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Future Ecom
Interreg Europe

White book

Project Future Ecom

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Contents

Introduction

Business as usual is no longer an option for SMEs in a competitive environment that is rapidly evolving when it comes to digitisation. Companies need to apply to new business models and strategies to take full advantage of the opportunities offered by new technologies. Successful companies are the first to understand and utilize the new forces.

The former challenge of running a business at local or national level has moved to a global scale due to digitisation. Industries are being disrupted by new entrants, value chains are being re-formed, and profit pools are shifting. Instead of waiting for the benefits of globalisation to trickle down from large corporations, SMEs can become micro-multinationals in their own right. Information can be transmitted halfway around the world in the blink of an eye, but so can disruptions allowing SMEs to scale up quickly - if they are able to mobilise ideas and resources. It is estimated that in 2020 B2B e-commerce in EU will be twice as large as B2C in terms of sales which proves a huge unreleased potential for EU SMEs.

There is a risk of being surpassed by frontrunners as most SMEs have not even taken the first step in this direction. Succeeding with B2B e-commerce requires a huge turnaround within the company's internal processes as this may scale up the turnover dramatically. Digitising and automatising the internal processes of the SME is key to manage and keep up with the upscaling due to global e-commerce while ensuring the economic profit.

Creating a Digital Single Market (DSM) is one of the top ten priorities of the European Commission. The overall objective is to bring down barriers, regulatory or otherwise unlock online opportunities in Europe to create one borderless market with harmonized legislation and rules for the benefit of businesses throughout Europe. This is stated by the EC in the 6 May 2015 DSM strategy aiming to remove key differences between the online and offline worlds and to break down barriers to cross-border online activity and thereby improve B2B e-commerce.

Future Ecom project (Exploiting digitisation to increase B2B e-commerce) was financed by the program Interreg Europe, European Regional Development fund. Project has focused its activities on improvement of the effectiveness and impact of the policy instruments addressed within the partnership stimulating the exploitation of digitisation in SMEs in order to improve their competitiveness in the future and thereby to grow. More specifically Future Ecom aimed to provide policy makers with the knowledge and understanding of the potentials digitisation holds while at the same time make them aware of the challenges and barriers that SMEs face in terms of preparing their internal processes and their company in general for the digital age.

Future Ecom project conducted effective learning and exchange of experiences addressing topics how different digitization tools are used in various economic and business processes. This exchange of experiences among the regional partners (10 project partners, representing 8 EU regions) was followed by the transfer of the lesson learnt to the regional programmes. The project contributed with insight into different topics, various digital tools and systems to reinforce B2B in the region boosting innovative ecosystems where actors, regional and local authorities and innovation partners, together with stakeholders: associations, academia, regional governments worked together in the Action Plans to reach the needed policy change for the digitization of SMEs to increase B2B services.

Furure Ecom partners understand the importance of the learning outcomes that need to be transferred and inspire the implementation of change in each partner region to result the effective policy change, also to put the emphasis on the needs of SMEs, clearly identifying their problems and potential solutions.

In this document partners have assembled all the results from 8 regions, to be accessible to all regions facing challenges in B2B e-commerce field, fostering the transformation process in the internal processes of SMEs moving to e-commerce platforms. During the project partners researched and examined 6 topics related to B2B e-commerce various aspects, as a result 6 State of Art reports were produced and assembled into the White book. In this process partners also identified good policy practices which have success and high achievements, bringing expected results and a value added to the regions and their SMEs. Most important the good practices have a potential to be transferred to other regions. Partners also examined various business models used in the B2B e-commerce world and presented some of the examples to be used as initial ideas while building own business model for any SME or other organisation.

The White book was assembled to preserve project achievements for anyone interested in the topics or looking for ideas to transform policy instruments.

State of the art reports

Each State-of-the-art report is an effort to demonstrate the novelty of research results in the region in the given topic. The importance of demonstrating novelty and ideas in the topic is a cornerstone of business development.

The state of the art describes the current knowledge about the examined topic through the analysis of various regional, national and international statistical data, related published work. It might provide a comprehensive overview of what has been done in the field and what could be further investigated, it helps formulate the problems and ideas for solutions in the addressed topic. This was a challenging task for partners involving analysing, comparing, evaluating and linking different sources. Above all, our State of the art reports served as a facilitating instrument for discussion tackling the problems addressed in the Future Ecom project. During the project partners researched and examined 6 topics related to B2B e-commerce various aspects.

Innovation and Product Development Support

Tess Lukehurst, Coventry University Enterprises Limited, Coventry, UK

Introduction

Whilst e-commerce might be strictly defined as the carrying out of transactions using electronic and digital technology, for the Future Ecom project we are looking more widely at all the processes that companies might need to adapt in order to make the most of the ways in which digital transactions can improve the business. This runs from innovation through the whole business process to final payment.

Innovation is a difficult topic to define. A dictionary definition is "A new method, idea, product etc."[1] In business this can be considered simplistic. Having new ideas is the easy part. It is taking the idea and proving that it has application that makes real innovation. And yet even this needs impact and innovation adds little value without implementation. Using this definition, the most important innovations are those that can be applied. These can be completely new ideas or the new application of older technology in new environments (new to me).

Technology is recognized as a key driver of innovation. Adoption of technology is usually left to the businesses involved in the industry. Most sources are agreed that we are on the cusp of a major shift in patterns of work and not just of manufacture.

This is a brief report on the contents with key factors.

[1] Oxford English Dictionary (en.oxforddictionaries.com)

Current situation

There is a great potential for innovation in digital, both within the technology and through using digital technology to increase the speed technologies of innovation and product development. Artificial Intelligence, Machine Learning and the Internet of Things all provide opportunities to improve processes and products for all kinds of business. Developing and using these technologies requires a significant upskilling of staff in the businesses at all levels. If managing authorities want their businesses to participate in and benefit from this revolution, then identifying and highlighting these opportunities and creating this preparedness must be a priority.

Commercial innovation can be a complex process. It requires expertise across the business. The Harvard Business Review defined the key elements as Intellectual Property, Process and Finance. These elements are both sequential and part of an iterative process.

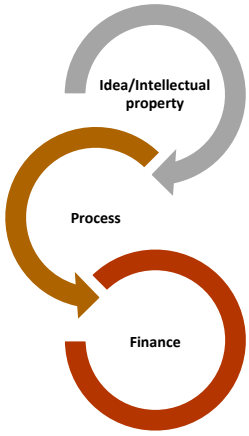

Figure 1 ***Commercial innovation key elements***

Digital technologies are an enabler at all stages of this process, but offer the most benefit during the process stage. Iterative modelling, CAD and 3D printing for prototypes can all play a role in accelerating and reducing cost through this stage of the process. This can speed up the innovation lifecycle reducing costs and increasing the pace of innovation.

To date most support has been placed on facilitating the change to take place. Ensuring the availability of the broadband and mobile digital networks that are needed to enable companies to adopt the new technologies. There is, however, a driving need to place an emphasis on ensuring that companies have the skills needed to respond to the opportunities for innovation.

Broadband has been rolled out across much of Europe, and there is very good uptake in most EU states. However, the challenge of providing coverage to rural and remote areas using commercial companies is slowing progress in nearly every member state which is putting the 100% target for 202 at risk.

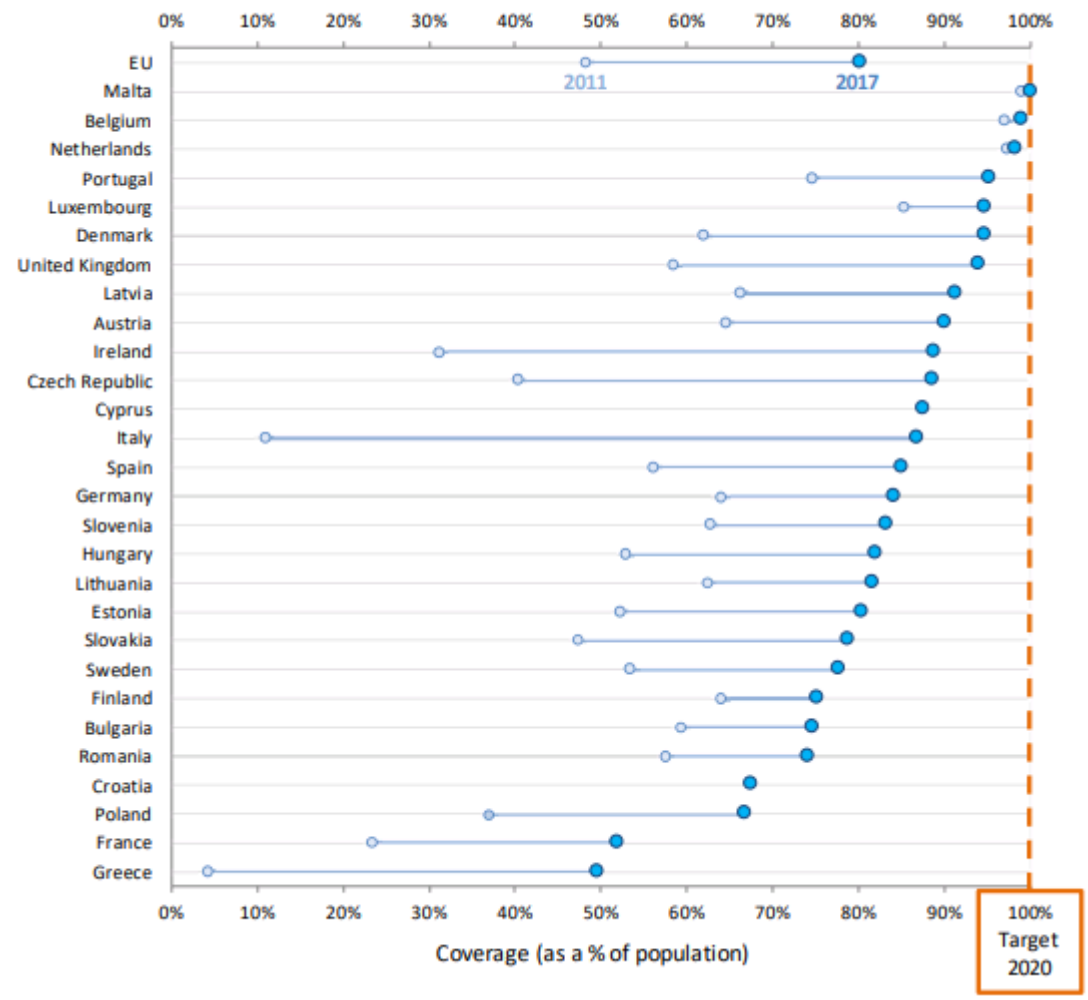

Figure 2 ***30 Mbps coverage in all Member States in 2011 and in 2017***[2]

Amongst the project member states Portugal, Denmark and the UK lead the table, with 95 and 94% provision, whilst Greece is at the bottom of the European table with only around 50% provision.

[2] Special Report Broadband in the EU Member States, European Court of Auditors 2018, https://www.eca.europa.eu/Lists/ECADocuments/SR18_12/SR_BROADBAND_EN.pdf

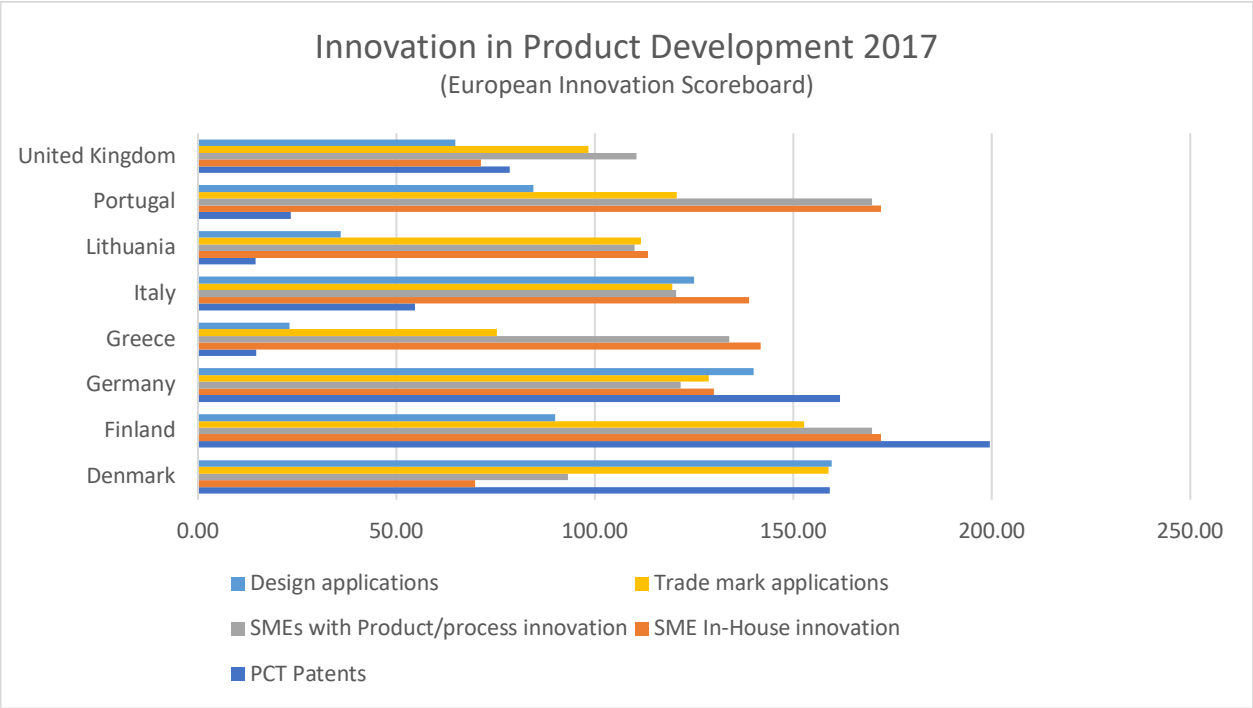

Figure 3 ***Index points, Data on use of Digital technology in the marketplace - European level***

The innovation scoreboard data[3] demonstrates that Innovation is happening in all the partner states. Each area has differing strengths, and this can indicate some opportunities to encourage growth.

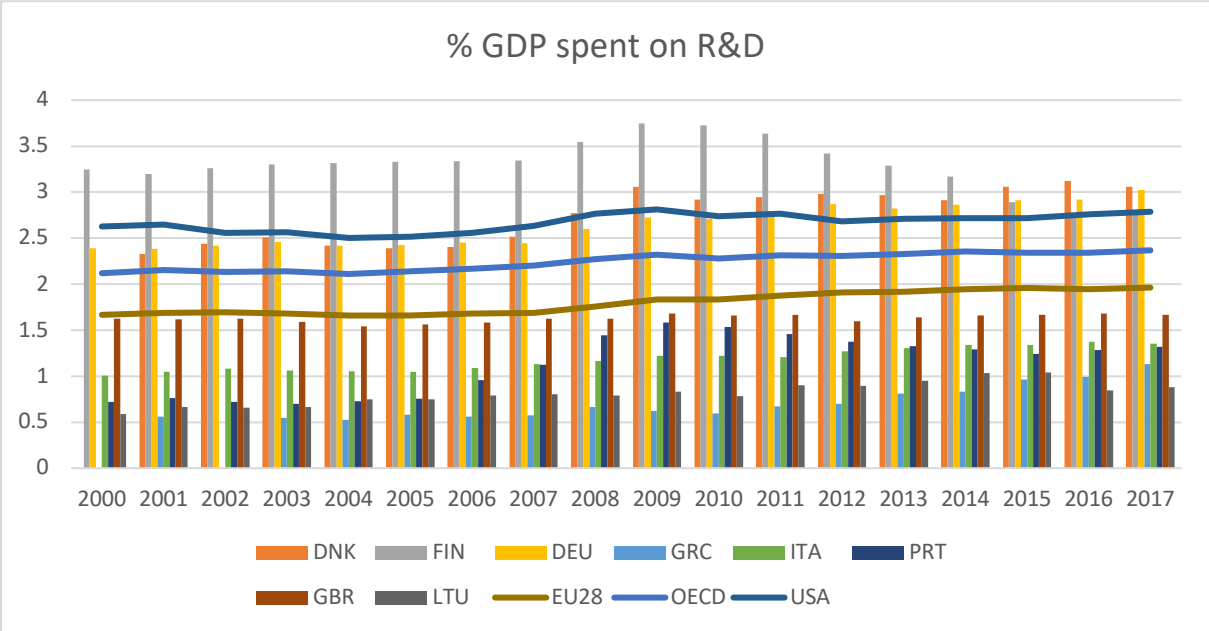

Figure 4 ***OECD Gross Domestic Spending***[4]

[3] https://interactivetool.eu/EIS
[4] https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm

Compared to International levels, however there is definite room for improvement. Other than in a Finland, Germany and Denmark investment as a percentage of GDP lags behind the averages for the EU, the OECD and for the USA. If we wish to be ahead in innovative businesses and systems then we need to at least match the spending in other nations or we risk a drain of the most innovative companies and minds to the areas where there is more investment.

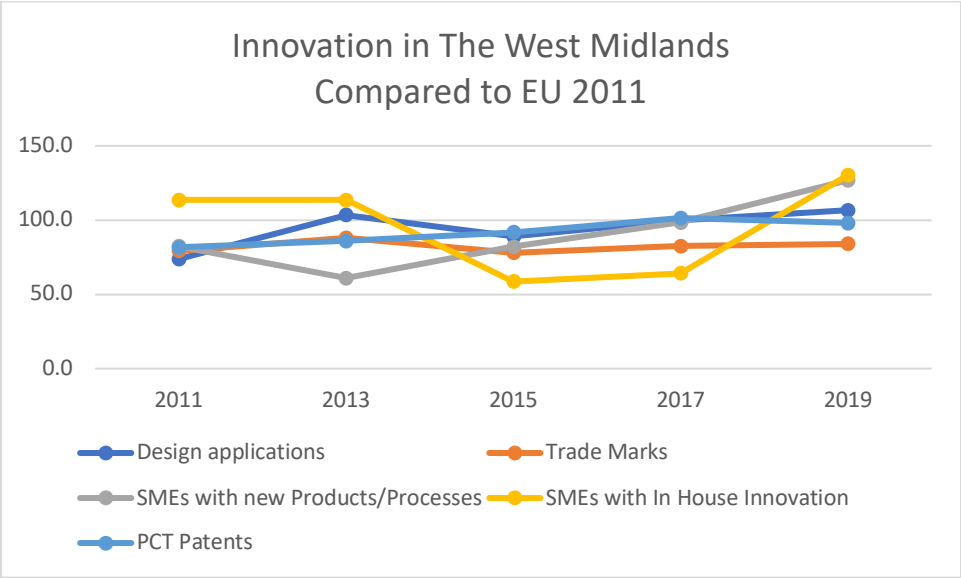

Figure 5 ***Innovation in The West Midlands compared to EU 2011***

Locally the West Midlands is a Strong Innovator. Comparing the region with the average for the EU in 2011 demonstrates, however, that there is significant work still to do. Starting below the EU average for all the selected comparators in 2011, it is clear that the region is developing faster well in all of the key innovative areas, however the fall in the numbers of Trademarks suggests that we are not as effective in commercialising this research.

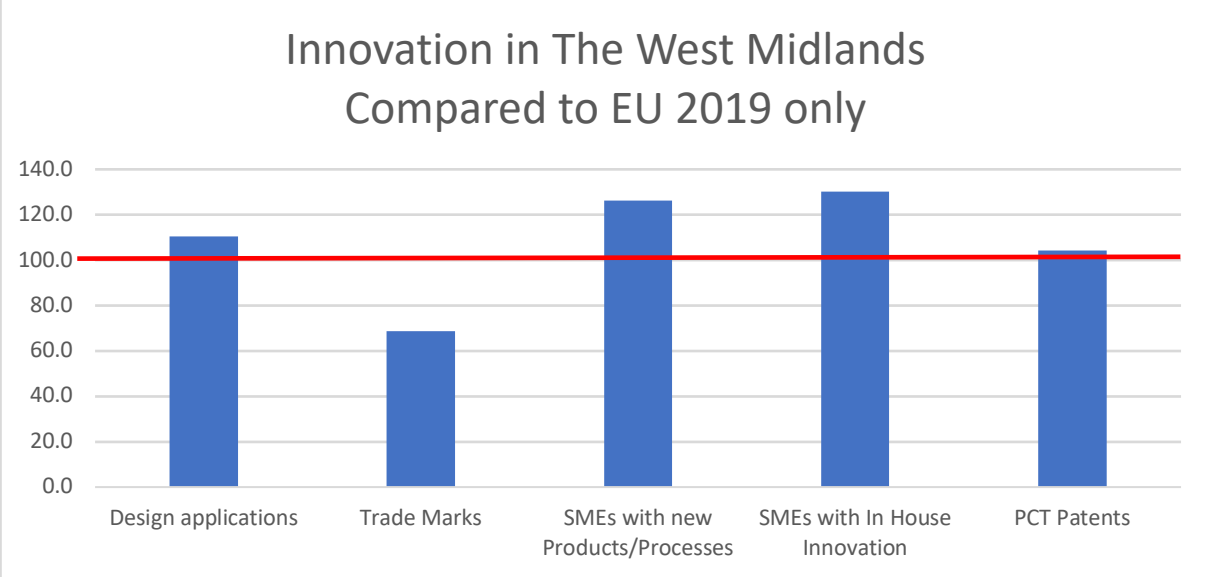

Figure 6Figure 1 **Innovation in the West Midlands compared to EU 2019 only**

Making the comparison with the 2019 data only confirms the conclusions above, and highlights that the region is improving on the overall EU situation.

Current Approach

There are multiple sources of funding available to support and encourage innovation in Coventry and Warwickshire. They are focused on business growth and definitely encompass digital development. In exploring the range of products to support business it is important to keep in mind that use of digital technologies to improve innovation and R&D is only one part of the needs for businesses and that other issues need to be covered. In amongst the wide range of funding projects that support businesses:

- Infrastructure – Access to broadband/5G
- Funding programs to achieve uptake of digitization targets are achieved.
- Funding for digitization in Manufacture– medium and large-scale funding
- Funding programs for innovation – From Start up through to Scale up programs for high growth businesses.
- Funding programs for digital innovation – software programming

Market failure. The Coventry and Warwickshire ESIF document for 2014-2020 describes market failures in this area as[5]:

- Technological or knowledge spill overs – where there is no incentive for companies to exploit or share innovation which does not have a direct potential to increase its profitability;
- Coordination and network failures – where factors including lack of trust high transaction costs or asymmetric information reduces collaboration to achieve innovation;

[5] European Structural and Investment Funds 2014 to 2020 Coventry and Warwickshire European Structural and Investment Funds Strategy: ERDF, EAFRD and ESF Priority Descriptors

- Asymmetric information – related to the above where SMEs often struggle to find investors for innovative projects.

These areas have not been well addressed by the current program of projects.

Best Practice

In addressing this we will highlight best practices from the present funding system drawn from:

- Innovate 2 Succeed – Consultancy aimed at bringing ideas to market;
- Proof of Concept – 40% funding of up to £10,000 for innovative projects;
- Innovation networks – Funding of up to £10,000 for collaborative projects;
- Focus Digital – Funding and support to increase digitisation in Business.

E Procurement

Marja Holopainen, Cursor Oy, Kotka-Hamina Regional Development Company, Finland

Introduction

Definition of the topic and scope of the report

E-procurement or electronic procurement can be defined as the process of B2B (business to business) or B2C (business to consumer) or B2G (business to government) procurement of products and services i.e. purchasing and selling of goods and services through electronic methods, such as Internet as well as other information and networking systems. Most e-procurement takes place via dedicated software platforms, which enable registered and qualified users to browse for suppliers or buyers of products and services.

If you look more closely to B2B and B2C, they are two forms of commercial transactions which differ from each other in many ways. B2C is a process for selling products and services directly to consumers. Consumers buy products or services for personal use. In B2C, consumers who buy products also pay the same price as other consumers. B2B in turn is a process for selling products or services to other businesses. Business buyers purchase products or services for use in their companies. In B2B-buying, the purchasing process is more complex. In B2B, price may vary by customer. Customers who place large orders or negotiate special terms pay different prices to other customers. Payment mechanisms also differ.

E-procurement systems are increasingly used to further simplify purchasing and selling processes. Automated e-procurement helps to ease the purchasing process in many ways. E-procurement can automate supply chains and provide great benefits for buyers and sellers as well as the overall economy.

Therefore, businesses and organizations are nowadays increasingly opting for e-procurement platforms and processes due to their obvious benefits such as:

- reduced costs
- transparent spending

• increased productivity
• elimination of paperwork
• increased transaction speed
• standardized buying
• reduced errors.

E-procurement market is large, and it is expanding rapidly. It is hard to ignore even by businesses that have previously sold only to consumers. Modern businesses are more and more relying on technological advancements to keep up with demand and stay competitive. An increasing number of B2C retailers are e.g. expanding into B2B, taking advantage of changes in technology and B2B e-procurement culture to grow revenue by selling to other businesses. Despite all this, B2B e-procurement is still young and relatively untapped market with huge growth potential.

In this report we focus on B2B e-procurement i.e. process by which companies purchase products and services from other companies online over some digital network or platform.

Current situation

Data on use of Digital technology in the marketplace

Digital technology is rapidly transforming the world's economies and societies. For example, the Digital Single Market (DSM), one of the top ten priorities of the European Commission, aims to open up digital opportunities for people and business and enhance Europe's position as a world leader in the digital economy.

Europe's overall digital performance is monitored and the progress of EU countries in their digital competitiveness is tracked by the results of the 2019 Digital Economy and Society Index (DESI) released by European Commission (results released on 11th June 2019) https://ec.europa.eu/digital-single-market/en/news/digital-economy-and-society-index-desi-2019 . The five dimensions of the DESI are:

1. Connectivity
2. Human capital
3. Use of internet services
4. Integration of digital technology
5. Digital public services

Bearing in mind the topic of this report i.e. B2B e-procurement, dimensions of connectivity, human capital, use of internet services are explored for background information and integration of digital technology is explored statistically in more detail.

According to DESI report 2019, all EU countries have improved their digital performance over the past year. Highest ratings were scored by Finland, Sweden, the Netherlands, and Denmark. These countries are among the global leaders in digitalization. These countries are followed by the United Kingdom, Luxembourg, Ireland, Estonia, and Belgium. Bulgaria, Romania, Greece and Poland have the lowest scores on the index.

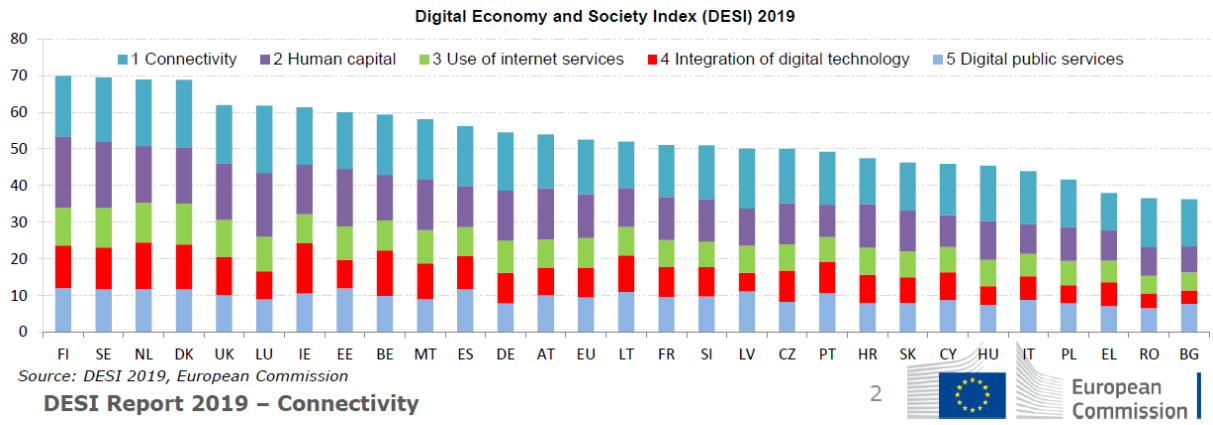

Figure 7 ***Digital Economy and Society Index (DESI) 2019***

DESI report in Connectivity states also that a comparative assessment of fixed broadband (basic, fast and ultrafast) shows that the Netherlands and Luxembourg are the best performers. Greece, Poland and Croatia are amongst the worst. As for mobile broadband, Finland, Denmark, Latvia and Italy are the leaders and Romania and Hungary scored lowest ratings.

