities aimed at the radical development of the voivodeship by increasing the innovativeness of the economy. A key aspect of smart specialization is the fact that it combines the existing strong economic potential with advanced research carried out at European and global level.

Czechia

The "**Country for the Future**" might be considered as an umbrella strategic document helping Czechia prepare for the future, it connects/refers to existing related strategies (Digital Czechia) and suggests/anticipates others (e.g. National AI Strategy). One of its pillars is focused on

digitalisation of the state, products and services, but the rest of the pillars are also at least partly related.

Initiative Industry 4.0 (2017) The aim of this document is to provide key information related to the topic of the fourth industrial revolution, show possible directions of development and outline proposals for measures that could not only support the economy and industrial base of the Czech Republic, but also help with preparation of society to absorb technological changes.

Research and Innovation Strategy for Smart Specialisation (2021-2027) helps aiming resources to priority areas with high potential to create competitive advantages based on knowledge and innovation. In its analytical part, it says that the potential of digitalisation is not fully used. One of the specialisation domains is Digitalisation and automation of manufacturing technologies and the digital agenda is one of the horizontal pillars.

National S3 is also closely bound to **National AI Strategy** and strategy **Digital Czechia (2018-2030)**, which is a complex conception of digitalisation of the Czech Republic, and its pillar Digital economy and society. National AI Strategy is a basic strategic document for development of AI, which covers several different areas from supporting science and research through education to issues of regulation and international cooperation in AI.

Strategy to support SMEs in the Czech Republic for the period 2021-2027 sets the strategic objective Digital transformation of SMEs. The main objective is to facilitate the transition process of SMEs to take full advantage of the rapidly evolving digital economy and society, thereby ensuring or increasing their competitiveness. The Strategy also defines specific objectives within the topic of digital transformation:

- Increasing public awareness of the benefits of digital transformation;
- Increasing the use of digital tools and new technologies in SME business;
- Ensuring the functioning of the Digital Innovation HUBs network to support SMEs;
- High-quality digital infrastructure and high-speed Internet connectivity.

Regional Innovation Strategies in many regions also include Smart Specialisation Strategies and thus defining general and systemic priorities fostering innovation as a main driver of competitiveness, but also set specialisation domains in regional economies, which seems to

have higher positive impact to sustainable growth and competitiveness of regional economies.

Integrated Territorial Investment of the Usti-Chomutov Agglomeration is an integrated tool for using EU funds for development of metropolitan areas. One of its specific goals is to activate human capital for the development of science, research and innovative business.

Re:Start is a strategy of economic transformation of the Usti, Moravian-Silesian and Karlovy Vary Regions. These regions are economically lagging behind due to its economic structure and unfinished transition from coal mining and heavy industry to knowledge and innovation based economies. The document reflects the importance of digital transformation (e.g. measure IV. A.3.1). Another closely related important framework is the above-mentioned JTM (Just Transition Mechanism/Plan), where digitalisation and green economy are two key priorities.

Finland

Government action to digitize public services

Ministry of Finance

The Finnish state is responsible for the digitization of companies' public services. The aim is to digitize all the authorities' functions of companies - taxation, permit applications, etc. Finnish society is currently undergoing a transition that includes big structural reforms. One framework for the changes is provided by digitalization. It challenges us to question the existing methods and practices and to make them more effective and flexible. Digitalization helps create better and more reliable service chains to meet the requirements of good life and varying circumstances. It is also a means to look after our wellbeing and success and can ultimately work as a kind of restructuring protection. Finland is already one of the leading countries in the world in public electronic services. Furthermore, studies show that the digital skills of Finns are the best in the EU. This proves that the prerequisites for success in digitalisation are excellent. Most importantly, the focus of the service development must be placed on the customer as that is the way to ensure that we are genuinely building our society on the basis of our needs.

Digital services

Digital services increase the opportunities for citizens, companies and corporations to use public services regardless of time and place. Digital services are usually the fastest and easiest way to interact with the authorities. When the use of digital services becomes more widespread, the public service production becomes more efficient, which saves public resources. The starting point is that digital services provided by the public administration must be functional, easy to use and safe.

Programme for the Promotion of Digitalisation

The Government Programme includes the following objective: Finland will be recognised as a front runner that develops and introduces new solutions enabled by digitalisation and technological advances, doing so across administrative and sectoral boundaries. The aim is to increase the technological and digitalisation capabilities of the public sector and to promote cooperation between the public and private sectors.

The Programme for the Promotion of Digitalisation ('digitalisation programme') has been put together to implement the objective stated in the Government Programme. The digitalisation programme supports and encourages public authorities to make their services available digitally to citizens and businesses by 2023. The Ministry of Finance established the Programme for the Promotion of Digitalisation on 25 February 2020.

The aims which the Programme for the Promotion of Digitalisation wishes to achieve by 2023 are as follows:

- high-quality digital public services will be available to citizens and businesses in accordance with, as a minimum, the requirements of the Act on the Provision of Digital Services;
- the extent to which business operators use in-person services and services based on printed materials will have fallen significantly, and a number of digital-only business services will be available;
- digital user support will be available throughout the country and will also be developed to serve business operators;

The Programme's action plan for 2021 was published in January 2021.

The progress in promoting digitalization and achieving the goals set will be assessed using a set of indicators and an up-to-date picture of the situation. The primacy of digital services and the adoption of standard approaches to service development and provision will be furthered by applying and developing the legislation. The aim of digital support for online service users will be to improve the availability of this support across the country and make it easier to find. The digital programme also aims to ensure that digital support serves business operators, too. The YritysDigi project will meet the programme goal of significantly reducing the extent to which business operators use in-person services and services based on printed materials, and making available a number of digital-only business services. The programme also includes other measures supporting digital service development, such as the further development of the Suomi.fi service being undertaken by the Digital and Population Data Services Agency, and the development of service quality tools.

Source: https://vm.fi/en/digitalisation

Business Finland

The Business Finland help Finnish companies to create global competitive advantage through digitalization build international ecosystems and provide foreign companies expertise to set up R&D and invest in Finland. The Business Finland Digitalization theme services include innovation funding, internationalization services and programs on the edge of the latest global digital trends. We offer companies strong expertise and the tools for international business.

During 2005–2019 Business Finland (formerly Tekes and Finpro) has advanced digitalization among other actions, by implementing a number of different programs, of which 13 were evaluated in 2020–2021. The purpose of the evaluation was to conduct a comprehensive evaluation of the relevance, results, impacts and added value of these programs. The evaluation produced information from the longer-term perspective, taking into account the combined effect of several successive and simultaneously implemented programs. The evaluation also produced information of the different implementation concepts of these programs. The results of the evaluation can be found in the report, which can be read at:

4/2021 BUSINESS FINLAND PROGRAMS ADVANCING DIGITALIZATION – Evaluation of a continuum of 13 programs and 15 years

Team Finland (Regional acteurs)

Team Finland is a network of public organizations providing internationalization services. The network aims to provide companies with a smooth service chain from advice to finance. The Team Finland network of Southwest Finland brings together business service providers in the region. For their part, service providers also support companies in the development of electronic services and the digitization of production.

Source: https://www.team-finland.fi/en/team-finland-organisations

Center for Economic Development, Transport and the Environment

The Center for Economic Development, Transport and the Environment coordinates the Team Finland network in the region. The centers implement nationwide business support services (Business Finland and Team Finland) - expert services, training services, finance, personnel services, counselling, change of ownership and networking services.

Association of Southwest Finland

The Association of Southwest Finland is a statutory association of municipalities consisting of 27 members, which according to the Land Use and Construction Act manages the regional planning of its area and according to the Regional Development Act is responsible for the general development of its area.

Tasks of the Association of Southwest Finland on a practical level:

- is responsible for the general development of the province in cooperation with the state authorities;
- is responsible for drawing up the provincial strategy and provincial plan;
- prepares an annual implementation plan for the provincial program on the basis of the provincial program in cooperation with stakeholders;
- participates in the preparation and implementation of program proposals for national Structural Funds programs;
- to promote regional and other co-operation between municipalities, as well as co-operation between provinces and co-operation with key stakeholders in the development of the province;
- manage international affairs and contacts related to its tasks;

- coordinates e.g. the preparation of provincial plans for training needs, transport systems, water and waste management, and natural resources and the environment; and
- manages the Central Baltic Interreg V A program 2014-2020 on behalf of the EU Member States (Finland, including Åland, Sweden, Estonia and Latvia).

Educational and research institutions

There are 13 universities, 22 polytechnics and 171 vocational education providers in Finland. In addition to these, companies are served by public (e.g. VTT) and private research institutes.

Universities and polytechnics produce experts in various fields and work closely with companies on R & D & I research. Vocational education in Finland is a second-level degree, after which some graduates continue to higher education and some enter the labour market.

SUPPORTING AND HINDERING FACTORS OF MANUFACTURING ENTERPRISES SUPPORT IN THE AREAS OF DIGITALIZATION

Based upon the continuous dialogue with companies (in the Usti region), among the top factors influencing innovation and digitalisation are ambitions and also openness to experiments and innovation. Although foreign ownership is significant and has a rather positive impact on innovation activities, in some cases the managerial responsibilities are focused on optimising costs and benefiting from relatively lower wages. In those cases, where responsibilities for creating a strategy and searching for development opportunities are insufficient or located abroad, also R&D and innovation activities are usually abroad. This limits innovation activities and digitalisation to instructions from the foreign HQ and it is directly related to the type of innovation system a particular company is using and it uses the potential of external cooperation (e.g. open innovation principles). Other factors are e.g. a position on Global Value Chains or industry.

The probability of successful digital innovation grows with increasing spectrum and accessibility of related services and infrastructure supporting digitalisation. These might be provided by the state in close cooperation with European activities (like ESA BIC incubators), or by the EU through (or with) private partners (activities of EIT Hubs; EIB, EDIH), or by regional/local authorities (alone or in cooperation; e.g. regional innovation centers or development agencies), or by private organisation solely. Among the services are consulting,

shared facilities (co-work, labs) and equipment for testing, experimenting and education (e.g. Intemac), incubation and acceleration programs (e.g. Platinn), direct or indirect financing. They increase awareness about the latest (digital) trends, provide information and show examples, and enable multi stakeholder cooperation.

According to McKinsey, Czechia has better results than CEE average in following areas: adoption of digital skills among individuals, adoption of digital tools among enterprises and participation rates in adult learning. Future skills developing education, re-skilling and up-skilling programs enable faster digitalisation.

OVERVIEW OF EXISTING INITIATIVES / INSTRUMENTS / SERVICES SUPPORTING DIGITALIZATION OF MANUFACTURING SMEs

Poland

Future Industry Platform https://przemyslprzyszlosci.gov.pl/

The Future Industry Platform was created to strengthen the competences and competitiveness of enterprises operating in Poland by supporting their transformation towards industry 4.0. Platform supports:

- digital transformation processes;
- implementation of digital products and services;
- introducing business models based on the latest solutions in the area of innovation, among others, intelligent data analysis, automation and communication of machines and people with machines, process virtualization, as well as cybersecurity.

One of the main goals of the initiative is also to strengthen the competences of human resources for the industry of the future. These are training programs and innovative ways to demonstrate solutions. We work to strengthen the business ecosystem created by Polish manufacturing companies. We pursue this goal by creating mechanisms for cooperation, sharing knowledge and building trust in relations between market entities involved in the digital transformation process. The activities undertaken are to engage companies in network cooperation and co-creation of new values. We direct our activity and support to entrepreneurs, entities managing innovative clusters, entities operating for the benefit of an innovative economy as well as social and economic partners who operate in Poland.

Offer for entrepreneurs:

- events

- consulting (Consulting 4.0) - Is a form of direct support for entrepreneurs, serving to prepare companies for digital transformation. The advisory offer includes audits aimed at assessing, analysing, verifying and improving existing processes and initiating changes towards industry 4.0 standards. Advisory services are provided by auditors and experts cooperating with the Future Industry Platform. The foundation's support is provided under de minimis aid. The number of places for individual services depends on the current FPPP budget. As part of the current recruitment, the platform provides entrepreneurs with support with an intensity of about 50 to 60% of the value of the service - which means that the recipient of the service finances from about 40 to 50% of the cost. The amount of aid granted is estimated individually for each applicant entity, being the difference between its market value and the sum of costs incurred by FPPP.

- mentoring - Mentoring support is a service consisting in consulting in the context of changes in the company, both in terms of organization and technology, which lead to the implementation of solutions for the industry of the future. Through mentors and experts from various fields of industry 4.0, you will be able to learn how to check areas in the enterprise and how to effectively implement changes diagnosed during mentoring support. In addition, during an internal or external audit, it will be possible to use the assistance or supervision of an independent expert.

Range:

- audit mentoring
- advice on conducting audits
- assistance with internal audit
- assistance during an external audit – supervision

Auditors: 1 FPPP expert

Duration: 1 working day (visit to the company) and 20 hours of consultations

Result: mentoring service, independent consulting

- compliance audit - Standardization is the key word in effective business. In a modern economy, standards, regulations and procedures are obligatory for every entrepreneur. Compliance audit is a product that responds to market needs in terms of checking and implementing industry 4.0 standards and rules. FPPP business and technology experts will audit companies in terms of the guidelines necessary to implement p4.0, but also conduct an

initial audit of technologies and products, assessing the possibility of implementing digital solutions.

Range:

- checking the company's rules and procedures in terms of compliance with industry 4.0 standards and normative guidelines
- initial technology audit in terms of the possibility of using industry 4.0 solutions

Auditors: 2 FPPP experts

Duration: 1 working day, audit in the enterprise

Result: consulting, audit report with recommendations for implementation

- operational audit - An operational audit is a product that includes professional consultancy in the field of checking the company's operation in the economy. The consulting service includes the analysis of areas such as the company's strategy, business model, processes and execution procedures. Our experts and auditors will point out the strengths and weaknesses of the organization, recommend the necessary corrective actions, but also show how to conduct effective communication within the company.

Range:

- analysis of the company's strategy
- analysis of the company's business model
- audit of organizational processes in the enterprise
- audit of operational procedures and results
- communication within the organization

Auditors: 2 FPPP experts

Duration: 2 working days, audit in the company

Result: consulting, audit report with recommendations for implementation

- ADMA maturity - A study in the form of a company's digital maturity analysis, which is a comprehensive assessment of the company's readiness to start the digital transformation process. The final part is the report along with the preparation of the initial transformation plan - necessary for the development of the so-called transformation roadmap.

Range:

- analysis of the company's maturity in seven areas: advanced production technologies, digital factory, ecological factory, customer-oriented engineering, human-focused organization, intelligent production, value chain

- advice on establishing priority development areas
- creating a transformation plan

Persons: 1 FPPP expert

Duration: 2 working days, audit in the company

Result: consulting, audit report with recommendations for implementation

- trainings and workshops - Awareness workshops are organized in the form of a series of meetings concerning the use of modern industry 4.0 solutions in the management and organization of enterprises, as well as showing the process of digital transformation. Classes are conducted by experts from the Future Industry Platform, their professional profiles are described in the announcement of each workshop. We have prepared the cycles for entrepreneurs and managers who manage the entire company or its areas.

- e-learning - platform with training (free)

- self-assessment of digital maturity - The role of the study is to determine the current state of digital maturity of the company, to show the challenges and the scope of necessary changes, the implementation of which will allow the company to become an organization compliant with industry 4.0 standards.

DELAB WAW https://www.delab.uw.edu.pl

The Digital Economy Lab was established in 2013 thanks to a grant funded at the University of Warsaw by Google.

The subjects of research are the digital economy, society and politics. Being primarily scientists - economists, sociologists, lawyers, IT specialists and data science specialists - they are also open to research and analytical cooperation with business and public institutions.

INITIATIVES:

- PODCASTS: Justyna Pokojska, PhD talks to eminent researchers and scientists about aspects of the digital revolution. The aim of the podcast is to network experts from the University of Warsaw, thus creating a field for effective scientific cooperation. The series of interviews covers such issues as: digital economy, competences of the future, as well as challenges and opportunities related to the digitization process - both on the level of everyday life, as well as international politics and the development of global science.

- SEMINARS: Series of meetings *Digitization under the magnifying glass of science* and *Digital Europe Economic Seminars* are organized under the program *Excellence Initiative - Research*

University (IDUB). *Digitization under the magnifying glass of science is a series* of Polish-language meetings, during which they will look at issues related to digital transformation, new technologies, innovation and digital research methods. *Digital Europe Economic Seminars* is a series of English-language meetings, during which research in the area of digitization, conducted by leading researchers from the European Union countries, is presented.

- Reports & working papers: Digital Research Studies are studies presenting the effects of interdisciplinary research in the area of digital transformation carried out by the research community around DELab. These works are working papers - so they are the most up-to-date results of research and research projects prepared by researchers, PhD students and students of the last years of studies at the University of Warsaw. By presenting them, we want to stimulate discussion on the challenges arising from digital transformation and support the creation of a communication network between young and more experienced scientists and teams undertaking research challenges in the field of digital transformation within and outside the University of Warsaw.

Gov-TECH https://www.gov.pl/web/govtech/centrum

Inter-ministerial team operating at the Prime Minister - this means that they operate across the entire public sector to coordinate strategic digital projects, involving entrepreneurs, officials, citizens and all those who can support the transformation of the Polish public sector with their ideas. They draw on the best international experiences, but they also share their knowledge with other countries, showing Poland as a country that in the digital sphere is able to contribute as much as the world's largest players. It is also crucial for us that competent, creative and visionary people, including young people, always have an attentive partner on the government side.

Their overriding goal is to coordinate the entire process of creating digital tools by public administration, focusing not only on the technological aspect itself, but also participating in the process of creating digital reality and its popularization among citizens. The key element of the Center's operation is an open and proactive approach to relations with entrepreneurs, NGOs and other innovators.

The Center is also responsible for key digitization projects in Poland - from those already in operation to those that are just under construction. The Center connects everyone who, with the help of technologically innovative solutions, supports the solution of challenges faced by

the public sector, thus improving the effectiveness of the public sphere and increasing the quality of life of citizens.

Academy of Innovative Applications of Digital Technologies (AI Tech)

https://www.gov.pl/web/govtech/akademia-innowacyjnych-zastosowan-technologii-cyfrowych-ai-tech

The Academy of Innovative Applications of Digital Technologies (AI Tech) is a project whose aim is to develop a system model for the education of high-class specialists in the field of artificial intelligence, machine learning and cybersecurity.

As a result of the Project implementation, a model of systemic education of high-class specialists in the field of artificial intelligence, machine learning and cybersecurity will be developed and tested, which will have a positive impact on the development of Polish science and the competitiveness of the economy. The developed solution will be implemented on a large scale in 2021-27 by various academic centers, including those with less experience in the field of teaching in the above-mentioned areas. Moreover, as a result of the Project implementation, a group of students will acquire advanced skills in the field of artificial intelligence, machine learning and cybersecurity.

100 best projects to increase the level of digitization in the company

https://www.parp.gov.pl/component/site/site/100-najlepszych-projektow-na-zwiekszenie-poziomu-cyfryzacji-w-firmie

Almost half a thousand applications were recruited for the competition organized by the Polish Agency for Enterprise Development "100 best projects to increase the level of digitization in the company". Ultimately 105 companies were selected. Each of the winners will receive a financial award of PLN 20,000 from EU funds. The competition was financed by the Intelligent Development Operational Program.

The simple and clear assumptions of the competition attracted the smallest companies, which are not often beneficiaries of Polish Agency for Enterprise Development funds. Representatives of micro-enterprises accounted for 82% applicants (383 submitted applications) and 72% awarded (76 laureates).

Financing

Industry 4.0 https://www.parp.gov.pl/component/grants/grants/przemysl-4-0

FINANCING OBJECTIVE: Supporting small and medium-sized manufacturing enterprises in pilot activities related to the transformation towards Industry 4.0.

The aim of the Pilot is to prepare small and medium-sized manufacturing companies to implement a comprehensive transformation towards Industry 4.0 and to implement selected areas of activities in the field of digitization, automation or robotization.

Operational Program Digital Poland (OPDP) https://www.polskacyfrowa.gov.pl

The aim of the Operational Program Digital Poland is to strengthen the digital foundations of the social and economic development of the country and to take full advantage of the opportunities offered by digital technologies to residents. The program provides for the support of electronic services in the public sector.

Projects financed by the Digital Poland Program can be divided into three groups.

- broadband infrastructure enabling access to high-speed Internet (recipients: inhabitants of areas where access to the network has been limited or not at all so far);
- projects that increase the pool of public services available electronically (recipients: the whole society);
- projects encouraging people to use the Internet and increasing their digital competences. Funding for this type of activities will be available mainly for non-governmental organizations in partnership with local governments.

