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FACULTY OF INTERNATIONAL RELATIONS

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Innovations in International Payments

Diploma thesis

UNIVERSITY OF ECONOMICS IN BRATISLAVA
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Innovations in International Payments

Diploma thesis

Study program: Economic Diplomacy

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Department: Department of International Economic Relations and Economic Diplomacy

Supervisor: JANČÍKOVÁ, Eva, Dr. habil Ing., PhD.

Bratislava 2020

Sanda Bírta

Declaration

I honestly declare that I have elaborated the final thesis independently and I have listed all the literature used.

Date:

.....

(Student signature)

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ABSTRACT

BÎRTA, Sanda: Innovations in International Payments- University of economics in Bratislava. Faculty of international relations; Department of International Economic Relations and Economic Diplomacy – Final thesis supervisor : Jančíková,, Eva, Dr. habil Ing., PhD.– Bratislava: FIR UE, 2020, 110 p

The aim of the diploma thesis is to define innovations in payment system and to provide insight into the news that has arrived on the financial market. The main benefit of thesis is that it highlights the main trends that will define banking this year and answer the question: How will future payments look like? The thesis is divided into 4 chapters and several subchapters and contains 9 Pictures and 3 Figures.

Key words: innovations, payments, system, SEPA, SWIFT, international, technologies

ABSTRAKT

BÍRTA, Sanda: Inovácie v medzinárodnom platobnom styku– Ekonomická univerzita v Bratislave. Fakulta medzinárodných vzťahov; Katedra medzinárodných ekonomických vzťahov a hospodárskej diplomacie. Vedúci záverečnej práce: Jančíková,, Eva, Dr. habil Ing., PhD.– Bratislava: FMV EU, 2020, 110 s

Cieľom tejto diplomovej práce je definovať inovácie v platobnom styku, teda poskytnúť prehľad o novinkách, ktoré vznikli na finančnom trhu.. Hlavným prínosom práce je, že poukazuje na hlavné trendy, ktoré budú tento rok definovať bankovníctvo, a odpovie na otázku: Ako budú vyzerat' platby budúcnosti.? Práca je rozdelená do 4 kapitol a niekoľkých podkapitol a obsahuje 9 obrázkov a 3 grafy.

Kľúčové slová: inovácie, platby, systém, SEPA, SWIFT, medzinárodné, technológie

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Abbreviations

ACH -Automatic clearing house

AI-Artificial intelligence

ATM- Automated Teller Machine

B2B-Business-to-Business

BBC-British Broadcasting Corporation

BCG-Boston Consulting Group

BIC- bank identifier code

BIR- Real-time payments (Betalingar i realtid from swedish)