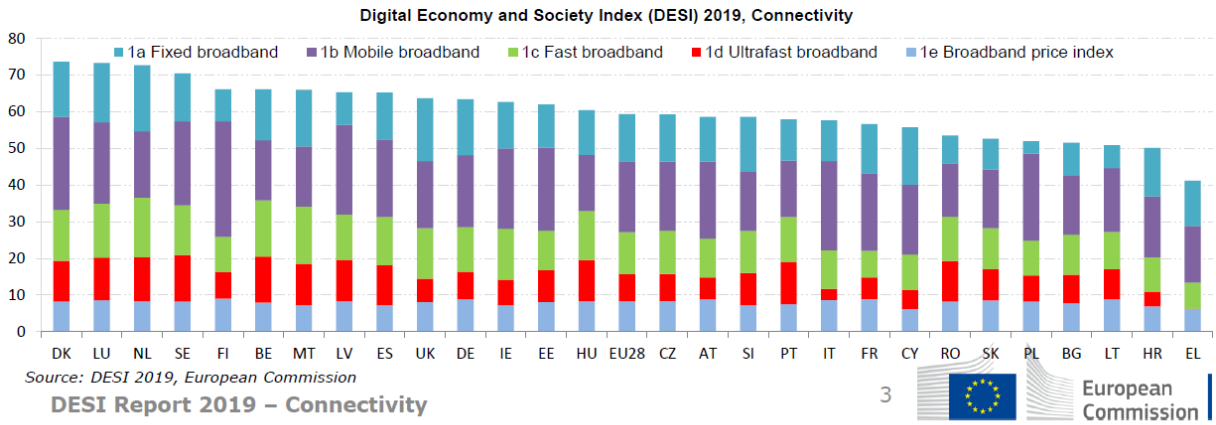

Figure 8 ***Connectivity states (DESI) 2019***

Again, according to Connectivity dimension of DESI report, while a large majority of European businesses use broadband, only 44 % of companies and 41 % of private homes subscribed to fast broadband in 2018. Despite that, there has been a considerable improvement in fast broadband penetration. There has been an increase by more than 20 percentage points (from 23 % to 44 %) for all enterprises in the last 4 years. It is also noteworthy that take-up rate of fast broadband varies greatly between companies of different sizes. While 75 % of large companies benefit from broadband speeds of at least 30 Mbps, only 40 % of small enterprises do so.

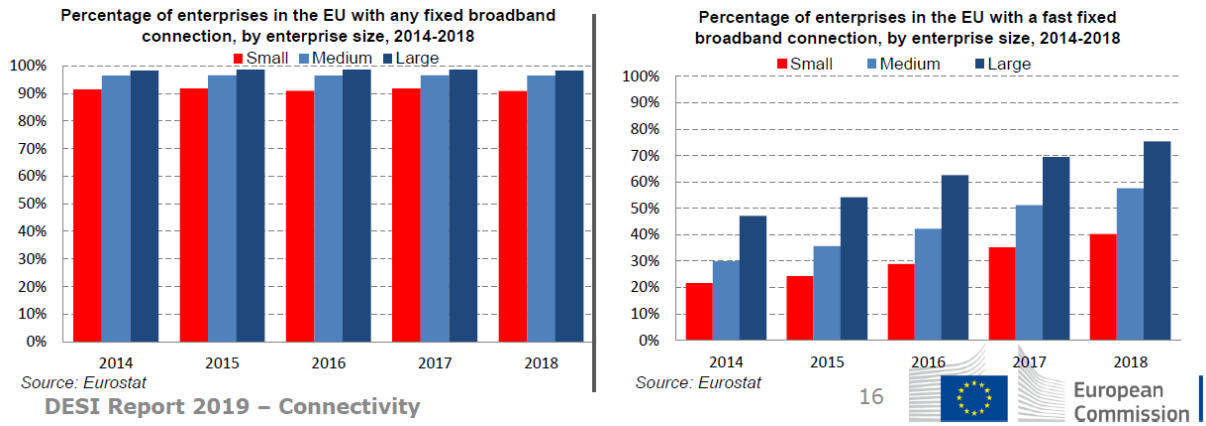

Figure 9 ***Percentage of enterprises in EU with any fixed/fast fixed broadband connection, by enterprise size, 2014-2018 (DESI)***

According to Human capital dimension of DESI report 2019, Finland, Sweden, Luxembourg and Estonia have the highest scores whilst Bulgaria, Romania, Italy and Greece have the lowest ones. This dimension of DESI has two sub-dimensions: 'internet user skills' and 'advanced skills and development'. The former describes the number and complexity of activities involving the use of digital devices and/or the internet. The latter consists of indicators on ICT specialist employment and ICT graduates.

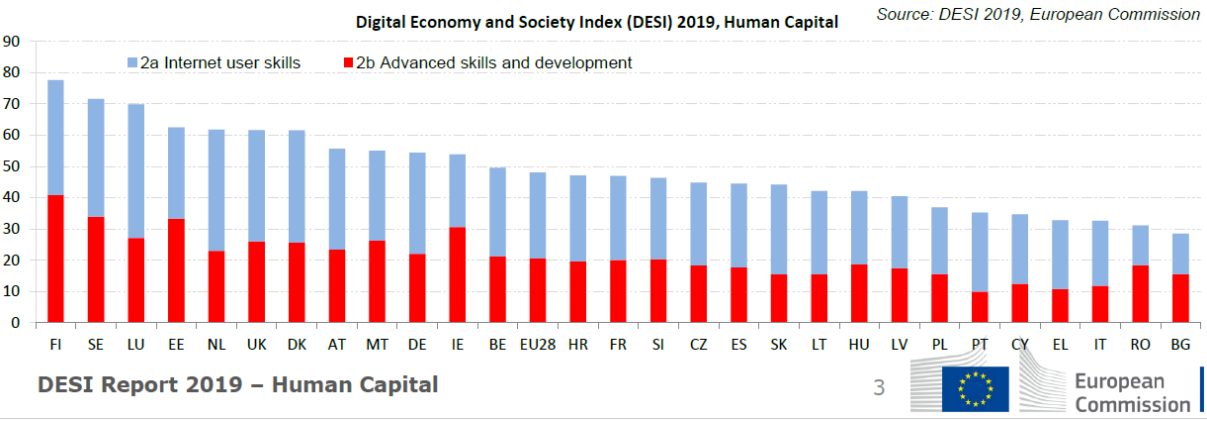

Figure 10 ***Human Capital (DESI) 2019***

Again, the report shows that around 10 % of the EU labour force has no digital skills, mostly since they do not use the internet. 35 % does not have at least basic digital skills required in most jobs nowadays. Digital skills are of critical importance. They are needed not merely to access the labour market but also to harness the benefits of current digital transformation.

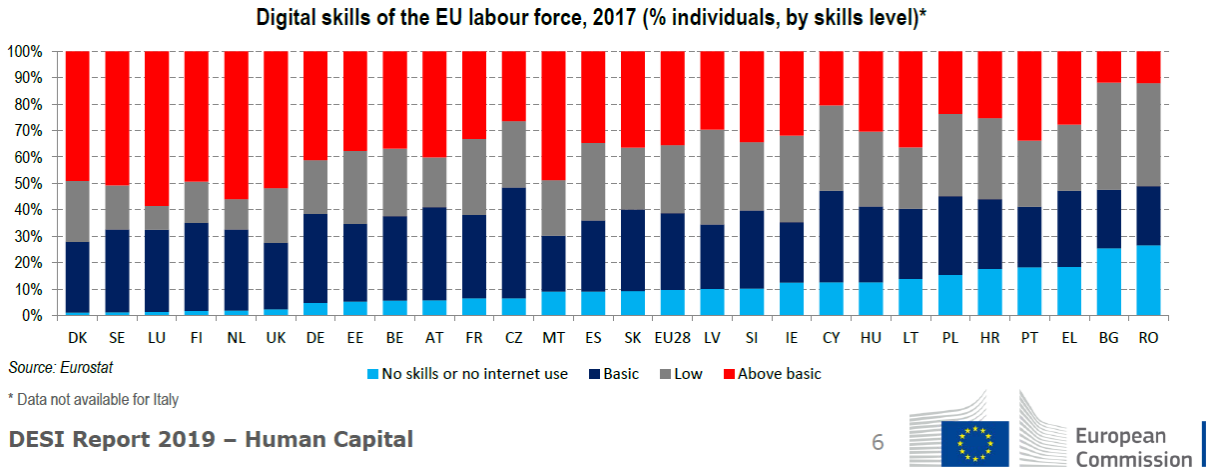

Figure 11 ***Digital skills of the EU labour force, 2017 (% individuals, by skills level)***

According to Use of Internet Services dimension of DESI report 2019, people in the EU take part in a lot of online activities such as using the internet to get news, communicate, shop and so on. Danes, Netherlanders, Swedes and Finns have the most active internet users. They are followed by the UK, Luxembourg, Estonia and Malta whilst Romania, Bulgaria and Greece are at the bottom of the ranking.

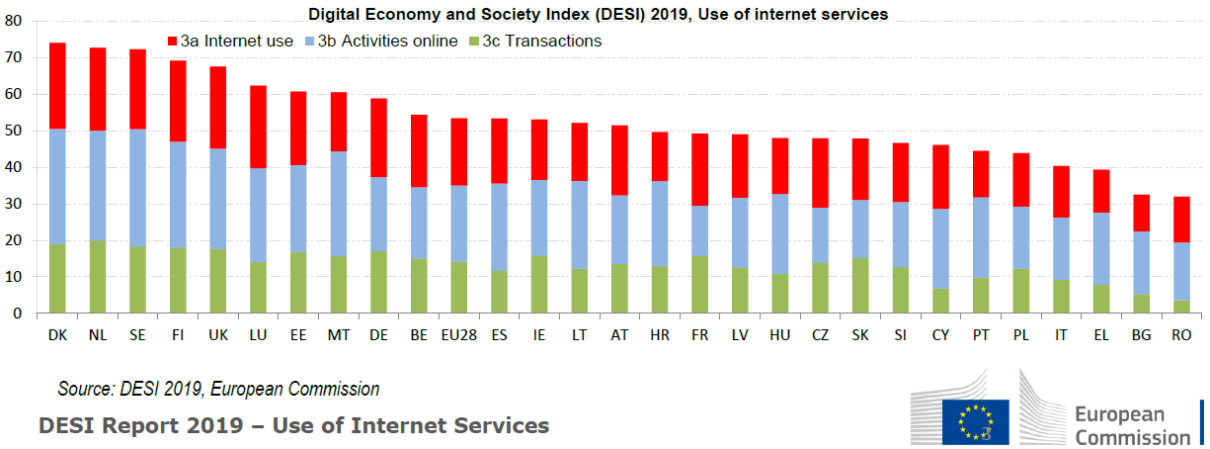

Figure 12 ***Use of Internet Services (DESI) 2019***

The report demonstrates also that the rising trend in e-commerce continued in 2018. Roughly 69 % of EU internet users are now shopping online although e-commerce activity varies considerably across EU Member States. Last year 87 % of internet users in the UK shopped online in comparison to only 26 % in Romania. E-commerce is also strongly affected by variables like age, level of education and employment situation.

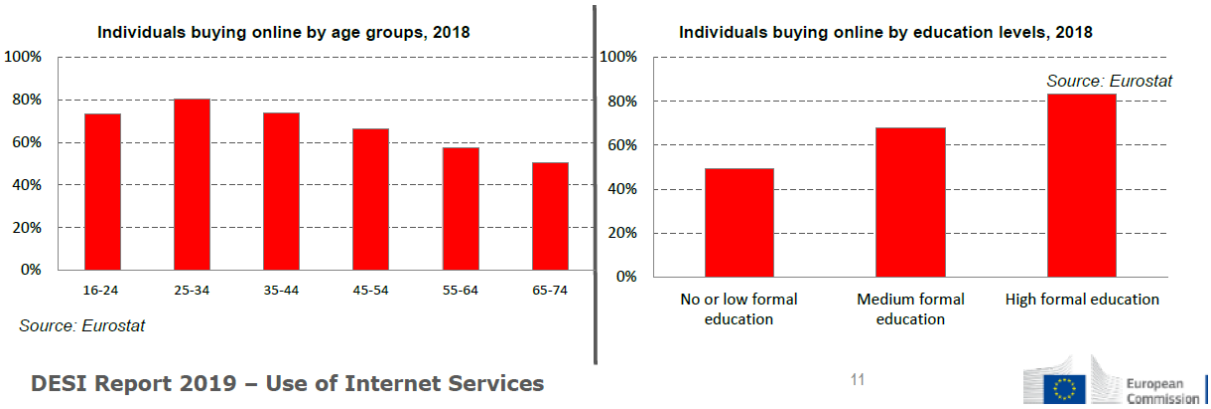

Figure 13 ***Statistics of individuals buying online by age groups/education levels (DESI) 2018***

According to Integration of Digital Technology dimension of DESI report, as a whole Ireland scored highest. The Netherlands, Belgium and Denmark followed close behind. Bulgaria, Romania, Poland and Hungary were the lowest scorers. Dimension of Integration of digital technology consists of "business digitization" and "e-commerce". As shown in pictures below business digitisation has four own indicators: electronic information sharing, social media, big data analysis and cloud solutions. E-commerce in turn includes three indicators: the percentage of SMEs selling online, e-commerce turnover as a percentage of total turnover of SMEs and the percentage of SMEs selling online cross-border.

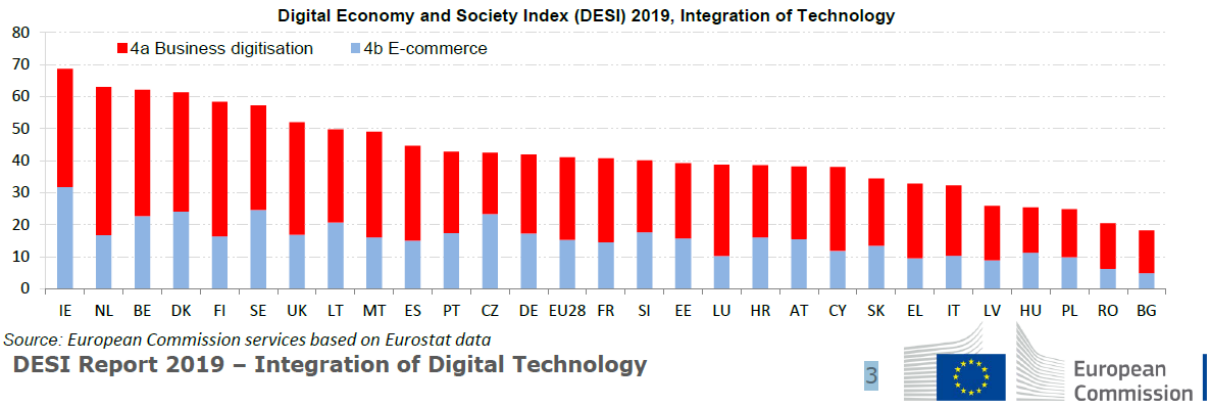

Figure 14 ***Integration of Digital Technology dimension (DESI) 2019***

Integration of Digital Technologies indicators in DESI 2019	EU
4a1 Electronic information sharing	**34%**
% enterprises	2017
4a2 Social media	**21%**
% enterprises	2017
4a3 Big data	**12%**
% enterprises	2018
4a4 Cloud	**18%**
% enterprises	2018
4b1 SMEs selling online	**17%**
% SMEs	2018
4b2 e-Commerce turnover	**10%**
% SME turnover	2018
4b3 Selling online cross-border	**8%**
% SMEs	2017

Figure 15 ***Integration of Digital Technologies indicators 2019***

And in addition, the report demonstrates that enterprises are implementing both e-business and e-commerce solutions. According to DESI report: Regarding e-commerce, Ireland, Belgium and Czechia are among the top five countries in all the three indicators mentioned previously. Denmark is leading regarding the share of enterprises selling online, whereas Sweden ranks 3rd. Sweden is 4th and Denmark 5th regarding the share of e-commerce turnover in total turnover. Bulgaria, Romania and Latvia are yet to exploit the opportunities e-commerce encompasses.

Regarding e-business technologies, the leading countries are the Netherlands (2nd among EU Member States in three indicators: electronic information sharing, social media and big data analysis; 3rd in cloud solutions), Finland (forerunner in the use of cloud solutions) and Belgium (first in electronic information sharing).

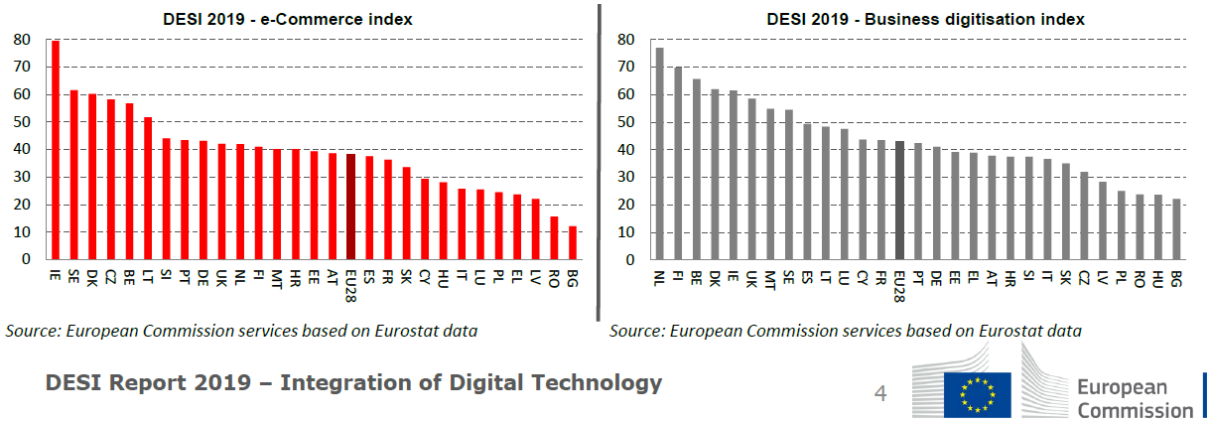

*Figure 16-**Commerce/Business digitisation index (DESI) 2019***

Smart Production

Thorsten Brinkmann, Business- and Innovation-Center Lippe-Detmold GILDE, Germany

Introduction on Smart Production

Smart Production is a technological concept that uses machines connected via the Internet to monitor the production process. The goal of Smart Production is to advance the automation of manufacturing processes and use data analysis to improve production performance.

Smart Production is a specific application of the Industrial Internet of Things (IoT or Industry 4.0) and turns IoT into reality. The implementation of Smart Production involves the integration of sensors into manufacturing machines to collect data on their operational status and performance.

Ideally, the networking of embedded production systems and dynamic business and engineering processes takes place in a networked factory (Smart Factory). It enables the profitable manufacture of products even for individual customer requirements up to lot size 1. In this context, this is also referred to as mass customization (customer-specific mass production).

At universities and research institutes, work is being done on the Smart Factory within the framework of so-called model factories. The most important components and tools in a Smart Factory are: Cyber-physical systems (CPS - Cyber Physical Systems), modern and efficient information and communication technology, big data technologies, embedded systems for controlling and monitoring the Smart Factory and the production process, services of Cloud Computing, flexible and intelligent logistics systems and wireless communication technologies such as Bluetooth or RFID (Radio Frequency Identification).

The cyber-physical systems are responsible for the mediation between real and virtual components. They form the interface between the hardware and the intelligence in the Smart Factory and are exposed to high physical demands. The systems are equipped with sensor, processor and radio technology for data exchange. Due to the huge amount of data that is generated in a Smart Factory over the entire manufacturing process, technologies from the Big Data environment have to be implemented. Large amounts of data, often in unstructured form, have to be stored and processed. Short access times and high-performance data processing are the basis for the Smart Factory concept.

Summary

Digitalization is associated with the 4th industrial revolution. National and global developments are influenced by this. Production processes, trade and services are facing massive changes in the near future. This creates opportunities and risks for companies.

Not only, but especially for smaller companies, the question arises how they can recognize technological and social changes through digitization and the associated changes in their business models at an early stage and react to them in good time.

The SmartFactoryOWL provides companies in East Westphalia-Lippe with an industry 4.0 testing-environment with which they can experimentally and practically initiate the switch to Smart Production.

Current situation

Companies are called upon to increasingly engage in the digital upgrade of their production lines. According to a study by McKinsey, networked production in Germany alone promises growth of 207 billion euros by 2025. But many decision-makers are still acting cautiously. This is confirmed by another study by Deloitte. The reason? There is no concrete idea of the results and goals of networked production. Many companies are not in a position to easily transfer the complex principles of industry 4.0 to their operations.

According to McKinsey, states that are the first to successfully integrate Internet technologies into production have the very best growth prospects. According to McKinsey, Germany is in a promising starting position in perfecting the Internet of Things. If the economy were able to set standards in this field and develop high-revenue business models, this could increase Germany's gross domestic product (GDP) in 2025 by 207 billion euros or almost five percent. At the same time, many new jobs would be created. Conversely, however, this also means that if the changeover fails, just as much economic output will be lost in extreme cases - with all the negative consequences for employment.

According to Deloitte, the opinion of the decision-makers about the possibilities of Smart Production is as far apart as the actual degree of implementation in the companies. For some, it is merely a synonym for more or less new technologies whose benefits have yet to be proven. Others see it as a holistic "Smart Factory" that already creates concrete added value and is integrated across the entire value chain.

A more detailed analysis, however, reveals how unclear the wealth of ideas and concepts and their understanding are in many companies. In many places, the ideally networked and „intelligent factory" seems to be more theory than reality - and it is usually completely unclear what quantifiable added value the individual technologies generate. This in turn makes a well-founded investment decision difficult - or even impossible.

In an international comparison, there are clear differences in the development of Smart Production and Smart Factory. According to Capgemini, the USA plays a leading role here. In Europe, Germany, France and Great Britain occupy a strong position. China has a backlog demand to register. However, more than 50% of the companies surveyed that there are currently planned concrete projects in the Smart Factory sector.

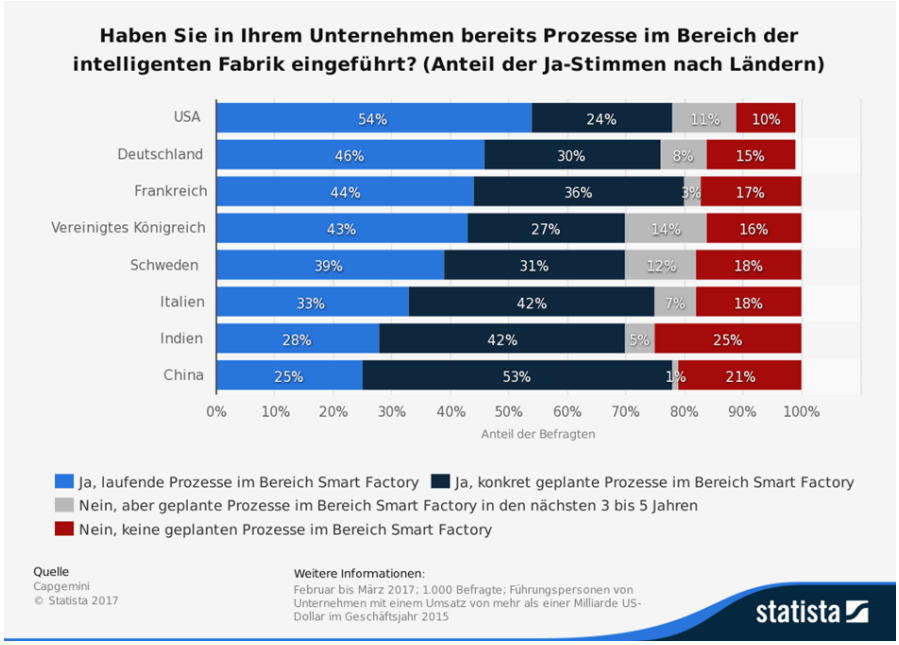

Figure 17 ***Survey on the implementation of smart processes***

A Huawei study compares the industry 4.0 capabilities of China, Germany, Japan and the USA. This provides a differentiated picture of the current situation. Each of the four countries has strengths and weaknesses that need to be exploited or remedied.

In Germany, the importance of the Internet of Things for the economy has been recognized and is concentrated under the keyword Industry 4.0 on the manufacturing industry. The German Industry 4.0 Initiative is supported equally by politics and the private sector and is bundled under the umbrella of the Industry 4.0 Platform. The concentration on manufacturing reflects the importance of this sector for the German economy. The manufacturing industry in Germany generates an above-average share of gross value added for a developed country and is of great importance for the German labour market.

In the development of industry 4.0, far-reaching changes in the world of work are to be expected. Entire job profiles will disappear or change fundamentally, especially low- and medium-skilled workers will find it more difficult to find jobs. Against this background, a well-educated population and an efficient education system are important prerequisites for mastering the challenges facing industry.

Current Approach

Challenges

As a general rule, many manufacturing companies are afraid of losing security and of spending too much time and money. This results in high costs for the implementation of sensors on a broad basis. The uncertainty of companies is further exacerbated by the complexity of developing predictive models.

Another, possibly biggest challenge is the processing of large amounts of data - Big Data. This poses a great challenge for IT systems. Nevertheless, experts are certain that data masses of the size required for Smart Production can be processed without any problems within a few years. However, it is important that all machines speak one "language", i.e. you should choose one or a few types of communication when developing such systems.

However, the lack of standards and interoperability is the biggest obstacle to the widespread use of smart production. Technical standards for sensor data have not yet become so widespread, preventing different types of machines from exchanging data and communicating effectively with each other.

In the United States, the National Institute of Standards and Technology (NIST) is trying to develop and promote standards. In Germany, the Digital Association Bitkom, the German Engineering Federation and the German Electrical and Electronic Manufacturers' Association want to draft standards. However, there is no end in sight to the standardization process.

In summary, Deloitte sees the greatest risks of Smart Production in the following aspects:

- Securing IT security for smart industrial applications
- Technology standards not yet established
- Lack of know-how
- Fear of setting the wrong priorities and/or being unable to produce competitively in the long term due to lack of knowledge and missing business cases

Opportunities

The Smart Factory offers a number of advantages over traditional production processes and manufacturing facilities. According to Deloitte, the biggest opportunities for Smart Production are through supporting sustainable business growth, by more efficient process design, by more ergonomic workplaces and environments, an early quality assurance using Smart Analytics applications and ensuring the long-term satisfaction of interface partners and customers. These benefits include in detail:

- Lean and optimized processes
- lower production costs
- shorter production times
- Production of individual products at mass product prices
- Increase in productivity
- lower warehousing costs
- transparent supply chain
- automated, efficient ordering processes
- Lower personnel expenses in production
- Greater flexibility in production
- Shorter time-to-market for new products
- Fast implementation of innovations
- Fast adaptation to new or changed product requirements
- Consumption-controlled production supply
- increased delivery reliability
- agile reaction of the production process to fluctuations in market demand

Regional Support

Many companies do not know how they can shape the first steps towards digitisation and where the greatest potential lies. The SmartFactoryOWL determines these potentials and supports companies in their entry into the digital age.