The Operational Program Digital Poland (OPDP) is financed from two sources:

- the European Regional Development Fund, of which EUR 2.17 billion is allocated to the program,
- national resources - public and private, the minimum commitment of which amounts to EUR 394.4 million

The program has been divided into 4 Priority Axes:

- Universal access to high-speed Internet - EUR 1.2 billion
- E-government and open government - EUR 1.1 billion
- Digital competences of society - EUR 171 million
- Technical Assistance - EUR 68 million

Basic program documents:

- The Operational Program Digital Poland for 2014-2020,

- Detailed Description of the Priority Axes of the Operational Program Digital Poland for 2014-2020.

FOLLOWING OP DP - European Funds for Digital Development 2021-2027 (FERC).

Regional Operational Program (Kuyavian and Pomeranian Region)

Priority axis 2. Digital region

Total allocation: EUR 50 169 580

Investment Priority: Strengthening ICT (Information and Communication Technologies) applications for e-government, e-social inclusion, e-culture and e-health.

- development of electronic public services, including projects in the field of e-administration, e-health, e-culture;
- computerization of entities from the areas of administration, health, culture, as well as digitization, including digitization of resources at their disposal;
- creation and development of reference public registers, including geographic spatial information systems and support for IT infrastructure integrating resources and organizations.

Services

Digital Innovation Quotient		Description
Describe the target group		SME
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		The service is provided by the EEN staff who are also responsible for finding companies. Expert is looking for the potential clients for the service by searching the different types of databases and by approaching the participants of various events organised by TRDA or other stakeholders active in the field of entrepreneurship and digitalization.
Description of the service	Describe the service? What kind of issues does it consider?	A service that aims to support the entrepreneur in improving innovation management. It focuses on broadly understood digital innovation, including automation.
	Describe the way the service is provided.	Stage I: self-assessment associated with personalized benchmarking - It takes place using a specially prepared form and consists in collecting information by filling in a questionnaire on digital

		innovation management processes in the enterprise. Based on the generated report, it is possible to make a comparison with other companies operating in a sector similar to the surveyed company. Stage II: consulting - on the basis of the report, the consultant, in cooperation with the entrepreneur, analyzes the facts, prepares recommendations for the implementation of solutions to improve the management of digital innovations in the enterprise and develops an action plan based on these recommendations. Stage III: implementation - the company has the opportunity to use the services of an EEN consultant to implement the activities recommended in stage II. After completion of the implementation, the consultant and the company provide mutual feedback aimed at assessing the effectiveness of the advisory service. In addition, nine months after the completion of the consulting service, the audited company will evaluate the change in its innovation management.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		Free of charge for SMEs

Projects implemented in Torun Regional Development Agency:

REGIONAL TRAINING FUND - development services for SMEs from the Kuyavian-Pomeranian Voivodeship and their employees:

Grants for SMEs intended for development services registered in the Development Services Database. The maximum amount of co-financing provided for one entrepreneur is:

- micro-enterprises - PLN 10,000.00;
- small enterprises - PLN 30,000.00 and the maximum value of advisory services may not exceed PLN 20,000.00;
- medium-sized enterprises - PLN 100,000.00 and the maximum value of advisory services may not exceed PLN 30,000.00.

CERTIFIED COMPUTER TRAINING for adults from the Kuyavian-Pomeranian Voivodeship:

The project is aimed at people who, on their own initiative, want to acquire, raise or supplement their competences and qualifications, work or learn in the Kuyavian-Pomeranian Voivodeship and belong to one of three groups of people: over 25 and with low qualifications, over 25 years of age and with disabilities, people over 50 years of age. Persons who conduct business activity are excluded from participation in the project.

As part of the project, training and computer courses are carried out on various topics - both professional, qualification and specialist training, at various levels of advancement - basic, intermediate and advanced.

Objective of the project: the acquisition, improvement or supplementation of competences and qualifications in the field of Information and Communication Technologies by 6,030 adults from the Kuyavian-Pomeranian Voivodeship belonging to groups disadvantaged on the labour market. The project is implemented from January 1, 2018 to June 30, 2023.

Innovation Framework for Challenge Oriented Intelligent Manufacturing (Inform):

Project goal: supporting digital solutions in manufacturing companies. Realization time: 01/01/2019 - 30/09/2021.

Partnership: 9 organizations from 6 European Union countries that represent a wide range of end users (mechatronics industry) and the R&D sector.

The associate partner of the project in Poland is the Bydgoszcz Industrial Cluster.

Scheduled activities:

- Creation of a common methodology for the implementation of digital audit services.
- Conducting digital audits for manufacturing companies.
- Raising awareness among regional stakeholders in the context of digital transformation.
- Mapping the regional infrastructure for digital activities in the region.
- Establishment of the Digital Platform Supporting Innovation for the Baltic Sea states, including the creation of a virtual environment for intelligent solutions.

The Future of Farm to Fork (acronym:3F) – digital solutions for short food chains

Project objective: supporting the agri-food sector by developing solutions to improve the use of short supply chains.

The short supply chain is a transaction model in the agri-food sector, the main idea of which is to exclude or limit sales agents between the producer and the end customer to one.

Realization time: 07.2020 - 12.2020

Project implementation: In order to implement the planned activities and maintain the highest effectiveness, agreements were made with the Marshal's Office of the Kuyavian-Pomeranian Voivodeship, the Nicolaus Copernicus University in Toruń and the Kuyavian-Pomeranian Agricultural Advisory Center in Minikowo.

Scheduled activities:

- Active cooperation with stakeholders and users of short supply chain;
- Conducting workshops and identifying the needs of short supply chain users;
- Formulating the challenges that will be undertaken by participants of the Hack3F virtual Hackathon;
- Organizing and conducting a virtual Hack3F Hackathon, the result of which will be prototypes of technological solutions supporting short supply chain;
- Popularizing short supply chain through other activities undertaken in the project.

Czechia

Digitalisation ecosystem

In Czech Republic, the topic of digitalisation is processed by national agencies, regional development agencies or innovation centres as well and specific subjects – typically DIHs and BICs. Network of DIHs is being developed. 6 EDIH candidates were pre-selected by member state for Digital Europe Programme (DEP):

Name	Focus
BRAIN FOR INDUSTRY (leader: Institute of Physics of the Academy of Sciences of the Czech Republic v.v.i.)	AI
CYBERSECURITY INNOVATION HUB (leader: CyberSecurity Hub, z.ú.)	Cybersecurity
DIH NORTHERN AND EASTERN BOHEMIA (leader: ARR - Regional Development Agency)	AI
EDIH CTU (leader: Czech Technical University in Prague)	AI

EDIH DIGIMAT (leader: Intemac Solutions, s.r.o.)	AI
EDIH OSTRAVA (leader: Technical University of Ostrava)	HPC

There are also other DIH consortiums, which were asked to provide relevant inputs to DIGIT-ME project: DIH Pilsen, HUB For Digital Innovations (H4DI).

Following table brings an overview of existing organizations or initiatives, that were asked to fill questionnaire template, and answer relevant questions about instruments, which were or are being provided to support the process of digitalisation of manufacturing SMEs. Some of listed organisations are members of EDIH consortia mentioned earlier.

Name	Type
Business and Investment Development Agency CZECHINVEST	National agency
Business and Innovation Agency	National agency
Technology Agency of the Czech Republic	National agency
Technology Centre of the CAS	National agency
Karlovy Vary Business Development Agency, contributory organisation	Regional agency
Innovation Centre INION, registered institution	Regional agency
ARR - Regional Development Agency, LLC	Regional agency
Central Bohemian Innovation Centre, association	Regional agency
JIC, interest association of legal persons	Regional agency
Moravian-Silesian Innovation Centre Ostrava, PLC	Regional agency
Innovation Centre of Olomouc Region	Regional agency
Centre for Investment, Development and Innovation	Regional agency
Technology Innovation Centre LLC, Zlín	Regional agency
BIC Brno LLC	Regional agency
BIC Plzeň, LLC	Regional agency
BIC Ostrava LLC	Regional agency
Regional Development Agency of Pilsen Region	Regional agency
Czech Technical University in Prague - CIIRC (National Centre for Industry 4.0)	DIH
South Bohemian Science and Technology Park, corp.	DIH
TECHNOLOGICAL CENTRE Hradec Králové, registered institution	DIH

*information provided via INTEMAC Solutions, s.r.o. (DIH)

Coordination of EDIHs and regional DIH is going under Ministry of industry and trade, but also CzechInno – NGO focused on topic of digitalisation of SMEs.

Financing

Operational Program Enterprise and Innovation for Competitiveness (OP EIC) https://www.agentura-api.org/en/

OP EIC was (is) the key, national level programme for supporting Czech entrepreneurs in the 2014-2020 programming period, offering wide range of financial support for manufacturing SMEs in total allocation of EUR 4,331 mil. The Managing Authority of OP EIC is the Ministry of Industry and Trade. The role of the intermediate body is played by the Business and Innovation Agency (API). Digital transformation/digitalisation was supported within following sub programs:

- *ICT and shared Services* - programme focused on the development of an information and knowledge society and intended for all enterprises that wanted to develop their own software solutions or create so-called strategic service centres (data centres).
    - *Example activities*: construction and modernisation of data centres, creation of new IS/ICT solutions, establishment and operation of shared services centres.
- *Innovation* - aim of the programme is to strengthen the innovation performance of domestic firms and to improve their competitiveness through increasing the use of unique know-how created in cooperation with the academic and research sector.
    - *Example: Call IX* - Implementing new methods of organising corporate processes through the deployment of new information systems to integrate and automate intra-company processes targeted especially at interconnecting research and development (R&D) activities, innovation, and production; subsidy 1 mil.- 100 mil. CZK, aid intensity up to 45 % of eligible costs.
- *Innovation vouchers* – focused on developing communication and share knowledge and know-how between the business sector and research, which can be used by the enterprises for launching or intensifying their own innovation activities
    - *Supported activities*: Purchase of advisory, expert and support services in the area of innovations from organisations for research and knowledge dissemination or from accredited labs with the aim to commence or intensify

innovation activities of SMEs. Grant up to 500 k CZK/2 mil. CZK, aid intensity up to 85 %/50 % of eligible costs.

- *Technology* - programme supporting the increase in the number of new businesses of small business start-ups and SMEs in economically distressed regions, contributing to the development of these regions and increasing employment
    - *Example I: Call VII* – focused on acquisition of new machinery, technological equipment and facilities and the integration of the acquired or existing technologies by means of autonomous two-way communication into the production process. Simple renewal of existing machinery with zero degree of innovation was not supported. Subsidy 1 mil.- 20 mil. CZK, aid up to 45 % of eligible costs.
    - *Example II: Call XIII* – supporting projects that have a set strategy for further development in the field of digital transformation of society through the acquisition of new technological devices and equipment, which must be connected to existing or newly acquired technologies information system (IS or ERP, MES, MIS) and its other implemented modules integrating all or most areas of business activity, especially production planning and management, inventory, purchasing, sales, finance, human resources, etc.; subsidy 1 mil.- 40 mil. CZK, aid intensity up to 45 % of eligible costs.
- *High-Speed Internet* – focused on expansion of modern, high-quality and secure infrastructure enabling high-speed Internet access (next generation access networks) to locations where such access is not provided and is not likely to be provided by market mechanisms on a commercial basis, for the purpose of development of digital economy.
    - *Example: Call IV* - to provide the next generation access network in areas where it has not been provided yet - extension (modernization) of existing access network infrastructure or establishing new networks for high-speed Internet access provided at a fixed location in order to achieve the NGA network characteristics under Article 2(138) of Commission Regulation (EU) No 651/2014; subsidy 0,5 mil.- 200 mil. CZK, aid intensity up to 75 % of eligible costs.

National-level programmes for the period 2021-2027

- **Recovery and Resilience Facility (RRF)** – approved by the EC
    - Focus on increasing the intensity of digitalisation and promoting innovation in companies in line with defined Industry 4.0 standards, digitalisation and key trends of promising industries;
    - Building the digital transformation infrastructure in the form of the European Ecosystem (DIHs);
    - Promoting the adoption and development of new technologies.
- **Operational Programme Technology and Applications for Competitiveness (OP TAC)**, examples of instruments, supported activities:
    - Innovation vouchers;
    - Building and developing infrastructure for R&D, testing and validation of technologies in business sector (testbeds);
    - Implementation of digitalization in enterprises, including the necessary process analysis and follow-up investment support for the deployment of digital solutions; support for projects in areas related to artificial intelligence, process automation and robotics, and cybersecurity for online and physical systems, in the context of the introduction of new technological developments;
    - Development and acquisition of specialized software (e.g. for computer security, simulation, monitoring, computer vision, for working with big data - Big Data Analytics, for 3D printing etc.), as well as in the field of digitisation, automation, Industry 4.0 and higher level, implementation of AI, robotics, machine learning, augmented and virtual reality, business intelligence, e-commerce etc. SW solutions that fundamentally streamline processes and add value, in particular in SMEs.

National level non-financial services

The most important role plays the **Business and Innovation Agency (API)**, which acts as intermediate body of OP EIC and provides consultancy services related to this programme. API, with headquarters in Prague, operates 13 regional offices to get closer to SMEs in every NUTS III region in Czechia. Potential customers (applicants for subsidy) will get answers to questions connected to OP EIC and specific programmes and calls for proposals. This service

is provided free of charge (financed from Technical Assistance of OP EIC budget). All relevant information about OP EIC and financial instruments are provided via API web pages, information days, individual meetings or seminars/webinars. This non-financial instrument could be called as „access to finance“ service. API consultants do not provide in depth advice about concrete technical solutions.

Technology Centre of the CAS, as national coordinator of EEN in the Czech Republic, also plays an important role by providing services to the largest international network of business support - comprehensive support for business development and innovation in the Czech Republic, especially technology transfer, internationalization of business (search for foreign partners), advice on digitalisation, sustainability and intellectual property protection and information on available financial resources. Clients are usually actively contacted or look for information about the service based on PR activities and the transfer of information from existing clients. Required qualifications of professional providing the service are economic or technical higher education and relevant experience. The Centre uses EEN database, methodology of company evaluation in terms of innovation, digitalisation and sustainability. The service is free of charge - subsidized by a European project.

Regional level financial instruments

Wide range of institutions, commercial, non-commercial (regional authorities, regional development agencies, innovation centers, BICs, DIHs – often founded by regional authorities or municipalities) offer quite wide range of supportive instruments/services towards digital transformation of SMEs, incl. manufacturing SMEs. These can be divided into financial (grants, vouchers) and non-financial, consultancy-like instruments.

Pilsen Business Vouchers Programme	**The programme is one of the tools used by the Statutory City of Pilsen to contribute to the development of the business environment and the competitiveness of companies. The aim of the programme is to strengthen the innovative activities of companies in the Pilsen agglomeration and thus contribute to increasing their competitiveness**
Describe the target group	SMEs with its registered office or place of business in the Pilsen Metropolitan Area.
Describe how do you reach the service to customers? Does the company apply for the	Information campaign, in cooperation with the City of Pilsen and local research organisations.

service independently via email or website? or Does the Business Support Organisation seek clients?		
Description of the service	Describe the service? What kind of issues does it consider?	Subsidies for the purchase of services from research organisations leading to innovation in SMEs. To some extent, it helps to finance the innovation activities of enterprises, even start-ups, but above all it encourages the establishment of closer relations between enterprises and research organisations (especially the university), which are an important source of innovation. See http://www.bic.cz/vouchery
	Describe the way the service is provided.	The grant programme of the City of Pilsen is handled by BIC Plzeň. It receives applications, checks the formal and factual correctness of applications, administers the further process up to the subsequent checking of final reports and payment of subsidies. Grant size 150 k CZK, aid intensity up to 75 % for SMEs, 50 % for big companies.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		The programme is funded by the City of Pilsen.

Innovation Vouchers of the Usti Region		**Subsidy program for companies from Usti region that find innovative solutions for their products, services or production processes in conjunction with a research organization. Provided by Usti Region Authority.**
Describe the target group		SMEs with registered office or place of business in the Usti region.
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		Websites, seminars, PR articles, social networks, etc. Potential applicants were also informed about the possibilities of using the voucher during joint meetings. In some cases, customers call themselves.
Description of the service	Describe the service? What kind of issues does it consider?	Programme focused on: - making new knowledge for product, service and process innovation available to companies that do not have their own research and development capacities - support to companies in adapting to the digitalisation of production and elements of industry 4.0 - connection of businesses and research organizations. Lack of own resources (personal or technological) needed for innovation within the SME.
	Describe the way the service is provided.	Financial support through open calls for proposals (one call per year).

Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge	Grant up to 200 k CZK, aid intensity 70 %.

Development of Competitiveness of the Karlovy Vary Region Programme (subprogramme 1 Innovation vouchers)		**Provided by Karlovy Vary Business Development Agency, contributory organisation (KARP).**
Describe the target group		SMEs. The applicant may be a commercial company, European company, European economic interest grouping, a cluster, a cooperative or a non-profit company. The applicant for a subsidy must be a legal entity that has its registered office in the territory of the Karlovy Vary Region; in the case of a cluster, the majority of its members must have its registered office in the Karlovy Vary Region.
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		Websites, seminars / webinars, PR articles, social networks, etc. Potential applicants are also informed about the possibilities of using the voucher during joint meetings (e.g. in interviews with companies during mapping of innovation environment). In some cases, customers call themselves, sometimes KARP address them directly. The customer applies through the electronic system of the Karlovy Vary Region Authority for submitting grant applications.
Description of the service	Describe the service? What kind of issues does it consider?	Through the grant title Innovation Vouchers, it is possible to optimize production processes in companies. Thanks to the voucher, it is possible, for example, to carry out a feasibility study of digitalisation of processes in the company. The output can also be background analyses facilitating digitalisation.
	Describe the way the service is provided.	Applications for subsidy titles are accepted once a year during the spring months. Before submitting the application, the applicant will find a suitable knowledge provider who will provide the required service for him. A contract is signed with applicants who successfully pass the evaluation of acceptability and formalities, and subsequently defined cooperation activities are pre-financed.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		Subsidy up to 170 k CZK. The aid intensity is 100 %. The beneficiary thus pays only the costs exceeding the maximum possible amount of aid.

Regional level non-financial instruments

Instruments/services with direct focus on digitalisation:

DigiAudit Online	**Provided by National Centre for Industry 4.0**

Describe the target group		Small and medium-sized manufacturing enterprises in the Czech Republic
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		Communication at conferences, seminars and professional webinars. Communication through the newsletter of the National Centre for Industry 4.0. Personal referrals.
Description of the service	Describe the service? What kind of issues does it consider?	It guides in answering the basic questions of digitalisation: what do I expect, where do I want to move to, what benefits do I hope for. It guides through learning about one's own level of digitalization through examples of technologies used. The service identifies opportunities based on knowledge of the motivation for digitalisation and the current state. https://www.ncp40.cz/analyza-digitalni-zralosti
	Describe the way the service is provided.	Online self-assessment form followed by automated processing, generation of a comprehensive assessment report and delivery of the result to an email address.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		Fully paid by the business, subsidised by public sources (national, EU, etc.), free of charge. Free of charge, used for familiarization with the principles and procedure of the full DigiAudit.

DigiAudit		**Provided by National Centre for Industry 4.0**
Describe the target group		Small and medium-sized manufacturing enterprises in the Czech Republic
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		Communication at conferences, seminars and professional webinars. Communication through the newsletter of the National Centre for Industry 4.0. Personal referrals. Follow up to complete the free Online DigiAudit.
Description of the service	Describe the service? What kind of issues does it consider?	It guides in answering the basic questions of digitalisation: what do I expect, where do I want to move to, what benefits do I hope for. It guides by getting to know one's own level of digitalization through the evaluation of digitalisation processes and the analysis of technology usage. It identifies opportunities based on knowledge of the motivation for digitalisation and the current state. Agreed opportunities are thoroughly explored with a technology questionnaire. Based on the findings, the company is compared with the segment through benchmarking and an expert proposal is made to address the identified weaknesses in the form of specific technology projects using anonymised requests for information from technical suppliers.

		Furthermore, measures are proposed to define the future vision of the company using local and global references. Furthermore, we propose steps to increase technical competences in the form of professional workshops and training.
	Describe the way the service is provided.	Preparatory part for gathering information about the enterprise, defining priorities for digitalization and selecting relevant activities and appropriate respondents. Evaluation part in the form of a one-day face-to-face visit to question and discuss organisational, process and technical maturity. Furthermore, joint reflection on opportunities and detailed technological analysis of opportunities. The design part takes place in a group of experts from the National Centre for Industry 4.0, during which a summary report is produced summarising the company's readiness, benchmarking and suggesting practical next steps.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		Fully paid by the entrepreneur, subsidized by public sources (national, EU, etc.), free of charge. 50000-70000 CZK depending on the size of the enterprise and scope. Paid (so far) exclusively from the enterprise's own resources.