BIS-Bank of International Settlement

CBDC -Central bank digital currencies

CD-compact disk

CIS-Community Innovation Survey

EUROSTAT-Statistical Office of the European Communities

CL/C- The Commercial Letter of Credit

CPSS-Committee for Payment System S

D/C-Documentary Credit

DLT- Distributed Ledger Technology

ECB-European Central Bank

ECU-The European Currency Unit

EFTA- European Free Trade Association

EIS-European Innovation Scoreboard

ERP- Enterprise Resource Planning

ESMIG -Eurosystem Single Market Infrastructure Gateway

EU-European Union

FinTech-Financial Technology

FIS- Fidelity National Information

GII- Global Innovation Index

GPI-Global Payments Initiative

GPS- Global Positioning System

GSRS- Global Substance *Registration* System

IaaS- Infrastructure as a Service

IBAN- International Bank Account Number

ICI-Innovation capacity index

ID-Digital identity

IMF- International Monetary Fund

IoT-The Internet of things

ISO-International Organization for Standardization

IT- Information Technology

L/C- Letter of Credit

LVPS – Low Value Payment Settlement Subsystem

MARTI-Machine readable teletext input

MDES-Mastercard Digital Eanblement Service

NBS-National bank of Slovakia

NFC- Near field communication

PIN-Personal Identification Number

POS-Point of Sale

PSD -Payment Services Directive

R&D-Research and development

RFID - radio frequency identification

RPA -Robotic Process Automation

RTGS- Real-time gross settlement

SCF -The SEPA Cards Framework

SCT-SEPA Credit Transfer

SDD-Sepa Direct Debit

SDR-Special Drawing Rights

SEPA- Single euro payments area

SLA- Service Level Agreement

SME- Small and Medium-Sized Enterprise

SNB-Central Bank of Switzerland

STP- Straight Through Processing

SWIFT- Society for Worldwide Interbank Financial Telecommunication

TARGET-Trans European Automated Real Time Gross Settlement Express Transfer System

TIPS-Treasury Inflation-Protected Security

UK-United Kingdom (U.K.)

UNIFI-UNIversal FIancial messaging standard

US(A)-United States(of America)

WB-World Bank

XML-Extensible Markup Language

QR-Quick Response

Introduction

Over the past decade, rapid innovations in financial markets and the internationalization of financial flows has changed the banking system, making it almost unrecognizable. Both technological progress and liberalization have provided new opportunities for banks and non-banking institutions. The growth of international financial markets and a greater diversity of financial instruments have allowed banks greater access to finance. At the same time, markets have expanded opportunities to develop new products and provide a wider range of services have emerged. While the pace of these changes seems to be faster in some countries than in others, banks everywhere have generally become more involved in the development of new tools, products, services and techniques.

The main purpose of this diploma thesis paper is to define innovations in payment system and to provide insight into the news that has arrived on the financial market. The diploma thesis is divided in 4 chapters and several subchapters.

In the first chapter we analyze the current state of the problem solved in the native country and abroad, we deal with the theoretical aspect of the problematic. Parts of this chapter are definitions and opinions of scientists that studied the topic of innovation, and payment system. It is presented as well a short historical aspect of the evolution of payment tools. As well part of this chapter is the analysis of means and payment instruments.

The second chapter entitled “The Aim of the Work, the Methodology of the thesis and research methods” In this chapter there is described the main goal of this diploma thesis, partial goals for achieving this main goal. We focus on the methodology, the steps of procedures taken before writing the thesis, the written resources and there are mentioned the figures on which the diploma thesis is based on. There is also mentioned basic theoretical research methods.

The third chapter is the practical part of the thesis. It is entitled “The results of the thesis”. This part is based on practical research. In the beginning of the chapter we will start with a short characterization SEPA components and participants and of Single Euro Cash Area and other optional services. In this chapter as well is description of instant payment around the world. It is presented how were implemented such projects in different countries and it is presented how it is implemented in Slovakia. As well important part in this chapter is

identification of high technologies in payments, how are they being implemented in new methods of payment and how countries are implementing and reacting to digital payments (mainly blockchain).

The last chapter is entitled discussion and is based on conclusions based on previous chapters: about payments instruments, SEPA. In this chapter we will identify new challenges and opportunities in the payments market and how to solve this challenge of digital transformation. In this chapter we will focus on the banks of the future. This highlights the main trends that will define banking this year and answer to the question how will future payments look like. This will help individuals and legal entities reading this paper to become familiar with the innovations and tendencies in international payments and will help them prepare for what is coming up next in future payments.

1 The current state of the problem solved in the native country and abroad

Innovation is generally considered to be the main driver of economic growth in today's global economy. By introducing innovations into practice, we can obtain: products with improved quality features, higher quality services, new, more efficient and ecological production processes, improved models of the business management system, modern methods of workforce management etc. There are multiple motivations for companies and organizations to innovate, including: increasing market share, conquering new markets, improving product quality, expanding the product range, replacing outdated products, reducing environmental impact, etc. Innovation is inextricably linked to creativity. Innovation and creativity processes are interrelated, because finding the solution to the problems that arise in an innovation process requires creativity. The innovation aims at a marketable application in practice of an invention, however, innovation is possible and without a prior invention.