The SmartFactoryOWL is a joint research and demonstration factory of Fraunhofer IOSB-INA and the Technical University OWL. It is an industry 4.0 demonstration center and an official test field of the international Industrial Internet Consortium (IIC). SmartFactoryOWL is also an accredited test environment and a member of the Labs Network 4.0 of the Industry 4.0 platform. SmartFactoryOWL also belongs to the "EU listed Key Enabling Technologies Centre".

Through guided tours and qualification offers in the SmartFactoryOWL, company representatives are introduced to the technologies of networked digitization and shown how future business models can emerge from it: From product development to production and networking. The future of production and work is already visible today in the SmartFactoryOWL. The services of the SmartFactoryOWL offer a broad spectrum around the topic industry 4.0 and everything that is relevant for companies, their employees and their (future) customers.

The SmartFactoryOWL is a certified industry 4.0 test environment. In this industrial environment prototypes can be developed and tested for use in production environments. This allows especially small and medium-sized companies to be supported intensively, e.g. in projects lasting one to several weeks for the development of new products. This ensures an optimal market launch.

Best Practice

Three good examples on Smart Production/Smart Factory are presented in the good practices section: “SmartFactoryOWL”, “Smart-Innovation-Campus”, and the third is „Training programme for transfer mediators“, which trains key multipliers on their own digitisation skills to help their target groups, particularly small and medium-sized enterprises and to develop Smart Production.

E-Sales & Marketing

Georgios Kouklakis, Chamber of Magnesia, Volos, Greece

Introduction

E-Sales

In Europe, the creation of a Digital Single Market (DSM) is key to global e-Commerce. SMEs are invited to increase their competitiveness while ensuring the economic profit by adopting good practices in the field of digital sales. Future Ecom project aims to provide policymakers with the knowledge and understanding to direct SMEs to take full advantage of digitisation and atomisation.

Electronic commerce or e-Commerce is a business model that lets enterprises and individuals buy and sell things over the internet. Whereas e-business refers to all aspects of operating an online business, e-Commerce refers specifically to the transaction of goods and services. E-Commerce has helped businesses establish a wider market presence by providing cheaper and more efficient distribution channels for their products or services. It can be divided into e-Commerce sales (e-sales) and e-Commerce purchases (e-purchases).

There are five main types of e-Commerce models that can describe almost every transaction that takes place between consumers and businesses.

- Business to Consumer (B2C):

  When a business sells a good or service to an individual consumer (e.g. You buy a pair of shoes from an online retailer).

- Business to Business (B2B):

  When a business sells a good or service to another business (e.g. A business sells software-as-a-service for other businesses to use)

- Consumer to Consumer (C2C):

  When a consumer sells a good or service to another consumer (e.g. You sell your old furniture on eBay to another consumer).

- Consumer to Business (C2B):

  When a consumer sells their own products or services to a business or organization (e.g. An influencer offers exposure to their online audience in exchange for a fee, or a photographer licenses their photo for a business to use).

- Business to Government (B2G):

  When a business sells a good or service to government agencies at the federal, state, and local levels (e.g. A business providing IT consulting to a local government agency).

Recently, the growth of e-Commerce has expanded to sales using mobile devices which is commonly known as "m-commerce" and is simply a subset of e-Commerce.

The largest category of e-Commerce is business-to-business (B2B) commerce. This involves enterprises conducting e-procurement, supply chain management, network alliances, and negotiating purchase transactions over the internet. Businesses use e-Commerce to reducing expenses, increasing efficiency, and improving their business relationships with a limited number of key suppliers.

EDI is one of the main technologies that help organizations achieve these goals and one of the oldest and most successful technologies used in B2B e-Commerce. A dictionary definition is “A

comprehensive set of standards and protocols for the exchange of business transactions in a computer-understandable format". Businesses use EDI to integrate and share a range of document types — from purchase orders to invoices to requests for quotations to loan applications and more. In most instances, these organizations are trading partners that exchange goods and services frequently as part of their supply chains and business-to-business (B2B) networks.

Digital marketing

Digital marketing is an umbrella term for the marketing of products or services using digital technologies, mainly on the Internet, but also including mobile phones, display advertising, and any other digital medium. These campaigns are becoming more prevalent as well as efficient, as digital platforms are increasingly incorporated into marketing plans and everyday life, and as people use digital devices instead of going to physical shops.

Digital marketing such as geofencing marketing, loyalty schemes (customer loyalty program), beacon marketing, social media marketing, RFID marketing (radio frequency identification) is becoming more and more common in our advancing technology.

- Geofencing is a technology which draws a virtual line around a physical area so that a signal can be sent to a mobile electronic device such as a phone inside this line or when this line is crossed.
- Customer loyalty programs/schemes are structured marketing strategies designed by SMEs to encourage customers to continue to shop at or use the services of businesses associated with each program by offering special benefits such as discounts, rebates, free products, or other promotions.
- Beacon marketing involves the use of beacons to engage with customers. A beacon is a small, physical object that receives location data from nearby devices via Bluetooth. Beacon data tells the app precisely where in the store customers are walking, which helps optimize the in-store experience. For instance, marketers using beacon marketing can send customers timely, relevant messages about nearby products.
- SMEs crave sources of data to optimize their business. RFID (radio frequency identification) is a tracking technology that uses small tags or chips to transmit a signal to remote scanners by creating a whole new set of data about their in-store environments, product movement, and customer behavior.
- Social media marketing (SMM) refers to techniques that target social networks and applications to spread brand awareness or promote particular products.

Summary

In Europe, the creation of a Digital Single Market (DSM) is key to global e-Commerce. SMEs are invited to increase their competitiveness while ensuring the economic profit by adopting good practices in the field of digital sales.

The largest category of e-Commerce is business-to-business (B2B) commerce. This involves enterprises conducting e-procurement, supply chain management, network alliances, and negotiating purchase transactions over the internet. SMEs adopt specific digital marketing strategies to enable

successful online sales and increase turnover percentage. The most popular is geofencing marketing, loyalty schemes (customer loyalty program), beacon marketing, social media marketing, RFID marketing (radio frequency identification).

The use of social media has played an important role in Greece, which has led to increased use of the internet. Social media have also been a key tool in the digital promotion of goods and services.

It also mentions the role of policymakers in implementing new policy instruments to exploit digitisation and the challenges SMEs are facing in today's competitive environment such as limited trust in online transactions, lack of know-how and also the opportunities they can seize from a non-border market.

Current situation

Data on use of Digital technology in the marketplace - European level (from Eurostat)

The Digital Single Market for Europe is a major priority of the European Commission. The strategy is built on three pillars:

- Better access for consumers and businesses to digital goods and services across Europe.
- Creating the right conditions for digital networks and innovative services to flourish.
- Maximizing the growth potential of the digital economy. More specifically, for the first pillar, the Digital Single Market strategy aims at removing the key differences between online and offline worlds, and to break down barriers to cross-border online activity.

People in the EU engage in a range of online activities — they actively use the internet to get news, browse social networks, communicate, shop, use online banking services and much more. Such activities are captured in DESI's Use of internet services dimension. Denmark, the Netherlands, Sweden and Finland have the most active internet users, followed by the UK, Luxembourg, Estonia and Malta. Romania, Bulgaria and Greece are, by comparison, the least active.

Another dimension of the DESI which applies to our report is the Integration of digital technology.

Integration of digital technology covers

- Business digitisation
- E-Commerce

Business digitisation has four indicators (as the % of enterprises using): electronic information sharing, social media, big data analysis and cloud solutions.

E-Commerce includes three indicators: the percentage of small and medium-sized enterprises (SMEs) selling online, e-commerce turnover as a percentage of total turnover of SMEs, and the percentage of SMEs selling online cross-border.

One out of five enterprises in the EU-28 made electronic sales in 2018. The percentage of turnover on e-sales amounted to 17.4% of the total turnover of enterprises with 10 or more persons employed.

In the EU-28, between 2012 and 2018, the percentage of enterprises selling online increased by 3.6 percentage points and the companies' turnover realised from e-sales increased by 2.9 percentage points.

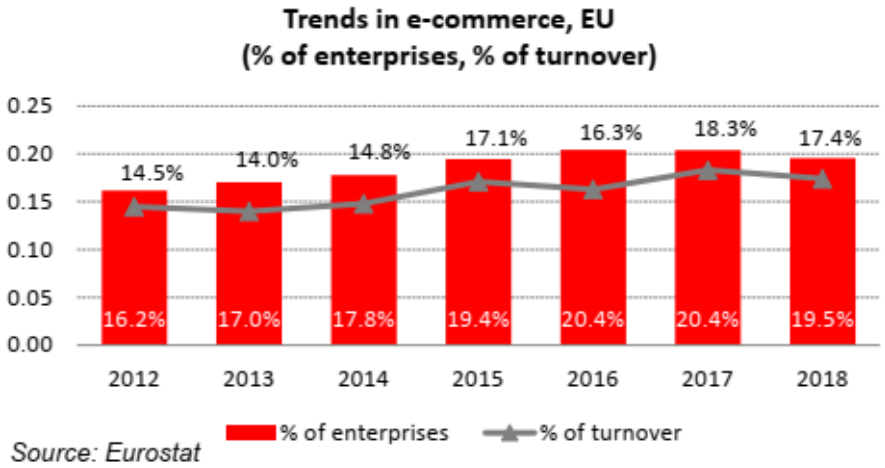

Figure 18 ***Trends in e-commerce, EU***

The share of enterprises conducting e-sales and the turnover from e-sales varies significantly according to size. The share of SMEs making e-sales (18.9%) is less than half compared to the share of large enterprises (42.5%). Similarly, the share of the e-sales' turnover on the total turnover by SMEs (10.1%) is less than the half of the share generated by the large ones (24.1%).

E-Commerce can be broadly divided into two types: web sales and Electronic Data Interchange (EDI-type) sales as mentioned in the introduction.

The percentage of enterprises selling online (web or EDI type) ranged from 8% in Bulgaria to 12% in Greece to 35% in Ireland, followed by Sweden (32%). Around 14% of the enterprises sell through a website, 2% exploit both channels, while slightly more than 3% make use of EDI-type sales.

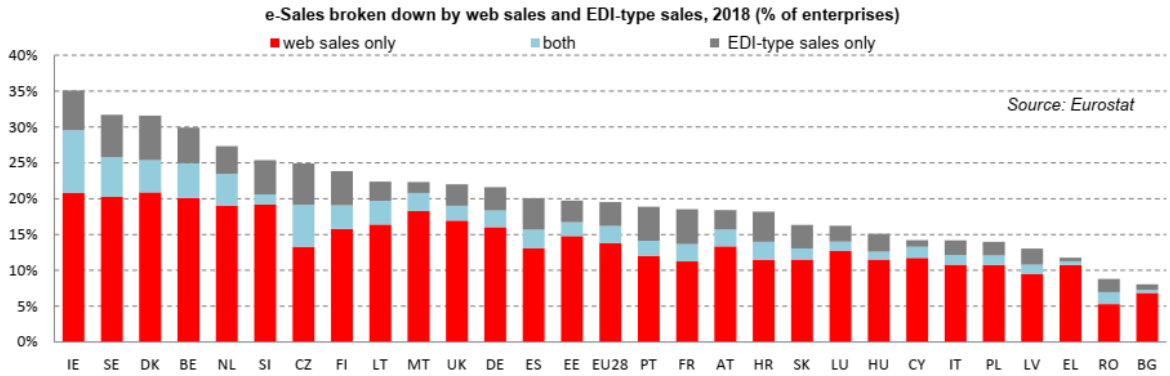

Figure 19 ***e-Sales broken down by web sales and EDI-type sales, 2018***

Web sales, made through the enterprise own website or third parties one (including marketplace), is the most common option for e-sales. More than twice as many companies with web sales sell on their websites or apps than in marketplaces.

Altogether 13 EU Member States reported that over 90% share of enterprises with web sales via own sites, with Croatia, Slovakia, Finland and Estonia are leading in this group of countries. Enterprises in Finland, Croatia, Denmark and Czechia have the lowest percentages of web sales via marketplaces (below 20%). Selling online via marketplaces was the most common option in Italy (64%), Cyprus, Poland (both 53% of enterprises with web sales) and Greece (42%).

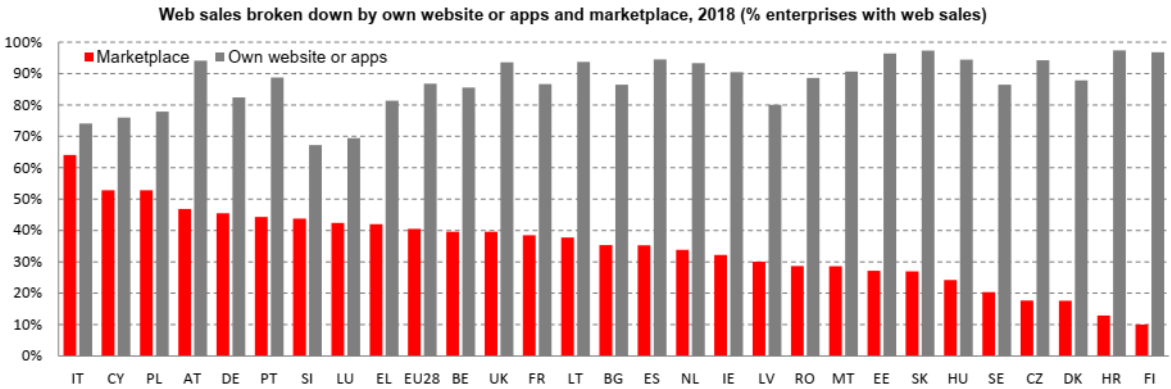

Figure 20 ***Web sales broken down by own website or apps and marketplace, 2018***

In the EU-28, enterprises gained 7% of their total turnover from web sales. 87% of it (equal to 6% of total turnover) was gained from web sales via own website or apps and only 13% (equal to 1% of total turnover) from sales via online marketplaces. Turnover from sales on own websites or apps had the highest share in total turnover in Belgium (14.2%), Ireland (12%), the UK (8.3%), Sweden (8.1%) while the percentage of Greece was about 3,8%.

The highest share of turnover from selling via the marketplace (from the total turnover of the enterprise) was gained in Ireland (2.5%), in Netherlands (1.6%) whereas in Greece was about 0.2%.

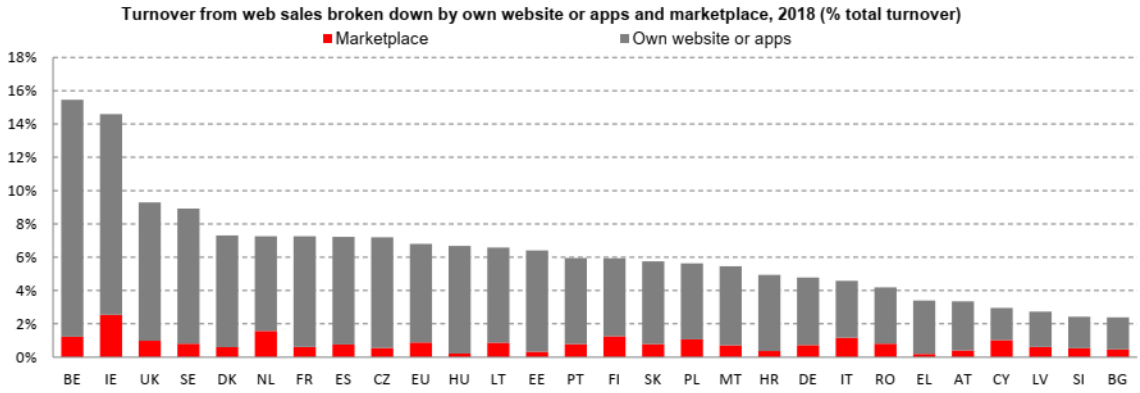

Figure 21 ***Turnover from web sales broken down by own website or apps and marketplace, 2018***

SMEs adopt specific digital marketing strategies to enable successful online sales and increase turnover percentage. Social media (along with other technologies such as cloud computing, mobile access to the internet, and "big data") enable business to grow and innovate.

The most popular than other types of social media were Social networks. 45% of enterprises in the EU used social networks empowering customers to connect by creating personal information profiles, to share experiences, to express opinions, to exchange information and, most importantly, to create communities of people with common interests around the enterprises' product brands. Since 2013, the use of social networks has increased more than that of the other types of social media. Denmark and Cyprus (31 and 28 percentage points respectively) reported the highest increases, followed by Finland (27 percentage points), Luxembourg and Belgium (26 percentage points each) and Greece (21 percentage points).

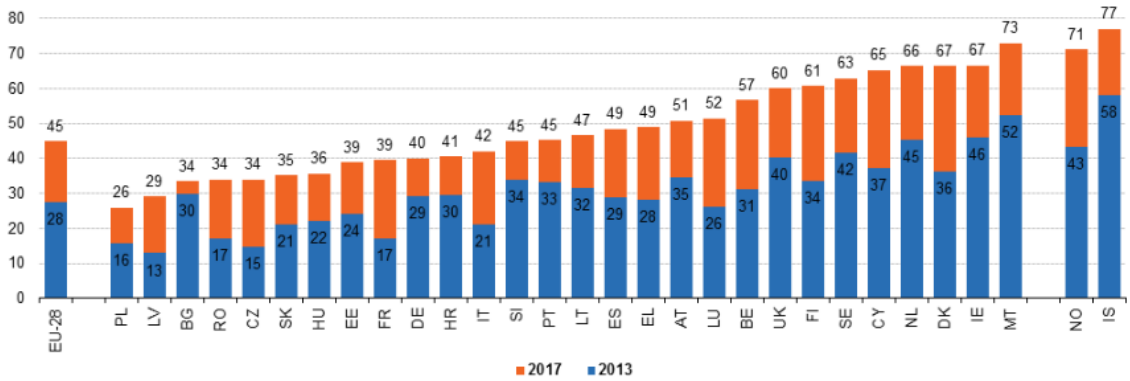

Figure 22 ***Growing use of social networks 2013-2017***

Local Level

In Central Greece during 2014-2018 the percentages of people who have ordered products or services from the internet for private use (B2C) ranging from 21% in 2014 to a significant increase in 2015 of 7 percentage points, following a decline in 2016-2017, however Eurostat data show an increase (2 percentage points) over the past two years (27%). Growth rates recorded compared to other regions of the European Union rank our region relatively low.

According to the data above, all EU countries show a significant increase in online sales. Greeks have embraced social media networks and blogs as a form of communication, networking, and expression. The use of social media has played an important role, which has led to increased use of the Internet but not in the field of online sales where Greece ranks in the last positions compared to other European countries. The strong preference of the Greek users to social media turns brands and advertisers to the social media space.

Current Approach

There are various financing programs in our country such as Regional Operational Programs. The overall objective of the ROP is to boost economic development and to create employment in Greece. Furthermore, it seeks to support enterprises to increase their competitiveness and to become more innovation-driven. There is a driving need to emphasize e-sales and digital marketing. As the data from the graphs above show (Current situation chapter, a significant proportion of business turnover came from online sales. However, many problems need to be resolved and many barriers to be overcome.

What are the challenges?

- Limited commercial trust and user concerns for transaction security.

- Older people tend to speak only Greek while younger people do not always feel confident with their second language. Greek society is not very familiar with electronic transactions and services.
- Policy actions by the Greek government fall behind in helping individuals and professional acquiring the necessary e-skills, being fragmented and lacking an institutional approach.
- Low quality of available Greek electronic services.
- Corporate culture towards Internet business is poor, affecting negatively the quality of service and user experience.
- The economies of scale, that are vital to support sustainable long-term operations, are not easy to be achieved during the recession.
- The costs for maintaining high-quality Internet content and services in the long run are high, thus discouraging local service providers from entering or staying in the market.
- Businesses and entrepreneurs are concerned about the protection of their intellectual property rights.
- Businesses lack the corporate culture and the operational structure to deliver high-quality content and services in the long-term.
- Public sector's initiative to promote the demand for and the supply of electronic services has proven fragmented and insufficient.
- Difficulty of integrating existing databases and transaction-processing software designed for traditional commerce into the software that enables e-Commerce.
- Many enterprises have had trouble recruiting and retaining employees with the technological, design and business process skills needed to create an effective e-Commerce presence.

What are the opportunities?

- A business can reduce the cost of handling sales inquiries, providing price quotes and determining product availability by using e-Commerce in its sales support and order-taking process.
- E-Commerce provides buyers with a wider range of choices than traditional commerce with an easy way to customize the level of details in the information they obtain about a prospective purchase.
- E-Payments can be easier to audit and monitor than payments made by cheque, protecting against fraud and theft losses.
- E-commerce can also make products and services available in a remote area.

Best Practice

In the region of Central Greece, there is no any good practice in e-sales. However, in areas such as engineering services and agriculture, the region has shown significant progress in the last years.

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Global B2B E-Commerce in the US & EU

Ole Madsen and Lone Johansen, Business Development Centre North Denmark and North Denmark Region, Aalborg, Denmark

Introduction

The key presentation at the partner meeting in Denmark on "Global B2B e-commerce in the US & EU" is by Jacob Shellenberger-Bessmann, Senior Commercial advisor at the ministry of Foreign Affairs of Denmark, New York and Sascha Domula, E-commerce and Marketing Advisor at the Ministry of Foreign Affairs of Denmark, Berlin.

Danish companies have high online sales internally in Denmark and are very good at adopting e-commerce, however not very good at using e-commerce for export. DK has an e-export deficit. Therefore, the global e-commerce team under the Danish Trade Council was established to onboard companies.

The offerings of the E-commerce team include:

1. Entering markets;
2. Accessing platforms - overview of partnerships both existing and future - most of them are B2C platforms but in the future, there will be more focus om B2B platforms;
3. Optimizing processes – support via networks, pushing brands, working with service providers;
4. Distributing products.

In Denmark we have written about this good practice of The Danish Ministry of Foreign Affairs´ E-Export Program and you can read more about it at our Future Ecom website if you are interested in knowing more about it https://www.interregeurope.eu/policylearning/good-practices/item/3508/ministry-of-foreign-affairs-e-export-program/, also in the section of good practices.

Digital competences are very important for the companies if they want to be successful in B2B e-commerce. The challenge is that many companies have outsourced their IT competences the last years and therefore it is very difficult for them to incorporate the new digital technologies in their companies. That is why we also had a presentation on "Digital force of imagination" by Reimer Ivang who is Ph.D., Business Researcher and CEO and founder of Ivang.dk/Better World Fashion. You can also read a short introduction to Digital force of imagination in this report.

B2B introduction

Companies operating in the B2B e-commerce space follow either the direct model or the marketplace model to conduct their business. The direct model involves companies setting up their own platforms and selling directly to the buyers. A marketplace on the other hand is a platform where many companies sell their products alongside their competitors.

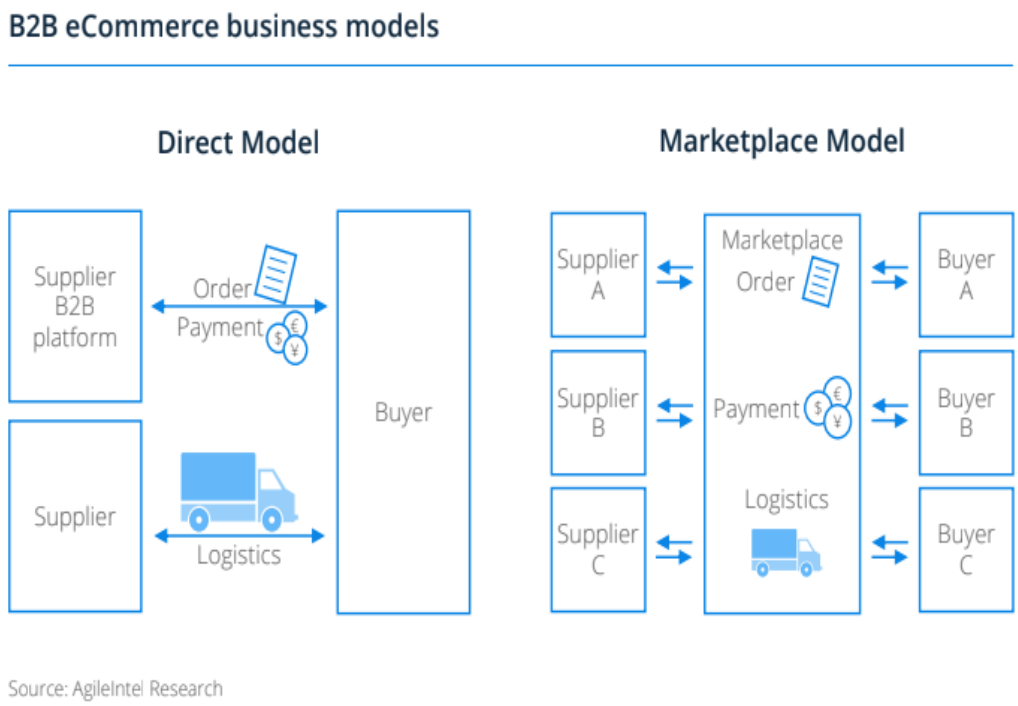

Figure 23 ***B2B eCommerce business model***

B2B vs B2C

In B2C commerce, the motto is simply "product sold, target achieved". B2B customer relationships, on the other hand, are traditionally more long-term. The purchasing process is generally much more complex here variables such as delivery conditions, logistics or assembly services come into play. There is often a long-term, personal and service oriented relationship between suppliers and companies. Up to now, B2B has been relatively safe: once a customer has been won, the chances are good that a long-term business relationship will develop.

You can see some of the differences between B2B and B2C at the figure below.

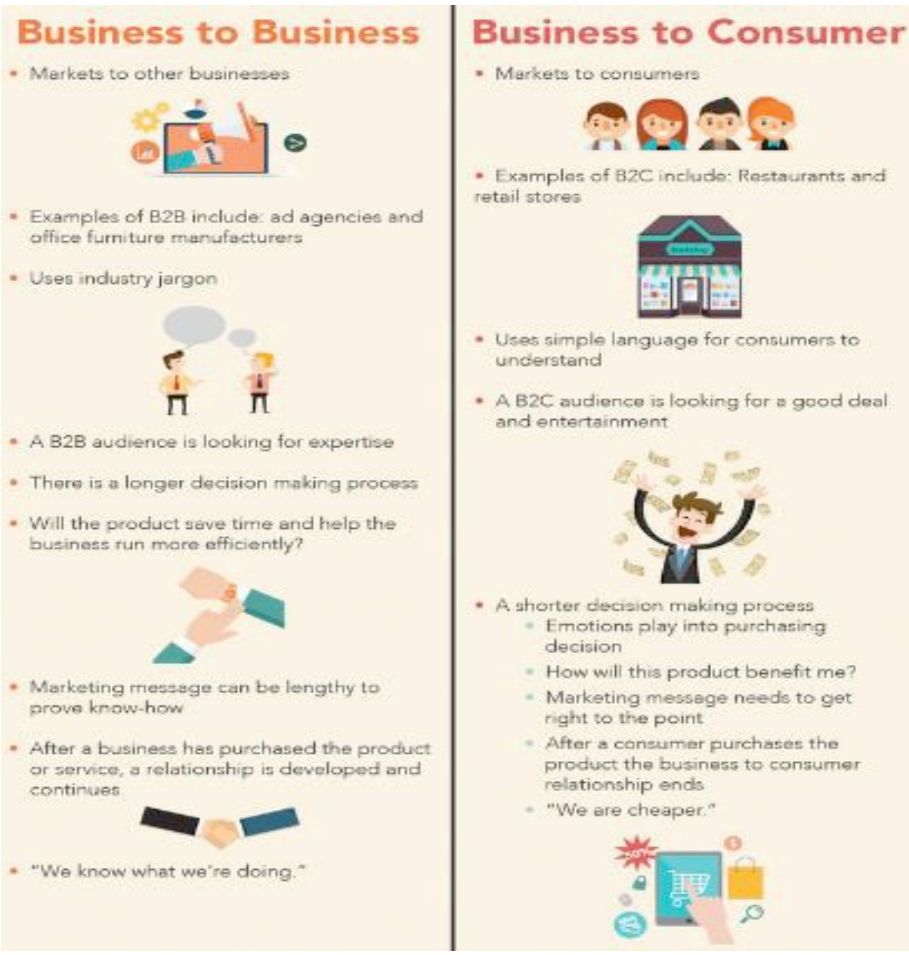

Figure 24 ***Differences between B2B and B2C***
Source: *Presentation of the Danish Ministry of Foreign Affairs at the partner meeting.*

Vertical and horizontal market

B2B is much more complex than B2C. B2C is short term after sale of product whereas B2B is traditionally longer term and usually with more focus on customer relationship.