DIGIMAT		**Provided by Intemac Solutions, s.r.o.**
Describe the target group		Manufacturing SMEs
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		Active search - in various ways (most effective organization of educational events), about 10-20% will address the service itself.
Description of the service	Describe the service? What kind of issues does it consider?	Programme helps with setting up priorities. Impartial expertise, experience and a new perspective of specialists will help find direction for further development of the company. 4 main pillars of the programme: - initial analysis of the company - suggestion of concrete solution - recommendations of the implementation procedure - recommendation of possible sources of financing https://www.dih-digimat.cz/program-digimat/
	Describe the way the service is provided.	Consulting / advisory activity.

Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge	The DIGIMAT program is financed from the resources of the South Moravian Region, so participation in it is financially advantageous for SMEs from the South Moravian Region. Companies based in other regions can also join the program, but this financial support no longer applies to them. 1st project - up to 45 hours of consultations CZK 1500/hour, aid 75 %, final price CZK 375/hour excl. VAT. 2nd project - up to 80 hours of consultations CZK 1500/hour, aid 50 %, final price CZK 750/hour excl. VAT. 3rd project - up to 80 hours of consultations CZK 1500/hour, aid 20 %, final price CZK 1200/hour excl. VAT.

Digital Audit		**Moravian-Silesian Innovation Centre Ostrava**
Describe the target group		SMEs with its registered office or establishment in Moravian-Silesian region.
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		Through its own social and partner networks across MS region. Own business activities, conferences and workshops. A significant proportion is represented by personal recommendations among business owners / managers. Clients ask for themselves, but we are also actively searching. (combination of both scenarios)
Description of the service	Describe the service? What kind of issues does it consider?	The service addresses the lack of qualified and experienced people within SMEs who would be able to optimally set the strategy for the digital transformation of the company. They would be able to recognize which places to digitalise first and whether the places are really fully prepared for digitalisation, or there are still some prerequisites (process optimization, sufficient qualification of people, etc.).
	Describe the way the service is provided.	10-hour work of an expert who will go through the basic processes of the company from a broader perspective and provide recommendations for individual areas and ideal places where and how to start digitalisation. In addition, it will also check whether the company is ready for this change and whether the implementation or introduction of newly digitalised processes will fail.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		The service is provided free of charge as part of de minimis support.

Another digital maturity instrument is provided by consortium of partners: Brno University of Technology, University of Technology and Economics in České Budějovice, Association of Small and Medium-sized Enterprises of the Czech Republic and the Research Institute for Entrepreneurship and Innovation. The DigitalPodnik.cz project helps small and medium-sized companies to strengthen their innovation capacity, competitiveness, increase the level of digitalization and set sustainable performance. By completing the digital maturity test, the company gets an easy, fast and free overview of the level of digitalization in their company, including a comparison with competitors. This instrument provides 2 options of the digital maturity test: simplified with 14 and extended with 28 questions. The questionnaire is available online at https://www.digitalnipodnik.cz/test. The project is funded under the ETA programme of the Czech Technology Agency.

More general instruments/services supporting digitalisation:

Grant consultancy		**Provided by BIC Pilsen**
Describe the target group		Innovation enterprises in the region.
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		A combination of promotion on the website, in the newsletter and directly targeted emailing. Long-term clients contact BIC themselves.
Description of the service	Describe the service? What kind of issues does it consider?	The service helps companies to navigate business support programmes and research, development and innovation support programmes where they can obtain funding to implement their development projects.
	Describe the way the service is provided.	Personal consultation, selection and assessment of the suitability of the programme to support the client's project, regular meetings and joint formulation of the project and other annexes of the project application. Assistance with application, communication with the provider, etc.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		Services are subsidised by the City of Pilsen, almost in full.

Introducing Business Intelligence into the enterprise	**Provided by INION**
Describe the target group	SMEs across branches

Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		We are looking for clients on recommendation.
Description of the service	Describe the service? What kind of issues does it consider?	It helps management obtain data from all areas of the company and make informed decisions based on it. It helps reduce costs, streamline production and processes based on data analysis.
	Describe the way the service is provided.	In the form of consultation, processing of analysis, processing of a dashboard on which data to collect, how to work with them and how to make decisions based on this data.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		Fully paid by the entrepreneur, subsidized from public sources (national, EU, etc.), free of charge.

Regional-level instruments in preparation for period 2021-2027

Usti Region: Innovation vouchers - digitalisation

The Innovation Vouchers programme will focus on innovative solutions for products, services and production processes of companies in conjunction with a research organisation and digitalisation, where the cooperation of beneficiaries with research organisations or qualified service providers in the field of introducing digital tools and solutions to enhance competitiveness or improve the quality of services will be supported. Examples of supported activities:

- Review of the company's business model and strategy with regard to the use of digital tools and the use of a "digital maturity" analysis tool (analysis of the company's activities in terms of the level of digitalization, e.g. in the area of human resources, activities along the value chain, vertical integration or product life cycle)

Subsidy (draft) 50 k - 300 k CZK, aid intensity 75 % of total eligible costs.

Finland

National funding

Business Finland, https://www.businessfinland.fi/en/for-finnish-customers/home

Offers funding for research, product development, and many kinds of business development needs, especially for small and medium sized companies. Large companies and research organizations can receive funding for joint projects with smaller companies.

Centre for Economic Development, Transport and the Environment (ELY), https://www.ely-keskus.fi/en/web/ely-en

The aim of the ELY Centres is to ensure a balanced regional structure provide a sound basis for competence, entrepreneurship and growth and promote employment opportunities. ELY Centres support the establishment, growth and development of small and medium sized enterprises by providing advisory, training and expert services and by granting funding for investment and development projects.

Centre for Economic Development, Transport and the Environment (ELY Centre's)		**Description**
Describe the target group		SME's in Southwest Finland
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		The ELY Centre's own information is mainly implemented via websites and e-mail. Several service providers provide information about ELY's services and also help companies to apply for services.
Description of the service	Describe the service? What kind of issues does it consider?	Productivity and digitization Does your business need to be streamlined or clarified? Are you looking for digital solutions to tighten your business? The ELY Centre's service helps to hone your company's processes. In consulting, you work with an experienced management expert to develop your company's processes from a productivity perspective. Depending on your company's needs, you can focus on, for example, production, service, quality, financial or monitoring processes or operational management. You will gain perspectives on how responsibility can be a competitive advantage for a company. Consulting can also find out what technological and digital solutions support your company's operations. The ELY Centre's service is suitable for SMEs operating domestically or internationally, which have established their operations and have the conditions for profitable operations. The duration of the consultation is 2-5 days at a time, and it costs the company 325 euros + VAT / day. The consultation can be obtained for a maximum of 15 days in three years.

	Describe the way the service is provided.	The company contacts the ELY Center and explains its need. The company selects the certified consultant they want and they sign the contract. The company agrees with the consultant on how to carry out the consultation.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		325 € + VAT/day max. 15 days

SITRA, https://www.sitra.fi/en/

Launches and implements projects together with the private, public and third sector, all aimed at increasing sustainable wellbeing in Finland. The range of projects is broad, and includes those that run for several years as well as short term trials. The projects that receive funding are related to Sitra's themes and the practical work. Sitra's themes are Sustainability solutions, Fair data economy and Democracy and engagement.

<SITRA>		Description
Describe the target group		Private, public and third sector, all aimed at increasing sustainable well-being in Finland. Sitra is redefining the idea of a good life, seeking human-oriented operating models and promote sustainable business.
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		There is no specific funding call for applications or application form. If you have a project idea related to one of our themes or you are interested in Sitra's trials.
Description of the service	Describe the service? What kind of issues does it consider?	Sitra does not provide funding for academic research projects, dissertations or commercial research and development projects.
	Describe the way the service is provided.	Contact the person in charge of the respective theme. Themes are Sustainability solutions, Fair data economy and Democracy and engagement.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		Mostly fully paid

Technology Industries of Finland Centennial Foundation, https://techfinland100.fi/en

The purpose of the Foundation is to develop competences and an innovative business environment for the companies represented by the Federation of Finnish Technology

Industries. In total, the Foundation has granted 114M€ to support development of education, research and the innovation environment in Finland. According to our current strategy, the Foundation supports especially initiatives that aim at a significant leap in renewing the Finnish innovation and educational environment.

The Finnish Foundation for Technology Promotion, https://tekniikanedistamissaatio.fi/en/

Foundation supports education and research in the field of technology and has always played an important role in supporting technology in Finland. During its history, the foundation has been involved in nationally important research and technology projects.

Academy of Finland, https://www.aka.fi/en

Academy of Finland fund high quality scientific research, provide expertise in science and science policy and strengthen the position of science and research. Example of call for proposals:

- Special funding for research on key areas of green and digital transition 2021
    - The projects to be funded must focus on measures supporting both the green and digital transition, respecting the principles of sustainable development and the 'Do No Significant Harm' principle.
    - Maximum funding EUR 2 million per consortium and EUR 600,000 per consortium party.
    - Applied for by multidisciplinary consortia of two or more research teams; the consortium parties bring expertise in both green and digital transition; applicant consortium must collaborate with different actors and end-users of research results.

Jenny and Antti Wihuri Foundation, https://wihurinrahasto.fi/?lang=en

Foundation is a Finnish non-profit organization that supports hundreds of projects in the areas of research, art and societal activities every year. The primary purpose of the projects supported is not to generate monetary benefit. The Foundation aims that the granted projects will strengthen Finnish expertise and in this way further the building of the future.

Regional funding

Regional Councils have two main statutory functions: 1) area development and 2) provincial zoning. Councils are key international players and are largely responsible for the EU's Structural Fund programmes and their implementation. The Regional Council is the most prominent trustee of its territory. The Regional Council variously nurtures the culture and traditions of its region by networking with actors in the sector and its region to promote intellectual and economic prosperity.

REGIONAL COUNCIL OF SOUTHWEST FINLAND		Description
Describe the target group		Comprehensive developer of the province. An important part of the development work is to support an adequate and high-quality education network. The union's co-operation group makes decisions on the financing of national project projects, which are implemented by educational institutions, associations and development companies.
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		REGIONAL COUNCIL OF SOUTHWEST FINLAND sends e-mails monthly and publishes press releases on its website. Workshops and seminars on various topics are also an important part of the communication.
Description of the service	Describe the service? What kind of issues does it consider?	We are developing maritime Southwest Finland to be a region, were the quality of living is the best. A succesful region is built with partnership and cooperation. The Regional Council of Southwest Finland functions as an authority for regional development and as an organization for planning and promoting regional interests.
	Describe the way the service is provided.	We will send a funding application notice to our stakeholder. Those interested will submit a project application, which will be discussed in the cooperation group. Projects must support the provincial strategy.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		In general, funding is granted at 70% of the cost.

MAIN FINDINGS

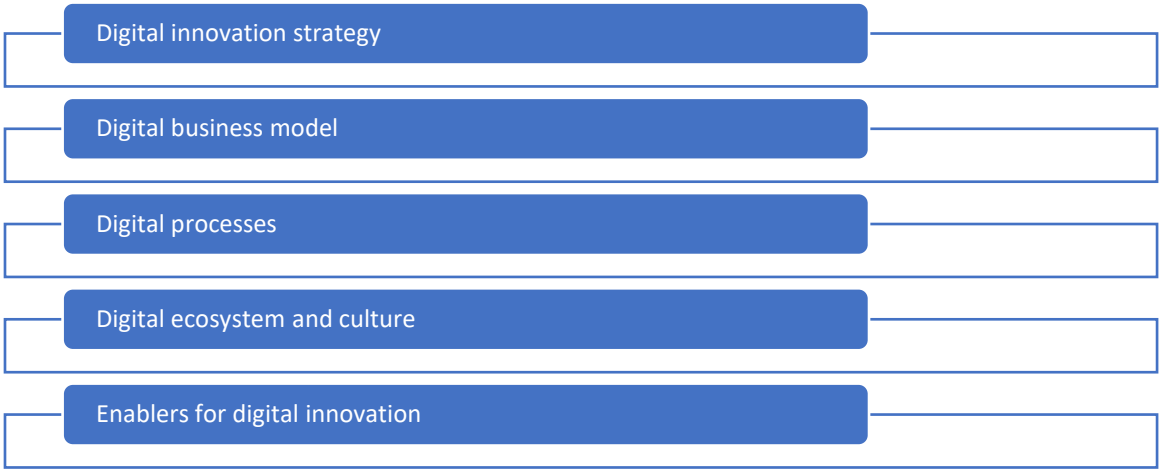
- The strategy papers for digitization in partner countries are of a similar degree of detail.
- Among the digitization-related services and financing opportunities presented, the following problems and obstacles most often appear (a detailed description of the services listed in the report can be found in Annex 1):
  - Programme conditions may exclude certain types of enterprises.
  - High administrative complexity related to grant.
  - Companies do not perceive the need for collaboration with research organisations as particularly urgent, so more often, than not the initiative lies with the research organisation that wants to provide its services commercially.
  - Insufficient own resources (personal capacities, technological equipment), limited knowledge of the topic digitalisation, limited access to research teams.
  - Provided subsidy covered only small part of SME needs (because of limited amount of subsidy).
  - Organizational processes - the executive's busyness with operations, lack of time for strategic decision-making.
  - Insufficient experience with the introduction of digitalisation in the first projects. The complexity of digitalisation projects in terms of the speed of change of available tools and services.

Chapter 3. Research on digital innovation needs and stage of development. Digital innovation support map in manufacturing SMEs.

SUMMARY

The assessment was provided with the use of IMP³rove Digital Innovation Quotient audit (DIQ) which has been delivered by AT Kearney, which is recommended by European Commission and which also goes in line with European Innovation Management System CEN/TS 16555-1. The IMP³rove Digital Innovation Quotient assessment and benchmarking builds on a combination of qualitative and quantitative performance indicators to measure and compare internationally to what degree companies are successful in turning ideas into digital innovation.

The research focuses on the particular areas of manufacturing companies' performance in the field of digital innovations. The following areas have been studied:



The scope of the research addresses the groups of obstacles defined in Deloitte survey provided in 2018 on *European companies and how digital technologies can strategically enhance innovation.* The participants in that study pointed out several obstacles to fostering innovation within the company. We may group them into four sections which further be the basis for the research provided on manufacturing SMEs.

The research aims to support the entrepreneur in improving innovation management. Most of all IMP³rove Digital Innovation Quotient shows gaps of companies' digital innovation process management. This knowledge is very important for a successful implementation of digital innovations.

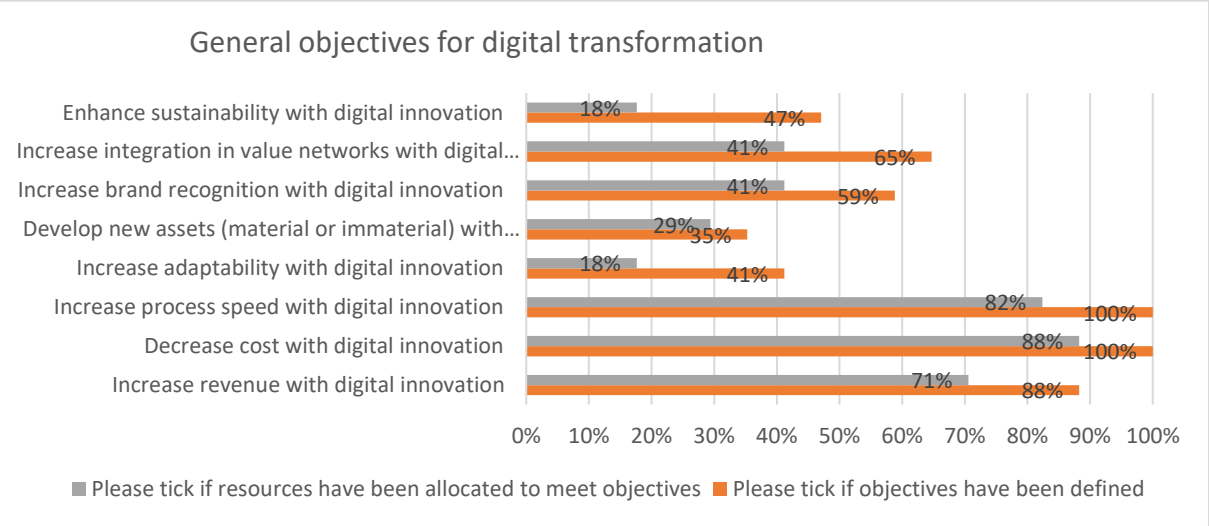
In November and December 2021 17 manufacturing companies participated in the survey: 7 from Poland, 5 from the Czech Republic and also 5 from Finland. The information gained from the DIQ questionnaire are used to learn about needs and expectations of assessed companies.

We have selected 19 questions (from 35) that best reflect the state of digitization in manufacturing companies that participated in the survey.

Digital Innovation Strategy

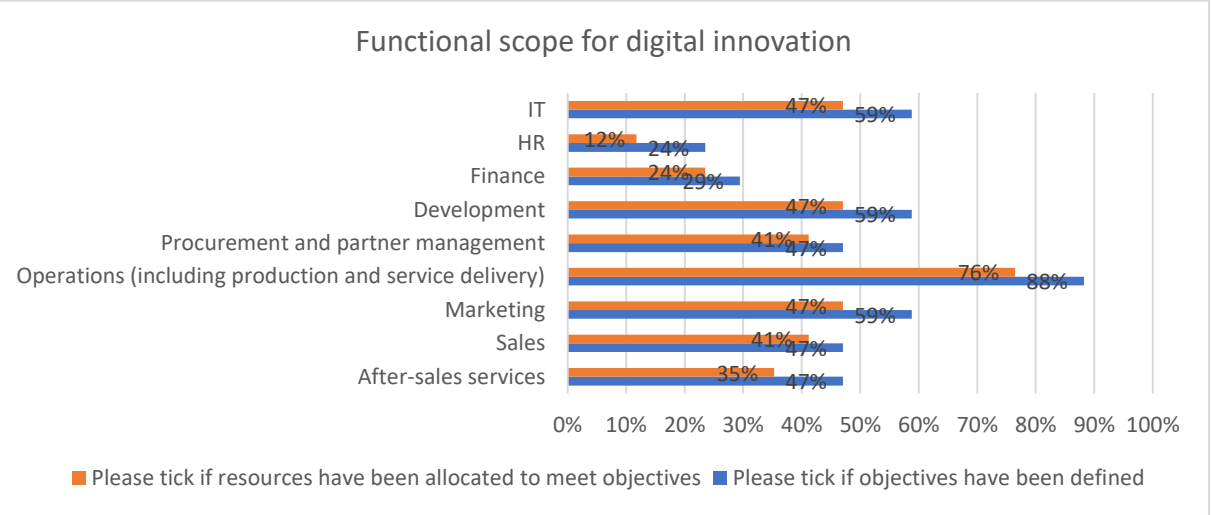
In this section entrepreneurs answered to questions about general objectives for digital transformation, functional scope for digital innovation and about digital innovation trends.

Question 1: What are your general objectives for digital innovation? For which do you allocate resources to drive digital innovation?