1.1 Innovations

Innovation has been defined in many different ways by different specialists, without a generally accepted definition. In the Dictionary of Contemporary Slovak Language¹ it is mentioned that innovation is: "1) introduction of new significantly improved elements to the existing form, function of things, production and organizational procedures, etc., or 2) result of innovation process, improvement, new phenomenon, process, etc.". The Merriam-Webster Online Dictionary presents a broad definition of innovation: "1) the introduction of something new, or 2) a new idea, a new method or a new device, novelty"². Innovation is a process (the action of innovating), and also innovation is the result of an innovating process. There is also the opinion that "Innovation" is both a process and the result of this process, so it would be both an active and a resultative form), so there is a polysemy of this term.³ Innovation is not limited to science and technology. In a broad sense, innovation can also be social (in social systems), artistic, in the administrative field, in business, in medical care,

¹ Jazykovedný ústav Ľudovíta Štúra Slovenskej akadémie vied [online] - [cit. 15-12-2019] Available at: https://www.juls.savba.sk/pub_sssj.html

² Merriam Webster online],[cit. 15-12-2019]Available at: <https://www.merriam-webster.com/dictionary/innovation>

³ Azgaldov, G.G., Kostin, A.B. (2009). K voprosu o termine "inovatija" (About the problem of term "innovation")

etc. In sociology, innovation is defined as a process of influence that leads to social change and whose effect is to reject existing social norms and to adopt new norms.⁴

1.1.1 Types of innovations

The type of innovation is a common term used in literature to differentiate innovations. OSLO Manual proposed to classify innovations into four categories⁵: 1) product innovation, 2) process innovation, 3) marketing innovation, 4) organizational innovation. The OSLO Handbook recommends the following conceptual definition of (technical) innovation: "An innovation is the implementation of a new or significantly improved product (goods or service), or a process, a new method of marketing, or a new method of organization in business practice, in the organization of jobs or in external relations". The minimum requirement for an innovation is that the product, process, marketing method or organizational method must be new (or significantly improved) for the firm.

A *product innovation* is "the introduction of a good or service that are new or significantly improved in terms of their characteristics or intended uses". These include significant improvements in technical specifications, components and materials, embedded software, user-friendly attitude or other functional features. Product innovations can use new knowledge, technologies, or can be based on new uses or combinations of existing knowledge and technologies. The term product is used to cover both goods and services.

Process innovation is the implementation of a new or significantly improved production method (for example, new manufacturing processes or technological flows) or a new delivery method. This includes significant changes in techniques, technology equipment or software. The result of the process innovation must be significant in terms of: the level of production, the quality of the products or the reduction of production and distribution costs.

Marketing innovation is the implementation of a new marketing method that involves significant changes in product or packaging design, new sales methods, product placement, product promotion or pricing policy. Marketing innovations aim to meet better the needs of customers, follow opening new markets or a new positioning of the company's products on the market, with the aim of increasing the company's sales.

⁴ Corsi, Patrick et al.(editors),(2006).Innovation Engineering.The power of intangible networks. Published by ISTE Ltd 2006- London ISBN: 978-1-905-20955-2

⁵ OSLO Manual.Guidelines for collecting and interpreting innovation data.3rd ed.OECD/European Communities, 2005 ISBN 92-64-01308-3

Organizational innovation is the implementation of a new method of organizing in the business practices of the company, in organizing the work places or in the external relations of the company. Such an innovation aims to increase the company's performance by reducing administrative or transaction costs, improving job satisfaction (and thus labour productivity) or reducing supply costs. This type of innovation at the moment seems to offer solutions for organizational development that is more sustainable and harder to imitate by competitors. Among the innovations in the new methods of organizing business practice, we can mention: knowledge coding, training and education schemes, supply chain management, lean production, quality management systems. In addition, perhaps even the somehow indefinite character of the notion of organizational (managerial) innovation gives it increased attractiveness in the eyes of those who are not satisfied with the easy solutions.⁶ In USA, many organizational innovations have taken place in distribution. Examples of organizational innovations include the introduction of supply chain management systems, the quality management system, etc. Generally speaking, the term "organizational innovation" refers to the creation or adoption of new ideas or behaviours for the organization, through internal changes and adaptations of the innovating organization⁷. Changes can be introduced in strategy, structure, competences, processes, incentive systems, innovation culture of the organization or reorganization of the whole organization. Among the initiators of organizational (managerial) innovation are mainly the managers of the organizations, management consultants and representatives of the academic environment.⁸