A vertical market is used in the national economy to describe a market in which goods and services from business segments of a value chain in a particular industry are offered.

A horizontal market is a market in which the same products, i.e. goods and services, are sold to companies in different sectors.

You can see an illustration at the figure below.

Figure 25 ***Vertical and Horizontal Market***
Source: *Presentation of the Danish Ministry of Foreign Affairs at the partner meeting.*

B2B e-commerce sector penetration

Data from France show that some sectors like Travel/transportation, furniture/office supplies have been among the sectors that have most quickly adopted to B2B ecommerce

The more mission critical a purchase is and the more frequently you use the good, the more likely it is that a company will use more old school sales channels. The less critical the purchase is (pens, paper, etc.), the more likely companies are to use B2B.

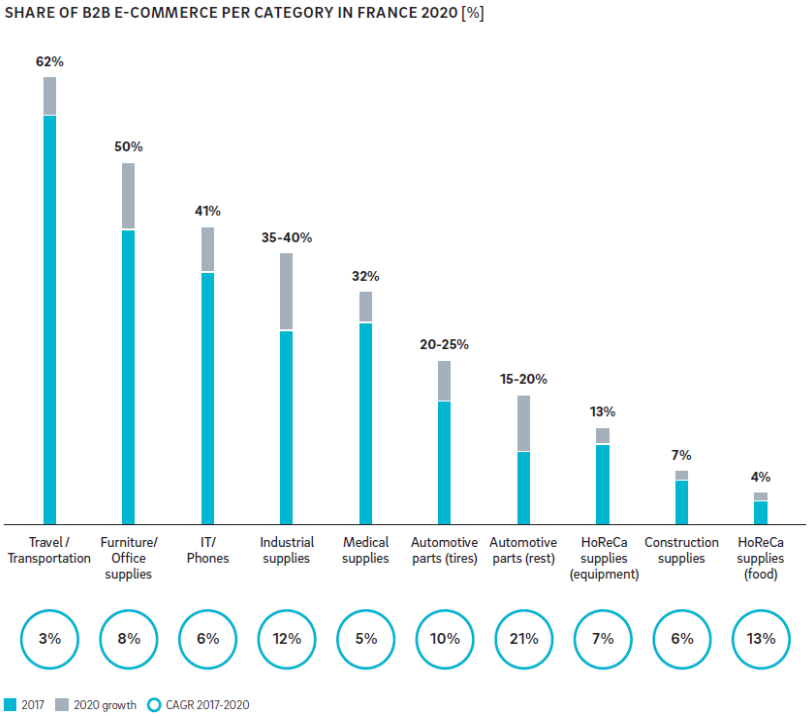

Figure 26 ***Share of B2B E-commerce per category in France 2020***

Amazon also has a B2B platform for businesses – pretty much the same as the B2C platform but with a business focus and higher quantities. Amazon closes and removes companies if they or their

products do not live up to expectations. Amazon focuses on customers' experience and if too many customers complain, Amazon may close the account.

Summary

The partner meeting in Aalborg, Denmark was on the subject "Global B2B e-commerce in the US & Europe". The report looks into global B2B e-commerce but also specific into e-commerce in the US & Europe. Another subject is the digital challenge for B2B e-commerce and the concept of "Digital force of imagination" is introduced.

At the end of the report we sum up on the barriers and opportunities for global B2B ecommerce in the US & EU.

Current situation

Global B2B e-commerce overview

Most companies don't know about the B2B marketplaces and platform possibilities that exist. The B2B marketplace is at least twice as big as the B2C marketplace but not known to most people. Predictions for the future are that the B2B platforms/marketplaces will follow the development and growth of the B2C platforms, that are taking over consumer sales.

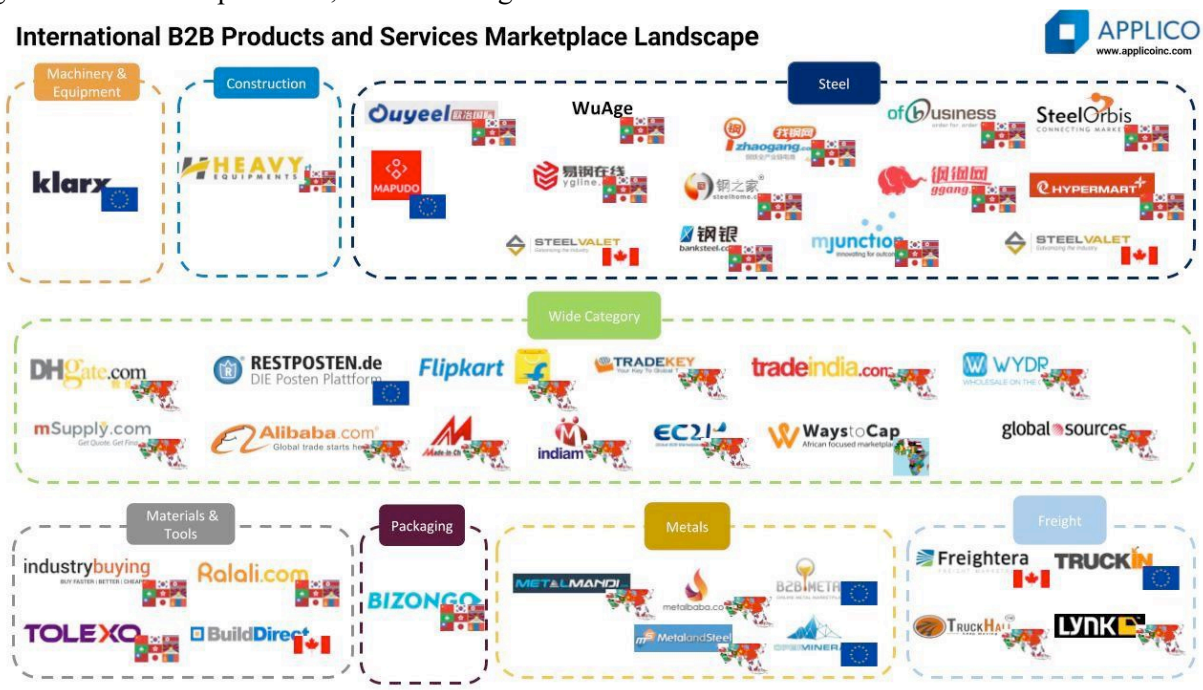

Figure 27 ***International B2B Products and Services Marketplace Landscape***

B2B growth

In B2C business, online platforms and marketplaces are already established business models. Online platforms and marketplaces are becoming more and more important in the B2B sector. Why? For the buyers of a company, procurement via the platforms is practical. For retailers, B2B marketplaces are a good way to open up new markets and opportunities. The growth of B2B e-commerce makes complete sense because B2B buyers are essentially B2C buyers who expect seamless, high-quality online purchasing experiences.

Amazon and Alibaba, for example, have set up similar platforms/marketplaces to their B2C platforms. B2C is very developed and B2B is in its start-up phase. The market place of Alibaba does not have own stock, so it is a true market place. Amazon has many products owned by Amazon, but majority is sold by third parts. They only make money on cloud services, they don't earn anything on selling products. Scary for others trying to do the same, unless they sell specialized products. Room for growth = niche market with specialist knowledge.

Status of the major e-commerce markets

Asia: Dominated by pure players with huge market penetration and global reach.

EU: Many legacy players that provide high level of service for their clients and still have a window of opportunity to launch their own market places – less profitable but necessary.

US: Service level in the US has not been that high in B2B so market places have had an easier time gaining momentum.

Global B2B: buyers' behaviour & Continental differences

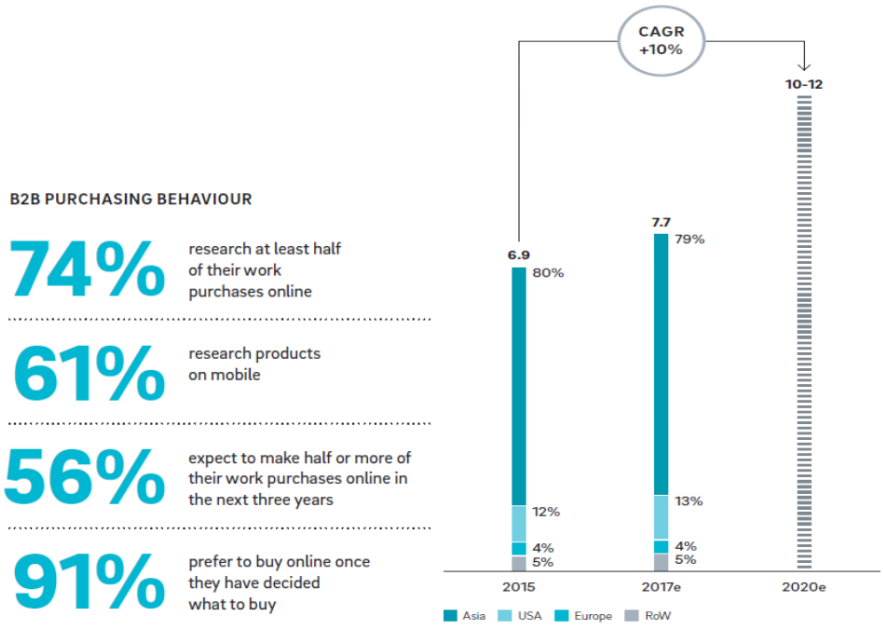

Figure 28 ***B2B purchasing behaviour and continental differences***
Source: *Presentation of the Danish Ministry of Foreign Affairs at the partner meeting.*

B2B Europe vs world

B2B is growing continuously worldwide and predicted to be worth **US$12.2 trillion** in 2019 corresponding to a 13% increase since 2013. Expected volume in 2019 for Asia/Pacific (concentrated in China) is **US$ 9.8 trillion**, USA **US$ 1.4 trillion** in 2019 up from US$606 billion in 2013. The size of the European market was US$255 billion in 2013 and is going to increase to **US$355 billion** in 2019.

B2B Logistics Europe vs World

As concerns B2B logistics, the EU performs well at country level (top 10 is EU countries) but if we look at logistics at EU level (countries combined), the performance is not as good.

Closed marketplace is a good solution for very big companies, building on and transferring the relations of trust already existing in the traditional marketplace to a B2B marketplace (for example BMW and their suppliers).

Country	LPI Rank	Customs	Infra-structure	International shipments	Logistics competence	Tracking & tracing	Timeliness
Germany	**1**	1	1	4	1	2	3
Sweden	**2**	2	3	2	10	17	7
Belgium	**3**	14	14	1	2	9	1
Austria	**4**	12	5	3	6	7	12
Netherlands	**6**	5	4	11	5	11	11
Denmark	**8**	4	17	19	9	3	2
United Kingdom	**9**	11	8	13	7	4	5
Finland	**10**	8	11	16	15	1	8
Switzerland	**13**	16	9	20	11	5	13
United States	**14**	10	7	23	16	6	19
France	**16**	19	12	17	17	12	14
Spain	**17**	17	19	6	18	19	20
Italy	**19**	23	18	21	24	18	17
China	**26**	31	20	18	27	27	27
Greece	**42**	47	38	35	48	45	42
Russian Federation	**75**	97	61	96	71	97	66

Figure 29 ***Logistics Performance Index 2018***
Source: *World Bank Logistics Performance Index 2018*

B2B Europe

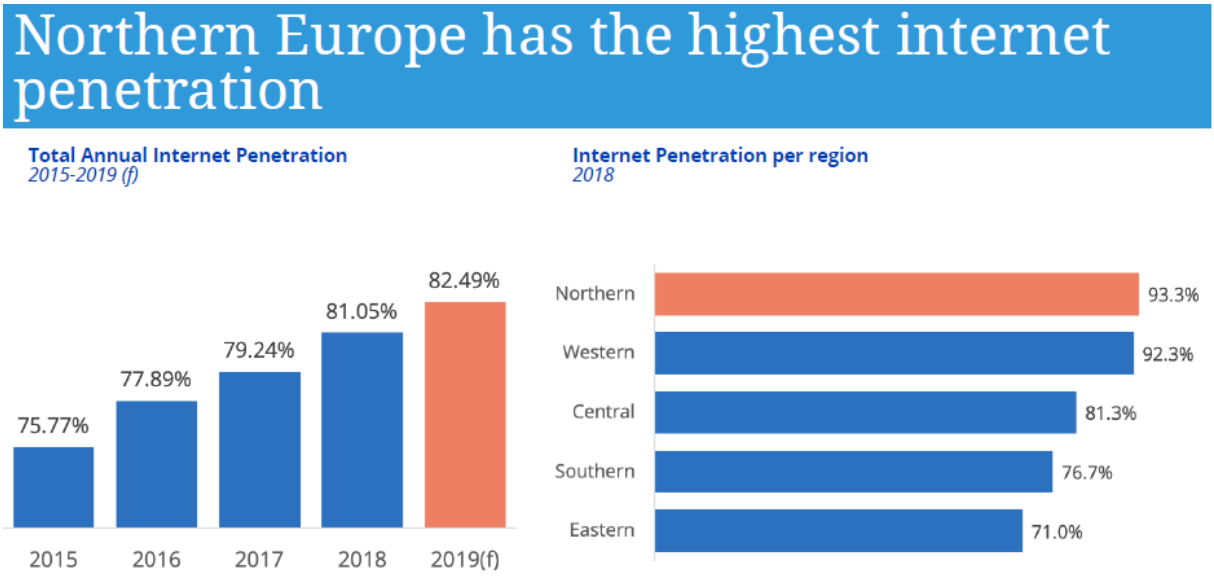

Figure 30 ***Internet Penetration***
Source: Presentation of the Danish Ministry of Foreign Affairs at the partner meeting.

Key Facts of B2B Companies

European B2B companies lean on e-commerce efforts to drive customer satisfaction, revenue growth, and productivity goals.

50% of European B2B leaders say that their e-commerce efforts specifically help them capture, engage, and keep customers.

B2B leaders specifically look for reliable, flexible, and complete technology solutions nearly and 50% admit that they face challenges finding third-party partners that can help them integrate these solutions.

B2B in Germany

B2B is growing in Germany and Amazon business is by far the most used marketplace for B2B selling.

Germany

Quick introduction
2019

- Population 82.4 million
- Currency Euro
- Logistics Performance 1st
- Ease of Doing Business 24th
- E-Government Index 12th
- Internet Inclusivity 18th
- GDP Per Capita 41,400 €

Ecommerce Environment
2018

Payment Method Preference/Use	
PayPal	52%
Invoice	26%
Debit or credit card	12%
Direct debit	6%
Cash on delivery	1%
Other/don't know	2%

Delivery Method Preference/Behavior	
Deutsche Post DHL	77%
Collection	21%
Spedition	21%
UPS	16%
DPD	15%
Hermes	14%
GLS	7%

Best Selling Ecommerce Retailers	(Mill.)
Amazon	€8,816
Otto	€2,956
Zalando.de	€1,281
Notebooksbilliger.de	€751
MediaMarkt.de	€734
Lidl.de	€594
Bonprix.de	€591

Figure 31 ***B2B in Germany***
Source: *Presentation of the Danish Ministry of Foreign Affairs at the partner meeting.*

B2B and B2C in Germany

- B2B turnover around €180 Billion
- B2C sales amounted to € 53 Billion in 2018
- 2019 nearly € 60 Billion
- Nearly 90% of Germans shop online at least once a year
- The growth rate in recent years has been over 10%.

B2B Marketplaces in Germany

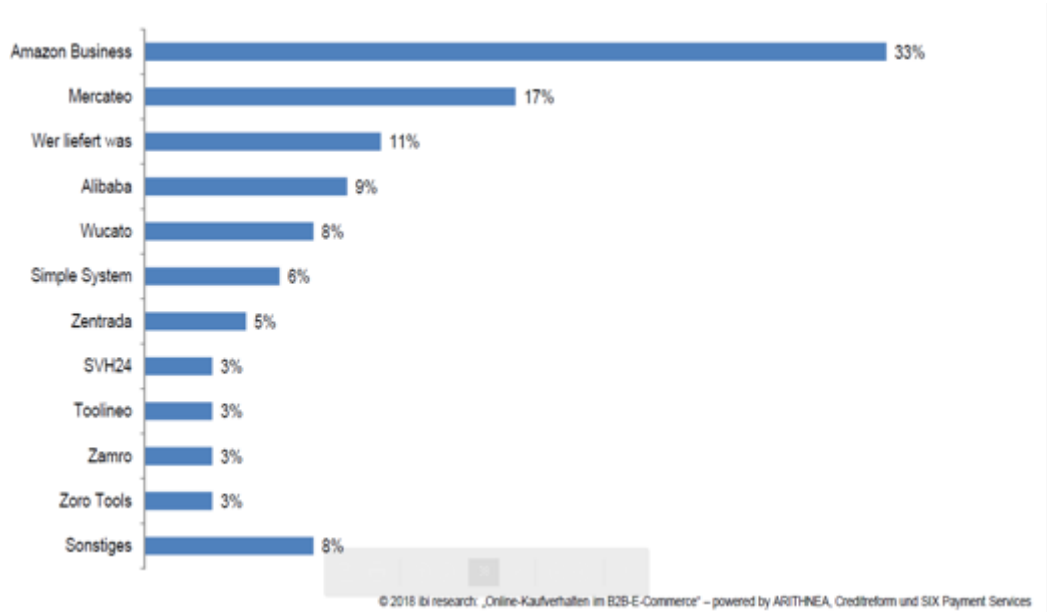

Figure 32 ***Research from University of Regensburg 2018 with 149 SMES: Where are you selling your products***

Expectations of B2B buyers in the US

Similar to consumers: The best practices from B2C selling can be translated into B2B. Digital natives are becoming buyers for companies. Over 50 pct. of manufacturers in the US don't have ecommerce sales channels in US but their customers are expecting it. Site search and navigation, user experiences, product images/video & payments checkout needs to be at the same high level.

Barriers to US B2B e-commerce

B2B is experiencing the same challenges that B2C was experiencing 10 years ago:

•Processes needs to change

•Sales force is often resistant

•Executives have been successful without ecommerce

•Many companies try ecommerce half-heartedly and is not fully successful because it is not done right.

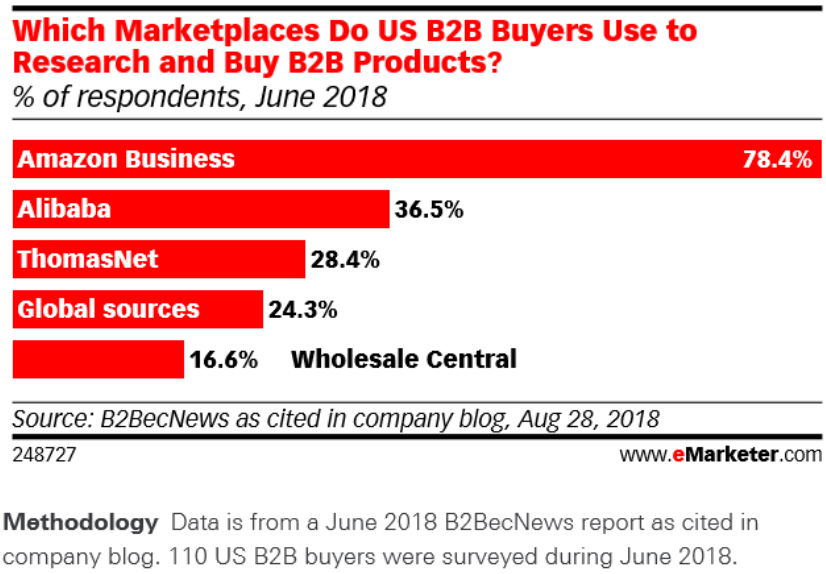

Figure 33 ***E-commerce research among B2B executives in the US***

Figure 34 ***Attitudes towards e-commerce among B2B executives in US***

Key Findings

New technologies, growing competition and changing customer demands will further blur the boundaries between B2B and B2C in the future. Companies should better prepare today. What used to be innovative in B2C is now regarded as standard, the market as saturated and more or less divided among the large platforms. In B2B, on the other hand, entire process chains are completely open to

change, because many things are still going on as they were 20 years ago. B2B platforms are a good opportunity for companies, and especially for medium-sized businesses, to participate in this development without any great effort of their own.

The US is one sole market and therefore uniform and easy to understand. EU is more fragmented, some platforms working only in one or few countries, barriers such as culture, language, payments methods, tax systems, etc.

The digital challenge for B2B e-commerce

Digital competences are very important for the companies if they want to be successful in B2B e-commerce. The challenge is that many companies have outsourced their IT competences in the last years and therefore it is very difficult for them to incorporate the new digital technologies in their companies because they no longer have this competence in house.

Reimer Ivang claims in his presentation that the greatest force of change today is digitization. Why? Because digitization **grows exponentially** and because digitalization power just becomes **faster - smaller** and **cheaper.** That is why digital imagination is important for the B2B company as it improves the ability of the companies to innovate and develop the value propositions of the future. That's why we need digital imagination because **companies can´t use, invent or implement what they can´t imagine!**

Reimer introduce a concept which he calls **"Digital force of imagination"** - but what is it? It is defined as the capability to think with technology and to change the known to the possible. The capability to imagine and improvise within a narrow framework, with existing elements and thus create something new.

Behavioural economics explain why we need digital imagination and it has the last years uncovered how several different unconscious biases influence our ability to make solid decisions:

- **Success** – overrating the value of experience and past achievements
- **Act now** – acting on incomplete knowledge
- **Pattern recognition** – selecting specific cues to create a pattern that is not there
- **Stability** – we favour stability
- **Social acceptance** – we look to our peers

Digital imagination impact on B2B:

1. Currently the business toolbox explodes.
2. Successful management is redefined.
3. Competition is redefined (think NOKIA).
4. Great benefits to the companies that can utilize the new tools. Competition will be even harder for all others.
5. Outsourcing of IT is a trend that will provide short-term savings but will hurt the long-term digital imagination.
6. More and more companies will become IT/software companies in the future.
7. The big question is – how do we develop the imaginative competences of managers to utilize the opportunities of the present and the future?

Current Approach

Barriers for B2B ecommerce

1) One size does not fit all – different product lifecycles and features to take into consideration both in EU and in EU versus US.
2) People mindset is different in EU versus US among others with respect to shopping methods and payments – more advanced and accepted in US (for instance in US you have been able to shop online voice controlled using Alexa (Amazon), use of credit is more accepted in US).
3) Currency and exchange rates inside EU (advantage in US with common currency).
4) Logistic cost and time challenges (same day (or next day) delivery is becoming a requirement and the de facto standard).
5) IT-solutions and the interconnection between different systems and platforms are challenging and a digitalization challenge.
6) Agility of the employees (ongoing change and the management of these changes).
7) Culture differences within EU (besides EU and US) for e-commerce.
8) Legislation differences within EU (besides EU and US).
9) Payment conditions differences within EU (besides EU and US).
10) 24 different languages in EU – official language in EU is English.
11) Digital imagination is important for the B2B company as it improves the companies' ability to innovate and develop the value propositions of the future therefore it is a problem, that most companies have been outsourcing their IT competences.

Opportunities

1) E-commerce platforms such as Amazon (Amazon Business) – makes the entry barrier low in order to get started with E-commerce
2) "Online" that is E-commerce is the future – the market is growing (all by itself)
3) Flexibility and innovation in e-commerce options
4) Improve the digital imagination of company management and the board of directors in order to make them able to see and implement the digital possibilities in their companies.

Best Practice

What have we identified as the best approach from:

1) From best practices in region we have identified the **Ministry of Foreign Affairs' E-Export Program** and ***E-export via online marketplaces*** and they are both described at the Future Ecom website.
2) We have also identified 2 very good business models which are **Luksusbaby (Luxury Baby)** and **Coolrunner.**

Bitcoin, Blockchain and innovative means of Payment

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Francesco Simoncelli, Bcademy, Bologna, Italy

Executive summary

Instruments are given to understand the Bitcoin phenomenon: from monetary theory to practice examples, a crucial paper to better frame how crypto industry is a game changer in nowadays life and beyond. Readers will understand how money spontaneously emerges from human action and through which mechanism it coordinates human production. Bitcoin steps in as a major improvement of money developing history, allowing entrepreneurs to thrive thanks to its underlying technology and its nature as sound money.

Credits

This report has been prepared for ART-ER S.c.p.a. by Bcademy Srl in the framework of the project Future Ecom financed by the Interreg Europe programme. ART-ER participates in Future Ecom as project partner.

Contents of this report have been prepared by Francesco Simoncelli, Bcademy.

Maria Cristina D'Aguanno, ART-ER, prepared the addendum "Additional information"

Fabrizio Tollari, ART-ER, has been coordinating the work for supervising and editing the document together with the expert contributions by Lucia Chiodini, ART-ER, and suggestions from all Future Ecom partners.

Enrico Cancila, head of the Economic and sustainable development Unit, ART-ER supervised the entire job.

Introduction

The best approach to understand money and why cryptocurrencies are money is an appreciation of some of the writings by members of the Austrian School of Economics on matters of monetary theory and policy. Carl Menger (1840-1921), the founder of the Austrian School in the 1870s, had explained in his Principles of Economics (1871) and his monograph on "Money" (1892), that money is not a creation of the State[6].

A **widely used and generally accepted medium of exchange emerged "spontaneously" – that is, without intentional government plan or design – out of the interactions of multitudes of people over a long period of time, as they attempted to successfully consummate potentially**

[6] For more info see: Austrian monetary theory vs. federal inflation targeting, Richard Ebeling, Mises.org

mutually advantageous exchanges. For example, Sam has product "A" and Bob has product "B". Sam would be happy to trade some amount of his product "A" for some quantity of Bob's product "B". But Bob, on the other hand, does not want any of Sam's "A", due to either having no use for it or already having enough of "A" for his own purposes.

Rather than forego a desirable trading opportunity, we can easily imagine Sam believing that Bob might be willing to take some other commodity or product in trade for his product "B", if only Sam had some of whatever it is. So, Sam might decide to first trade an amount of his product "A" for a quantity of Bill's product "C". Not because Sam has any need for it himself, but because he anticipates that if he were to have some amount of "C", Bob would gladly take it in trade for some his product "B", which is what Sam actually wants to acquire.

In this instance, product "C" has been used by Sam as a medium of exchange – something purchased by Sam not for any immediate and direct use himself, but as something to be traded away, again, in exchange for what Sam really wants to obtain: an amount of product "B", given that the owner of product "B" had no desire or use for Sam's original product "A".

Over time, individuals discovered that some goods possessed a variety of qualities, characteristics and attributes that made them more useful than others in this role of a medium of exchange – particular goods that were in wider and greater demand than others; goods that were more easily divisible into amounts reflecting agreed-upon terms of trade without losing their desired features as useful goods; more durable goods, so they may be stored for future exchange opportunities without a significant decrease in their marketable qualities; and goods that were more conveniently transported to where advantageous trades might be possible at some point in the future.