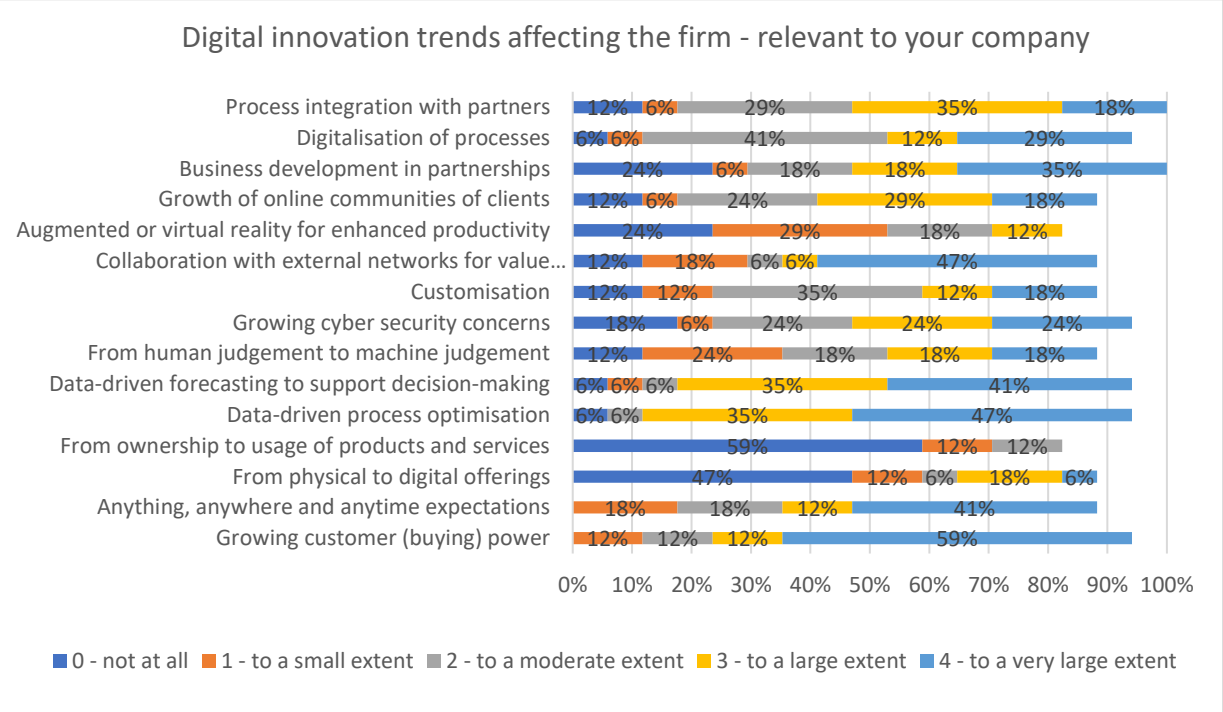
Among the general objectives for digital innovation, the most frequently mentioned were: decrease cost with digital innovation and increase process speed with digital innovation (both were mentioned by all respondents. 88 % chose: increase revenue with digital innovation. On the other hand, the following objectives had the least indications: enhance sustainability with digital innovation (47 %), increase adaptability with digital innovation (41 %) and develop new assets (material or immaterial) with digital innovation (35 %). The responses to the question of which objectives are allocating resources are similar: the biggest difference was in enhancing sustainability with digital innovation - it was indicated by 47 % of respondents as a general objective, while only 18 % confirmed that some resources have been allocated to meet this objective.

Question 2: In which of the following functions do you have objectives for digital innovation? For which do you allocate resources to drive digital innovation?



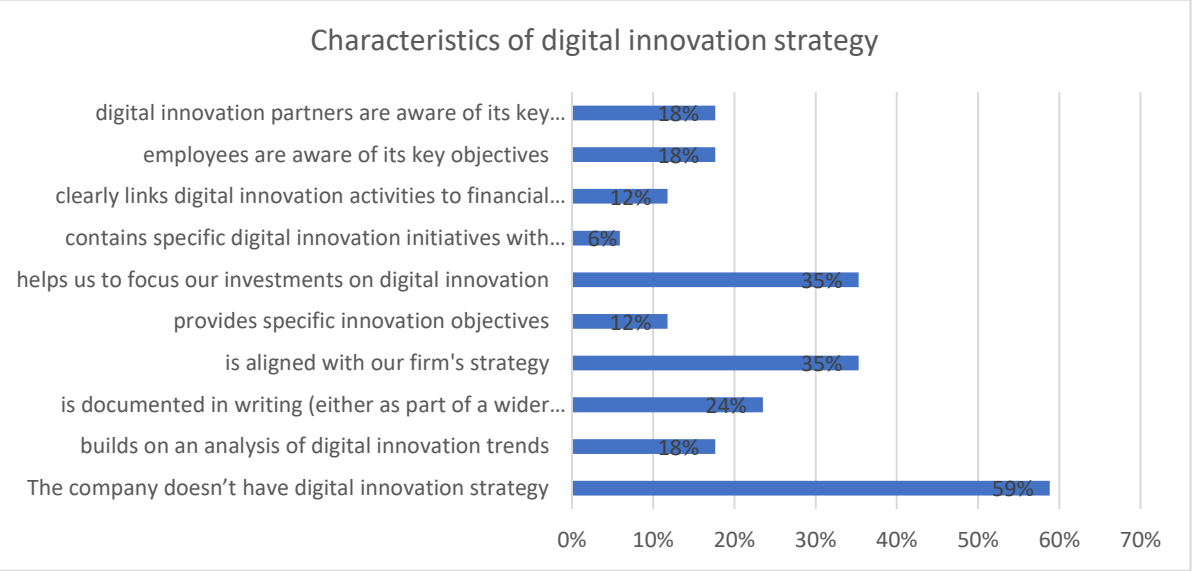
When asked which of the following areas do you have specific objectives for digital innovation, the following areas were most often identified: operations (including production and service delivery) – 88 %, marketing, development and IT – all equally at 59 %. It was mentioned least often: finance – 29 %, HR – 24 %. And again – as in the previous question, the answers about the functions overlapped with the answers to which functions you allocate resources to drive digital innovation: operations (including production and service delivery) – 76 %.

Question 3: To what extent are the following digital innovation trends relevant to your firm?



This question was to what extent the following digital innovation trends affect the company. The trends have been grouped into 4 categories: consumer behaviour, data and information, connectivity, value network. The following trends were of the greatest importance: growing customer (buying) power, data-driven process optimization and data-driven forecasting to support decision-making. The following trends were of the least importance: augmented or virtual reality for enhanced productivity, from physical to digital offerings, from ownership to usage of products and services. The companies replied that the greatest resources were committed to the following trends: growing customer (buying) power, data-driven process optimisation and collaboration with external networks for value generation. On the other hand, the fewest resources were involved in: from ownership to usage of products and services.

Question 4: Which of the following attributes apply regarding your digital innovation strategy?

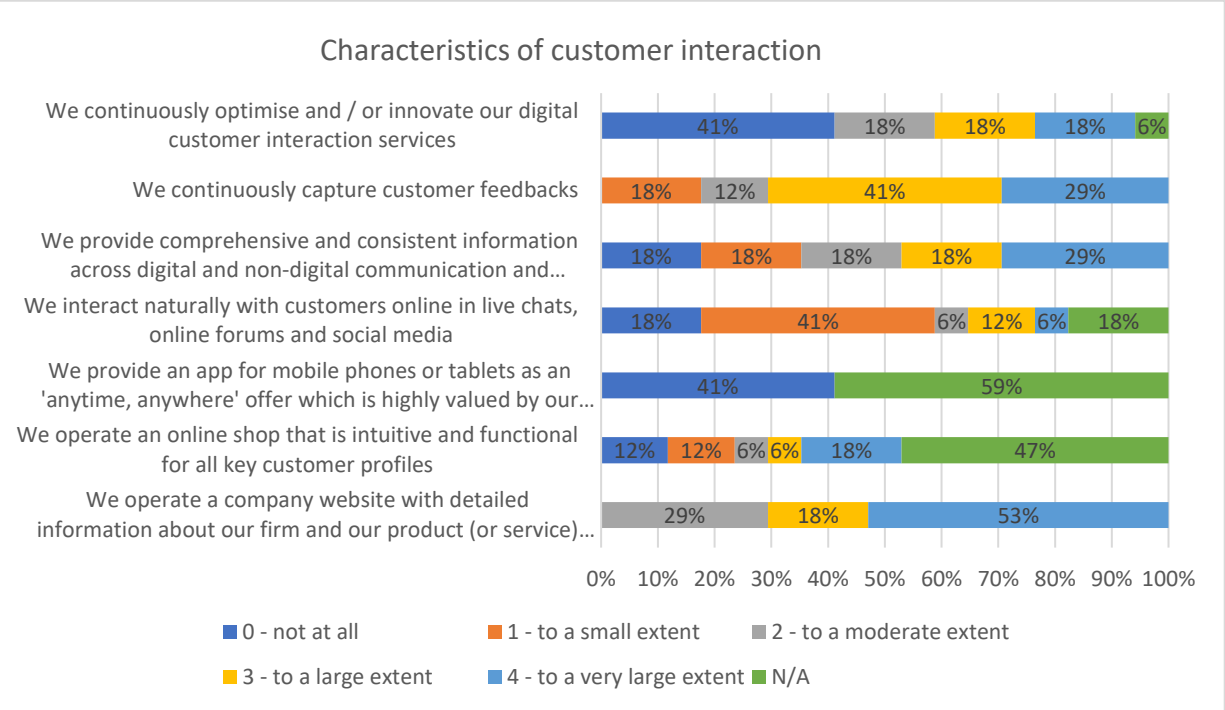


The last question in this section was about the digital innovation strategy. More than half (59 %) replied that they did not have a strategy. Among those companies that have the digital innovation strategy, 35 % answered that it is aligned with their firm's strategy and helps them to focus their investments on digital innovation. Interestingly, not all companies (24 %) have this strategy documented in writing (either as part of a wider strategy document or as a separate strategy document) and 18 % build strategy on an analysis of digital innovation trends. Only 6 % indicated that their digital innovation strategy contains specific digital innovation initiatives with defined implementation plans.

Digital Business Model

There are 3 areas worth summarizing in this section: characteristics of customer interaction, data capturing and data analytics.

Question 1: Which of the following attributes apply to your interaction with customers?



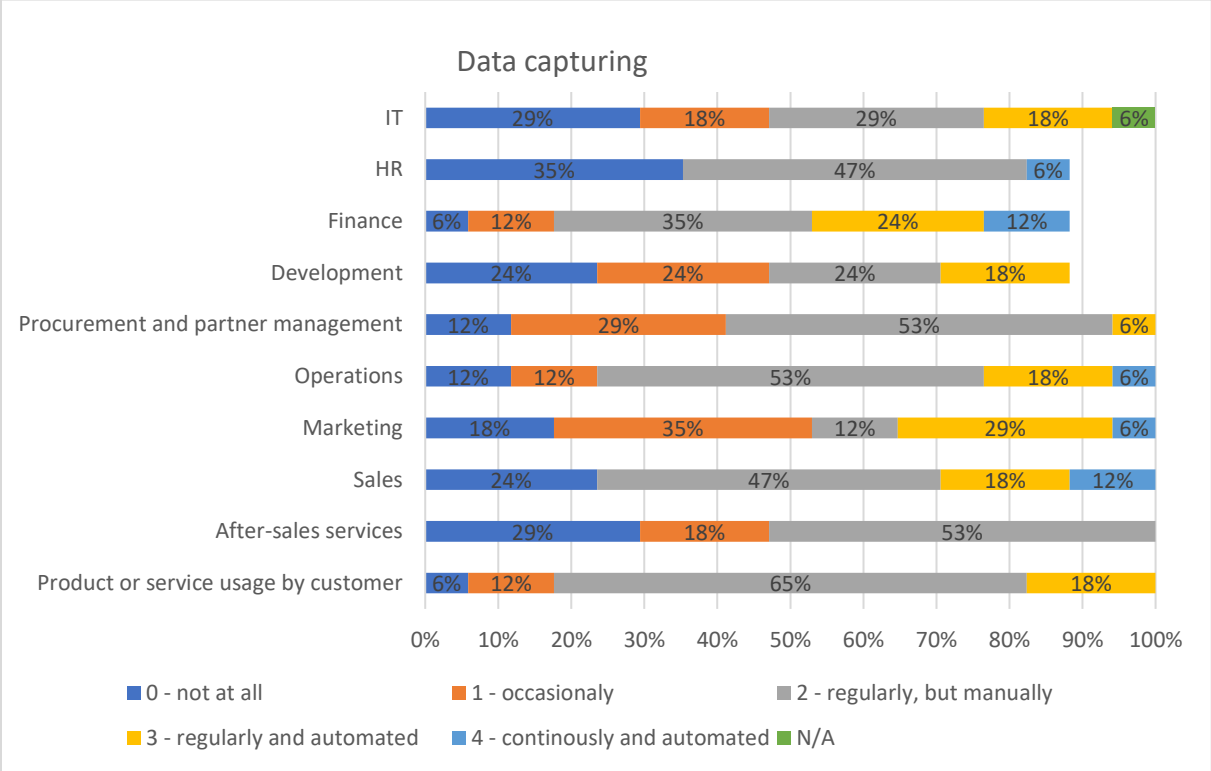
The first is the characteristics of the interaction with the client. The respondents were asked to define the statements related to the customer-company relationship. They had a choice of 7 statements, which they could rate on a scale from 0 to 4: where 0 means does not apply at all and 4 – applies to a very large extent:

- we operate a company website with detailed information about our firm and our product (or service) offering,
- we operate an online shop that is intuitive and functional for all key customer profiles,
- we provide an app for mobile phones or tablets as an 'anytime, anywhere' offer which is highly valued by our clients,
- we interact naturally with customers online in live chats, online forums and social media,
- we provide comprehensive and consistent information across digital and non-digital communication and marketing channels,

- we continuously capture customer feedbacks,
- we continuously optimise and / or innovate our digital customer interaction services.

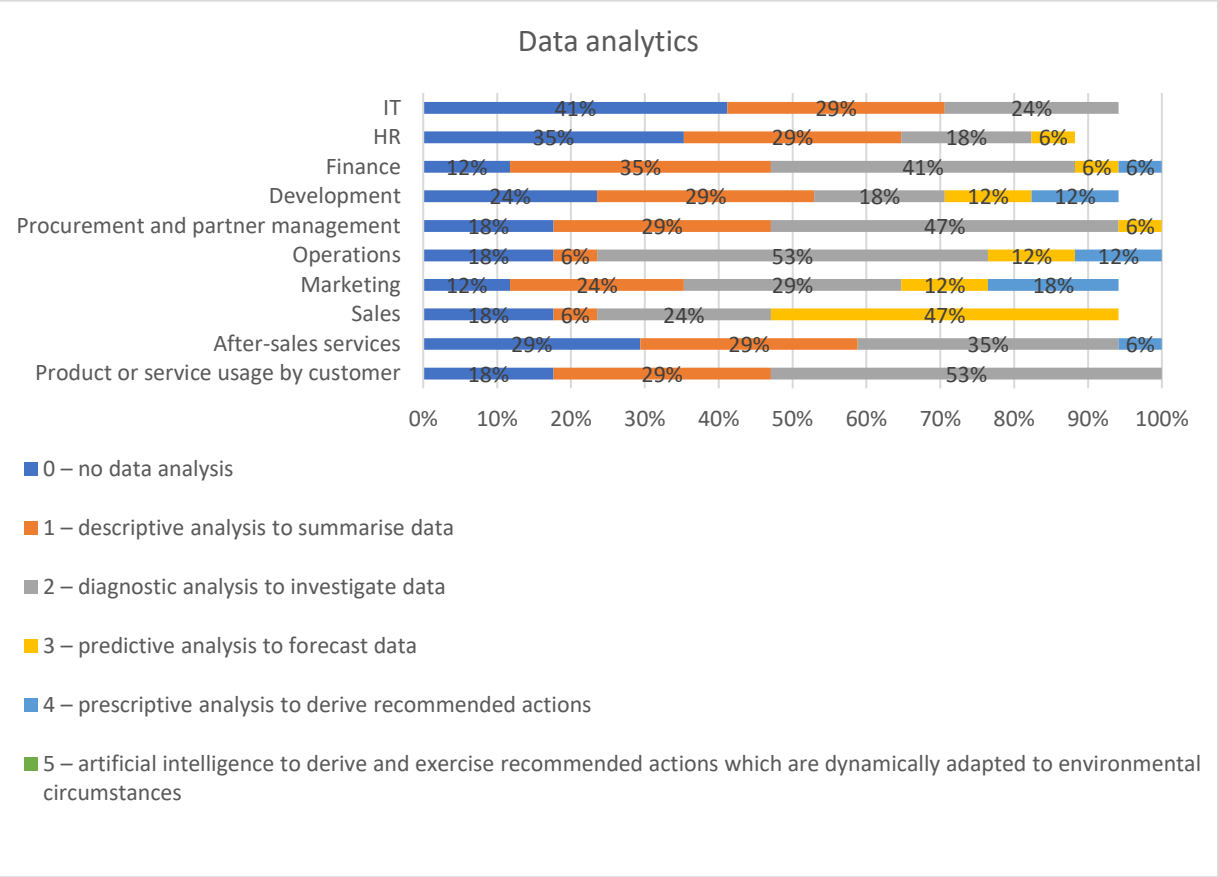
None of the surveyed companies has a mobile application, and more than half (58 %) do not run an online store. Almost half (47 %) do not optimise and / or innovate their digital customer interaction services. The most frequently indicated following statements: we operate a company website with detailed information about our firm and our product (or service) offering and we continuously capture customer feedback.

Question 2: To what extent do you capture data in the following functions?



Regarding the question of whether and how (manually or automated) information is obtained in the mentioned areas: customer experience, customer contact points, value generation and delivery, administration, we received the following answers: regularly but manually, companies obtain the most information from: product or service usage by customer, after-sales services, operations, procurement and partner management, sales and HR. The most automated areas are: marketing and finance, but the least automated areas are: after-sales services, procurement and partner management, HR.

Question 3: To what extent do you systematically analyse data in-house across the following functions?



This question is closely related to the previous one: to what extent do you systematically analyse data in-house across the following functions? As described in the question respondents considered data analytics related to the offering with the highest contribution to earnings before interest and taxes (EBIT) in the last three years. They can choose on a scale from 0 to 5: 0 – no data analysis; 1 – descriptive analysis to summarise data; 2 – diagnostic analysis to investigate data; 3 – predictive analysis to forecast data; 4 – prescriptive analysis to derive recommended actions; 5 – artificial intelligence to derive and exercise recommended actions which are dynamically adapted to environmental circumstances.

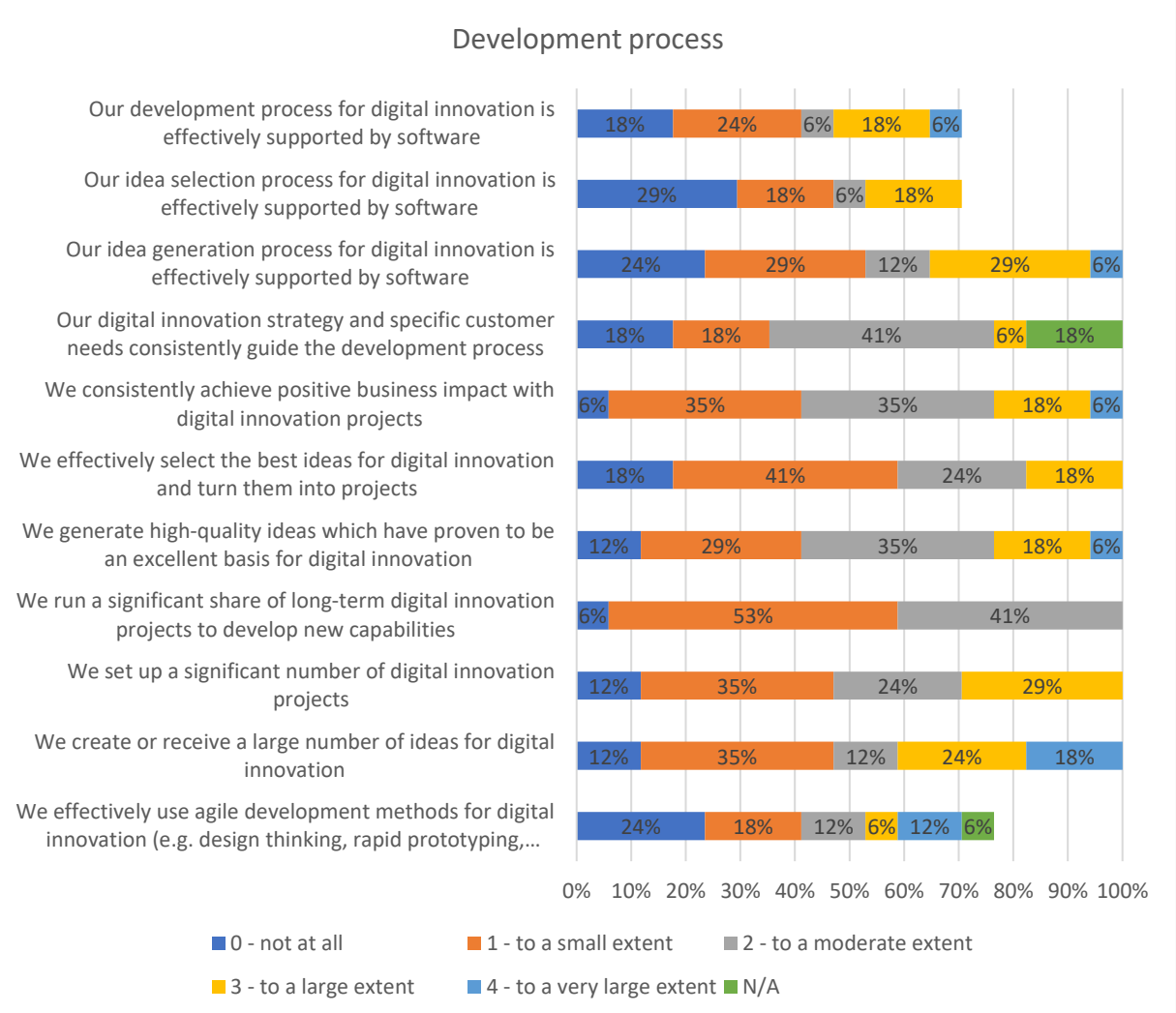
None of the companies has indicated in any areas that they use artificial intelligence to derive and exercise recommended actions which are dynamically adapted to environmental circumstances. Each of following areas is not analysed to a varying degree: IT – 41 %, HR – 35 %, after-sale services – 29 %, development – 24 %, procurement and partner management, operations and sales – 18 %, finance and marketing – 12 %. It is worth distinguishing finance, which is indicated by 35 % of companies as an area of descriptive analysis to summarise data.