A comprehensive definition of innovation, incorporating both products (and services) and processes (in marketing, systems and operations) was formulated by G. Pinchot and R. Pellman⁹: "innovation is both creation and bringing into profitable the use of new technologies, new products, new services, new marketing ideas, new systems and new ways of operating." One of the early classifications of the types of innovations was developed by the Austrian economist Joseph Alois Schumpeter (1883-1950), who distinguishes five types¹⁰: a) the creation of new products or the improvement of the quality of a product; b) new production methods based on new scientific discoveries; c) new sources of supply with

⁶ Ciomara, T. (2013) The exploration works efficiently and will consult consultants in the management of innovative practices under conditions of exploitation of sustainable economic resources, National Institute of Economic Researche, ISBN 978-973-618-325-6

⁷ L. ,Alice(2004),Organizational Innovation,Working Paper,No.1

⁸ Ciomara, T. (2011) Brief Analysis Of Some Sources Of Managerial Innovation, Financial Studies, vol. 15, nr. 3

⁹ G. Pinchot,R. Pellman (1999): Intrapreneuring in Action: A handbook for business innovation, Berret-Koehler Publishers Inc,San Francisco CA,1999 ISBN: 978-1576750612

¹⁰ Schumpeter,J.A.(1934) The Theory of Economic Development,Cambridge,Mass:Harvard University Press ISBN 9780674879904

raw or semi-manufactured materials; d) creation of new markets; e) the emergence of a new form of industrial organization leading to the creation of a monopoly position. Damanpour, F. ¹¹ defines innovation as "the adoption of a device, system, program, process, product, service, or policy that is new to the organization that adopts them. "The Boston Consulting Group's (BCG) general management company affirm that "innovation is the process of making improvements by introducing something new. It may be a new product invented, a new law issued by the government, or simply a new idea that encourages new thinking ". An edition of the Business Dictionary¹² defines innovation as "the process by which an idea or invention is transformed into goods or services for which people will pay. To be called innovation, an idea must be reproducible at economic costs and must satisfy a specific need. Innovation involves the deliberate application of information, imagination and initiative to obtain a different or greater value from resources and contains all the processes by which new ideas are generated and converted in useful products ".

Abernathy and Clark ¹³ evaluated the innovation in terms of the advantages that it brings to an organization over its competitors, and defined four types of innovations:

- a) "architectural" innovations (of background) that recombine certain components of a product or process so that a new "architecture" result. An example of architectural innovation may be the replacement of steel with plastics, in some applications;
- b) "commercial niche" innovations that allow the creation of new markets through the use of existing technology;
- c) "regular" (current) innovations that are incremental, continuous changes that have significant cumulative effects on the cost and performance of the products. Current innovations of continuous improvement take place in the automotive industry, computer industry, etc;
- d) "revolutionary" (ground-breaking) innovations that produce completely new technologies or products, involving radical ("ground-breaking") changes of some industries or the creation of new industries. The occurrence of compact audio disks (CDs) is, in relation to the magnetic stripe, a revolutionary innovation.

¹¹ Damanpour, F. (1991) Organisational Innovation: A Meta-Analysis of Effects of Determinants and Moderators, Academy of Management Journal, 34, No. 3, 1991, p. 555-590

¹² Business Dictionary.com, 2007-2009 ISSN: 0950-4125, Vol. 23 No. 2, Publisher: Emerald Group Publishing Limited

¹³ Abernathy, William J. and Clark, Kim B. (1985): Innovation: Mapping the Winds of Creative Destruction, Research Policy, 14, 3 ISBN 0415426790. - 2008,

Francis, D. and Bessant, J.¹⁴ propose four categories of innovations (the '4P' of innovation): 1P-product innovation, 2P-process innovation, 3P-the innovation of positioning of companies or products and 4P- paradigm innovation. These four categories of innovation are not strictly distinct, but have fuzzy borders. The "4P" of innovation allows to examine the space of opportunities for innovation.