Individuals, in their own self-interest, would find it advantageous to first exchange their own, less marketable goods for such other more marketable ones before searching for trading opportunities to acquire the goods they actually wanted. Having possession of a relatively more marketable and salable good would increase the likelihood of being able to obtain from others those goods that were desired for various consumption or production purposes.

Observing the successes of some in this endeavour, Carl Menger said, would reinforce others to also demand the same more marketable good to use as a medium of exchange. Or as Carl Menger explained in his, Investigations in the Methods of the Social Sciences (1883):

Each individual could easily observe that there was a greater demand in the market for certain wares, namely those which fitted a very general need, than there was for others […] Thus, every individual who brought to the market items of slight marketability […] had the obvious idea of exchanging them not only for goods he needed, but also for others […] which were more marketable than his […] The economic interest of the economic individuals, therefore, with increased knowledge of their individual interests, without any agreement, without legislative compulsion, even without any consideration of public interest, leads them to turn over their wares for more marketable ones […]The origin of money can only be truly understood […] as the unintended result, as the unplanned outcome of specifically individual efforts of members of society.

Menger's analysis of the market-generated origin of money became the starting point for later Austrians analysing the nature, workings and problems of money in society. This was particularly true of **Ludwig von Mises** (1881-1973), in his, **The Theory of Money and Credit** (1912; 2nd revised ed., 1924). One of Mises' main concerns was to explain the determination of the value of money and how changes in money's general purchasing power were brought about.

For any good or commodity to emerge as the money-good in a society, it clearly first had to have a use and a value as an ordinary marketable good for either direct consumer uses or indirect production applications. Otherwise, in that historically distant past, no one would have seen an advantage to obtain it in exchange to, then, plan to trade it away for something else they actually wanted to buy, since there would be no one else who would want it and take it in trade.

But once this particular commodity was being used, also, as a medium of exchange, Mises argued, part of its market value was now based upon its demand for and use as a "money," besides its parallel and separate value and demand as an ordinary good having consumption and production uses. Indeed, Mises reasoned, over time the money demand and value for this commodity might come to overshadow and supersede its original non-monetary uses and demands. In the extreme, if this good through use, custom, habit and tradition had become the money-good in a society, it could even lose its original non-monetary uses and values and still have its demand and market-based value as the generally accepted and most widely used medium of exchange.

Of course, looking over the centuries, the most widely used and generally accepted commodities for such money purposes have been gold and silver. Not that other goods have not also served as moneys at different times and different places, but gold and silver often have been the predominant ones in many parts of the world, and especially in "the West" with the development of capitalist or market-based institutions of trade and finance.

But what is the "value" or purchasing power of money in the marketplace? Money, the Austrians argued, is an unusual good in the arena of exchange. As a particular good comes to be more widely and generally used, it becomes customary practice to first trade away one's own good or service in the division of labour in exchange for a sum of the money-good, with the plan and intention of then turning around and trading the money one has earned as a "supplier" of goods to now be a "demander" of other people's goods. Goods are traded for money, and then money is traded for goods.

With, increasingly, money on one side of every exchange, every other good tends to now have one price, their individual money-price. For instance, the dollar price for a hat, the dollar price for a pair of shoes, the dollar price for a suit of clothes, the dollar price for a dozen eggs, the dollar price for a bushel of wheat, and so on. But money, on the other hand, continues to have no single price. Instead, it has as many prices as goods against which it trades. Money's value is reflected in the array, or network, or set of all the individual exchange ratios between money and each of the large number of individual goods against which it trades in the market.

The value of money, as with all other market activities, is the outcome of the interaction of supply and demand. But the demand for money, unlike other goods and services bought and sold in the marketplace, is not to be used and consumed but to be held as a desired average cash balance over a period of time to facilitate future exchanges, whether those trades are only a few minutes away or a significant distance in the future. Each individual decides how much of his earned money income from selling goods or offering services should be held as an average cash balance over the income period to undertake future transactions until the next inflow of money income from the sale of one's goods or labour services.

While a number of monetary theorists have highlighted the "objective" institutional constraints that influence any person's decision concerning how much of an average cash balance to hold over an income period – the timing of when bills come due during a month, the frequency with which individuals are paid by their employers, or the habits of how frequently people do their ordinary shopping – the fact

is, Mises and other Austrians argued, **the decision and choice of holding cash balances of various amounts may have to take into consideration such institutional surroundings, but, ultimately, it is a matter of personal, or "subjective," judgment and evaluation that cannot not be mechanistically determined or predicted.**

The interaction of suppliers of goods in exchange for money, and possessors of cash balances of money choosing to demand goods together determines the money prices for all the goods and services bought and sold, produced and consumed, in the marketplace. Out of these interactions emerges the formation of the structure of relative money prices for finished goods and the factors of production (land, labour, capital) out of which those finished goods are manufactured. And the height or "scale" of this general structure of relative money prices at the same time the represents the purchasing power or general value of money in the marketplace.

Thanks to Austrian monetary theory we understood how money emerges, from the spontaneous order of society, and how behaves when are laid down all the laws to which is tuned in. Of course, this is just a brief explanation of monetary theory, but you can figure now how price mechanism works, why money purchasing power is so important and, above all, why gold has been selected by people as the most traded commodity in exchanges. That's crucial. These are the basis from which has been designed Bitcoin.

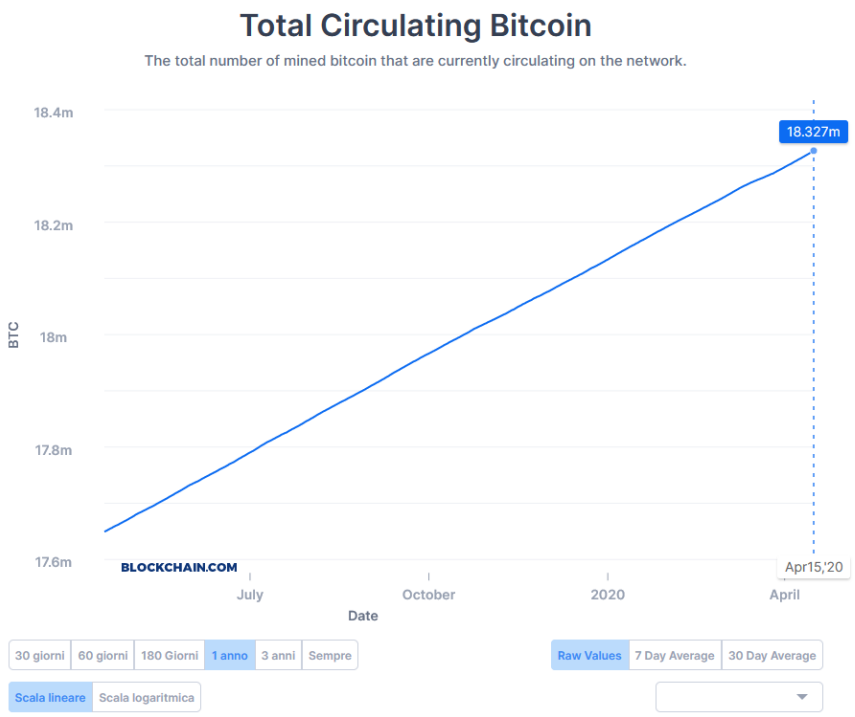

Figure 35 ***Total Circulating Bitcoin***
Source*: Blockchain.com*

Figure 36 ***Bitcoin Market Capitalization (USD)***
Source: *Blockchain.com*

Figure 37 ***Bitcoin Exchange Trade Volume (USD)***
Source*: Blockchain.com*

Figure 38 ***Total number of transactions on the Bitcoin blockchain***
Source*: Blockchain.com*

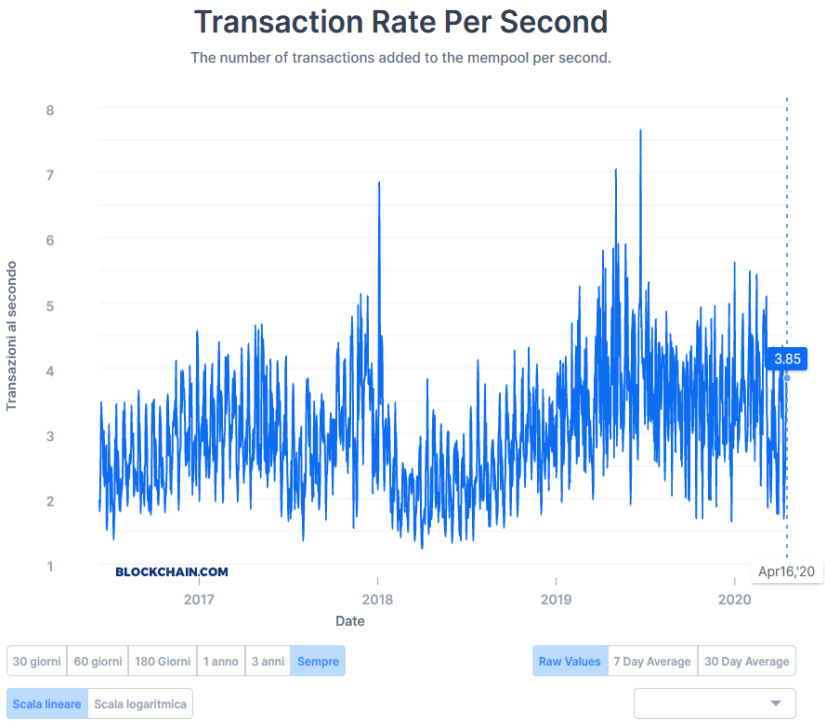

Figure 39 ***Number of Bitcoin transactions added per second***
Source: *Blockchain.com*

Current Situation

Bitcoin and its underlying technology blockchain are game-changing technologies that are reshaping and revolutionizing the world economy. Often hidden behind the headlines of Bitcoin's meteoric rise in market value and blockchain's technological promise is a basic understanding of what these two technologies are and where they come from. **In 2008, a person or group of people acting under the pseudonym Satoshi Nakamoto published a white paper titled Bitcoin: A Peer-to-Peer Electronic Cash System. The paper introduced a solution to two puzzling issues[7].**

The first was our inability to transfer money digitally between willing participants without the need of a trusted third party. The second was that a function was needed to transfer money digitally with the ability to establish the order of transactions to avoid double spending.

Nakamoto proposed two solutions:

- A **peer-to-peer currency** capable of maintaining its value without a central authority.
- A **decentralized digital ledger** capable of establishing the order of transactions. The ledger would operate much the same as any other, except that the recorded transactions would be distributed to computers around the world. In 2009 the ability to transfer value digitally was born in what is widely known as Bitcoin. However, it is the second capacity, now known as blockchain that is proving to be of far greater significance. Although blockchain has scarcely found its way into mainstream thinking and discourse, it is, as mentioned, revolutionizing the world economy.

Since inception, Bitcoin has captured the attention of an ever-growing, and yet relatively small, number of investors, enthusiasts, companies, and others around the globe. As it has grown, it has served the dual function of acting as proof of concept for a "peer-to-peer version of electronic cash" and simultaneously giving rise to thousands of other digital currencies. The most well-known of these currencies by market value are Bitcoin and Ethereum. Any attempt however to compare the two cannot be accurately described as an apples-to-apples comparison. More about this later. First, let's look at what Bitcoin actually is.

Bitcoin is a decentralized peer to peer electronic version of cash that maintains its value without backing or inherent value. It allows the transference of money digitally without going through a trusted third party such as a bank or credit card. The first standardized value of Bitcoin was set on October 5th, 2009 at $.0008, calculated using $1USD equals 1309.03 Bitcoin (BTC). It presently trades at more than $2300 USD. This represents 2.9 million x its initial value. According to the Washington Post, if you had purchased $100 in Bitcoin seven years ago, those coins would be worth more than $73 million USD today. To put this into perspective, if you had invested $100 into Amazon.com when it went public in 1997, your investment would be worth just under $64,000. It is worth noting, however, that digital currencies are significantly more speculative than stocks like Amazon.

As the price of Bitcoin goes higher, one question that naturally comes to mind is, where do Bitcoins come from? **Where do Bitcoins come from if by definition they are not backed by any central authority?** Bitcoins are actually "mined" into existence by Bitcoin miners. The easiest way to

[7] See for more info: From Bitcoin to Ether: Today's Blockchain Basics, Billy Silva, FEE, July 11, 2017

think about this is to consider gold miners. Gold miners work to mine gold from the earth. As it is mined, it then enters the economy.

Conceptually, Bitcoin is the same. New Bitcoins are generated through a competitive process called mining. Miners are given Bitcoins as rewards for their services processing transactions and securing the network using highly specialized hardware.

After Bitcoins are mined into existence, how are they used and what are they used for? Bitcoins are traded on exchanges like stocks, bonds, and currencies, and are also used as currency in the exchange of goods and services. The number of vendors and merchants accepting Bitcoins for the exchange of goods and services is expected to grow from the 1000's to the 100,000's now that Japan is accepting Bitcoins as currency. Japan has been the first nation to officially accept Bitcoin for payments. More than 300,000 merchants begun accepting Bitcoin payments in that country alone.

While Bitcoin was first to market and has drawn most of the media attention, many believe that the Ethereum blockchain, and its currency Ether, is a much more powerful tool. Ethereum is an open source blockchain platform and its fundamental contention is this, that blockchains can be used for more than just the transfer of money. "Smart contracts" are one of Ethereum's most important contributions to the rapidly expanding universe of digital currencies and blockchains. They can be thought of as a digital means of facilitating the exchange of anything of value in a way that is transparent and removes middlemen such as lawyers, notaries, and others. Smart contracts perform this function by carrying out the terms of the digital contract itself.

Nakamoto's initial description of the framework needed to facilitate the movement of online payments between two willing participants without an intermediary has become known as blockchain. In its most simple form blockchain is a decentralized ledger. The implications of blockchain however, are far greater than the simplicity its name implies. **Blockchain facilitates the digital transference of value itself.** Sally Rivers, Financial Times technology writer describes the relationship between blockchain and digital currencies like Bitcoin: "[Blockchain] is to Bitcoin, what the internet is to email." In the same way the internet facilitates the digital transfer of information, blockchain facilitates the digital transfer of value.

Industries in which blockchain technology is being rapidly explored and deployed include the capital markets, financial services, payments and remittances, derivatives, identity and reputation management, governance, sharing economy, supply chain, auditing, stock trading, internet of things, insurance, healthcare, and others. Digital currencies and Blockchain technology are truly reshaping the world economy.

We may, however, be too close to their inception to accurately assess their importance or ultimate impact.

A few key thoughts:

- Bitcoin was founded in 2008 and launched in 2009. Bringing with it digital currencies and the underlying technology, blockchain.
- There are thousands of new digital currencies of which Bitcoin ($30bil) and Ethereum ($16bil) are the largest in terms of market value.
- These currencies are created through a process of digital mining akin to mining for gold.
- Many of these currencies are traded on exchanges like stocks, and used for the purchase of good and services.
- Blockchain is to Bitcoin, as the internet is to email.

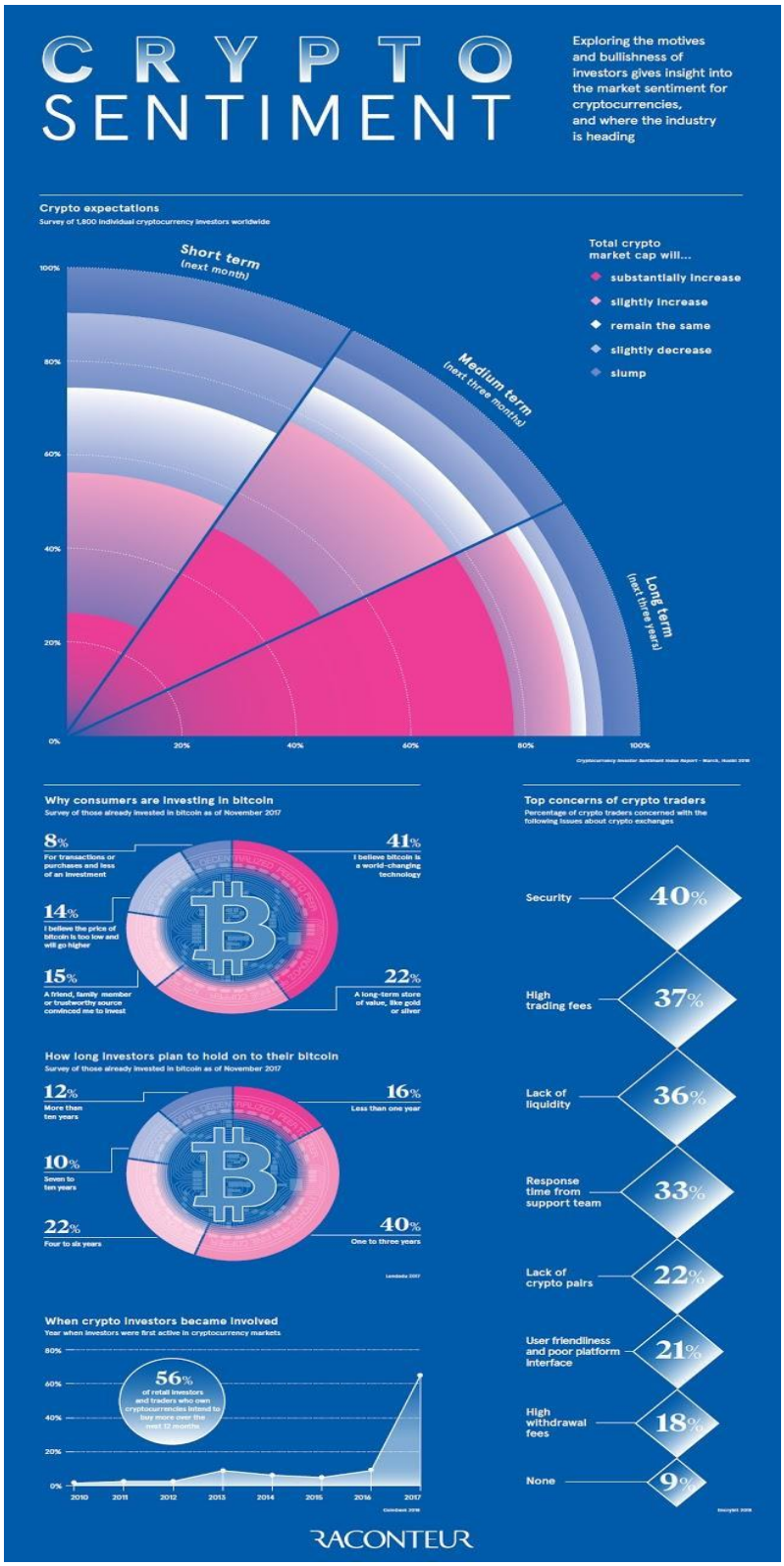

Figure 40 ***Crypto sentiment.*** Source: *Raconteur.net*

Current Approach

It is true that much of the 2018 price-driven euphoria has vanished, but interest in the underlying technology hasn't. **Good products and services are offered on the market, The phases of recession does this: clears the market from all the bad projects and allow entrepreneurs to distinguish which of the remainings are good enough to be prosecuted. Even if they are ambitious projects.**

Thus, business investments in blockchain technologies continued to develop and mature. Not all projects have seen the light and some of these examples have been overshadowed by other initiatives, but you must focus on the main point here: **blockchain technologies are already offering cost savings, efficiency gains and market advantages.** But wait, there's more: **companies are pushing to reconsider paradigms that, until recently, there was no reason to reconsider.**

There are many examples of this and the following described are among those who achieved a good scale of success:

B-Notary: a notarization service that allows you to obtain proof of the existence of a digital document on a certain date, guaranteeing that it cannot be modified later.

Tokens and Blockchains: as part of innovative business projects, we design and program Blockchains and related Tokens, with the specific function decided at the start of the project. We can analyze and manage the progress of the project as a general contractor, evaluating and coordinating the different aspects that must dialogue closely: technical part, fiscal and administrative part, and marketing part.

Cybersecurity: we initiate audit procedures that allow us to consider and bring to light, through various security tests, all the potential weaknesses and threats, both physical and digital, that penalize a company's business, promoting its resolution.

Documents: Proof of Concept, White Paper, tax analysis and all the technical documents necessary to start and develop a blockchain based project.

Let's take a close look to some of these projects. Bnotary is a notarization software that allows the insertion of a unique and deterministic code (hash generated by processing a document) in a transaction on the Bitcoin blockchain. In this way it is possible to prove the date insertion (timestamp) and the correspondence of a document with the filed version (in case of modification, the generated code would be different from the one filed). With the advent of systems like Bitcoin, evidence of a particular document can be created and verified (timestamp or timestamp, which we could translate with the periphrasis "stamping with date and time") without relying on a trusted third party. From a legal point of view, the value of blockchain registrations is governed by art. 8-ter of Legislative Decree 135/2018, converted with Law 12/2019, which refers in general to all technologies based on distributed ledgers. In this regard,

B-Notary[8] allows multiple business model spin offs, new-born enterprises and many other applications. Remember we are talking about notarization here and this means a basis for a wide range of projects, most of all the supply chain tracking.

The advantages of using B-Notary compared to other forms of traditional notarization, as well as compared to the same implementation of other forms of Proof-of-Existence, are evident both in terms of time and costs.

● trust - B-Notary uses the decentralized Bitcoin blockchain, eliminating the need for trusted third parties;

● costs - B-Notary is indefinitely scalable, allowing the creation of timestamps by combining an unlimited number of timestamps within a Bitcoin transaction;

● convenience - B-Notary can create a timestamp as a third party trustee party in less than a second, there is no need to wait for confirmation on the Bitcoin network.

A good example of supply chain tracking is Chain Beauty. **ChainBeauty.it** is the reference portal for the cosmetics sector (raw materials and production) that allows you to notarize and share regulatory documents, technical data sheets, safety data sheets, efficacy tests, compatibility tests and many other documents relating to intrinsic characteristics of active ingredients, product efficacy and tolerance. ChainBeauty is a notarization system built on blockchain technology, applicable to the business to business (private labelling, third party productions), the business to consumer (own brand productions for direct retail) and the sector of raw material suppliers. B2B cosmetic productions for third parties requires a high index of guarantee and protection information. The business customer appreciates the immediate availability and truthfulness of the documentation accompanying the product.

For manufacturers of proprietary brand cosmetics in retail distribution, ChainBeauty B2C is the notarization solution that provides all final information for the customer.

By framing the QR-Code on the product label with a smartphone, the consumer can immediately consult the list of raw materials used, view the origin of the ingredients, identify the authenticity of the certified organic cosmetic, have certainty about the vegan product, check the cruel free guarantee and finally, obtain confirmation that it is a product allowed to the consumer of Islamic religion. In addition, the buyer can check the results of the product efficacy tests by reading the final evaluations of the reports issued directly by the appointed analysis laboratories or university research institutes. To complete the information on the cosmetic, you can finally insert the essential elements on the composition of the packaging with the related indications of stability, environmental impact and disposal methods.

Remember a key factor here: the thing that led to the transition from a movement to an industrial sector is the greater efficiency posed to the business modelling of the blockchain technologies. That's an entrepreneurs' task. Through their alertness they can diminish the energy intensive costs required by a new technology and in turn maximize the efficiency within. That is to say, when you look to a business model in the blockchain environment or you want to develop one, there are two aspects which require careful attention and details: **value proposition** and **revenue stream**. The first is intended to explain

[8]Bnotary website: http://b-notary.com/

what kind of usefulness is expected to give a particular project: why people should invest in it, believe in it, or use it. The second is aimed to explain how deep is the gain that a project can reach. Of course, the more the value proposition is high, the more the revenue stream will be high. Everything begins with the value proposition and everything ends with the revenue stream, a confirmation of the good alertness of the entrepreneur. In the end, that's the role of entrepreneurs: to anticipate consumers' demand as precise as possible.

Moreover, the **Nasdaq**, together with other stock exchanges such as the NYSE and the LSE, has continued to invest financial and human capital in blockchain technologies. Although too early to predict how these experiments will end, the benefits and investments are real.

The prospects for using blockchain technology in the **securities markets** are promising. And while the prospects of **tokenizing physical assets** are clear, reducing or eliminating the cost of back-office processes with blockchain technologies adds a boost to productivity and profitability: confirmation, processing and management of post-trade functions, reconciliation (confirmation of the correct movement of securities and cash), purchase/sale (the details of the exchanges: price, selling times, etc.), settlement/register performed in a fully automated way with blockchain technology. **Rather than keeping one's register centralized with tons of people working feverishly to keep everything in order, a consensus-based process can quickly reconcile positions and movements.**

A further advantage deriving from the shift of these functions in a peer-to-peer framework will be a slow but constant reduction of the operational risk since the risks can be learned over time and taken into consideration in the decision-making process.

For example, a product like B-Notary can facilitate strict transparency requirements for asset managers. For share brokerage relationships, the proxies can be controlled and applied almost in real time. With higher levels of trust imposed by programmable and executable contracts, investors can focus more on performance and costs than administrative distractions.

The first wave (2017-2018) of inefficient blockchain and cryptocurrency applications has been swept away, letting "survivors" create new businesses that offer real savings and value; and this is more than evident in the Fintech field. This development and the competition that accompanies it are positive both for the blockchain market and for future users of these products and services.

Best Practices

Before parting away, we want to shed light on a couple of examples in which is best seen how blockchain technologies are helping firms to thrive and create value. Again, we can't but underline how Bcademy has a leading role on this transition thanks to its team and therefore their skills. **Tokenomic** is a highly innovative project, centred on the virtualization of credit rights through the generation and distribution of tokens. A token is a digital representation of value, ergo represents in a virtual format a real asset. In this case, unlike a utility token, which usually represents a medium of exchange for an asset or service of the issuer, a security token represents a right, a legally protected claim towards the issuer, incorporated in its digital representation. This type of token is the subject of particular attention by financial authorities, which tend to assimilate it (case by case) to financial instruments or, more

generally, to financial products. This classification is in principle the one proposed by FINMA and generally adopted in the absence of a standard, since the token classifications made by the financial authorities are manifold and none of them are universally recognized.

More generally, the Tokenomic project becomes particularly disruptive in a post COVID-19 historical moment where SMEs will be on the hunt for funding to survive. Many companies, especially in Italy, will find themselves facing an economic crisis probably worse than the previous one, and organically the unemployment rate will be destined to rise. It is estimated that start-ups (and more generally new-co) have been one of the main drivers of post-2008 recovery, and will probably be called even more to be in 2021, on the wave of new generations needing to create their own occupation. In this respect, the idea of investing in a start-up could weaken, while the idea of supporting a new-co to keep the production sector of its territory alive could survive. According to this dynamic it will therefore become fundamental that the new solutions for the purchase and transaction of quotas are easy to use and negligible cost, to break down any friction that can keep the ordinary person away from the investment in SMEs.

It becomes clear that in such a scenario the Tokenomic project represent an easy and viable way to gather funds, while remaining in compliance with the regulator. Through a simple online procedure, it will be possible to comply with all the KYC and AML regulations directly from your smartphone, to then proceed directly to the purchase of shares with the guarantee of a transfer immediately notified and notarized on blockchain.

Tokenomic is an ecosystem based on the BTOKEN platform, which allows you to virtualize (tokenize), real assets as a service, in a simple and intuitive way. The perspectives are literally boundless: the tokenization can extend to any asset since the virtualization of real rights and credit, ergo the virtual representation of a real asset, made possible by the tokenization (and incorporation) operation, is almost unlimited: real estate or property income, percentages of business turnover or spin-offs, revenues from works of art or social media. The value offered is out of scale here: with a simple wallet via smartphone it is possible to exchange a multiplicity of assets in real time, without geographical borders, without commissions.