Enterprises conduct a diagnostic analysis to investigate data most often in the case of: product or service usage by customer and operation (both – 53 %) and procurement and partner management (47 %). The area where most entrepreneurs indicated that they make a forecasting analysis conducted in order to predict future data is sales (47 %). Marketing is an area where 18 % of companies declared that they conduct prescriptive analysis in order to take recommended actions.

Digital Processes

In this part, entrepreneurs answered to questions about the description of the digital innovation process in the company, process automation in order to deliver digital innovations as well as the usability and business impact of digital marketing.

Question 1: How do you describe the development process for digital innovation in your company?

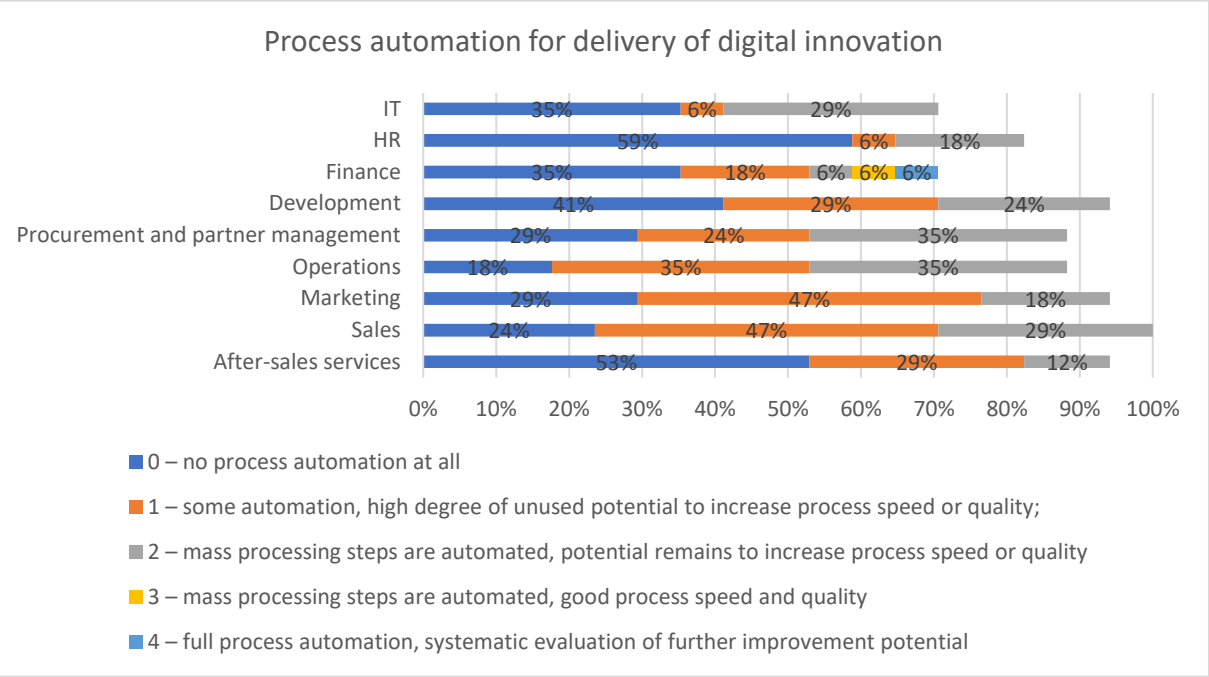


The companies that participated in the survey are characterized by an average level of development of digital innovations. Most companies assessed that the given statements refer to them to a small or moderate extent. The assessed statements concerned: types of processes, activity, process efficiency and IT support:

- We effectively use agile development methods for digital innovation (e.g. design thinking, rapid prototyping, scrum).
- We create or receive a large number of ideas for digital innovation.
- We set up a significant number of digital innovation projects.
- We run a significant share of long-term digital innovation projects to develop new capabilities.
- We generate high-quality ideas which have proven to be an excellent basis for digital innovation.
- We effectively select the best ideas for digital innovation and turn them into projects.
- We consistently achieve positive business impact with digital innovation projects.
- Our digital innovation strategy and specific customer needs consistently guide the development process.
- Our idea generation process for digital innovation is effectively supported by software.
- Our idea selection process for digital innovation is effectively supported by software.
- Our development process for digital innovation is effectively supported by software.

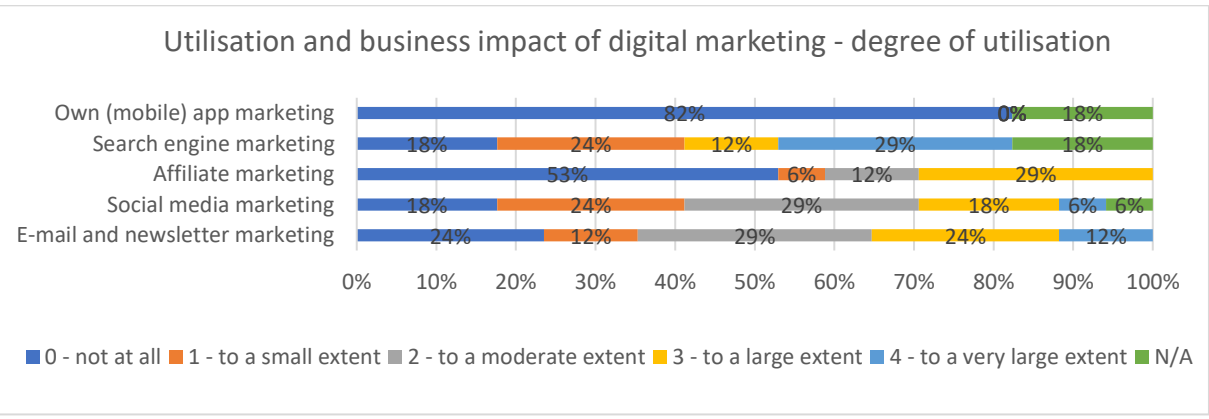
As an example, only 12 % indicated that they were heavily affected by the statement that they were using agile methods effectively. 24 % indicated that this statement did not apply to them at all. The example that shows that companies are still at the beginning of their path to the full development of digital innovation is noteworthy. Statement that they are running a significant number of long-term digital innovation projects to develop new opportunities: 53 % companies judged them to be small extend and 41 % companies to a moderate extent.

Question 3: What degree of process automation does your company experience today across the following functions?



One of the most interesting questions in this survey concerns the process automation for delivery of digital innovation. Among the 9 processes mentioned: after-sales services, sales, marketing, operations, procurement and partner management, development, finance, HR and IT, the most automated are finance and operations. Only 6 % rated one of its processes at 4 (on a scale from 0 to 4, where 0 means no automation, and 4 - full process automation) and it was finance. The least automated processes are after-sales services, development and HR.

Question 4: In the last year, to what degree have you utilised the following digital marketing options?

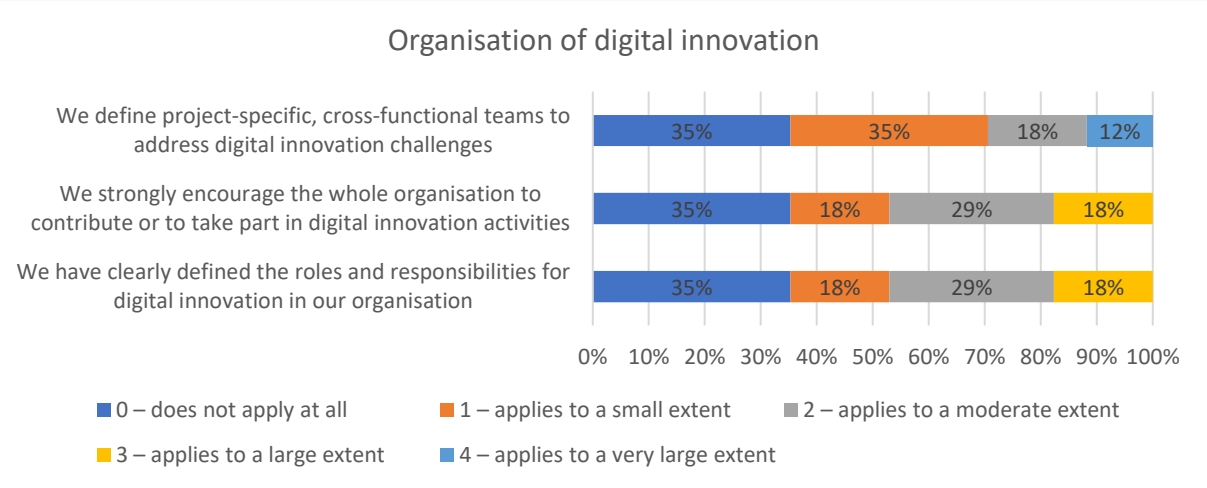


In question about the utilisation and business impact of digital marketing, respondents had to assess how they had used various forms of digital marketing. Search engine marketing was rated the highest, followed by e-mail and newsletter marketing, then: social media marketing and affiliated marketing.

Digital Ecosystem and Culture

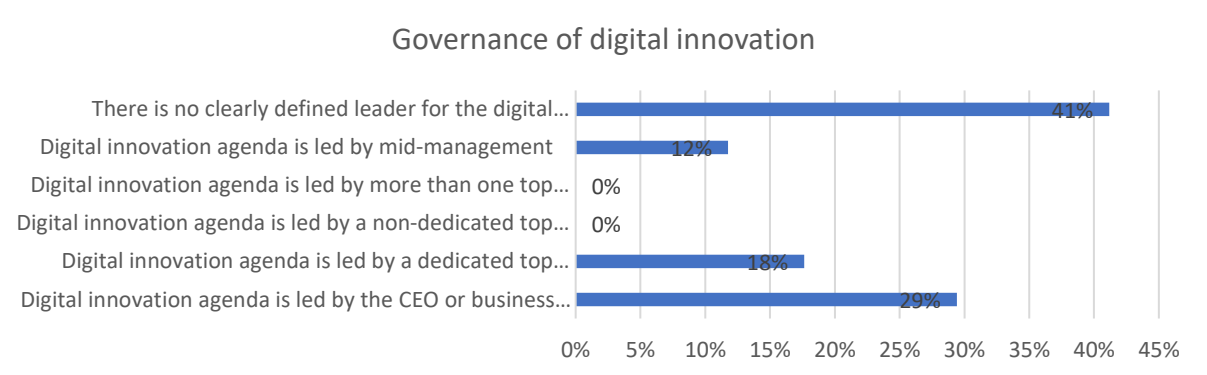
In this section, we would like to focus on summarizing questions about organizing and managing digital innovations and the development of the digital ecosystem, general digital competences and incentives to participate in creating digital innovations.

Question 1: How do you describe the organisation of digital innovation in your company?



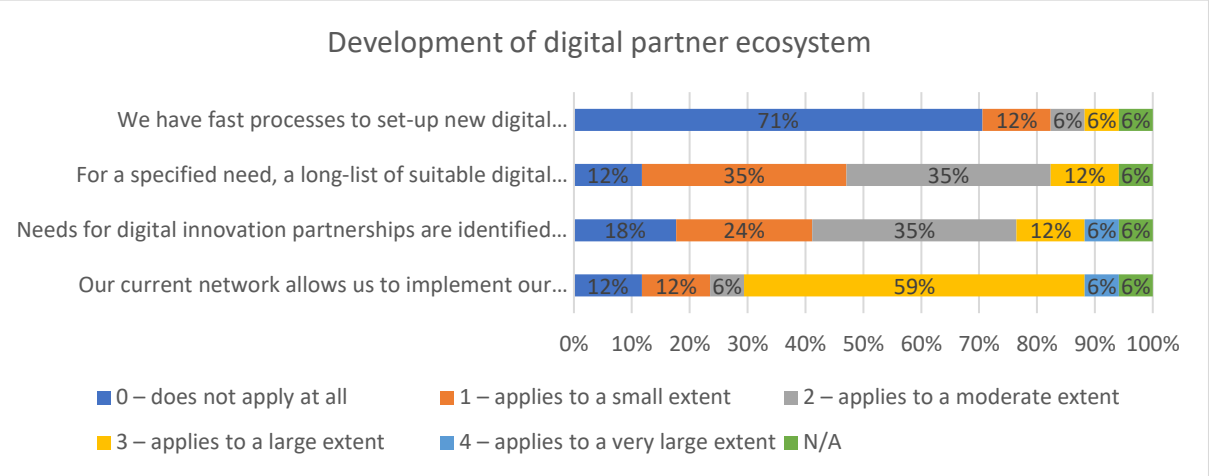
In the first question, companies had to describe the organization of digital innovation within the company. 35 % of companies indicated that none of the following 3 statements occurred for them. Only 12 % indicated that the first statement occurs on a very large extent. The rest of the companies assessed that they occur on a small or moderate scale.

Question 2: Who is leading the digital innovation agenda in your company?



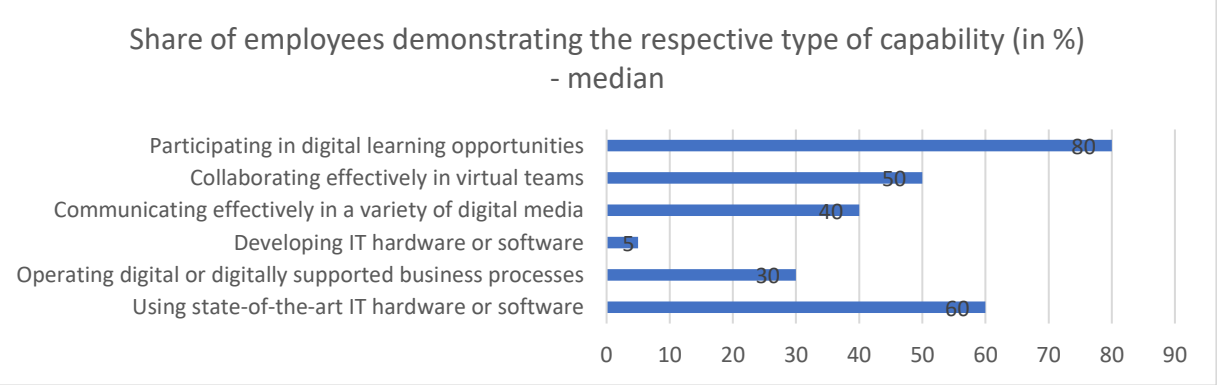
Companies had to indicate who is responsible for planning digital innovation. Most companies (41 %) indicated that there is no clearly defined leader for the digital innovations agenda, 29 % indicated that: digital innovation agenda is led by the CEO or business owner, and 18 % that: digital innovation agenda is led by a dedicated top manager.

Question 5: How do you rate your company's capabilities to develop an ecosystem of partners which drive digital innovation?



In the next question, the companies rated the capabilities to develop an ecosystem of partners which drive digital innovation. More than half (65 %) indicated that the statement: our current network allows us to implement our ambition for digital innovation for the next three years applies to a large and very large extent. 59 % indicated that the statement: needs for digital innovation partnerships are identified systematically applies to a small and moderate extent. 70 % shared the same opinion that for a specified need, a long-list of suitable digital innovation partners can easily be generated. Also, 71 % indicated that the statement: we have fast processes to set-up new digital innovation partnerships did not apply to them at all.

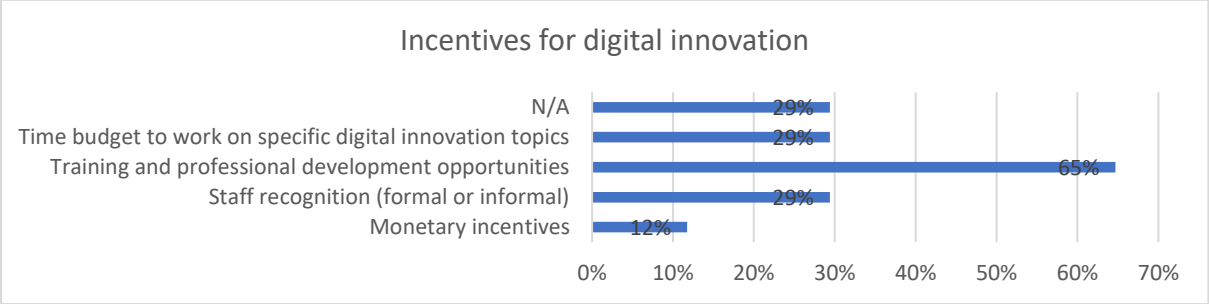
Question 6: What share of employees in your company demonstrates the following digital capabilities?



In the next question, the respondents had to indicate what share of employees has the following digital qualifications. They had to give their answers as a percentage, so to compare the results, we give the median in parentheses:

- Using state-of-the-art IT hardware or software (60),
- Operating digital or digitally supported business processes (30),
- Developing IT hardware or software (5),
- Communicating effectively in a variety of digital media (40),
- Collaborating effectively in virtual teams (50),
- Participating in digital learning opportunities (80).

Question 7: Which of the following monetary and non-monetary incentives for employees to contribute to digital innovation do you have in place?



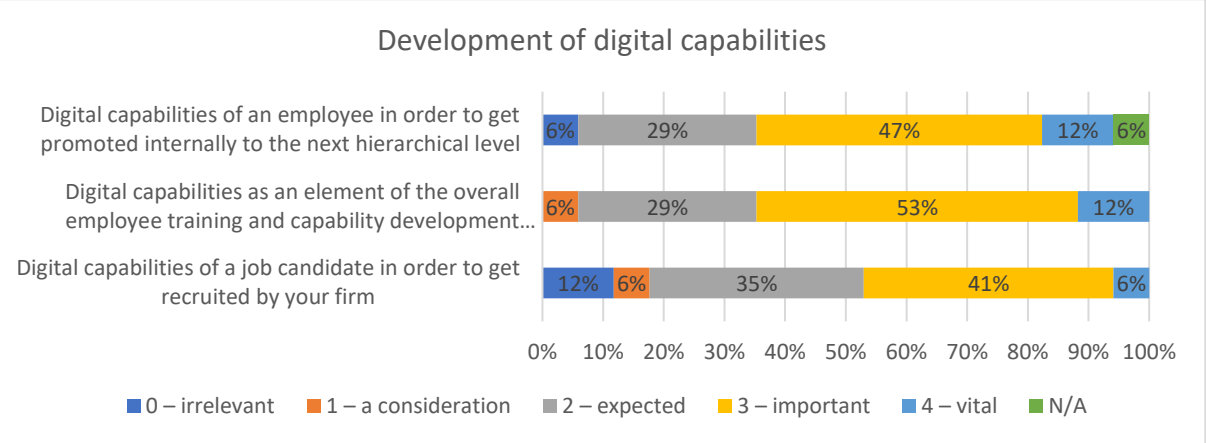
The last area examined in this section is incentives to participate in the creation of digital innovation. What incentives (monetary or non-monetary) are used by the company to motivate employees to get involved in the creation and development of digital innovation? 29% of companies indicated that they did not have any incentives for employees. The most popular incentives were (the company could have indicated several incentives):

- Training and professional development opportunities.
- Staff recognition (formal or informal).
- Time budget to work on specific digital innovation topics.
- Monetary incentives.

Enablers for Digital Innovation

In this section, we will analyse answers to questions about digital capacity development, specialized competences, digital security awareness and measuring the impact of digital innovation.

Question 1: How important are the digital capabilities of your current or future employees in the following dimensions across your company?