Positioning innovation is a change in the context in which the products are delivered and does not significantly affect the composition or functionality of the product. For example, placing a well-defined product on a new market is a positioning innovation. The main feature of the innovative product positioning strategy is identity management, through advertising, marketing, media and packaging. Positioning innovation can change the characteristics of an existing market or create a completely new market that did not exist before.

Paradigm innovation. The term paradigm has found its place in the vocabulary of organization's management in expressions such as "paradigm shift" or "paradigm break". Expressions are generally understood to imply that a traditional belief system - the old paradigm - has been replaced by a new way of understanding, a new paradigm. The paradigm of innovation is a change of mental models of action to solve the problems associated with the innovation of a particular product or service. Examples of paradigm of innovation that radically redefine the nature of the organization and management policies can be: changing management practice, removing authoritarian style, introducing participatory style, team-based approaches. An example of paradigm innovation is the development of Internet solutions for many areas, such as banking, insurance, travel, etc. There is, however, some clarity in the definition of paradigm innovation, the term being somehow litigious.

1.1.2 Incremental innovations and radical innovations

The terms incremental innovations and radical innovations are frequently differentiated according to the degree of change required for the implementation of the innovation and by the level of technological intensity. Radical innovations (breakthrough innovation) produce entirely new solutions for systems, processes, products or services, which develop into new business, can cause major changes in an entire industry or can lay the foundations of a new industry, accompanied by the creation of new markets. Radical innovations ensure substantially greater customer value, this being a dimension of novelty. Examples of radical

¹⁴ Francis,D.,Bessant,J.(2005):Targeting innovation and implications for capability development, *Technovation*,25(3),p.171-183 ISBN: 978-1-118-53859-3

innovations are: laser, fiber optics, computer industry, radar, etc. Radical innovation product describe a product whose intended use, performance characteristics, attributes, construction properties or use of materials and components are significantly different from the products previously manufactured. Such innovations may involve radically new technologies or may be based on combining existing technologies into new uses.

Radical innovations are characterized by the following:

- a) the product's performance improves between 5 and 10 times compared to the existing similar products;
- b) there are created premises for the reduction of costs between 30 and 50% or even more;
- c) the products have new performance characteristics worldwide.¹⁵ Currently, researchers are far from a consensus on the formal definition of radical innovations.¹⁶

Incremental innovations involve "adapting, refining, simplifying and improving existing products or production and distribution systems."¹⁷ Incremental innovations were defined by Banbury and Mitchell¹⁸ as "refinements and extensions of established projects that lead to substantial price or functional benefits to users". Incremental innovations are usually minor improvements to existing products and processes.¹⁹ Incremental innovation of a product or service refers to an existing product or service, whose performance has been intensified or increased during the life cycle, from one version to another. A simple product can be improved by using higher performance components or materials, while a complex product made up of several subsystems, integrated techniques, can be improved by partial changes to one of the subsystems. Incremental innovations may also consist of extending existing production lines, creating product families or extending the functions of existing products by adding complementary functions. Incremental innovations have a continuous character (in contrast to radical ones that are discontinued) and a relatively high frequency, in order to meet the needs perceived on the market, but it provides smaller profits to the firms compared to radical innovations. The category of incremental innovations also

¹⁵ Leifer, R. et al (2000): *Radical Innovation-How Mature Companies Can Outsmart Up starts*, Harvard Business School Press, Boston Mass., 2000, ISBN: 978-0875849034

¹⁶ McDermott, C.M., O'Connor, G.C. (2002), *Managing Radical Innovation: An Overview of Emergent Strategy Issues*, *Journal of Product Innovation Management*, 19, p.424-438.