Side note: We have already sent a letter to Consob, asking for confirmation to issue tokens for that type of start-up that have successfully passed a funding phase on the crowdfunding portal.

Alongside tokenization there's the financing needs of enterprises. And Bcademy recently has been the advisor of an Italian non-profit foundation that wants to raise funds in order to finance its project in the social media world. Let's start by saying that nowadays it is possible to make a token sale with a level of 100% legality. Obviously, this has greatly reduced the offer of new tokens on the market, but at the same time those who present themselves in this landscape have much more market. Precisely because they don't have to worry about any legal flaws. So, despite the fact that costs have increased, and therefore barriers to entry, companies that now present themselves with a token sale are "forced" to be much more serious. As a rule, therefore, these token rooms are organized to raise funds that are at least around the million, if not more.

It brings utility to the market and consequently this new utility pushes users to consider it more valuable. Unlike IPOs or bond issues, tokenization opens up a new way of understanding investments. We are no longer passive spectators of a world that goes on with its own facts and looks only at the gain of the title. In this case the investor becomes an active part of the project, because he participates in the

token community, actively uses it and therefore encourages its value thanks to the usefulness he finds in it.

LKSCOIN[9] is an intriguing project regarding the world of copyright. There is little to add about how confusing this sector is today and how many violations occur every day. LKSCOIN goes to solve long-standing problems regarding the rights of a work and its remuneration. For example, you will no longer have to pass the scrutiny of "experts" who make the crest on the original works of the authors. Your work is presented directly on the market and financed by those who intend to subsidize it through "likes". The most disparate social platforms can integrate LKS into their system and allow/encourage individuals to issue micro-payments with very low commissions. Needless to say, social networks are now a staple in the costume of individuals and something like LKS could even overcome LIbra by Facebook.

Then we have a project born from a public tender: **ChainLeather**. It concerns tanneries, which have a series of needs: to trace leathers from the raw material until they leave their warehouses and end up in stores. Supply chain tracking is done for a whole series of reasons, not least that they give leathers to external companies and often some of them go lost. In addition to the fact that tanneries want to innovate and trace the supply chain to understand how to optimize the processes within the company, to ensure that their product comes effectively from their warehouses and to have a guarantee of quality.

And let us not forget that there is also project aimed to allow people to have full control of their coins thanks to a software called "wallet". These are the most common form of custodial service that, as far as for now, the cryptocurrency environment can offer. No intermediaries. And also, here Italy has its own excellence, in fact an Italian firm called Melis developed the definitive wallet for Bitcoin, Bitcoin Cash, Litecoin and Groestlcoin. The concept of national currencies, centrally controlled and manipulated by states is antithetical to the Internet. Furthermore, fiat money is not at all functional in online transactions. So, the rise of the so-called "money of the Internet", with Bitcoin and a handful of other cryptocurrencies, will be consolidated by an offer of stability, usability, security and convenience, providing better and more efficient solutions.

With Melis users can get convenience, security and privacy all in one app. Melis team daily work is focused on maintaining this perspective: be the best with the least costs. This in turn helps them developing a better infrastructure and helps the users by having a service full of options and minimum expenses. Melis team goal now is to reach a wider pool of users. For more details check Melis website (melis.io). But Melis team is not only involved in this kind of developing, linked especially on cryptocurrency environment. In fact, they are also a consulting firm. So, as readers have seen in this essay, Italy is a great forge of ideas and projects when it comes to blockchain technologies, each of them with huge perspective of growing in a world destined to be digitalized in the near future.

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Business Models

Business Models are central to the way we think about business and competitive advantage. In the Future Ecom project we have been looking at the ways in which the opportunities offered by increasing digitisation of marketplaces, machine learning, the Internet of Things and automation are impacting models to help determine the ways in which success is being achieved.

Whilst there are a number of ways to describe a Business Model, all have the same purpose, to capture the ways in which business converts concepts to profit and maintains competitive advantage. When markets or technologies change it frequently challenges the basis of a model and the business then has to choose a response. It usually means that they have to change a part of all their model to stay competitive.

In Future Ecom, looking for best practice in the ways that Policy Interventions can support businesses, the impact that these changes have on business models is of great importance. Only when we fully understand the implications of change and the opportunities that are presented can we move effectively to provide support in adopting positive change.

Figure 41 **Business model**

To help understand this need and the potential impact of each of this report's topic areas we are highlighting the ways in which companies are adopting new models as they adopt new technology. We will relate this to the illustrated Model in each section.

Business Models *for Digital Innovation*

Coventry University Enterprises Limited, Coventry, UK

Internal Expertise

This is applied where a company recruits and develops all technology internally. Where technology need is identified seeks to recruit new talent or to develop the technology leveraging the staff already employed.

Advantages

- All IP is owned and controlled by the company.
- The company gains a reputation for expertise.
- Exploitation is in the hands of the company
- The technology can be licenced to provide an additional income stream
- Resulting product is more likely to be unique for competitive advantage

Disadvantages

- High investment cost required
- Pace of development relies on quality and availability of expertise
- Flexible only within the expertise available
- It can take time to recruit suitable expertise

Requirements

- Company needs strong innovation culture
- Flexibility of approach – ability to respond to change – "fail fast, fail frequently" principle
- Strong reputation within the target field – company with no track record may struggle to gain traction if unknown in market
- Be prepared to invest without certainty of reward
- Commitment to developing new product/development
- Highly effective marketing for exploitation

Suitable for:

- Companies with strong reputation in market or for specific expertise
- First mover in a specific product field

Examples

- RDT
- Automotive manufacturers
- Apple

Collaborative Innovation

Company works in joint ventures or funds external expert companies to develop innovative products. The process brings together innovators with a wide range of skills for the duration of each innovative project.

Advantages

- Fast and flexible response
- Potential access to the most up to date thinking on the innovation area
- Access to wide range of expertise
- Access to industry reputations
- Cost of innovation can be shared (reduces barrier to entry)
- Risk is shared

Disadvantages

- IP ownership may not be controlled by company
- Need a strong legal framework
- May need to share IP and ideas to progress innovative project
- May not have control of resulting IP
- Some of the resulting profits may have to be shared

Requirements

- Collaborative culture
- Strong networking within innovator group
- Strong base knowledge of the technologies
- Preparedness to share income streams

Suitable for:

- Fast moving new technology markets
- Market/product diversification
- High risk innovations
- Specialists in a specific area

Examples

- Android phones
- Conigital

The impact of Digital Innovation opportunities can be seen in three of the eight key areas in the business model.

Choice of internal and external model is vital to the unique value proposition, especially if leadership in new technology and markets is important, it offers a higher score in innovation factor. The costs of achieving this, however, can be high, impacting on the profit model.

In the Collaborative innovation model, costs are kept much lower, and although the company may not have a unique product, they will be able to innovate and respond to market changes faster.

Business Model *Empower Oyj*

Cursor Oy, Kotka-Hamina Regional Development Company, Finland

Overview

Empower is a multinational company building a smarter society.

The company develops digital platforms for customer needs utilizing profound domain competences of the service business ranging from building and maintaining electricity and telecom networks and maintaining factories and power plants to delivering information management systems and services to the energy sector. The company operates in the Nordic countries and in the Baltics. Turnover is 252,7 million euros with around 1,700 employees.

The Digital Opportunity

Empower provides a unique combination of industry-specific services, process delivery tools and intelligent data platforms for the end-to-end realizations of smart society essentials.
Empower focuses on the four essentials of smart society:

- Intelligent data
  The Data Economy, is a new way of doing business by using information and technology as facilitators of communication, data transfer and commercial transactions.
- Smart industry
  Industry 4.0 introduces what has been called the "smart factory," in which cyber-physical systems control and monitor processes, make decentralized decisions and workflows are digitized and data driven.
- Hyper connectivity
  A hyper-connected society is one of ubiquity, of embeddedness, a society in which the connectivity is becoming "like electricity", a core essential. Speed and resiliency of connectivity becomes crucial in our daily lives and fuel for innovations and disruptive services.
- Sustainable energy
  The rise of renewable energy, life on the grid edge and electrification of the society are all driving investments to redesign, build and operate smarter grid and related operational services.

Impact on Value Streams

Empower's agile services and digital products with intelligent data enable growth and profit for both their customers and the company itself. Intuitive, effective and scalable digital software products get the job done efficiently, safely and save energy.

Empower participates in all stages of energy sector life cycle and their services can make a major contribution to a more sustainable society. Empower reduces the environmental impact of their own operations.

As an example, Empower has decreased lost workday injury frequency significantly in the long term using their active work safety application with precision spatial data.

Lessons learned

Transparency to customers improves trust in all levels. The transparent operation provides up-to-date data to be used by everyone at every organisational level, including customers and subcontractors. Real-time monitoring of the order-delivery chain is becoming much more interesting to companies today as they want to address environmental considerations in their operations and also expect sustainably from their partners.

For example, Empower factory in Hamina, south-eastern Finland, is a state-of-the-art "laboratory", or model factory, where conventional industry will exploit the latest technological advances. Smart ERP influences everything that takes place in the factory. The opportunities for improving the efficiency of the operation and optimising the production conditions are almost limitless.

Transferability

Realizing smart society essentials and keeping pulse on them 24/7 is the key factor for success and future growth and profit. This business model can be applied in any industry field if the company has the resources and the will to move digitalization to a new level.

Business Model *Weidmüller / Industry 4.0*

Business- and Innovation-Center Lippe-Detmold GILDE, Detmold, Germany

Overview

The Weidmüller Group has production facilities, sales companies and representatives in more than 80 countries. In the fiscal year 2018 Weidmüller achieved sales of 823 million euros with around 4,900 employees.

Weidmüller Interface offers a broad range of products and solutions for Industrial Connectivity, Device and Field Connectivity, Automation Products and Solutions. Customers can be found in many different industries, machinery&factory automation, energy systems, transportation like ship building, railway, telecommunication, building infrastructure.

The Digital Opportunity

The classic automation pyramid with central control will no longer exist in Industry 4.0. Focused on the goal of extremely versatile production plants, networks of intelligent, interacting automation components will take the place of this pyramid. Weidmüller is therefore developing industrial connectivity solutions based on the latest information and communication technologies for the Smart Factory of tomorrow.

Weidmüller pursues the dual strategy: Industry 4.0 – Digitalisation will help them as providers and also as users, to increase their competitive strength.

As a provider of digital solutions, sales and market share are to be secured and expanded "Make money". Digitisation should increase turnover. As users of digital solutions, operational costs are to be reduced "Save money". The aim is to improve efficiency through digitisation.

An example from the field of industrial analytics:

Gaining added value from machine and production data

The desire for increased production output and optimum process quality requires the highest machine and plant efficiency. To achieve this, anomalies and errors must be detected at an early stage, without provoking downtimes by additional maintenance work. Weidmüller Industrial Analytics solution collects and processes a wide range of data relating to the plant in question and evaluates it using intelligent procedures. On this basis, anomalies and inefficiencies in a wide variety of applications are reliably detected, error forecasts are made and maintenance recommendations are given. With this holistic approach, Industrial-Analytics provides precise information for the assessment of plant processes and for predictive maintenance, making it far superior to conventional condition monitoring solutions.

Impact on Value Streams

Weidmüller uses its digital components for its own production, enabling digital process transparency, smart maintenance and virtual plant optimisation. On the other hand, innovative components and solutions offers Weidmüller customers added value too.
The added value:

- Minimization of unplanned downtimes
- Increased plant productivity
- Higher innovation performance in mechanical engineering
- Suitable for usage-based business models

Lessons learned

3 Key factors at all:

- Culture and mindset: Active involvement and training of the employees
- Organization and processes: Lean and digital processes increase efficiency
- Technology and business models: Establish new Technologies and create disruptive approach

Transferability

Driving Industry 4.0 in the network!

In order to be successful in the course of digitisation, companies must conduct an intensive stakeholder dialogue with their customers, employees and, in some cases, with their current competitors in order to survive against new competitors. Weidmüller follows this path, for example, through joint projects with current competitors in the Smart Factory OWL.

Business Model *Coolrunner*

Business Development Centre North Denmark and North Denmark Region, Aalborg, Denmark

Overview

Coolrunner started in 2015 and is a parcel handling and freight company delivering parcels primarily supporting web shops. Their focus is delivering parcels cheaper, faster and better compared to competitors.

They are extremely customer focused and among others open 365 days a year. They have company branches in Norway, Sweden and the Netherlands. Coolrunner has a few of their own trucks going to Germany and to the UK, but otherwise they use only local distributors around Europe to optimize the cost of shipping and the cost of doing business by keeping the capex low.

Coolrunner handles 750.000 parcels per months with a peak in December of around 1 million parcels and Coolrunner makes 1 million Euro in gross profit (2019).

Below is some of the partners throughout Europe

Figure 42 ***Coolrunner partners in Europe***

The Digital Opportunity

Coolrunner as a company is a mix of a software development company, a parcel handling company and a customer support company comprising of 15 people. They develop their own parcel handling software and API's to connect to both the customers ERP systems (in this case the web shops) and the suppliers ERP system (in this case the freight companies).

Shipping a parcel with Coolrunner is a paperless effort thus booking, tracking, shipping and all the way up to the delivery to the customer is handled digitalized by ERP systems communicating with and through Coolrunners IT platform.

As a private person you can also utilize Coolrunners service for shipping parcels. In this case you can do it as a "label free" shipment, that is, when ordering a shipment online from Coolrunners website you simply get a 9-digit code which you write on the parcel and then hand it in to one of the parcel collecting points near you and that is it – of it goes to the receiver.

Impact on Value Streams

Coolrunners multi and all-in-one integration with both the customers and the suppliers thus enabling a digitalized parcel shipment benefits the whole value chain. The parcels in principle never enters Coolrunners facilities but is handled by the physical shipping "experts".

Coolrunner is a "platform" company connecting the customers with the suppliers in a seamless and effective way. Their business model is based on a per-parcel-fee and with no extensive capex it becomes possible to ship 1 million parcel per months with a company of only 15 people.

Coolrunner supplements their national parcel shipping business with CoolEurope enabling shipping of parcels in all Europe and with Coolpay which is an integrated payment service to the platform.

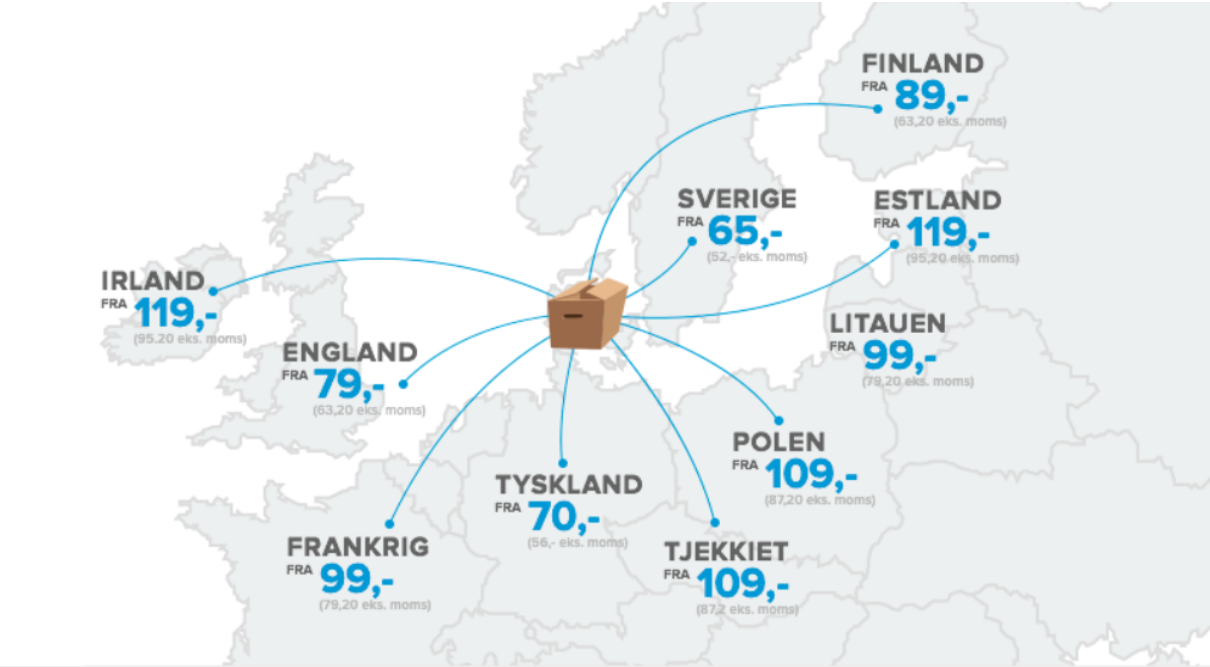

Figure 43 ***Coolrunner parcel services in Europe***

Lessons learned

Main lessons learned:

- Digitalization together with integration enables paperless and seamless platform services – in this case web shop parcel shipments throughout Europe
- Stick to your core competences in the value chain, that is implement a platform solution that takes the "pain" away from the customers by seamless and effective connects the customer with the suppliers.

Transferability

The Coolrunner business model is transferable to other business where you as a platform provider connects seamless and effortless the customer and the supplier together and make your business model as a “transaction fee” model.

The business is known from the e-commerce platforms for instance from the Amazon platform where Amazon connects the customer with the suppliers of goods in vast varieties.

The foundation for doing a platform business model consists in a variety of business areas and typically in order to spot an opportunity you need find a way to reduce and/or remove “customer pains” and/or “suppliers pains”.

Business Model *Luksusbaby (Luxury Baby)*

Business Development Centre North Denmark and North Denmark Region, Aalborg, Denmark

Overview

Luksusbaby is a web shop that sells luxury clothing for babies and children (ranging from 0 to 16 years old). The clothing come from well-known designer brands and the product range also includes ecological clothing.

The beauty with this business model is as actually how the business was started. Luksusbaby today is operated by a couple living together (Morten and Ann-Louise). When they got their first child 5 years ago (2015) Morten was working as a policeman and Ann-Louise was working in the clothing design business.

They wanted to dress the child in well-known designer brand clothing but was not able to source it easy and convenient. After some sourcing here and there on the internet they decided to start a web shop in order to make luxury baby clothing available to everybody from just one web shop – Thus LuksusBABY.dk was born.

Figure 44 ***Luksusbaby.dk***

The Luksusbaby web shop was established in 2015 with the focus of providing high quality designer brand clothing for babies and children together with a strong customer centric focus.

Since 2015 the web shop has constantly been expanding and today the web shop has a turnover of 12 million Euro (2019) with a gross profit of 2 million Euro and ships more than 500 parcels a day primarily inside Denmark however roughly 10% ships abroad.

In order to increase the business Luksusbaby has established a physical shop I Aalborg where customers can see and feel the clothing before the buy. This is like an upside-down approach as you

typically has a physical shop and then establish a web shop. However, based on vast customer feedback requests for being able to see and feel the clothing and the quality of the clothing Luksusbaby decided to open a physical shop in 2019. The physical shop now adds to the turnover with approximately 10%.

Below some of the luxury brands sold by Luksusbaby:

Figure 45 ***Brands sold by Luksusbaby***

The Digital Opportunity

Luksusbaby spends a lot of effort in making the website user friendly and easy to navigate on thus making it seamless and "painless" for the consumer to do the shopping and payment on the LuksusBABY.dk website.

Luksusbaby utilize the web shop tools for website optimization here under Google Analytics etc. and use the Coolrunner (see business model Coolrunner) shipping solution for their logistics thus securing a same-day or next-day delivery schedule.

Shipping a parcel with Coolrunner is a paperless effort thus booking, tracking, shipping and all the way up to the delivery to the customer is handled digitalized by Luksusbaby' ERP systems communicating with and through Coolrunners IT platform.

Impact on Value Streams

Luksusbaby is a dedicated web shop with a physical shop that focus on customer intimacy and has found a business model together with a product range of clothing that full fills a marked demand not previously full filled.

Luksusbaby are besides a web shop also a platform solution that connects suppliers (in this case designer branded clothing for children) and customers (in this case parents seeking an easy way to get access to a variety of designer branded bay and children clothing).

The customer pains are eased by the web shop and the platform solution which typically is good starting point for starting a business.

Their business model is based on a traditional shop mark-up model from the supplier to the customer.

Since the beginning in 2015 Luksusbaby has expanded the product sortiment to also include compementary products to children besides clothing and this supports a constant revenue growth.

Lessons learned

Main lessons learned:

- Find some "customer pains" and provide a solution and you have foundation for starting a business.
- Stick to your core competences and/or interests in the value chain, that is implement a platform solution that takes the "pain" away from the customers by seamless and effective connecting the customer with the suppliers.

Transferability

The Luksusbaby business model is transferable to other business where you as a platform provider connects seamless and effortless the customer and the supplier together and make your business model as a "transaction fee" model – in the case with Luksusbaby it is mark-up model.

Luksusbaby is primarily a B2C business but can be copied to a B2B business without problems.

Business model *Participation to Credit-clearing systems and use of complementary currencies*

ART-ER S.c.p.a., Bologna, Italy

Overview

AppAway Srl is a young small enterprise operating in two different fields of work: software development and IT, and workplace safety. Its businesses have been significantly affected over the last few years by the economic situation, implying poor investments by SMEs and therefore the situation of a poor market for software development, IT infrastructures and other expenses (i.e. safety).

In fact, often some ordinary problems of liquidity which affect SMEs imply that these latter are not motivated in planning and doing investment or pay attention to the need of innovation and related investments the company has to face. Entrepreneurs facing a situation of economic recession often do not consider that software development and IT solutions are investments SMEs really need in order to maintain or gain competitiveness.

AppAway joined the Liberex platform in 2017 and since then their business based on the participation in the circuit has grown reaching the 10% of the revenue in 2019. They increased their turnover and experienced, among other things, that SMEs (their customers) are more willing to take risks and plan investments and sustain related costs if they can use complementary resources and an additional capability to sell their own products other than in the traditional market place.

The Digital Opportunity

Liberex is a Credit-clearing system which works mainly through a digital platform, and which integrates digital services, social relations and networking activities at territorial level. The system provides for the generation of units of a complementary currency (named Liberex itself). Using these latter, SMEs participating in the community (the "circuit") can finalize transactions and sell or buy products and services. In specific, the Liberex circuit operates with enterprises located in Emilia-Romagna.

The working scheme upon which Liberex is based takes inspiration and rules from many other recent or historical experiences about generation of complementary currencies, for instance WIR experience in Switzerland.

How does it work? In short, the manager of the platform evaluates the capability of a company who wants to join the circuit to offer products and services and sell them on the platform. If there is reasonably a sufficient demand for products and services offered by the company, this later joins the community and can make transactions using the complementary currency.

Each transaction is operated and registered through the digital platform.

Impact on Value Streams

Through the participation in the circuit and through the digital platform, a SME can exploit a capability of producing and selling products or services additional to the ordinary capability to operate on the traditional market using the legal currency (euro), and thus receiving additional credit capability, therefore have the opportunity to use additional liquidity for expenses connected with operational daily costs as well as small or bigger investments.

This can support the SMEs activity, development or even survival, especially during times of economic recession or scarcity of liquidity and low currency circulation rates within the local or regional economic system.

The aim of the circuit is to give value to the capability of the SME to produce and sell products and services required by the community, and in specific, to the residual capability that currently is not appreciated by the ordinary market. Based on this residual capability, monetary credit is given to the enterprise. This latter can therefore start to buy products and services from the other SMEs participating in the circuit, using the digital platforms.

Lessons learned

The credit-clearing system enables the generation and the use of units of the complementary currency (Liberex) on the basis of the real residual productive capacity of the SME which can be shared with the circuit through the selling of its products and services. The enterprise has the opportunity to increase its turnover or to compensate for a decrease of the turnover obtained on the traditional reference market. Therefore, the system is an effective tool for supporting SMEs, within a local or regional community of enterprises, especially in a period of economic recession or downturn. Units of currency have no financial value, because they cannot be saved over time and the accruing of interests is not admitted. Therefore, the currency is continuously transferred for buying or selling, and its circulation rate is much higher that euro's in the traditional market.

The active participation (and the sense of belonging) in a local or regional community is one of the most important elements of the system. The opportunity to know other enterprises and entrepreneurs promotes a direct connection and relation between them and reinforce the trustiness, in addition to the functioning of the digital platform and the role of assurance provided by the manager of the platform.

The manager of the platform promotes the reciprocal connection between the enterprises also through networking local events or participation to local initiatives. Moreover, the manager plays a fundamental role by regulating access to the community according to the real demand and offer of product and services that are required or needed in order to feed the complex of transactions, and by assuring the solvency of the system as a whole. In fact, if an enterprise is not able over a certain period of time to recover from a situation of shortfall on its account, the manager can take charge of it. Moreover, the manager provides assurance about all legal and tax issues connected with transactions. For instance, all transactions imply the need to pay taxes of the amounts exchanged according to the national legislation, exactly as the transactions paid in euros, and therefore any selling of products or services is supported by the issuing of an invoice or other fiscal document. Enterprises pay for an annual fee to participate in the circuit and benefit for the management of the platform. On the other hand, transactions are free of charge, and there is no financial charge on them from the manager.

Transferability

Currently more than 300 enterprises actively participate in the Liberex circuit operating in Emilia-Romagna. Their case is similar to AppAway case. The community based on the digital platform is constantly enlarging and, generally, enterprises continue staying and operating on the platform over time, considering it a convenient and fruitful opportunity both under the business and the relational point of view.

The regional dimension (possibly supported by more local initiatives, agreements of events) is considered as the most suitable in order to balance two needs of the system: assuring opportunities for transactions to all participants, and at the same time always give priority to direct relations and trustiness between entrepreneurs.

Other credit clearing system working at regional level are operating in Italy, based on the same model of the first created, in Sardinia, called Sardex.

Both in Emilia-Romagna and Italy other experiences based on complementary currencies are being developed, mainly at local level. At the European level, the idea of complementary currency and systems based on this latter are well recognized and appreciated, also by the same European Commission[10].

[10] Cfr. https://ec.europa.eu/regional_policy/en/projects/france/community-currencies-get-into-action-for-local-development

Business Model *Participation to "Smart communities" schemes and digital platforms*

ART-ER S.c.p.a., Bologna, Italy

Overview

Federazione Trentina della Cooperazione (FTC) is the main business association which associates cooperative companies operating in the Province of Trento, Italy. Currently it counts about 450 member companies connected to about 280.000 people.

FTC is the main promoter and developer of the project "cooperation 4.0". The project aims at developing a collaborative platform and will represent the evolution of the "Cooperation Card", a tool already tested and used by the families connected with member companies. The project involves members from all sectors and potentially all cooperatives, developing inter-cooperative interactions, collaborations and opportunities for goods and services.

It applies the model of a "smart community" which aims at responding to immediate needs, providing a system value (greater than the addition of single initiatives), engaging local actors for a common purpose. The Smart community model is composed by different characteristic elements, such as a framework of nodes and relationships, value aggregation and redistribution models connected to general purposes (corporate welfare, mutualistic, etc.), an overall collaborative platform (usually based on the blockchain technology), a structure of specific applications over the overall platform, specific tools and rules

The Digital Opportunity

The Smart community represents a social and economic structure in which the community manager (better named as "enabler") does not take a predominant role but manages the infrastructure and technologies which enables the production and the use of services through specific digital tools (i.e. smart contracts, wallet, etc).

Behind this digital structured system, the community agrees about common goals and the collaboration that derives from the achievement of these goals generates value. This value is transferred to socio-economic fabric through the digital platform in the form of a kind of virtual currency. This system makes it possible to collect resources which, in the absence of the Smart community, would have been destined elsewhere, and send them to the territory and/or towards specific aims.