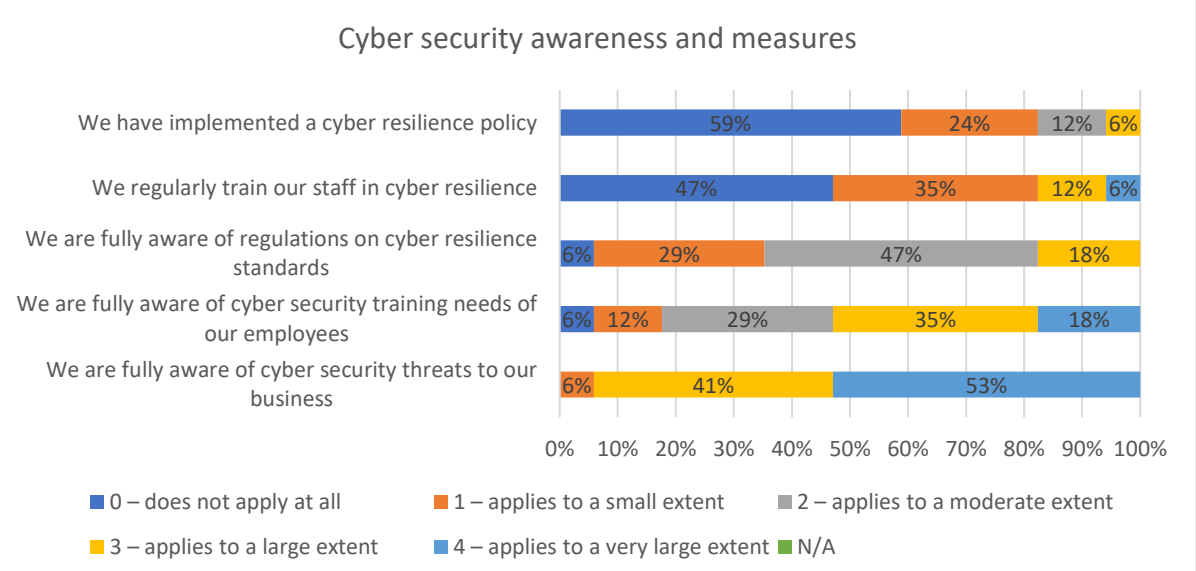


The respondents had to indicate the importance of the digital potential of the company's current and future employees in the indicated dimensions of the company's operation:

- Digital capabilities of a job candidate in order to get recruited by your firm.
- Digital capabilities as an element of the overall employee training and capability development curriculum.
- Digital capabilities of an employee in order to get promoted internally to the next hierarchical level.

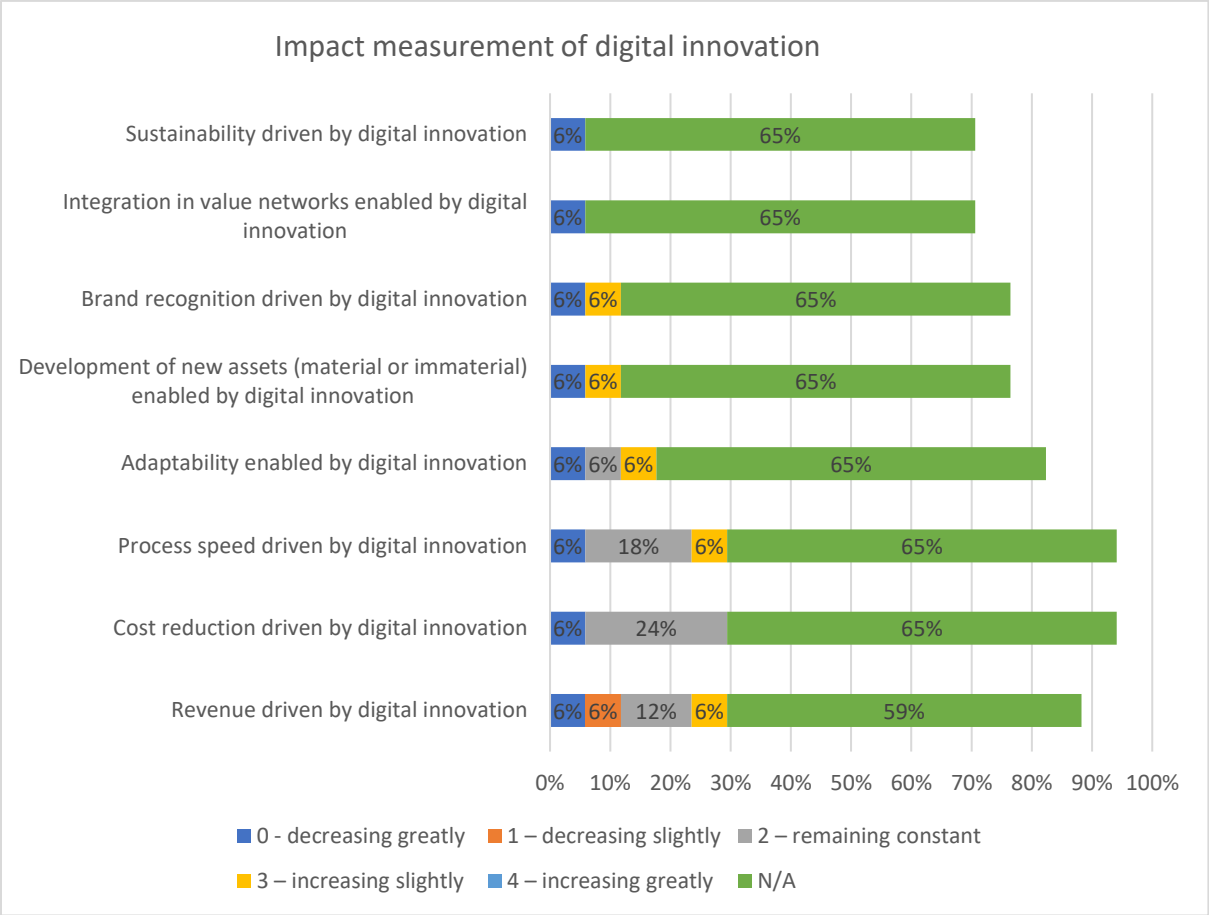
For 65 % of companies, it is important and vital that digital opportunities as part of overall employee training and skills development program.

Question 2: To what degree do the following statements describe your company's cyber security awareness and measures?



There is a paradox in the question about digital security awareness and the measures taken to increase it. On the one hand, companies indicate that they are aware of threats: 94 % said: We are fully aware of cyber security threats to our business, 52 % believe that: We are fully aware of cyber security training needs of our employees, 76 % said that the statement: We are fully aware of regulations on cyber resilience standards fits them slightly or to a moderate extent. On the other hand, more than half (58 %) do not have implemented a cyber resilience policy, and 47 % denied that they regularly train our staff in cyber resilience.

Question 3: Do you use key performance indicators (KPIs) to measure the impact of digital innovation in the following areas? If yes and considering only the course of the last year: How would you describe the dynamics of your performance in the respective areas?



The question about measuring the impact of digital innovation was the question with the most answers: not applicable. As many as 65 % of companies do not have defined result indicators (KPIs) to measure the impact of digital innovation. Among companies with defined result indicators in the case of cost reduction stimulated by digital innovations and the speed of processes stimulated by digital innovations - the level of these indicators remained constant.

MAIN FINDINGS

- Companies still expects quick results – like cost optimalisation, rising the speed of processes from the innovations implemented than long-term effects.
- There is both low awareness and low need of providing innovative business models. If this is caused by the market, which is not ready for changing, i.e. from ownership to usage of products and services, that is understandable but still the goal of the company should be seeking for new approaches, which would allow to create advantages.
- Regularly, but manually, companies obtain the most information from: product or service usage by customer, after-sales services, operations, procurement and partner management, sales and HR. The most automated areas are: marketing and finance but the least automated areas are: after-sales services, procurement and partner management, HR.
- Only 29 % of companies indicated that they did not have any incentives for employees.
- For 65 % of companies, it is important and vital that digital opportunities as part of overall employee training and skills development program.
- Cybersecurity - more than half (58 %) do not have implemented a cyber resilience policy and 47 % denied that they regularly train our staff in cyber resilience.
- Companies do not have defined result indicators (KPIs) to measure the impact of digital innovation.

DIGITAL INNOVATION SUPPORT MAP IN MANUFACTURING SMEs

Basing on results of digital innovation audit (DIQ) provided in each Partners' region among manufacturing companies we prepare digital innovation support map in manufacturing SMEs. There is room for improvement in each of the areas studied. There is a list of issues and directions below, that constitute the basis for the preparation of recommendations for Business Support Organizations and policy makers.

- Encouraging to consider digital innovations as strategic for the company development in short and long term perspective.
- Education on new business models.

- Improvement of data based management.
- Encouraging to implement process automation.
- Strengthening digital culture.
- Fostering digital capabilities of the employees.
- Paying close attention to issues related to cybersecurity and cyber resilience.
- Effectiveness measurement the impact of digital innovation.
- Access to safe funding.
- Strengthening the awareness of the need of implementing digital innovation.

Chapter 4. Recommendations. Support programme for efficient innovation through digitalization actions.

CHALLENGES

At the stage of writing the application, Partners have already identified several barriers and obstacles noticed in all regions and countries. The following issues were listed:

- Low level of knowledge and resources on digital innovation and Industry 4.0 challenges among manufacturing SMEs,
- lack of complex solutions that combine different services (e.g. training, process design, new technology services),
- manufacturing SMEs are constantly challenged to innovate and think ahead in order to be able to effectively compete with low-cost competitors,
- weak collaboration and knowledge opportunities to help educate entrepreneurs and business executives on the practicalities and potentialities associated with digitalization of companies.

After providing the inventory of instruments/services supporting digitalisation of manufacturing SMEs in Czechia, Finland and Poland and taking into account the results of the DIQ, partners prepared SWOT analysis. It allows to use the collected information to develop an action strategy based on strengths and opportunities, while eliminating or reducing weaknesses and threats. It became basis for wording challenges and problems which were transformed into recommendations.

STRENGHTS	WEAKNESSES
Good basic IT skills especially young people - Finland	New technologies awareness support programmes – Czechia, Poland
Good infrastructure – Finland	Educational structure – Czechia, Poland
Well-developed and coordinated network providing knowledge on digitalisation – Czechia	Lack of experts in digitalisation (private and public sector) – Czechia, Poland
Fast growing ecosystem of support services on no competitive basis – Czechia, Poland	Problem with cooperation between different stakeholders of the system – Poland

Experience & Knowledge about the former programmes & instruments (innovation vouchers) provided in the past – feedback from the companies - Czechia Regional universities working on current challenges including digitalisation	Too low use of previous experiences – Poland, Finland Older company owners are not interested in digitalisation – Finland, Poland, Czechia Younger people are not interested in manufacturing industry – Czechia, Finland Low labour cost philosophy - Poland
OPPORTUNITIES	**NEEDS / THREATS**
EU & National Fundings – EU and national levels; Physical closeness of different stakeholders supporting digital innovations; Improving political support at national and regional level; Moving back manufacturing from Asia/China to Europe; People are getting more used to digital innovations; Labour shortages, increasing energy costs – more interest in automation from the companies (rising the efficiency, speed of processes); Becoming robot operator is more attractive to young people than doing the „dirty" work; Digitalization of the world in general;	Educational system – schools don't answer current trends including digitalisation – problem with study programme (not flexible), too long time of gaining new knowledge; Possibility of replacing the role of the universities and other schools directly by companies (especially big); Low public awareness and acceptance of the change; Lack of IT skilled labour; Role of the labour office – obtains a lot of money for requalification of unemployed or people threatened by loss of job, which may be spent in public procurement basing primarily on price – the courses lack quality, do not reflect oncoming needs of the labour market (based on unactual data) – Czechia;

The research conducted as part of the project and the peer learning project meetings with exchanging experience helped to identify further problems and challenges related to the supporting digitalization in manufacturing companies:

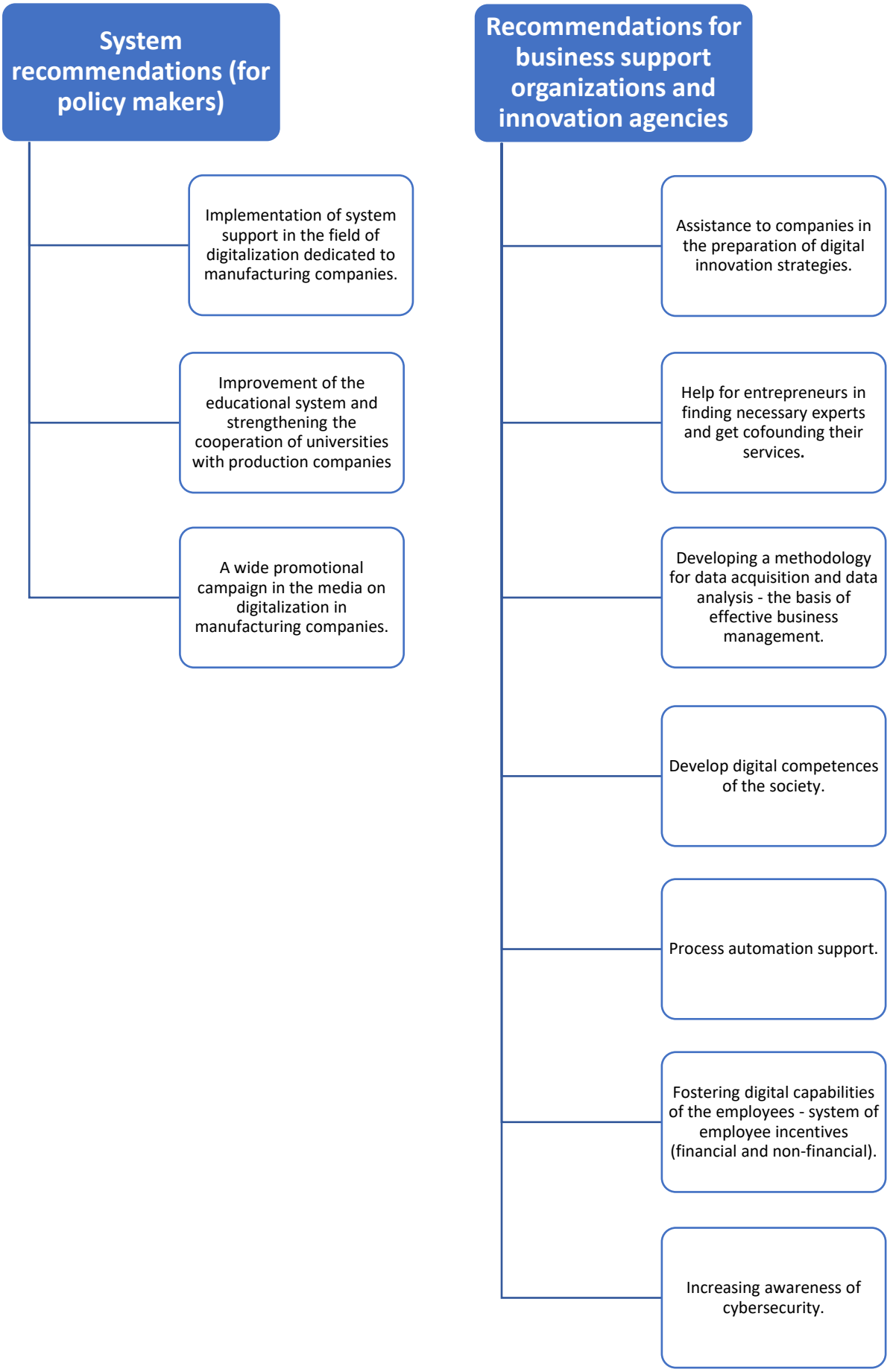
- Lack of experts in digitalisation (private and public sector);
- Difficulty in finding necessary experts and get cofounding for their services;
- Need to support in defining directions of development;
- Difficulties in cooperation between companies and experts – lack of experience in this area among business, problems with understanding the language;
- Little awareness of how technology can boost business;
- How to show benefits coming from digitalisation;
- Lack of awareness or low need of providing innovative business models;
- Insufficient funding.

RECOMMENDATIONS

Basing on the information gained from:

- the inventory of innovation support policies and instruments for SMEs;
- the research on digital innovations needs and stage of development (DIQ audit);
- peer learning meetings combined with meetings with production companies from Poland, Czechia and Finland;
- exchange of experiences between project partners during project meetings,

the DIGIT-ME Partners have discussed and agreed that all recommendations apply in the first row to innovative agencies. However, some recommendations are systemic in nature and the involvement of policy makers is necessary to implement them. We present below recommendations divided into systemic (for policy makers) and other (addressed to innovation agencies and business support organizations). For each of recommendations, we specified the purpose, justification and presented a solution proposal:


System recommendations (for policy makers)
Implementation of system support in the field of digitalization dedicated to manufacturing companies.
Improvement of the educational system and strengthening the cooperation of universities with production companies
A wide promotional campaign in the media on digitalization in manufacturing companies.
Recommendations for business support organizations and innovation agencies
Assistance to companies in the preparation of digital innovation strategies.
Help for entrepreneurs in finding necessary experts and get cofounding their services.
Developing a methodology for data acquisition and data analysis - the basis of effective business management.
Develop digital competences of the society.
Process automation support.
Fostering digital capabilities of the employees - system of employee incentives (financial and non-financial).
Increasing awareness of cybersecurity.

System recommendations (for policy makers)

1. **Implementation of system support in the field of digitalization dedicated to manufacturing companies.**

This recommendation is a response to the problem of insufficient financing of digitalization in manufacturing companies.

Goal: Supporting small and medium-sized manufacturing enterprises in activities related to the transformation towards Industry 4.0. This applies in particular to such areas as: digitalization, automation or robotization.

Justification: Digitalization especially for companies from the manufacturing sector and those that are thinking of greater expansion and gaining foreign markets, has become a necessity. It is clear that this trend will continue to grow. Companies have limited financial possibilities and lack of adequate knowledge about digital tools. In manufacturing companies, especially small and medium-sized enterprises, the digital transformation process is far too slow. The Digi Index report prepared by Siemens Polska indicates the need for urgent measures, especially in the area of obtaining financing for digitization and access to know-how.

Proposed solution: Grant programs similar to the pilot announced by the Polish Agency for Enterprise Development. Co-financing for: a service consisting in the development of a road map, advisory services related to the implementation of the roadmap, purchase of machinery and equipment necessary to implement a selected area of transformation, purchase of intangible assets in the form of patents, licenses, know-how and other intellectual property rights.

Another solution may be vouchers for specialized training (digital vouchers) and various types of tax benefits related to the introduction of digital solutions in manufacturing companies.

2. **Improvement of the educational system and strengthening the cooperation of universities with production companies and replacing the role of the universities and other schools directly by companies.**

This recommendation is a response to one of the threats listed in the SWOT analysis in relation to education: schools don't answer current trends including digitalisation. There is a problem with study program (which is not flexible) and e.g. too long time of gaining new knowledge.

Goal: Improvement and reform of the education system in order to increase awareness and deepen knowledge about modern technologies and their application in industry.

Justification: Well-prepared (well-educated) youth and students will be valuable employees in manufacturing companies.

Proposed solution: Introducing the subject of modern technologies, artificial intelligence, robotization and automation to the educational program in secondary schools. Due to the fact that currently in industry 4.0 there are professions / jobs that were not there before, it is important to specifically define and characterize new professions.

Create digi education clusters – cooperation between universities, teachers, career counsellors, representatives of innovative companies. The main tasks are: defining the framework for cooperation, drawing on their experiences, evaluating the curriculum, internship plan.

Vouchers for teacher – to gain knowledge about new trends in digitalization.

3. **A wide promotional campaign in the media on digitalization in manufacturing companies.**

Goal: raising awareness on a large scale of how important and helpful it is to digitize the activities of manufacturing companies; encouraging the implementation of new solutions.

Justification: Increased awareness will make companies more willing to invest in new solutions.

Proposed solution: examples of good practices (documentaries), talks with experts (interviews), examples of solutions ready for implement; advantages of solutions. Using both traditional media and social media channels for this purpose.

Recommendations for business support organizations and innovation agencies

1. **Assistance to companies in the preparation of digital innovation strategies and providing information on digital innovation trends that affect the manufacturing companies.**

This recommendation applies to the conclusions of the first area of the Digital Innovation Quotient: Digital innovation strategy. There is both low awareness and low need of providing

innovative business models. If this is caused by the market which is not ready for changing i.e. from ownership to usage of products and services that is understandable but still the goal of the company should be seeking for new approaches which would allow to create advantages.

Goal: Encouraging to consider digital innovations as strategic for the company development in short and long term perspective. Education on new business models.

Justification: In an economy focused on development, the competitiveness of enterprises depends primarily on the innovation strategy as well as the application of new technologies and digitization on a global scale. It is important that entrepreneurs have knowledge of current trends.

Proposed solutions: A wide range of training, mentoring and consulting services using business tools e.g. Digital Innovation Quotient, Business Model Canvas, Lean Canvas, or more advanced methods as Six Sigma DMADV for redesigning of current processes or developing new ones; supporting in defining directions of development (using existing tools and solutions); help in creating digitalisation action plan; a comprehensive approach to the subject of digital innovation.