¹⁷ Song, M.X., Montoya-Weiss, M.M. (1998), *Critical development activities for really new versus incremental products*, *Journal of Product Innovation Management*, 1998; 15(2), p.124-135

¹⁸ Banbury, C. and Mitchell, W. (1995), *The effect of introducing important incremental innovations on market share and business survival*, *Strategic Management Journal*, Vol. 16, pp.161-182

¹⁹ Piana, V. (2003), *Innovation-a key concept in Economics and Management* received from: <https://economicswebinstitute.org/glossary/imitation.htm>.

includes "imitated" innovations, similar to those of competitors, which are new to the firm but not new to the market. Imitated innovations typically have low technological innovation and lower market innovation.²⁰

1.1.3 Differences between invention and innovation

Invention and "innovation" are concepts that should not be confused. The invention consists in creating a new configuration, composition or subject matter, device or process.²¹ The invention is the first appearance of a new idea (concept) for a new product or process, while innovation is the first commercialization of the new idea.²² This new idea can be a recombination of old ideas, a scheme that is a challenge to the present order, a unique formula or approach that is perceived as new by the people involved. The innovation aims at a economic application in practice of an invention, an integration of the invention in the social-economic practice. Whether the invention is defined as the action of imagining, inventing, creating something new, or the ability of discovering something, of creating by imagination, innovation is defined (especially in economics) as the whole process that continues from the emergence of an idea until its materialization (launch of the new product), through market research, prototype development and the first production phases. An invention does not become an innovation until it has been processed through production and marketing activities and has been marketed. It is considered that: Ideas (invention) plus marketing equals innovation. Without the commercialization of new innovative products, the innovative idea does not bring advantages for the company, it has no economic value for it. Innovation is characterized by the ability to capture economic value from the invention. Innovation must be useful through its contribution to the performance of the company or to meet the needs of the customers, while the invention may not be applied in practice. A nuanced approach of the concepts of innovation and invention belongs to Edward B.Roberts²³ who considers that the innovation process is composed of two parts: 1) generating an idea or invention and 2) transforming that idea into a business or other useful application. This approach would be expressed as: Invention plus exploitation equals innovation

²⁰ Garcia,R.,Calantone,R.(2002) A critical look at technological innovation typology and innovativeness terminology: a literature review.Journal of Product Innovation Management,19(2002),p.110-132.

²¹ Ciumara, T. (2011) Brief Analysis Of Some Sources Of Managerial Innovation, Financial Studies, vol. 15, nr. 3

²² Fagerberg, Jan (2004): Innovation: A guide to the Literature, in The Oxford Handbook of Innovation Oxford University Press, 2004, pp.1-26

²³ Roberts, Edward, B. (2007). Managing Invention and Innovation. In: Research-Technology Management, January 2007, 50 (1), p.35-54

The invention process involves all efforts to create new ideas and get them to "work", and the exploitation process refers to the commercial development efforts of the idea or invention, their application and transfer, including focusing the ideas or inventions on specific goals, evaluation of these objectives, possibly of wide use, the dissemination and spreading the results based on the technology.

1.1.4 Innovation activities

Innovation activities are actions of a scientific, technological, organizational, financial and commercial nature that participate in the realization of innovations and their implementation²⁴. Innovation activities also include research and development, which is not directly related to the development of a specific innovation, but which aims to accumulate new knowledge in mechanics, kinematics, electromagnetism or thermodynamics, which will be needed in the design of modern innovative technical systems. The innovation process includes a series of activities that are not of a research-development nature, such as the subsequent phases of production and distribution of new products, staff training about new processes, activities of implementation of innovations, for example new marketing methods or new organizational methods.

1.1.5 Sources of innovation

Systematic innovation begins with analyzing the sources of new opportunities for innovation. Peter Drucker²⁵ claims that there are a number of sources of innovation of the firm, internal and external sources. As internal sources of innovation of the firm or industry can be considered:

The unexpected event: Any unexpected commercial success must be exploited by the company in an opportunity for innovation, by developing a new product variant or a new product that will be launched as a next generation.