Digital instruments included in a Smart community platform (typically based on blockchain technology applications, tokens, wallets, etc.) enable the composition of a scheme with different working elements, such as:

- the creation of the network that allows the definition of the digital identities of the participants and their role;
- accounting for assets;

- the choice of operating levers (aggregation of demand, sharing of objectives; integration of resources; management of activities and processes; synchronous management of activities; integration of resources; reduction of intermediate steps in the supply chain; alignment to needs);
- configuration of services;
- the implementation of a specific governance system based on the shared responsibilities of all participants.
- the payments on the platform through the interaction with the payment circuits (banking and private subjects).
- accessing the platform open to all (internal and external subjects to the community) through their mobile and web devices (smartphones, ipads, notebooks, etc.).

Typically, real case rollouts use a private or permissioned blockchain, as it guarantees greater security, privacy and performance.

Impact on Value Streams

The Trentino Federation of Cooperation, through the creation of:

1) the platform that clustered the audience of community cooperation members,
2) the multi-channel wallet that collects the value (token) and allows you to use it,
3) a model of smart contract defining the rules for transforming behaviours into value and marketplace access,

May allow the partners (citizen, company, etc) to transform the reward (discount) provided for by the agreement into digital spending capacity.

This new spending capacity (which otherwise is dispersed) can be directed towards a defined business marketplace (in this case the group of companies associated to the local cooperation system) the system and will benefit of additional rewards (part of the collective value back or rewards for virtuous behaviours) creating a significant aggregate value (200,000,000 euros, for the specific case study) and a benefit for the territorial system.

The digital wallet is the technological fulcrum that integrates IoT, blockchain and communities and that enables the model by defining scalable synergies and becoming in fact a tool that aggregates and translates digital spending capacity. Synergies can be produced intra-system, if the value is transferred to a subject belonging to the community, or extra-system, if the value is transferred to a reality out of the community. Extra-system interactions can take place with companies outside the territory or with other communities. This additional spending capacity can be addressed to:

- Rewarding for the achievement of "ever greater" cooperation objectives;
- Purchase or promotion of cooperative system goods and services;
- Purchase of products from the cooperative marketplace;
- Integration with partner reward systems;
- Integration of products and / or services with affiliated marketplace systems (Partners)

Lessons learned

The "smart community" scheme we can use value a number of value levers that are usually enabled only if included in a sharing and collaborative ecosystem, and through the aggregation of demand for negotiation and a univocal management of transaction with third parties.

The levers of the value are the following:

- Elimination or reduction of steps intermediaries that do not give added value
- Cooperation and sharing of objectives making available to the community development of skills, resources and ideas
- Resource sharing
- Reduction and integration of supply chain processes
- Integration of resources for more efficient production
- Synchronous management of the activities (it allows to reduce time and consumption)
- Alignment of production activities with community needs
- Engineering management of the underlying processes to the various community activities
- Integrated and interoperable platform that allows you to interact with all the "internet of things" devices, functional to the various activities managed by the community

These levers make it possible to optimize the economic value generated by the Smart community and the economic impact of the system in the territory.

The actors of the community (who traditionally produce services individually) work together to create a new aggregated service available to individuals. This service is provided through a Smart Contract which technologically regulates the collaborative process between the subjects. This allows the opportunity to model the service or product together with the final consumer. This latter is incentivized by rewarding mechanisms connected to his (social and economic) virtuous behaviour.

Two critical possible situations should be avoided:

- Pay attention to involve management with an adequate predisposition towards change, collaborative processes with other companies and technological innovation, especially when all these factors are strictly connected to the supply chain (change management).
- identify the right technological partners. Companies that offer technology, often suffering the commercial strength of the products of multinationals, determine consequently an adaptation of their companies to global models, believing that only these solutions can assure performance improvement (or survival). This is not always true, and often the investment in technology is therefore underutilized or misused.

Transferability

The smart communities' model can be replicated in different economic sectors. New businesses are actually developing in the field of tourism, commerce, multiutility. This replicability demonstrates the potential of the model, here some of the most significant cases:

- The multiutilities sector: recent developments in Emilia-Romagna, Italy demonstrated very interesting applications connecting territorial waste and energy management with objectives connected with the reaching of UN Sustainable Development Goals. These applications are based on the idea that it will be possible to associate a panel of virtuous behaviours (individual or community) capable of generating, through their accounting, the relationship between the multiutility and its customers (both as individual customers and community of citizens). The scheme will work through an easy-to-use technological support
- The tourism industry. Specific initiatives developed in Trentino, Italy intends to innovate the supply chain by promoting the establishment of a Smart Tourist Community. The functional prototype created allows to:
    - Systematise all new and old territorial tourism and commercial assets and optimize roles of companies, associations and institutions within a common scheme
    - Develop a tourist and commercial offer with higher added value through the integration of different components of the offer and by developing an operational model for the construction of the "experiential tourist and commercial program" generated by tourist profiling
    - Create and manage a business model in which the services are defined through the collaborative model of the "tourism proxsumer" and the reward of virtuous behaviour;
    - Provide all subjects promoting tourism offerings in the ecosystem with digital tools suitable for supporting the innovative challenges facing the market (virtual POS, booking system with certain date and time, etc.).

Business Model *Internet shopping platform*

Lithuanian Innovation Centre, Vilnius, Lithuania

Overview

UAB Pigu was established in 2007. in June. After consistent preparations, the online store Pigu.lt was introduced to the public already in 2008. In 2009, Pigu.lt was recognized by customers as the best online store in Lithuania. was announced as the fastest growing company in Vilnius county and was awarded the Gazelle of the Year award.

More than 500 trading partners ensure a quality range of products from well-known manufacturers at the lowest prices.

Developing a successful online trading activity, in 2011 UAB Pigu also acquired one of the largest and oldest online stores in Latvia - 220.lv. In 2013, Pigu grupė acquired a controlling stake in the Estonian company Dlb Trading OÜ, and at the beginning of this year it became its sole shareholder. This e-commerce company operates online stores dlb.ee (now kaup24.ee) in Estonia.

In 2014, Pigu grupė also expanded in Lithuania - it acquired e-mail for women. store "Sau.lt", whose products have further expanded the range of pigu.lt. In the e-shop, women can now find even more products designed for them, selected according to their needs.

In 2013, the companies belonging to the Pigu Group prepared a total of 600,000 orders, which accounted for almost 1 million goods, which is 80 percent. more than the year before. In 2013, all e-stores of the group received 40 percent. more visitors than in 2012.

In 2013, Pigu grupė allocated part of its profit to modernize its stores in Vilnius, Kaunas and Klaipėda and implemented an efficient queue management system, which allows it to serve customers even faster. Customers were also offered the opportunity to pick up their purchased goods at any convenient time at Omniva's 24-hour post offices. In addition, Pigu.lt customers can now choose from even more ways to pay for their purchases.

In total, the company currently owns as many as 10,000 square meters warehouses with about 400 thousand goods. Currently, UAB Pigu has 200 employees.

The authorized capital of UAB Pigu is € 1.74 million, company belong to the Lithuanian Electronic Commerce Association (ELKOMA).

UAB Pigu is an interent platform, seen as B2C. Company is also cooperating with a lot of business partners in Lithuania, providing them with e-shop service and access to the customers, presenting themselves as a shop for a lot of manufacturers in Lithuania and abroad. That is B2B services for a lot of companies, who are lacking rescources for their own internet platfrom or want to outsource the retail business outside the company.

The Digital Opportunity

The online store Pigu.lt offers manufacturers and traders cooperatation. They offer a reliable online sales channel and the well-known brand Pigu.lt. In this way companies and traders can avoid the

additional investments required to create your e-commerce solutions and they benefit from the offer of Pigu.lt:

- consistent online sales system: convenient and clear presentation of the supplier's goods on the Pigu.lt goods page, interfaces with the supplier's internal goods accounting systems;
- efficient distribution of goods to customers throughout Lithuania;
- if necessary - warehousing services;
- intensive communication of Pigu.lt product offers in media.

Impact on Value Streams

During Covid-19 quarantine period a lot of companies benefited from the company Pigu offer. When the shops of many companies were closed and it is not possible to launch e-commerce channel very fast, it was one of the efficient ways to keep the company performance going.

For Pigu.lt the cooperation with manufacturers and other trading companies allowed to expand the shop, offering much wider variety of goods and access to known brands in the country for privat customers. It made impact for value streams not only for pigu.lt, but also for the companies, which opened additional trade channel e-commerce using the platform.

During Covid-19 all electronic shops experienced expantion it is difficult to measure what impact cooperation with partners had on the growth, considering the virus situation and its impact on all economy, especially e-commerce.

Eventually partnership with Pigu.lt for companies became an additional trading channel and adds benefits to trade diversification strategy.

Lessons learned

It is important to set clear cooperation guidelines;

Company has to offer the service of warehouses to the partners;

Quality management process with clients is most important, presenting platfrom as interface for shopping, only clients can give feedback about the products they recieve from partners;

Most important aspect ensuring success of this business model, where partners join the e-commerce platform is integration of the systems between the e-commerce platform and accounting systems of the partners, in this way all the purchases are handled automatic.

Transferability

This kind of e-commerce platform can be created anywhere, where e-shop has a lot of clients;

Few companies could cooperate and create a platform for their products, cooperating for e-marketing, warehouses, delivery to clients and other processes of goods distribution.

Business Model *Digital Innovation Hub*

Lithuanian Innovation Centre, Vilnius, Lithuania

Overview

The Digital Innovation Centre for Advanced Manufacturing (Advanced Manufacturing DIH) is a centre coordinated by the Technology Centre "Intechcentras" and established in 2012 on the initiative of the Lithuanian Engineering Industry Association LINPRA to increase the competitiveness of industrial enterprises by providing services for improving business or production processes, products and services with digital technologies. The core of the Advanced Manufacturing DIH ecosystem consists of academic partners, innovative companies and their qualified researchers and specialists.

All over Lithuania Advanced Manufacturing DIH provides one-stop-shop innovation support and consulting services, expert assistance and services that help companies digitize business in their region and beyond. By applying business principles and a traditional service model, the centre helps customers meet the challenges of digitization and new product development and provides services that are difficult to access elsewhere. Advanced Manufacturing DIH services provide any company with access to up-to-date information, expert assistance, and access to technology for digital innovation testing and experimentation with the company's products, processes, or business models. Advanced Manufacturing DIH also provides networking services and mediates with investors, helps to obtain financing for digital change, and brings together consumers and suppliers of digital innovation in the value chain. 2016 the coordinator of the DIH "Intechcentras" has started to provide technology and enterprise digitization level (audit) services to help assess the technological readiness of enterprises and the need for enterprises' digital skills and their application.

Advanced Manufacturing DIH mission: Advanced Manufacturing DIH initiative to mobilize Lithuanian innovation ecosystem participants to increase the competitiveness of Lithuanian manufacturing companies through digital technologies.

Advanced Manufacturing DIH vision: Advanced Manufacturing DIH - the engine of the Lithuanian ecosystem - a reliable, entrepreneurial, participant in the European network of digital innovation centres.

The Digital Opportunity

Lithuania Advanced Manufacturing DIH provides one-stop-shop innovation support and consulting services, expert assistance and services that help companies digitize business in their region and beyond.

Digital Innovation Hub is established to connect 3 main groups of the digitization process participants: technology integrators and consultants, technology creators and companies, who are looking for specific digital technology.

Company starting digitalization of the processes inside the manufacturing or any other field of the company is facing a lot of challenges. First challenge is process optimization, companies often grow and expand processes by need, without thinking how to optimise it. When the task of digitization comes, the problem is to make process optimal before digitization. Here companies use the services of the

consultants to investigate the performance of the company, how is value created, how efficient every unit is using the time and money. In this task the consultant is needed, who has the experience in the field company is operating.

Second challenge that company is facing is to identify what already is used in the company and where which technologies can be implemented. This problem is usually solved by technological audit, to identify all the tools and technologies company already has, also the technologies most useful for the company and the field they are operating. This task is solved by technology audit consultants, who has knowledge of the technologies used for specific processes and tasks.

Third challenge companies are facing is to implement new technologies into the company. Big problem in the implementation of the technologies is change management and the staff acceptance, which is solved by the means of management. But there are also technological challenges, company often needs to test the technology, especially when it is new created specific for that company, to test it on larger scale manufacturing, test for quality, time, cost and using abilities. This problem is solved using R&D laboratories, a test bed for new technologies for the companies which create them, but also for the companies which want to implement it.

Those 3 challenges are solved in the Advanced Manufacturing DIH as a one-stop-shop innovation support. DIH is providing companies with consultants, network connection with technology creators and participation in international R&D projects for creating new technologies.

By applying business principles and a traditional service model, the center helps customers meet the challenges of digitization and new product development and provides services that are difficult to access elsewhere. Advanced Manufacturing DIH services provide any company with access to up-to-date information, expert assistance, and access to technology for digital innovation testing and experimentation with the company's products, processes, or business models. Advanced Manufacturing DIH also provides networking services and mediates with investors, helps to obtain financing for digital change, and brings together consumers and suppliers of digital innovation in the value chain.

Impact on Value Streams

Advanced Manufacturing DIH is working as a non profit organization, all the profit is reinvested into the expansion of this competence centre. After establishment of the DIH the scope of work is growing every year.

The biggest effect is felt by the participants of the DIH, one-stop-shop helped the players (consultants and technology creators) to increase the number of clients and keep the reputation in the market by giving feedback from the companies implementing the changes, which is essential for every company starting digitization process in the manufacturing.

Lessons learned

Creating a competence centre, a one-stop-shop in the field of digitization of manufacturing helped companies to get a reliable service and competent consultants in this process. It is very important to ensure the database of available experts with clear competence fields.

Companies decide to start digitization process easier when they have feedback from other companies, participating in the DIH about the implementation results.

R&D laboratories is essential part of the services, helping companies to save time and costs when the new technology is created or tested.

Transferability

This business model can be used by any competence centre in any field, not only digitization. DIH is ensuring quality of the services by facilitating the space to meet for all market players in very specific field.

Transferring the model, it is very important to establish the organization or unit which is facilitating the process, connecting people, contacting with government bodies, working with the market players, creating expert data base in the given field.

Business Model *Almyros Smart Open Mall*

Chamber of Magnesia - Municipality of Almyros, Magnesia, Greece

Overview

The Smart Open Mall of the city of Almyros is an initiative that comprises of a set of coherent and interconnected interventions aiming to upgrade the functionality and aesthetics of the Municipality and organize the economic activity by adopting and using smart applications.

It applies Smart Open Mall Ecosystem technologies and intelligent infrastructure services for the advanced and efficient provision of business, cultural and tourist services. The project wraps and extends the services of a Smart City to the benefit of the city and the surrounding areas targeting to the financial enlargement of the local economy via the leverage of its cultural, touristic and market product.

The Digital Opportunity

Smart Open Mall is based on the traditional form of a mall type, incorporating modernized infrastructure to make the visitor's / customer's / consumer's life simpler and easier. Smart Open Mall is integrated through specialized b2b platforms for enhancing local business services.

With the implementation of this Business Model, the Municipality of Almyros mainly targets to signal a new direction for the benefit of the region's commercial enterprises through extroversion and attracting new consumers, in an effective way. In particular, it aims to contribute to the promotion of goods and services of local businesses and extend their market share. The adoption of new technologies and strategic planning policies invoking the principles of sustainable development, the enhancement of the cohesive structure of the city, the sustainable mobility promotion, historicity and security can lead to the reconstruction and organization of new upgraded productive activities.

Impact on Value Streams

The Smart Open Mall project is creating an elegant network which will connect important cultural resources and tourist attractions while contributing to the commercial development. The interventions emphasize in bioclimatic approaches, unified architecture unities, quality public space and well-designed shopping area accompanied by smart technologies and applications, as well as sustainable mobility. Thus, the benefits are many and multiplicative. They concern not only the local businesses participating in the program but also all the residents and visitors of the Municipality.

With the implementation of the project, the commercial activity will be stimulated, the cultural and archaeological resources of the Municipality will be highlighted, green spaces will be created, the abandoned buildings will be utilized, and public spaces will be upgraded resulting in the revitalization of the area not only in store hours but all day, attracting visitors and tourists.

The integration of cutting-edge technological applications will substantially upgrade the environment, both residential and commercial, with a clear improvement of the commerciality and attractiveness of the area. In addition, it will include Almyros on the map of "Smart Cities" with obvious positive development results.

Lessons learned

The market of the Municipality of Almyros is mostly concentrated in the city center and plays an especially important role in the local development. This special role is not only for historical and geographical reasons but it is also the absolute centrality of the city of Almyros and also of the whole Municipality in the region. However, the business environment was based on older models which make it partially unsuitable for commercial development in comparison to new commercial models.

The new business Model of the Almyros Smart Open Mall will boost the local market, expand its growth potential, and help the city's internal competition with the neighbouring cities.

Transferability

The Smart Open Mall utilizes a b2b platform for enhancing local business services as an extender of the Smart City models and it can be applied to every open market. The platform aims to meet the needs of citizens, providing open trade and information services through a common smart application, acting as an ecosystem of interaction and synergy of all stakeholders involved.

Currently 64 enterprises actively participate in Smart Open Mall of Almyros. This market community can be further extended, while the Smart Open Mall ecosystem can be transferred and adapted to other local markets in regional and. national level

Good Practices

Good practice in the context of the Interreg Europe programme is defined as an initiative (e.g. methodologies, projects, processes, techniques) undertaken in one of the programme's thematic priorities which has already proved successful and which has the potential to be transferred to a different geographic area. Geographic coverage depends on the area where initiative was taken, depending on project geographical scope. Proved successful is where the good practice has already provided tangible and measurable results in achieving a specific objective.

Overall quality of the good practices will be evaluated and validated by the policy officers of Interreg Europe program in order to justify the value reported.

Project team focused on meeting these criteria when selecting good practices:

- Good practices create a real added-value. Initiatives seek to improve situation in certain areas and added-value can be described as an improvement made in comparison to *status quo* situation.
- Good practice is proven successful. It means that the initiative has reached its established objectives, tangible and measurable results.
- Good practice has potential for learning and inspiration for other regions. It means that it is well documented, displays its clear impact, possible constrains and main lessons learned.
- Good practice is transferable. Transferability implies "concept readiness" (i.e. performance, potential) and "institutional readiness" (i.e. motivation, resources) and shall not rely on major technical or financial investments.

In this chapter project partners collected best practices from the project Study visits and meetings with stakeholders in every region. Every practice was described according to Interreg Europe good practices database template and is published also here: https://www.interregeurope.eu/future-ecom/good-practices/. There is much more information about every practice than it is described here, therefore we added contacts of project team members at the end of the document, it is an open possibility for everyone willing to transfer those ideas to contact and get more information.

Good practice *Innovation Campus Lemgo*

Project	Future Ecom
Main institution	Innovation Campus Lemgo ICL e.V.
Location	Detmold, Germany
Description	**Innovation Campus Lemgo creates an ecosystem for innovations along the digital transformation based on cooperation business, science, society and administration** At the Innovation Campus Lemgo, the complete innovation chain of the digital economy is concentrated in one place: from vocational orientation and training, further education and academic studies to research, development, handicrafts, entrepreneurship and company settlement. This will result in innovative solutions for current and future challenges in the fields of digitalisation and intelligent technical systems in the clusters of automation/production technology, food technology, energy systems, health, as well as for vocational and academic training and further education. The overall project serves the future viability of the whole region – and the competitiveness of SMEs. In the triad of education - research - economy, the campus stakeholders are responding to the current and future challenges of demography, digitization and rural depopulation. Concerning digital innovations, the ICL forms the ideal eco-system for SMEs and business starters to increase B2B e-commerce. The Innovation Campus Lemgo association was founded to promote sustainable professionalisation in 2018. Stakeholders such as the Kreis Lippe (district of Lippe), the City of Lemgo, the TH OWL - University of Applied Sciences and Arts, the Fraunhofer IOSB-INA, the Regional Craftsmen's Association, the Regional Chamber of Commerce and Industry and Industry and others engaged as founding members.
Resources needed	The office of the association ICL currently operates with three employees and is basically financed by the members of the association and by subsidies. The demand for the first three years is about one million Euro.
Evidence of success	An excellent example of the open cooperation is the SmartFactoryOWL, a research and transfer platform for automation technology. As perfect

	counterpart for food technology the "Smart Food Factory" is being created. Today over 500 experts from various companies and disciplines are working on concrete applications and start-ups. They are profiting from the effective technology and know-how transfer based on short distances. Further inspiring science to business platforms are created.
Difficulties encountered	It is a challenge to find a balance between the different interests (from businesses, researchers, administration and society etc.) that inevitably come together in such an ecosystem, because only through community projects will be successful.
Potential for learning or transfer	The development in Lemgo on the Innovation Campus is a success-story for the development of a region especially when it comes to innovation and digital transformation. Several success factors for this regional innovation ecosystem have emerged that can be transferred to other projects, innovation ecosystems need: - content-related objective that allows profiling of a region, e.g. Ostwestfalen-Lippe (OWL) as technology region with focus on industry 4.0 - proven research expertise on site - special infrastructures and transfer platforms on site - local educational opportunities, especially for young people as the creative new generation - local companies and founders who act in the immediate vicinity, start-ups and entrepreneurship must be promoted. - acceptance and support from society, administration and politics by involving them personally - people who meet in a creative environment and therefore places of encounter and exchange
Contact	Thorsten Brinkmann

Good practice *E-Export via online marketplaces*

Project	Future Ecom
Main institution	Copenhagen Business School (CBS)
Location	Hovedstaden, Denmark
Description	**The practice goals are to provide competences and a virtual CMS platform enabling companies to utilize online marketplaces (E-export).** The practice is aimed primarily for helping Danish B2B companies that can potentially market their products in online marketplaces. The companies can be entrepreneurs as well as established companies, both with and without established e-commerce. The project consists mainly of three main activities: Mapping: The project will uncover corporate attitudes and knowledge about e-export and online marketplaces and their readiness to sell through digital channels in global online marketplaces. The project will investigate barriers and opportunities for e-export in the companies. In addition, a global survey of the potential online e-export marketplaces is undertaken to assess which marketplaces are relevant to each company. Model and tools: The project will develop a model, as well as tools to clarify the company's maturity for e-export through online marketplaces. The purpose is to assist companies in narrowing down the potential online marketplaces based on a match with the company's readiness and the company's existing business model. Platform for e-export: This activity focuses on designing and developing a prototype of a digital platform (Virtual CMS) for Danish companies who want to get online in one or more of the selected online marketplaces.
Resources needed	The resources needed in the project is 7 part-time persons in total from the two project partners and the one associated partner plus IT-platform development. The funding for the project is total 1.2 million Euro which is provided by www.industriensfond.dk/E-eksport under the program E-eksport.
Evidence of success	The goal in the project is by end 2020 to have moved 100 companies onto an online marketplace platform via the Virtual CMS platform. Currently the project goals are (almost) on track with 50 companies signed up for the Virtual CMS platform. It turns out the usage of a Virtual CMS platform are

	often considered second step when entering an online marketplace. The informational part of the project has been successful with close to 1000 companies receiving information and participating in workshops.
Difficulties encountered	One challenge encountered initially in the project was the willingness of companies to enter and use the Virtual CMS Platform, however this has improved throughout the project. During 2020 there is an (almost) exponential entry onto the platform and the target of 100 companies are within reach.
Potential for learning or transfer	The practice is an excellent jump start for companies that want to enter the online market and want to achieve experiences in the online market. The companies can after a sudden period decide if they want to pursue their own online web shop or if they want to continue on one or more online marketplaces either national or international. The Virtual CMS platform enables companies to maintain their products information and stock availability in one place only. Information is pushed out to selected online marketplaces - this could for instance be Amazon UK, Amazon DE, Newegg US etc. The good practice can be used as inspiration for public policy makers to focus on means and measures (similar to the one mentioned here) to support SME's through funded programs providing both knowledge and an easy access to enter online markets places like Amazon and Alibaba.
Contact	Ole Madsen

Good practice *Coventry & Warwickshire Innovation Test Bed*

Project	Future Ecom
Main institution	Coventry University Enterprises Ltd
Location	West Midlands, United Kingdom
Description	**To support SMEs to develop and test new products, services and digital technologies. Tackling inertia and funding real innovation.** Coventry & Warwickshire is England's fastest growing local economy since the 2008/09 recession, but a challenge facing the local economy is that just 14.7% of Coventry & Warwickshire businesses are defined as fast growing, compared to 16% nationally. Although a historically innovative area, 94% of R&D expenditure is focused in 0.05% of the area's business base (essentially Original Equipment Manufacturers). To continue the area's strong economic performance, there is a need for greater diffusion of innovation in the local business base. Co-ordinated by CCC, we developed integrated financial and non-financial support from the Delivery Partners. These include: • Workshops on specific innovation themes, led by CUE. • Specialist 1:1 support addressing barriers to innovation, led by CUE. • Usability studies to test new products on potential customers, led by CUE. • Capital and revenue innovation grants to support product and technology development, led by CUE, support from CCC. • Wraparound support from CCC and WCC to signpost SMEs to other specialist innovation support. The target beneficiaries are Coventry & Warwickshire SMEs. A range of methods are used to engage SMEs, including existing relationships the Delivery Partners have with the businesses, referrals from Coventry & Warwickshire Growth Hub (who co-ordinate public business support) and other innovation support schemes, and direct marketing through e-newsletters and websites of local business support bodies.
Resources needed	Resources are split across three Delivery Partners. Total Value is €8.7m including revenue and capital grants to SMEs (€4m from ERDF, plus funds from Local Authorities and Universities with match funding from SMEs

	for grants). 8 FTE staff across the 3 organisations manage and deliver the support.
Evidence of success	Innovation Grants for Digital Products 28 SMEs awarded grants are demonstrating good progress with product development. towards new product launches. Partnership working There is a strong collaborative working relationship between partners. Meetings of the partners share challenges and identify solutions. Project Delivery We achieved 47 business assists (target 25). Advisors attending networking events and generating relationships with other support providers is attracting referrals.
Difficulties encountered	Key lessons from Phase 1 (2016-2018) From SME feedback, intervention rate for revenue grants increased to 50%. Demand increased and grants claimed sooner. Stronger clauses around deadlines and milestones with better tracking to ensure timescales are met. Stronger programme governance.
Potential for learning or transfer	Most elements of this practice are transferrable: **Sector flexibility.** Supporting SMEs across variety of sectors, facilitates a range of innovation opportunities and use of digital/online technologies. Offering both capital and revenue grants is crucial in supporting product development. Of 28 awards, 7 SMEs are developing new digital products, e-platforms or mobile applications. **Partnership working.** Partnership working between 2 Local Authorities and a University is very effective. Collaboration with all agencies is vital. A Focus Innovation Group meets where representatives from various Innovation projects across the region provide update on their activity and cross-referral opportunities. It is attended by Local Authorities, Universities, Technology Centres and Innovate UK. **Range of delivery mechanisms.** A combination of financial and non-financial support, events, seminars and workshops has been utilised. Workshops on digitalisation are highly attended
Contact	Tess Lukehurst

Good practice *BrandLab workshops*

Project	Future Ecom
Main institution	Enterprise Lithuania
Location	Lietuva, Lithuania
Description	**BrandLab workshops is a program for creating brand for products shifting from outsource manufacturing to higher value-added manufacturing.** Lithuanian manufacturers are strong players in the global outsourcing manufacturing market, they have earned a reputation as manufacturers that can offer good value for money. Producing and being a low-cost labour force became a growing challenge for the industry. Effective solution to tackle this problem against rising labour costs is to sell own branded products in foreign markets. Good preparation and effective, targeted brand export strategy allows SMEs to bypass outsourcing manufacturing orders and open doors directly to foreign or e-commerce markets. Likeable, recognizable and strong brand is one of the greatest assets of a small business, capable of motivating employees, building customer and partner trust, and opening the door to deeper relationships with potential customers. The goal of the BrandLab workshops is to provide necessary knowledge of brand creation and development, using traditional and digital tools for global or e-commerce markets; to enable participants to create or renew a brand during the program and to prepare a strategic brand development plan. The impact of the program on participants is the growing export volumes. The total scope of the program is 8 days of workshops and trainings, individual consulting, practical work with program tasks and mentor, presentation of prepared strategic plans in the closing event, it happens every few years. BrandLab experts' competence and export strategy building program are key success factors.
Resources needed	A team of 4 experts with competence in the field of strategy building, change management, branding, marketing, e-commerce, communication ensured successful program implantation, program time frame is 2 months of workshops and individual work. Participant SMEs dedicate 2 people for this workshop.