2. **Help for entrepreneurs in finding necessary experts and get cofounding their services.**

This recommendation is a response to the lack of experts and lack of experience in working with experts.

Goal: Learning from the best specialists - practitioners. Understanding what it means to work with an expert. To teach entrepreneurs how to work with the experts.

Justification: Lack of experiences in this area among business, problems with understanding the language.

Proposed solution: On the one hand, a good solution may be to create a database of experts, and on the other hand, it can be combined with the granting of vouchers for expert services (assistance in financing the service). The base could be regional or national. Recommendation to use existing solutions.

3. **Developing a methodology for data acquisition and data analysis - the basis of effective business management; use of collected information to run more efficiently.**

This recommendation applies to the conclusions of the second area of the Digital Innovation Quotient: Digital Business Model.

Goal: Making entrepreneurs aware of the importance of collecting and analysing data.

Justification: Carefully collected and precise company data will allow to reach key information - anticipating market trends and customer expectations, identifying the company's strengths and giving up non-profit solutions.

Proposed solution: The subject of collecting and analysing data could be part of trainings and workshops.

4. **Develop digital competences of the society through e.g. popularization of sciences related to the digitization of the manufacturing companies and the use of ICT (industry 4.0); Active building of digital culture and strengthening the awareness of the need of implementing digital innovation; Promote companies that are characterized by courage, creativity and openness in implementing digital innovative solutions.**

This recommendation is a response to an underdeveloped digital culture.

Goal: Encourage entrepreneurs to invest in digital innovation. Demonstrating good practices and benefits.

Justification: Increased awareness will make companies more willing to invest in new solutions.

Proposed solutions: examples of good practices, events, study visits; Recommendation to use existing solutions.

5. **Process automation support.**

This recommendation applies to the conclusions of the third area of the Digital Innovation Quotient: Digital processes

Goal: The benefits of automating processes in a manufacturing company.

Proposed solutions: creating a process base / service provider base. Recommendation to use existing solutions.

6. **Fostering digital capabilities of the employees - system of employee incentives (financial and non-financial).**

This recommendation is response for question about what incentives are used by companies to motivate employees to get involved in the creation and development of digital innovation. 29 % of companies indicated that they do not have any incentives for employees.

Goal: Encouraging employees to engage in processes related to the creation and development of innovations related to digitalization.

Justification: It is obvious that the burden of introducing innovations and digitizing production companies should lie within the competences of CTO. It is important for the company to have a specialist with such competences. But on the other hand, ideas and commitment from employees can be a valuable contribution to the advancement of digitization in a company.

Proposed solutions: open courses – easy access for employees;

7. **Increasing awareness of cybersecurity.**

This recommendation is a response to question about digital security awareness and the measures taken to increase it. On the one hand, companies indicate that they are aware of threads: 94 % said that they are fully aware of cyber security threats to our business. But on the other hand: 58 % do not have implemented a cyber resilience policy, and 47 % denied that they regularly train their staff in cyber resilience.

Goal: Increasing awareness of digital security policy

Proposed solutions: “ethical hacking”, cyber security audits, consulting services.

Main responsibility for support innovation activities lay on innovation agencies as main actors particularly established for these kinds of activities. However, it is very important to involve a wide range of organizations that can play different roles and contribute to create a favourable environment for the development of meaningful and effective interventions. That approach assures access to wider group of manufacturing companies which exploit the offer of different business support organizations, not always innovation agencies. We trust that the developed

and presented recommendations and good practices will help innovation agencies and business support organizations support companies from the small and medium enterprises sector from whole Europe even more effectively.

SUPPORT PROGRAMME FOR EFFICIENT INNOVATION THROUGH DIGITALIZATION ACTIONS

Support programme for efficient innovation through digitalization actions is a summary of the results achieved during the project. It consists of three parts:

A. Preface – an overall diagnosis which showing the results of needs research and conclusions coming from evaluation of policies and instruments. This issue is elaborated on in Chapter 2 of this study.
B. Main areas analysis – which cover 5 areas checked within Digital Innovation Quotient which were used to create digital innovation support map in manufacturing SMEs. This issue is elaborated on in Chapter 3 of this study.
C. New services and action proposals – this part is developed based on A and B conclusions and on delivered recommendations. We decided to develop one comprehensive service that combines both obtaining financing and supporting various types of digitization activities. The supported areas of digital activity overlap with the challenges and problems that we identified in the project.

Digital Vouchers programme	
Abstract/brief description	The Digital Vouchers programme is focused on digitalisation in the private sector, where beneficiaries will be supported to cooperate with research and technology organisations (RTO) and business support organizations and innovation agencies. or qualified service providers in the field of introducing digital tools and solutions to strengthen competitiveness through higher adaptability or resiliency
Supported/unsupported activities	Examples of supported digitization activities: Revision of the company's business model and strategy with regard to the use of digital tools and the use of a tool for the analysis of "digital maturity" (analysis of the company's

	activities from the point of view of the level of digitalization, e.g. in the field of human resources, activities along the value chain, vertical integration or product life cycle) The analysis focuses on the following topics: • Changes in markets and in the industrial, political and environmental environment • Management, strategy, organization and corporate cooperation • Maturity of activities in individual departments in the supply chain, product life cycle and production from the perspective of the Industry 4.0 concept Elaboration of sub-studies for the deployment of digital tools • General company digitalization strategy • Support of production activities (robotization, digital twins, sensors and datamining, IoT, machine learning) • Support of business and administrative processes (CRM, BI, digitalization of business) • Cybersecurity Economic evaluation of the return on investment in digitization using a system model of innovation. Advising on the use of instruments for financing investments in digitalisation.
Applicant/beneficiary/type of entity	A business entity that is a small or medium-sized enterprise (SME) – eligible applicant RTO; DIH – project partner, service supplier
Conditions of acceptability	Registered office/branch in the eligible EU country;

	Applicant´s size is in compliance with EU SME definition; A partner for the project implementation comes from research organizations or qualified service providers for the implementation of digital tools and solutions (Digital Innovation HUB); Selection of a service provider for RTO or Qualified Contractor (DIH).
Form and amount of support	Proposal of min. amount of subsidy for one project: **EUR 2,000**, max. amount of subsidy for one project: **EUR 15,000**. The subsidy may be granted, for example, at the rate of 75 % in the case of final beneficiaries. The aid intensity may vary from one call to another in the programme. The subsidy is granted under the de minimis scheme pursuant to Commission Regulation (EU) No 1407/2013 of 18 December 2013 on the application of Articles 107 and 108 of the Treaty on the Functioning of the European Union to de minimis aid. L 352, 24.12.2013. According to Commission Regulation (EU) No 1407/2013 (for other sectors), the amount of aid to one de minimis entity is a maximum of EUR 200 000 for the relevant and the 2 fiscal years (financial years) concerned.
Program specifics (outputs, preparation, additional information)	
Open call type	Ongoing – reflects actual needs.
Number of supported projects	Call/year min. 200 Total min. 1000

Outputs/recommendations	The output will be a final report on the realized cooperation between partners / successful implementation of the digitization project (SMEs, municipalities). Recommendation: monitoring of the impact of digitalization (follow-up investments or projects) and further cooperation between partners (3 years after the end of the project).
Technical and system security of the program	Elaboration of the program manual, setting the conditions of the program, verification of absorption capacity and sufficient promotion of the program in the territory. Expert provision: The bearer of e.g. DIH – digital innovation hub announces an open tender for a service provider. The applicant/beneficiary receives a list of qualified suppliers from which to select a service supplier. It is possible to start from the list of DIH published on S3 platform.

Project Partners made efforts to ensure that this document meets the following conditions:

- achievable for small companies,
- covers 5 “focus on” areas,
- can kick-off the company to start bigger digitalization projects after using the voucher.

This support programme for efficient innovation through digitalization actions will be disseminate among all types of entities acting as innovation supporting agencies. We want the project results to be easily achievable by all interested stakeholders.

Summary

In conclusion implementation of DIGIT-ME by the Partners from Poland, Czechia and Finland led to the dissemination of successful Finnish approach to innovation in general which was enriched by experiences of countries from Central Europe. What is more, it allowed to exchange experiences in the field of supporting Industry 4.0 development in order to strengthen the position of each region and country state. Last but not least, the project

implementation raised the awareness that specific policies are needed to help manufacturing SMEs in facing challenges of digitalization in their companies.

As a summary, we can already inform that the following project results have been achieved: 10 innovation agencies from countries of partners' origin and other member states and 30 manufacturing SMEs directly rise their knowledge about effective supporting innovativeness through digitalization. Also 42 different stakeholders (clusters, chambers of commerce, industrial associations technology transfer centres etc.) from countries of partners' origin and other member states directly rise their level of knowledge about effective supporting innovativeness through digitalization.

We trust that the developed and presented recommendations and good practices will help innovation agencies and business support organizations support manufacturing companies from the small and medium enterprises sector from whole Europe even more effectively.

Appendix:

- Annex 1 List of services (full information).
- Annex 2 List of useful information sources.

Annex 1 List of services (full information).

ICT & DIGITAL SERVICES Support Programme - Digital Enterprise (5th Call for proposals)		**Supporting the purchase and introduction of new non-manufacturing digital technologies that will help to ensure a fundamental change in the production process or expansion of the capacity of an existing establishment or expansion of the production range by supporting automation, digitisation of data and more efficient interconnection and management of business processes.**
Describe the target group		SMEs
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		The applicant obtains information from the API, MPO websites. Regularly held webinars at regional offices, consultation days at regional offices. The applicant submits the application for support via ISKP14+ application.
Description of the service	Describe the service? What kind of issues does it consider?	Specific support reacts to issues defined within OP EIC.
	Describe the way the service is provided.	Financial support – grant.
Staff - describe the required qualifications		Precise programme and conditions for subsidy knowledge, knowledge of ISKP14+.
Description of tools and equipment		Computer with access to internet.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		The support is provided in the form of a subsidy (ex-post) - public aid. Aid intensity (%) set by the call for proposals.
Since when your organisation has delivered the service (if you do not deliver it anymore please point the period of time you have)?		Call announcement schedule 28th June 2021, receipt of applications 2nd September 2021 – 11th October 2021.
The effects	How many companies have already been the beneficiaries of the service?	None (oncoming call); 1043 applications submitted in previous calls, 507 approved.
	To what extent does the service covers the real needs of the companies? Point out the companies needs.	x
	Describe the obstacles faced by the companies and answer whether the service contributes in removing them.	Programme conditions may exclude certain types of enterprises, high administrative complexity related to grant.
	What mainly affects the effectiveness of the service? Describe the impact of the used method and the support system design.	x

TECHNOLOGIES (13th Call for proposals)		**The aim of the Call was to support the growth and strengthen the competitiveness of small and medium-sized enterprises through digital transformation, thus contributing to regional development.**
Describe the target group		SMEs
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		The applicant obtains information from the API, MPO websites. Regularly held webinars at regional offices, consultation days at regional offices. The applicant submits the application for support via ISKP14+ application.
Description of the service	Describe the service? What kind of issues does it consider?	Specific support reacts to issues defined within OP EIC. Development in the field of digital transformation of the company.
	Describe the way the service is provided.	Financial support – grant.
Staff - describe the required qualifications		Precise programme and conditions for subsidy knowledge, knowledge of ISKP14+.
Description of tools and equipment		Computer with access to internet.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		The support is provided in the form of a subsidy (ex-post) - public aid. Aid intensity (%) set by the call for proposals.
Since when your organisation has delivered the service (if you do not deliver it anymore please point the period of time you have)?		Call announcement schedule 10th October 2020, receipt of applications 2nd December 2020 – 2nd March 2021.
The effects	How many companies have already been the beneficiaries of the service?	281 applications submitted in call, 244 approved.
	To what extent does the service covers the real needs of the companies? Point out the companies needs.	x
	Describe the obstacles faced by the companies and answer whether the service contributes in removing them.	Programme conditions may exclude certain types of enterprises, high administrative complexity related to grant.
	What mainly affects the effectiveness of the service? Describe the impact of the used method and the support system design.	x

Pilsen Business Vouchers Programme		**The programme is one of the tools used by the Statutory City of Pilsen to contribute to the development of the business environment and the competitiveness of companies. The aim of the programme is to strengthen the innovative activities of companies in the Pilsen agglomeration and thus contribute to increasing their competitiveness**
Describe the target group		SMEs with its registered office or place of business in the Pilsen Metropolitan Area.
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		Information campaign, in cooperation with the City of Pilsen and local research organisations.
Description of the service	Describe the service? What kind of issues does it consider?	Subsidies for the purchase of services from research organisations leading to innovation in SMEs. To some extent, it helps to finance the innovation activities of enterprises, even start-ups, but above all it encourages the establishment of closer relations between enterprises and research organisations (especially the university), which are an important source of innovation. See http://www.bic.cz/vouchery
	Describe the way the service is provided.	The grant programme of the City of Pilsen is handled by BIC Plzeň. It receives applications, checks the formal and factual correctness of applications, administers the further process up to the subsequent checking of final reports and payment of subsidies. Grant size 150 k CZK, aid intensity up to 75 % for SMEs, 50 % for big companies.
Staff - describe the required qualifications		Qualification to prepare and administer a grant programme - especially knowledge of public support for R&D&I. Necessary cooperation with lawyers.
Description of tools and equipment		Administrative background.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		The programme is funded by the City of Pilsen.
Since when your organisation has delivered the service (if you do not deliver it anymore please point the period of time you have)?		2013
The effects	How many companies have already been the beneficiaries of the service?	88 applications, of which 48 were supported. However, some enterprises have received support repeatedly.
	To what extent does the service covers the real needs of the companies? Point out the companies needs.	As part of their development/innovation activities, companies need one-off professional services for which they do not have in-house capacity (testing, measurement, design, software development...). They can address this need by purchasing an expert service from a research organisation. In doing so, they often find ideas for further collaboration on innovation.
	Describe the obstacles faced by the companies and answer whether the service contributes in removing them.	Companies often postpone collaborating with researchers, but if there is a deadline by which a simple application for support must be submitted, time will be found and collaboration will begin.

	What mainly affects the effectiveness of the service? Describe the impact of the used method and the support system design.	Companies do not perceive the need for collaboration with research organisations as particularly urgent, so more often, than not the initiative lies with the research organisation that wants to provide its services commercially.

Innovation Vouchers of the Usti Region		**Subsidy program for companies from Usti region that find innovative solutions for their products, services or production processes in conjunction with a research organization. Provided by Usti Region Authority.**
Describe the target group		SMEs with registered office or place of business in the Usti region.
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		Websites, seminars, PR articles, social networks, etc. Potential applicants were also informed about the possibilities of using the voucher during joint meetings. In some cases, customers call themselves.
Description of the service	Describe the service? What kind of issues does it consider?	Programme focused on: - making new knowledge for product, service and process innovation available to companies that do not have their own research and development capacities - support to companies in adapting to the digitalisation of production and elements of industry 4.0 - connection of businesses and research organizations. Lack of own resources (personal or technological) needed for innovation within the SME.
	Describe the way the service is provided.	Financial support through open calls for proposals (one call per year).
Staff - describe the required qualifications		Perfect knowledge of the Programme and its conditions for providing grant consultancy to SMEs (applicants).
Description of tools and equipment		Common administrative equipment.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		Grant up to 200 k CZK, aid intensity 70 %.
Since when your organisation has delivered the service (if you do not deliver it anymore please point the period of time you have)?		2016-2020
The effects	How many companies have already been the beneficiaries of the service?	64
	To what extent does the service covers the real needs of the companies? Point out the companies needs.	Programme supported innovative solutions for their products, services or production processes in conjunction with a research organization. Programme covered wide range of eligible costs, eg.: - optimization of production processes, methods, parameters, use of materials in order to increase efficiency or reduce costs;

		- modeling, simulation of processes, processes, systems, operations; - application of new materials, methods, technological procedures, software; - elaboration of an expert plan for production digitalisation.
	Describe the obstacles faced by the companies and answer whether the service contributes in removing them.	Insufficient own resources (personal capacities, technological equipment), limited knowledge of the topic digitalisation, limited access to research teams. Provided subsidy covered only small part of SME needs (because of limited amount of subsidy). Complex digitalisation projects couldn´t be financed from this programme.
	What mainly affects the effectiveness of the service? Describe the impact of the used method and the support system design.	Defining and understanding real needs of the subject of the project. Effective communication among SME, research organization and administration authority. Necessary administrative support (advisory) was provided by Usti Region Authority.
Development of Competitiveness of the Karlovy Vary Region Programme (subprogramme 1 Innovation vouchers)		**Provided by Karlovy Vary Business Development Agency, contributory organisation (KARP).**
Describe the target group		SMEs. The applicant may be a commercial company, European company, European economic interest grouping, a cluster, a cooperative or a non-profit company. The applicant for a subsidy must be a legal entity that has its registered office in the territory of the Karlovy Vary Region; in the case of a cluster, the majority of its members must have its registered office in the Karlovy Vary Region.
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		Websites, seminars / webinars, PR articles, social networks, etc. Potential applicants are also informed about the possibilities of using the voucher during joint meetings (eg. in interviews with companies during mapping of innovation environment). In some cases, customers call themselves, sometimes KARP address them directly. The customer applies through the electronic system of the Karlovy Vary Region Authority for submitting grant applications.
Description of the service	Describe the service? What kind of issues does it consider?	Through the grant title Innovation Vouchers, it is possible to optimize production processes in companies. Thanks to the voucher, it is possible, for example, to carry out a feasibility study of digitalisation of processes in the company. The output can also be background analyses facilitating digitalisation.
	Describe the way the service is provided.	Applications for subsidy titles are accepted once a year during the spring months. Before submitting the application, the applicant will find a suitable knowledge provider who will provide the required service for him. A contract is signed with applicants who successfully pass the evaluation of acceptability and formalities, and subsequently defined cooperation activities are pre-financed.

Staff - describe the required qualifications		There are no special qualification requirements for employees.
Description of tools and equipment		Common equipment for administrative work. As part of the innovation voucher, it is possible to use any equipment and tools provided by the knowledge provider.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		Subsidy up to 170 k CZK. The aid intensity is 100 %. The beneficiary thus pays only the costs exceeding the maximum possible amount of aid.
Since when your organisation has delivered the service (if you do not deliver it anymore please point the period of time you have)?		2012
The effects	How many companies have already been the beneficiaries of the service?	A total of 139 applicants applied for the voucher (of which 75 were supported). However, vouchers are far from only used to support the digitalisation of companies. Due to the lower amount of support, companies often implement more partial activities aimed at the overall digitalisation of the company. Every year, some of companies implement a voucher focused on the digitalisation of one agenda and gradually digitalise the entire company (but these are only in the order of units of cases). Innovation Voucher is only a "small contribution", the total costs of projects are usually higher than the maximum amount of the subsidy.
	To what extent does the service covers the real needs of the companies? Point out the companies needs.	Based on existing evaluation activities, it can be argued that the service covers the needs of companies. So far, there have not been many requests focused directly on digitalisation, which reflects the overall situation in the region regarding the approach of companies to digitalisation. The situation is similar, for example, in the number of supported digitalisation projects within the OP EIC, where applications from the Karlovy Vary region form only units of cases.
	Describe the obstacles faced by the companies and answer whether the service contributes in removing them.	Due to the low number of applications, it is not possible to specify.
	What mainly affects the effectiveness of the service? Describe the impact of the used method and the support system design.	The efficiency of the service is affected, for example, by the absence of human resources for the implementation of the project on the part of companies, the setting of the project schedule (not always suitable for applicants) or insufficient support.