Evidence of success	The result is measured in the terms of export growth, companies which participated in the program in 2015 reported 63 % growth in exports, result was measured a year after completing the program. Companies reported these positive changes: creating new brands for products, changing company or marketing strategy, growing responsibility for created products with new brands, creating new lines of products, starting selling in e-commerce platforms and finding new market segments.
Difficulties encountered	The main challenge was to involve SMEs management, when management is participating it has authority to make changes fast. A lot of companies do not have their strategy, mission and vision of the company, or it needs to be updated. Based on company strategy team is building brand and export strategy
Potential for learning or transfer	A lot of SMEs have a challenge how to fight increasing labour costs, changes in the world trade, trading through platforms enables companies to be closer to the clients. Using those opportunities companies need to be recognizable and build the trust with clients using branding of products and having clear strategy. Increasing labour costs, when low cost production is not a solution anymore is very important to all European countries. Most valuable part of this instrument is BrandLab workshop program, which can serve as a guideline for any country who is facing the same problem in SME's. It is also very important to find experts in the field of change management, export, e-commerce and branding. Other important aspect of transfer is how to engage the management of the companies and marketing employees into workshops.
Contact	Vilma Vilutytė

Good practice *Fostering and Developing Innovative Networks (InoLink)*

Project	Future Ecom
Main institution	Agency for Science, Innovation and Technology
Location	Lietuva, Lithuania
Description	**InoLink is strengthening clusters by developing strategy, competence, fostering innovation initiatives and integration into international value chains.** In 2015 clusters in Lithuania were lacking of maturity, sustainability and high value-added innovative initiatives among members, there was also inability to form international consortia, integration into international value chains. Other problem was lack of management competence in newly established clusters. Project also addressed problems like cluster members engagement, lack of awareness of possibilities of networks, internal communication, managing common initiatives. Project InoLink was providing consulting services for every cluster which was committing for guidance of consultants on a long-term basis. Project activities had 2 different directions: strengthening and developing clusters and internalization of clusters. Initially clusters identified the problems preventing cluster to grow and reach maturity and developed action plan. Every cluster had strategic planning sessions, engaging all the members, sessions were facilitated by experts. Clusters formulated the strategy, business model, new product development strategy, marketing strategy and implementation plan, subsequent stages included discussion, evaluation and adjustment. Experts advised clusters on R&D activities, how to join international consortia, European cluster excellence label consulting. Project team also provided services of international partner search for specific initiatives, international industry events, b2b meetings for partnership development.
Resources needed	Required resources are a mentor for the cluster for 2- 3 years, who works with cluster on constant basis and external expertise for solving specific problems, total amount in financial form, including mentor salary and external expertise when needed is around 100 000 per cluster in 3 years.

Evidence of success	Main evidence of success are: 14 clusters formulated cluster development strategy; 200 various initiatives between cluster members; 8 clusters received the bronze European cluster excellence label; more than 70 new members in clusters; more than 90 cluster members international partnerships, created project internet site – a platform to find partners. Project has raised awareness about possibilities of collaboration; consulted and guided clusters established strong management.
Difficulties encountered	Main challenge is to keep the high engagement of all members in the cluster to participate in the project, there are often very different interests between the members depending on their company size, maturity, management school. To bring everyone together companies must see value in close future.
Potential for learning or transfer	Project InoLink is a good practice for those regions which do not have strong clusters and companies are slow to form collaborations for various initiatives. Companies need to create innovative products and be in a strong capacity and financial state for international trade and larger scale export. Cluster collaboration is an effective way for SMEs to reach a certain scale needed to integrate into international value chains as well and being able to trade in world market. This initiative looked at every stage what clusters need to make the performance more effective and form strong collaboration ties between companies. Systematic approach, not single actions is a main success factor in this project. As a result of this initiative a strong cluster community developed in the country.
Contact	Vilma Vilutytė

Good practice *Ministry of Foreign Affairs' E-Export Program*

Project	Future Ecom
Main institution	Ministry of Foreign Affairs, The Trade Council
Location	Hovedstaden, Denmark
Description	**Establishing international e-commerce advisory centres in connection with the Trade Council in the Ministry of Foreign Affairs to promote E-Export.** In order to support national companies in their e-commerce way towards international expansion via e-export and to show a viable way forward the Danish Ministry of Foreign Affairs has established 4 centers for e-commerce offerings in connection with their Trade Councils in strategic selected countries. The centers are established in 1) Berlin, Germany 2) New York, USA 3) London, UK 4) Shanghai, China The problems addressed by establishing the centres are the challenges involved in establishing company individual e-commerce platforms in each countries the company wants to address. By signing up to a platform already established in the relevant countries the implementation of an e-commerce platform providing product offerings either B2C or B2B in each specific country should be relatively easy although the platform owner will typically take a transaction-based cut for each product sold. The Trade Council advices the companies about relevant platforms and with some platform owners The Trade Council already have an agreement, which can be utilized for companies signing up to the platform. The Trade council currently has agreements with Amazon, Tmall, Alibaba, Wayfair, Newegg, Fruugo and eBay. The main stakeholder is The Trade Council and the primary beneficiaries are the companies and the platform owners which are brought together. The secondary beneficiary is The Trade Council as they have additional offerings they can sell to the companies.

Resources needed	The resources needed in the current setup is in principle one to two additional persons at each strategic selected country.
Evidence of success	Establishing an international e-commerce platform can be a challenge as each countries often have different cultures and different legislations compared to Denmark and by utilizing a platform approach these obstacles are handled by the platform provider. The evidence for success is founded in the fact that The Trade Council has up to now (Marts 2020) supported approximately 100 companies with the e-export program into e-commerce platforms (primarily Tmall and Amazon).
Potential for learning or transfer	The practice is considered an easy way to internationalization of a domestic company and its product offerings. The platform providers often have very specific and local ways of operating and with The Trade Council facilitating the company's engagement with the platform providers it becomes a "dual" short cut – both easing the engagement with the e-commerce platform provider and easing the entry into the specific country as product provider.
Contact	Ole Madsen

Good practice *Training programme for transfer mediators to promote innovation*

Project	Future Ecom
Main institution	it's OWL NRW.Innovationspartner
Location	Detmold, Germany
Description	**New approach to innovation promotion: Training programme for transfer mediators with a focus on competence development and further training offers** SMEs rarely develop technological innovations and rarely use appropriate funding programmes for that. In this field „transfer mediators“ act today as connecting satellites to ensure that programmes are actually used. These mediators work e.g. as facilitators for chambers, business development agencies or industry networks and district administrations. But the knowhow of the mediators is limited in understanding what the companies actually need, what support is relevant in each case and how it can be obtained for implementation. It is a complex challenge for mediators, namely to know top performance in technology, to have individual sales competence, to possess communication skills and to have up-to-date knowhow about relevant funding programmes. The approach is to qualify the transfer mediators as facilitators with a focus on competence development and specific further training on topics: -Basic knowledge of support programmes for SMEs -Expert training on funding programmes, innovation modelling and patent law -Communication and consulting training for transfer mediators -Business visits to digitally well-positioned and innovative SMEs -Visits to research institutes for advanced digital technologies -Tailor-made sales and communication training -Training on agile innovation methods for SMEs and transfer mediators -Advanced training in the marketing of innovations, systematic trend scouting and business development
Resources needed	For the development of tailor-made qualifications a central qualification for regional projects and actors is needed with a budget of ca. 15.000.00 € for

	the procurement of specific training services for transfer agents. Local training services are procured via standard award procedures.
Evidence of success	To date there is no specific support programme for transfer agents. A study showed how little prior knowhow there is in sales, technology, communication and funding. The training addresses the strengthening of competences in these areas. More than 100 participants from business development agencies and intermediary organisations took part in these qualifications. The response was extremely positive, especially the targeted practical orientation and the pragmatically usable know-how were praised.
Potential for learning or transfer	The NRW.innovation partner OWL is consciously docked to the internationally renowned technology network it's OWL. This gives the network a boost in terms of perception and reach. At the same time, in addition to supporting transfer agents, the project can also integrate transfer partners from science quickly and precisely. This structure proves to be optimal in terms of technical competence, reach and standing vis-à-vis regional entrepreneurs. At the same time, the NRW.Innovation Partner sees itself as a supporter of transfer brokers and companies, as well as a mouthpiece for the region in dialogue with funding institutions. It is particularly positive that this practice can be transferred to other regions very easily and that the individual qualification can optimise the behaviour of administration. Finally, experience shows that the latent need among those involved is much greater than originally assumed.
Contact	Thorsten Brinkmann

Good practice *NetHUB*

Project	Future Ecom
Main institution	Finnhub Association
Location	Etelä-Suomi, Finland
Description	**The idea of the NetHUB project is to develop a novel service model together with logistics service providers and buyers.** The NetHUB project was launched by Finnhub Association for the need of digital development in logistics industry. Finnhub Association is a joint marketing network of more than 50 logistics operators and export companies. Challenges SMEs in export/ import business are facing are lack of enough cargo flow, high costs and shortage of expertise in logistics services. NetHUB project´s idea was to develop a novel service model together with logistics service providers and buyers. Development work was done through personal interviews and workshops which notably increased collaboration between companies and enhanced commitment towards the project. As a result, a new quote request application was designed and completed. The application is used online on its website. A client makes a quote request by using the application. The application guides the user to fill in essential information about desired logistics service. Multiple companies are reached with a single quote. This service is free for the buyer. Interested service providers then make quotes to the buyer in the application. The buyer completes the quote request by accepting one of the quotes from service provider. This new, smooth and reliable service model helps in buying logistics services, makes quote data accessible which helps the comparison of service providers and eliminates overpricing. This leads to increased sales and growth in SMEs in export/ import business boosting employment and internationalization as well.
Resources needed	The project budget was EUR 285 040. 70% of the project was funded by European Regional Development Fund and 30% came from private sector.
Evidence of success	The requirements for quote request application were defined in collaboration with logistics companies to maximize the service offering for both import and export companies. The completed and fully operational application was published for corporate users. So far approximately 70

	companies have registered as the application users and about 30 quotes have been sent through it.
Difficulties encountered	The Finnish logistics sector still operates with relatively traditional methods, so it is quite challenging to convince logistics operators about the benefits of a new digital application.
Potential for learning or transfer	The idea of the application is very potential and feasible. The purpose of the service model is to support regional development, enable new business opportunities and internationalization for SMEs by effectively facilitating the provision and purchase of logistics solutions. The service model also enables SMEs to participate in larger tenders by networking and dividing the logistics chain. It is, though, crucial to allocate adequate amount of resources (both human resources and funding) for design, implementation and especially for marketing. Digitalisation in traditional businesses, like logistics, requires well targeted and quite extensive marketing to convince users/ entrepreneurs of the benefits of a new application and service model. NetHUB project has also been an excellent learning process about public procurement executed by a small organization. Developed application is well suited for an operating environment with a sufficient demand for logistics services.
Contact	Marja Holopainen

Good practice *Focus Digital*

Project	Future Ecom
Main institution	Coventry University Enterprises Ltd
Location	West Midlands, United Kingdom
Description	**Focus Digital provides a structured pathway to improving skills and utilisation of Digital technology in SMEs from simple to advanced applications.** The ESIF strategy for Coventry and Warwickshire identifies digital competencies as one of the most important challenges the region faces. Action was needed to improve the IT engagement of businesses in the region. Focus Digital is designed tackle this issue, to raise awareness and to provide a structured route from basic competencies through three levels of support. At stage One free workshops were offered to raise awareness and draw businesses into appropriate levels. Stage Two was set up to provide tailored advice and respond to any query on improving IT infrastructure and competencies utilising a Graphic Designer, IT developer and IT technician. Stage three was designed to provide grants to companies seeking to innovate. This has included Augmented Reality design walk throughs, 3D modelling for architecture and apps for a number of practical business applications. In implementation there has been a strong take up of the workshops. In particular workshops around engagement with the market have been built up based on client feedback and workshop uptake. These developed over time to include Web optimisation, image capture and usage, and Social media. Approximately 460 companies have been involved in these light touch interventions. The second stage has provided direct one to one support to around 120 companies.The third stage has helped around 130 companies and provided grants totalling £1.17m
Resources needed	The project was funded with £1.1million (€1.3m) ERDF funding with £1.1M match funding. The project has been extended until the end of the current funding period with an additional £1.2m of ERDF committed.

	It has employed the equivalent of 8 full time employees. These include specialist advisors.
Evidence of success	The numbers of companies helped have exceeded expectation and those who have engaged with the project are reporting increased capacity to innovate. The extension of the project with an additional £1.2m of ERDF funding (£2.4m with match funding) is testament to the impact demonstrated.
Difficulties encountered	It proved difficult to recruit skilled IT technical staff to run the second stage of the project which reduced the impact of this stage. This has now been resourced better.It was necessary to filter out businesses who wanted to upgrade IT hardware and not innovate.
Potential for learning or transfer	Every region in the EU is challenged by the coming transition in business as AI, the Internet of things and the connected world have the potential to change business significantly. The approach of businesses is almost as diverse as the nature of the businesses themselves. In this diversity there are many who are still using IT for basic business functions and others who are leading the way in changing or developing their business models. The support offered by Focus Digital works across all these stages and provides a pathway to addressing the issues for all. It can be used to feed businesses in to other support projects as capacity improves. A policy which includes a support project like Focus Digital offers support in a way that any region can benefit from, whatever the stage of development in the region.
Contact	Tess Lukehurst

Good practice *Central Public Procurement of Intermunicipal Community Medio Tejo (CC_CIMT)*

Project	Future Ecom
Main institution	COMUNIDADE INTERMUNICIPAL DO MÉDIO TEJO
Location	Centro (PT), Portugal
Description	**CC-CIMT consists of a strategic project in the context of Local Administrative Modernisation, which aims at centralise the procurement of public works.** The Intermunicipal Community of Medio Tejo is an association of 13 municipalities from Medio Tejo region. The CC-CIMT was set up with the aim of developing a common electronic purchasing system for the Municipalities to obtain financial / procedural savings. It is a centralised trading and contracting system for the acquisition of a standardised set of goods/services. This supra-municipal level approach obliges companies to adopt a strategy of digital transformation and adapting to more agile procurement processes wider including the adoption of framework agreements, facilitating the procedures developed by the acceding entities and promoting free and transparent access for companies. For companies, the CC-CIMT has addressed the following benefits: -The public procurement procedure is faster; -Standardisation of procedures between contracting entities; -Prior knowledge of joint negotiations beforehand; -Absence of costs access to or use of solutions for public procurement; -Free and cost-free access to the parts of the contracting procedures. Company service providers must establish digital procurement procedures to comply with requirements from framework agreements in terms of timelines, prices, services quality, among others. The CC-CIMT is an opportunity for public authorities/companies adopt competences in the area of electronic acquisitions and public procurement at large scale, presenting itself as fundamental role for the region and its stakeholders.

Resources needed	The initial implementation had a budget of 121.000 EUR in 3 years period and a further 18.000 EUR investment for new integrations (EFDR funding). Also a management team of 4 persons (project coordinator and 3 others categories) and 2 additional consulting units can provide further assistance.
Evidence of success	In the first 3 years the CC-CIMT procurement process achieved more than 3 Milion Eur and savings of 225.000 Eur. About 257 companies are registered in the suppliers' database. The practice was replicated within other Intermunicipal Communities in Portugal.
Difficulties encountered	The implementation process of electronic public procurement is associated with high and complexed levels of legislation. There are also difficulties to increase the number of companies registered in the database in a variety of services and goods.
Potential for learning or transfer	This practice was already transferred among others Intermunicipal Communities in Centro region of Portugal (eg. https://centraldecompras.cim-regiaodecoimbra.pt/). Some key factors for a transfer includes: - the level of accountability (number of tenders, number of service providers, savings in Eur for public authorities, volume of contracts for companies per service/good, etc)must be kept updated in order to highlight the evolution along the project duration and all benefits for the regional economy. - an important factor is the Informative Portal Medio Tejo (MT.com) which allows all companies to communicate their selling conditions to potential public buyers increasing visibility. - principles of transparency and efficiency – service providers are selected according to specific criteria defined by CIMT. - different topics/themes can be added to the electronic central public procurement to potentiate relevant needs, such as circular economy principles or innovation procurement
Contact	João Salvador

Good practice *Industry 4.0 Vouchers to promote SMEs digital transformation*

Project	Future Ecom
Main institution	Institute to Support Small and Medium Sized Companies (IAPMEI)
Location	Lisboa, Portugal
Description	**Industry 4.0 Voucher is a policy instrument to promote digital transformation in SMEs through the adoption of technologies and business models adaptation.** Most SMEs willing to promote digital transformation are lacking resources and specific know-how to adopt the suitable technologies that might contribute for disruptive business model innovations. The Industry 4.0 Voucher policy instrument is implemented through a financial voucher of 7500€ that allow SMEs to fund the acquisition of consultancy services for diagnosis of suitable strategies for the organisation leading to the adoption of technologies and processes associated with Industry 4.0: digital channels for managing markets, channels, products, customer segments; UX; CRM and E-Commerce; electronic marketplaces; SEO; Social Media Marketing; Content Marketing; Display Advertising; Mobile Marketing; Web Analytics; interconnection systems; Sensors; big data; Augmented reality; additive manufacturing; IoT; Cloud; machine learning; IA; Cyber-physical systems; solutions for connectivity.SMEs must apply for the voucher with a project where they specify their needs and business goals that consultants must take in consideration when designing digital transformation strategy. For consultants to provide technical assistance services to SMEs under Industry 4.0 vouchers, they must be accredited. The project evaluation process is simple and fast with several cut-offs along the year. The instrument implementation is operated by IAPMEI, the Portuguese agency for competitiveness and innovation, and the policy management is done by the managing authority of operational programs.

Resources needed	Each voucher has a unit value of 7500 EUR and represented a public investment of about 12M EUR to support more than 1500 companies. The funding comes from EFDR in the context of Regional Operational Programs and the Competitiveness and Internationalization Operational Program.
Evidence of success	Between 14th October 2018 and 30th June 2020, about 593 proposals will be supported representing 3.4M EUR for SMEs to support digital transformation.
Difficulties encountered	Implementation of a simple system for the evaluation process is challenging and most of times is difficult to implement; management of so many projects demands human resources availability.
Potential for learning or transfer	SMEs recognise the relevance of the instrument and the potential benefits involved when implementing technologies to stimulate digital transformation of traditional business models. It is felt that the application process is quick, simple and with low administrative paperload involved. The accreditation process for service providers brings transparency and trustiness in the consultancy services. The practice can be easily transferred in terms of implementation process to reach the target beneficiaries.
Contact	João Salvador

Good practice *HEIA - Technological and Holistic Engagement for Industry 4.0 Assessment*

Project	Future Ecom
Main institution	COTEC Portugal - Business Association for Innovation
Location	Norte, Portugal
Description	**THEIA is a digital self-diagnostic maturity model that supports the strategic planning of business transformation and identifying critical areas.** THEIA Model is a general-purpose framework adapted to every economic activity sector and identifies four dimensions responsible for the maturity of digital processes – Innovation and change management, Management of intangible assets, Operations and Processes, Orientation to Customer – which reflect a transformation trajectory logic, supported on the path of definition, preparation/execution. The model was developed and calibrated with a representative statistical sample of more than 300 Portuguese firms from different sectors. Also, the implementation process follows a "franchising" model in which a wide network of trained technicians from partner business associations and technological centers support the implementation of THEIA in SMEs. Through THEIA Model, COTEC can obtain significant information on the maturity state of organisations in Portugal, as well as their knowledge about the themes related to the digital transformation, providing significant information to influence policy decision makers. Through this diagnosis, COTEC will be able to have a more accurate mapping of companies' needs and gaps, facilitating the communication and dissemination of relevant information. On the other side, when using this tool, SMEs will be measuring their level of maturity through a set of questions that will make them reflect on their capabilities and how they want to position themselves in the future, so they can easily set the way to the desired digital transformation.
Resources needed	The practice requires 2 persons for project management. The development was subcontracted to a specialized IT company (100.000 EUR). The

	ongoing activities are done in partnership with business and industry associations (estimation of 50.000 EUR). The resources are funded by ERDF (COMPETE2020).
Evidence of success	The web-based tool is available to the Portuguese industry since beginning of 2020. More than 300 companies have participated voluntarily in the model development to refine dimensions, questions and indicators and make these useful and customised for the Portuguese reality.
Difficulties encountered	The questionnaire terminology is sometimes considered too technical jargon. It is important that intermediary organisations can "translate" the questions that companies can understand and adapt it to the context of specific sectors and industries.
Potential for learning or transfer	The practice is very interesting for replication because it represents more than just a "off the shelf" self-diagnostic tool that can be directly translated for any language, but is a model customized to each country/region reality. A potential transfer for other regions/countries must follow the development stages taken for THEIA: a first model definition based on international benchmark and market gaps; industry consultation and data collection from a representative sample of companies that reflects the national reality according to statistic models; model improvement; training the intermediaries' organisations; the implementation in SMEs is one-day session with experts from the intermediaries facilitating the session. Continuous feedback for improvement and development of the tool is still pursued.
Contact	João Salvador

Good practice *Smart Factory OWL*

Project	Future Ecom
Main institution	Smart Factory OWL
Location	Lemgo, Germany
Description	**The SmartFactoryOWL is the real laboratory for Industry 4.0 and makes technology from research and industry tangible** What is really behind "Industry 4.0" and how can small and medium-sized companies use these technologies today? The SmartFactoryOWL is the real laboratory for industry 4.0 and offers companies and research institutions extensive possibilities and services for the joint design of the factory of the future. The SmartFactory makes demonstrators and their technology from research and industry tangible and thus makes Industry 4.0 tangible. In the SmartFactory OWL Industry 4.0 is presented in a compact form with practical use cases: In highly attractive research, production and seminar areas, experts provide information on research results in the areas of digital transformation of industry, the future of work and process optimization. On the 2.000 sqm production and innovation area, these topics are presented in a way that can be experienced and interested parties can experience their benefits first hand. Experts from science and business applications help companies to identify fields of action as well as in knowledge and technology transfer and in the implementation of projects by forming the link to the experts and networking the players in a suitable way. Together with the CENTRUM INDUSTRIAL (CIIT), SmartFactoryOWL forms the research and development cluster for industrial automation in the technology region Eastwestphalia-Lippe (OWL Ostwestfalen-Lippe).
Resources needed	The investment costs for the Smart Factory OWL building (total floor space: 2,000 square meters) amount to around seven million euros. The equipment (changing frequently) is also worth several million euros. 5 experts for transfer and research demonstration are working in the Smart Factory office. The office of the association ICL currently operates with three employees and is basically financed by the members of the association and by subsidies. The demand for the first three years is about one million Euro.

Evidence of success	As a joint institution of the Fraunhofer IOSB-INA and the Technische Hochschule Eastwestphalia-Lippe (OWL Ostwestfalen-Lippe) in Lemgo, the three pillars of the SmartFactoryOWL are research, qualification and transfer to technologies of the digital industry. In these three fields, SmartFactoryOWL provides answers to many questions and inspiration for own developments, in addition to a worldwide unique Industry 4.0 infrastructure. More than approx. 6.000 visitors per year make use of this offer.
Potential for learning or transfer	Many companies in the EU need help in taking the first steps towards digitisation and recognising their individual potential. A service like SmartFactoryOWL makes Industry 4.0 and everything relevant for companies, their employees and their (future) customers tangible. In this industrial environment, prototypes can be developed and tested for use in production environments. Company representatives will be introduced to the technologies of networked digitisation and shown how future business models can be created from them: From product development to production and networking. Here the future of production and work becomes visible today. Experience and feedback from companies show that this cooperation concept is particularly driving forward digitisation and automation. The feedback from partners in the Future Ecom project was also very positive, enabling them to communicate the topic of Industry 4.0 to their regions, particularly by means of practical applications and their own trials.
Contact	Thorsten Brinkmann

Good practice
Combination of IoT and Wireless Sensors in AgrTech

Project	Future Ecom
Main institution	Centaur Technologies p.c.
Location	Volos, Magnesia Greece
Description	**Centaur Technologies is an Internet of Things solutions company developing wireless sensor electronics and cloud software for data monitoring and analytics. It is focused on Stored Product Protection for the food industry and logistics chain. Its specialties include web and mobile software, wireless electronics, semiconductors, simulation and analytics techniques.** Centaur has developed wireless sensors that can transmit reliably from inside containers, warehouses, silos, and can form 'mesh' networks for efficiently dispatching their data to the cloud. It also applies computer simulation techniques and data analytics methods for realtime monitoring of stored product conditions (e.g. temperature, humidity, ethylene, CO, CO2 emissions) in order to determine the quality, safe storage time and spoilage risk of the product being stored. One of the problems they are addressing is monitoring the concentrations of fumigants (such as phosphine) that are used for pest management of stored products such as grains, flour, dried fruits, tobacco and many others. The gas sensors detect these levels and the cloud software enables real-time monitoring and enforcement of proper stored product protection protocols. Traditional methods have been being prone to human error, waste, safety hazards to people and the environment. Centaur provides constant monitoring and online guidance for safe and efficient pest management.
Resources needed	The company is a dynamic high tech product company which started in Volos, Magnesia Greece. In September 2016, Centaur managed to attract a US$ 1.3 million equity investment from a consortium of VC and angel investors from Israel, US and Greece. As a result of this fundraising the company set up an operating entity in the USA, Centaur Analytics, Inc.,

	while it continues to develop its technology and products from its base in Greece. In June 2020, the company employs 16 full time highly skilled scientists and engineers, 5 of whom have post graduate degrees. The Centaur team combines hardware design, software development, data science and agronomy expertise.
Evidence of success	Developed and launched a traceability system for olive oil production in Greece, in contract with AgroSpeCom ltd (a food safety specialist) and the Centre for Export and Promotion of Olive Oil (EKEPE). The system is in use by Unilever's supply chain and has tracked more than 1,000 tons of olive oil production since 2014 (see https://farmer.gr/sustainoil in Greek). Actively developing wireless gas sensors and cloud apps for uses in Stored Product Protection and phosphine tracking.
Potential for learning or transfer	The Centaur team is passionate about ending post-harvest crop losses. After leaving the field, 17% of the world's harvests spoil. In developing countries, loss skyrockets to more than 30%. The Centaur Internet-of-Crops Platform gives the food and commodity industries an unprecedented capacity to track, monitor, and understand the quality of the world's food when stored, transported and delivered to shelves. Post-harvest quality is maintained. Losses are minimized. A more abundant food supply is delivered.
Contact	https://centaur.ag/

Future Ecom Project Partners

- Coventry University Enterprises Ltd, UK
- Business Development Centre North Denmark, Denmark
- North Denmark Region, Denmark
- Business and Innovation-Center Lippe-Detmold GILDE, Germany
- Chamber of Magnesia, Greece
- Lithuanian Innovation Centre, Lithuania
- NERSANT – Business Association of Santarem Region, Portugal
- ART-ER S.c.p.a. - Attractiveness, Research, Territory, Italy
- Cursor Oy, Kotka-Hamina Regional Development Company, Finland
- The Regional Council of Kymenlaakso, Finland