DigiAudit Online	**Provided by National Centre for Industry 4.0**
Describe the target group	Small and medium-sized manufacturing enterprises in the Czech Republic
Describe how do you reach the service to customers? Does the company apply for the service	Communication at conferences, seminars and professional webinars. Communication through the

independently via email or website? or Does the Business Support Organisation seek clients?		newsletter of the National Centre for Industry 4.0. Personal referrals.
Description of the service	Describe the service? What kind of issues does it consider?	It guides in answering the basic questions of digitalisation: what do I expect, where do I want to move to, what benefits do I hope for. It guides through learning about one's own level of digitalization through examples of technologies used. The service identifies opportunities based on knowledge of the motivation for digitalisation and the current state. https://www.ncp40.cz/analyza-digitalni-zralosti
	Describe the way the service is provided.	Online self-assessment form followed by automated processing, generation of a comprehensive assessment report and delivery of the result to an email address.
Staff - describe the required qualifications		A person responsible for digitalisation with knowledge of the business systems used and technologies in place.
Description of tools and equipment		Online web-based form with a comprehensive algorithm to evaluate the form and deliver the generated report.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		Fully paid by the business, subsidised by public sources (national, EU, etc.), free of charge. Free of charge, used for familiarization with the principles and procedure of the full DigiAudit.
Since when your organisation has delivered the service (if you do not deliver it anymore please point the period of time you have)?		April 2020.
The effects	How many companies have already been the beneficiaries of the service?	65
	To what extent does the service covers the real needs of the companies? Point out the companies needs.	Businesses looking to go digital often grope for where to start. The service helps them to answer essential initial questions in a structured way: what can I want and do I want, where am I, where should I look for the biggest opportunities. The feedback received 2 weeks after receiving the assessment report is positive, so Online DigiAudit addresses the respondent's real needs.
	Describe the obstacles faced by the companies and answer whether the service contributes in removing them.	Companies do not have a clear digitalisation concept, a roadmap for digital transformation. Online DigiAudit guides them in finding appropriate directions in line with the company's long-term vision and thus addresses the basic difficulty of most SMEs, i.e. the lack of a long-term vision and concept.
	What mainly affects the effectiveness of the service? Describe the impact of the used method and the support system design.	Extent of knowledge of your own company, honest and thorough completion of the Online Digiaudit.

DigiAudit		Provided by National Centre for Industry 4.0
Describe the target group		Small and medium-sized manufacturing enterprises in the Czech Republic
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		Communication at conferences, seminars and professional webinars. Communication through the newsletter of the National Centre for Industry 4.0. Personal referrals. Follow up to complete the free Online DigiAudit.
Description of the service	Describe the service? What kind of issues does it consider?	It guides in answering the basic questions of digitalisation: what do I expect, where do I want to move to, what benefits do I hope for. It guides by getting to know one's own level of digitalization through the evaluation of digitalisation processes and the analysis of technology usage. It identifies opportunities based on knowledge of the motivation for digitalisation and the current state. Agreed opportunities are thoroughly explored with a technology questionnaire. Based on the findings, the company is compared with the segment through benchmarking and an expert proposal is made to address the identified weaknesses in the form of specific technology projects using anonymised requests for information from technical suppliers. Furthermore, measures are proposed to define the future vision of the company using local and global references. Furthermore, we propose steps to increase technical competences in the form of professional workshops and training.
	Describe the way the service is provided.	Preparatory part for gathering information about the enterprise, defining priorities for digitalization and selecting relevant activities and appropriate respondents. Evaluation part in the form of a one-day face-to-face visit to question and discuss organisational, process and technical maturity. Furthermore, joint reflection on opportunities and detailed technological analysis of opportunities. The design part takes place in a group of experts from the National Centre for Industry 4.0, during which a summary report is produced summarising the company's readiness, benchmarking and suggesting practical next steps.
Staff - describe the required qualifications		Person responsible for digitalisation with knowledge of the enterprise systems used and the technologies in place. Relevant respondents for key departments with practical experience of day-to-day activities and tools used.
Description of tools and equipment		Data collection evaluation form enhanced with analytical algorithm functions for opportunity design. Materials for a detailed technology survey.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		Fully paid by the entrepreneur, subsidized by public sources (national, EU, etc.), free of charge. 50000-70000 CZK depending on the size of the enterprise and scope. Paid (so far) exclusively from the enterprise's own resources.

Since when your organisation has delivered the service (if you do not deliver it anymore please point the period of time you have)?		September 2019.
The effects	How many companies have already been the beneficiaries of the service?	8
	To what extent does the service covers the real needs of the companies? Point out the companies needs.	Companies looking to go digital often grope for where to start. The service helps them to answer the essential initial questions in a structured way: what can I want from digitalisation and what do I want, where am I, where should I look for the biggest opportunities. The opportunities are then explored in more detail and appropriate next steps are proposed: strategic and visionary workshops, competence enhancement, technology projects implemented by proven partners under the supervision of the National Centre for Industry 4.0. All these proposed steps are generally welcomed with enthusiasm and verbal feedback confirms the addressability and usefulness of the proposals.
	Describe the obstacles faced by the companies and answer whether the service contributes in removing them.	Companies are looking for ways how to get started with digitalisation. The service guides them through defining the expectations and future vision of the company, mapping organisational, process and technology maturity. Next, the biggest opportunities will be identified, and their detailed technical description will be provided. The findings are compared with relevant local and global enterprises. Specific practical steps are proposed to address the identified opportunities.
	What mainly affects the effectiveness of the service? Describe the impact of the used method and the support system design.	The actual interest of management and respondents in digitalisation. Willingness to change established processes and practices. Knowledge and expertise of the management and nominated respondents. Willingness to invest energy, time and money in the proposed projects. The "political" situation in the company stemming from the ownership structure. Long-term payback of complex digitalisation solutions. The method aims at answering and settling all obstacles, inducing motivation for change in the management and rank and file, proposing concrete, graspable and gradual steps to improve the digitalisation level.

DIGIMAT	**Provided by Intemac Solutions, s.r.o.**
Describe the target group	Manufacturing SMEs
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?	Active search - in various ways (most effective organization of educational events), about 10-20% will address the service itself.

Description of the service	Describe the service? What kind of issues does it consider?	Programme helps with setting up priorities. Impartial expertise, experience and a new perspective of specialists will help find direction for further development of the company. 4 main pillars of the programme: - initial analysis of the company - suggestion of concrete solution - recommendations of the implementation procedure - recommendation of possible sources of financing https://www.dih-digimat.cz/program-digimat/
	Describe the way the service is provided.	Consulting / advisory activity.
Staff - describe the required qualifications		5 people in a team (marketing, PR, technicians, business specialists), using specialists from YNNOVATE (former PLATINN) network.
Description of tools and equipment		Network of specialists, own methodology for evaluating the use of digi technologies (to identify innovation potential).
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		The DIGIMAT program is financed from the resources of the South Moravian Region, so participation in it is financially advantageous for SMEs from the South Moravian Region. Companies based in other regions can also join the program, but this financial support no longer applies to them. 1st project - up to 45 hours of consultations CZK 1500/hour, aid 75 %, final price CZK 375/hour excl. VAT. 2nd project - up to 80 hours of consultations CZK 1500/hour, aid 50 %, final price CZK 750/hour excl. VAT. 3rd project - up to 80 hours of consultations CZK 1500/hour, aid 20 %, final price CZK 1200/hour excl. VAT.
Since when your organisation has delivered the service (if you do not deliver it anymore please point the period of time you have)?		Pilot projects started in 2017.
The effects	How many companies have already been the beneficiaries of the service?	50+
	To what extent does the service covers the real needs of the companies? Point out the companies needs.	The service responds to real needs, following the analysis. Primarily companies need to learn to organize (processes). Learn to work with employees (resistance to innovation) - proper communication towards them and involvement in innovation processes.
	Describe the obstacles faced by the companies and answer whether the service contributes in removing them.	Organizational processes - the executive's busyness with operations, lack of time for strategic decision-making. The service contributes - setting step-by-step steps for digitization.
	What mainly affects the effectiveness of the service? Describe the impact of the used method and the support system design.	Company approach (executives, delegates). Companies willing to pay - try it, but without the need to change. Approach to financing an innovative solution - experience with subsidy titles (positive / negative). If the company's executive is misjudged (when he has no real interest in change) - inefficiently spent funds (time, money,

		personnel capacity) - harder measures are considered (consulting support from public funds - need to fulfill the agreed performance / indicators?)

Digital Audit		**Moravian-Silesian Innovation Centre Ostrava**
Describe the target group		SMEs with its registered office or establishment in Moravian-Silesian region.
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		Through its own social and partner networks across MS region. Own business activities, conferences and workshops. A significant proportion is represented by personal recommendations among business owners / managers. Clients ask for themselves, but we are also actively searching. (combination of both scenarios)
Description of the service	Describe the service? What kind of issues does it consider?	The service addresses the lack of qualified and experienced people within SMEs who would be able to optimally set the strategy for the digital transformation of the company. They would be able to recognize which places to digitalise first and whether the places are really fully prepared for digitalisation, or there are still some prerequisites (process optimization, sufficient qualification of people, etc.).
	Describe the way the service is provided.	10-hour work of an expert who will go through the basic processes of the company from a broader perspective and provide recommendations for individual areas and ideal places where and how to start digitalisation. In addition, it will also check whether the company is ready for this change and whether the implementation or introduction of newly digitalised processes will fail.
Staff - describe the required qualifications		External specialists with decades of experience in the field are hired to provide the service. However, the employees of the Innovation Center themselves do not have this special experience (it cannot be paid for while maintaining sufficient quality and economic efficiency). Employees are aware of the issue, have developed skills in project management, project development, evaluation, facilitation and networking. External specialists are people who have experience with the implementation of digitalisation projects and understand process engineering across the company-wide environment. Expert has to have a least 2 years of experience with team leadership, or mentoring and consultations.
Description of tools and equipment		Know-how, DigiAudit methodology, MS Excel, MS Word.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		The service is provided free of charge as part of de minimis support.
Since when your organisation has delivered the service (if you do not deliver it anymore please point the period of time you have)?		January 2020.

The effects	How many companies have already been the beneficiaries of the service?	15
	To what extent does the service covers the real needs of the companies? Point out the companies needs.	The service covers the need for the right decision of companies regarding the deployment of digitalisation tools. Where to start, what to start with, with what level of intensity and what to watch out for so that everything turns out according to plan. In this area, the service sufficiently covers the real needs of companies.
	Describe the obstacles faced by the companies and answer whether the service contributes in removing them.	Insufficient knowledge and qualifications in IT employees of SMEs. Operational blindness of SMEs. Insufficient experience with the introduction of digitalisation in the first projects. The complexity of digitalisation projects in terms of the speed of change of available tools and services. The complexity of digitalisation projects in terms of qualifications, values and habits of people in the company.
	What mainly affects the effectiveness of the service? Describe the impact of the used method and the support system design.	The efficiency of the service is influenced mainly by the efficiency of project processes, the level of experience and know-how of external specialists and the level of motivation on the client's side (priority, enthusiasm for technology, etc.). Innovation Centre uses agile control methods with precisely given and timed process maps, which are followed. Pre-prepared templates for output reports and automated excel tables are used as well. These conduct company evaluations within digital audit and create audit results themselves, plot visualizations and graphs of results and provide comparisons with the anonymized average of other companies that have gone through the program across various regions in the Czech Republic.

Grant consultancy		**Provided by BIC Pilsen**
Describe the target group		Innovation enterprises in the region.
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		A combination of promotion on the website, in the newsletter and directly targeted emailing. Long-term clients contact BIC themselves.
Description of the service	Describe the service? What kind of issues does it consider?	The service helps companies to navigate business support programmes and research, development and innovation support programmes where they can obtain funding to implement their development projects.
	Describe the way the service is provided.	Personal consultation, selection and assessment of the suitability of the programme to support the client's project, regular meetings and joint formulation of the project and other annexes of the project application. Assistance with application, communication with the provider, etc.

Staff - describe the required qualifications		Qualifications in business economics, knowledge of business support and R&D&I issues.
Description of tools and equipment		Common office and communication equipment for consultants.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		Services are subsidised by the City of Pilsen, almost in full.
Since when your organisation has delivered the service (if you do not deliver it anymore please point the period of time you have)?		To a greater extent since 2004, but the MIT R&D support programmes were already in place before that. With financial support from the city since 2013.
The effects	How many companies have already been the beneficiaries of the service?	107 projects, but many companies have used the service repeatedly, so the number of clients is lower than the number of projects.
	To what extent does the service covers the real needs of the companies? Point out the companies needs.	This depends on the specific conditions of each grant call. As a rule, companies are looking for funds to purchase a specific solution (machinery and control system), which will be proposed by a proven specialist supplier.
	Describe the obstacles faced by the companies and answer whether the service contributes in removing them.	If the obstacle is lack of funds to implement digitisation projects, then the services certainly contribute to removing them. The level of contribution depends on the level of support in grant programmes, the possibility of pre-financing (advance payment of subsidies), etc.
	What mainly affects the effectiveness of the service? Describe the impact of the used method and the support system design.	If it is a support system for specialized services subsidized by the City of Pilsen and provided in association with VTP a.s., the efficiency is quite high, it requires some work and time for administration, but it can be managed. In the case of subsidy programmes, which we help clients to use, the efficiency is considerably reduced by frequently changing conditions, long evaluation periods, high administrative burden, tenders for suppliers ... (the inefficiency of subsidy programmes would be the subject of a separate study).

Introducing Business Intelligence into the enterprise		**Provided by INION**
Describe the target group		SMEs across branches
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		We are looking for clients on recommendation.
Description of the service	Describe the service? What kind of issues does it consider?	It helps management obtain data from all areas of the company and make informed decisions based on it. It helps reduce costs, streamline production and processes based on data analysis.
	Describe the way the service is provided.	In the form of consultation, processing of analysis, processing of a dashboard on which data to collect, how to work with them and how to make decisions based on this data.

Staff - describe the required qualifications		Consultants with knowledge and experience from various areas of the company and with experience in data analysis (knowledge of SQL, Python languages)
Description of tools and equipment		Data processing software – Microsoft PowerBI, Anaconda.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		Fully paid by the entrepreneur, subsidized from public sources (national, EU, etc.), free of charge.
Since when your organisation has delivered the service (if you do not deliver it anymore please point the period of time you have)?		2019
The effects	How many companies have already been the beneficiaries of the service?	5
	To what extent does the service covers the real needs of the companies? Point out the companies needs.	Management must address common and extraordinary business situations - such as declining profits; rising costs; pandemic situation, redundancies. Making the right and quick decisions can only be made on the basis of sufficient and informative data.
	Describe the obstacles faced by the companies and answer whether the service contributes in removing them.	Business owners and management have little experience with data processing. We identify for the company which data is important to collect, how to obtain and further process them and how to use them to solve key issues of the company's business.
	What mainly affects the effectiveness of the service? Describe the impact of the used method and the support system design.	Proper analysis of the company's business model, understanding of internal processes, business and company strategy and implementation - setting up a dashboard and training stakeholders.

Centre for Economic Development, Transport and the Environment (ELY Centre's)		**Description**
Describe the target group		SME's in Southwest Finland
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		The ELY Centre's own information is mainly implemented via websites and e-mail. Several service providers provide information about ELY's services and also help companies to apply for services.
Description of the service	Describe the service? What kind of issues does it consider?	Productivity and digitization Does your business need to be streamlined or clarified? Are you looking for digital solutions to tighten your business? The ELY Centre's service helps to hone your company's processes. In consulting, you work with an experienced management expert to develop your company's processes from a productivity perspective. Depending on your company's needs, you can focus on, for example, production, service, quality, financial or monitoring processes or operational management. You will gain perspectives on how responsibility can be a competitive advantage for a

		company. Consulting can also find out what technological and digital solutions support your company's operations. The ELY Centre's service is suitable for SMEs operating domestically or internationally, which have established their operations and have the conditions for profitable operations. The duration of the consultation is 2-5 days at a time, and it costs the company 325 euros + VAT / day. The consultation can be obtained for a maximum of 15 days in three years.
	Describe the way the service is provided.	The company contacts the ELY Center and explains its need. The company selects the certified consultant they want and they sign the contract. The company agrees with the consultant on how to carry out the consultation.
Staff - describe the required qualifications		The staff of the consulting firm are usually postgraduates (technical or commercial). They must have at least 10 years of experience in similar positions in the industry. All consultants are certified persons approved by the ELY Center.
Description of tools and equipment		Consultant's own methods. They are not specified.
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		325 € + VAT/day max. 15 days
Since when your organisation has delivered the service (if you do not deliver it anymore please point the period of time you have)?		About last 10 years.
The effects	How many companies have already been the beneficiaries of the service?	>100
	To what extent does the service covers the real needs of the companies? Point out the companies needs.	Only general feedback is collected from companies and no detailed development needs are reported. They are covered by business secrecy.
	Describe the obstacles faced by the companies and answer whether the service contributes in removing them.	Usually, the company finds a solution that suits the company. The company is responsible for the success of the implementation of the solution, but as a rule, the problem has also been solved in practice.
	What mainly affects the effectiveness of the service? Describe the impact of the used method and the support system design.	In consulting, the company builds a roadmap for itself. Of course, the qualifications of the consultant are of great importance for the success of the service, but the key is the commitment of the company. The digital skills of companies 'staff vary and their lack slows down the change process.

<SITRA>		Description
Describe the target group		Private, public and third sector, all aimed at increasing sustainable well-being in Finland. Sitra is redefining the idea of a good life, seeking human-oriented operating models and promote sustainable business.
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		There is no specific funding call for applications or application form. If you have a project idea related to one of our themes or you are interested in Sitra's trials.
Description of the service	Describe the service? What kind of issues does it consider?	Sitra does not provide funding for academic research projects, dissertations or commercial research and development projects.
	Describe the way the service is provided.	Contact the person in charge of the respective theme. Themes are Sustainability solutions, Fair data economy and Democracy and engagement.
Staff - describe the required qualifications		Not required
Description of tools and equipment		
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		Mostly fully paid
Since when your organisation has delivered the service (if you do not deliver it anymore please point the period of time you have)?		
The effects	How many companies have already been the beneficiaries of the service?	Hundreds
	To what extent does the service covers the real needs of the companies? Point out the companies needs.	Produce new information in a transparent, open manner, so that it benefits everyone that needs the information. Provide funding for studies, which present information and views on matters that are important to the future (future-oriented work).
	Describe the obstacles faced by the companies and answer whether the service contributes in removing them.	Difficult to get funding.
	What mainly affects the effectiveness of the service? Describe the impact of the used method and the support system design.	Supporting trials and future healthy working environment. Open information

REGIONAL COUNCIL OF SOUTHWEST FINLAND		Description
Describe the target group		Comprehensive developer of the province. An important part of the development work is to support an adequate and high-quality education network. The union's co-operation group makes decisions on the financing of national project projects, which are implemented by educational institutions, associations and development companies.
Describe how do you reach the service to customers? Does the company apply for the service independently via email or website? or Does the Business Support Organisation seek clients?		REGIONAL COUNCIL OF SOUTHWEST FINLAND sends e-mails monthly and publishes press releases on its website. Workshops and seminars on various topics are also an important part of the communication.
Description of the service	Describe the service? What kind of issues does it consider?	We are developing maritime Southwest Finland to be a region, were the quality of living is the best. A succesful region is built with partnership and cooperation. The Regional Council of Southwest Finland functions as an authority for regional development and as an organization for planning and promoting regional interests.
	Describe the way the service is provided.	We will send a funding application notice to our stakeholder. Those interested will submit a project application, which will be discussed in the cooperation group. Projects must support the provincial strategy.
Staff - describe the required qualifications		Our staff has masters in social sciences and political science.
Description of tools and equipment		REGIONAL STRATEGY AND VISION
Charges: fully paid by the entrepreneur, subsidized from public funds (national, EU, etc.), free of charge		In general, funding is granted at 70% of the cost.
Since when your organisation has delivered the service (if you do not deliver it anymore please point the period of time you have)?		Been going on for many years and is still continuing.
The effects	How many companies have already been the beneficiaries of the service?	
	To what extent does the service covers the real needs of the companies? Point out the companies needs.	
	Describe the obstacles faced by the companies and answer whether the service contributes in removing them.	YES and NO

	What mainly affects the effectiveness of the service? Describe the impact of the used method and the support system design.	

Annex 2 List of useful information sources.

https://digital-strategy.ec.europa.eu/en/activities/digital-programme
https://ec.europa.eu/info/strategy/recovery-plan-europe_en
https://ec.europa.eu/growth/industry/policy/innovation/scoreboards_en

https://www.countryforfuture.com/
https://www.mpo.cz/cz/podnikani/ris3-strategie/
https://www.digitalnicesko.cz/
https://www.vlada.cz/assets/evropske-zalezitosti/umela-inteligence/NAIS_kveten_2019.pdf
https://dotaceeu.cz/cs/evropske-fondy-v-cr/kohezni-politika-po-roce-2020/uhelne-regiony/plan-spravedlive-uzemni-transformace-(psut)
https://www.databaze-strategie.cz/cz/mpo/strategie/prumysl-4-0-2017?typ=download
https://mpo.cz/assets/cz/podnikani/male-a-stredni-podnikani/studie-a-strategicke-dokumenty/2021/3/Strategie-podpory-MSP-v-CR-pro-obdobi-2021-2027.pdf

https://www.restartregionu.cz/
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http://www.kr-ustecky.cz/regionalni-inovacni-strategie-usteckeho-kraje/ds-99669
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https://wihurinrahasto.fi/?lang=en

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https://esavo.fi/
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https://www.pohjois-savo.fi/
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Other
https://digitalchallengers.mckinsey.com/
https://ifr.org/free-downloads/