Mismatches between expectations and results or between assumptions and realities can create opportunities for innovation.

²⁴ OSLO Manual.Guidelines for collecting and interpreting innovation data.3rd ed.OECD/European Communities, 2005 ISBN 92-64-01308-3

²⁵ Drucker, Peter (1985), The Discipline of Innovation, in Harvard Business Review (HBR), May-June, 1985 and Reprint in HBR, august,2002

Process Needs Process: improvements can create new opportunities. For example, the invention of the linotype allowed the printing of large quantities of newspapers, with high efficiency in the media.

Changes in the industry and on the market: increasing demand on the market or increasing industry opens new opportunities for launching innovation processes. Among the external sources of the company (in the social and intellectual environment) are:

Changes in the perception: Understanding customer perceptions of company products is the key to exploiting opportunities.

Demographic changes of the population, for example in the distribution by age groups, education, occupations, etc. there are opportunities for the innovative concerns of entrepreneurs.

New knowledge from the categories of inventions, patents, know-how, etc. will bring opportunities for new products or markets. Managers must analyze all these sources of new opportunities.

Joël Broustail and Frédéric Fréry²⁶ proposed other important sources for innovation, such as suppliers and customers, the technological transfer from one industrial sector to another or between different industrial branches, market demands. Other sources and methods for collecting innovative information and ideas should not be ignored, such as competitors, current company staff, business partners information obtained by the marketing department, etc.²⁷

1.1.6 Measuring innovation

Innovation is a complex activity, with many components interacting, and the innovation process is not easy to quantify. The most common method of measuring innovation is based on the use of indirect indicators: data about research and development and data on patents.

Research and development expenses represent an indicator that measures part of the inputs in the innovation process, indicates resources spent. This indicator has major disadvantages: the costs for research and development do not always equals to successful innovations, do not lead necessarily to improved products or processes. This indicator is an

²⁶ Broustail,J.,Fréry,F.(1993),Le management strategique de l'innovation,Paris,Dalloz,230 p

²⁷ Verworn,B.et. al.(2000),Innovationsmanagement in kleinen und mittleren Unternehmen,Arbeitspapier Nr.7,TU Hamburg-Harburg,2000.

overestimated measure of innovation, as it may include wrong R&D efforts. Patents are a common indicator of innovation, which has remarkable advantages: patents are offered for inventive technologies with marketing prospects and the patent system systematically records important information about inventions. However, the number of patents also has disadvantages as an indicator of innovations: not all innovations are patented as inventions, and on the other hand, an inventor is not necessarily innovator, if the invention is not marketed or put into production. New indicators have been developed and allow the direct measurement of innovations: number of innovations and analysis of innovative activities in companies. The number of innovations is a direct measure of the innovations and constitutes an "object" approach, because it focuses on the innovations themselves. The disadvantage of this indicator is that it tends to favour radical innovations, in detriment to incremental innovations and excludes unsuccessful innovations. The analysis of innovative activities at the level of companies collects information about innovations directly from companies through analyzes and interviews, and constitutes an "on topic" approach. This approach has at the moment become the standard method of collecting information about innovations from industry. The major disadvantage of this indicator consists in the fact that the representativeness of the results depends on the response rate of the companies to interviews.²⁸

1.1.7 European Innovation Scoreboard

In order to evaluate the innovation performance achieved by the European states, at the initiative of the European Commission was developed the instrument called European Innovation Scoreboard (EIS), which allows comparative analysis of the performances of the activities of EU Member States, as well as of other innovative nations.²⁹ A pilot version of the EIS was published in 2000, and since 2001 complete versions have been published each year. According to the EIS methodology, the innovation performance is characterized by 29 innovation indicators, divided into three main blocks: factors driving innovation, business activities and results. For a summary presentation of the national innovation performance, a Summary Innovation Index was developed, which is an index composed of the 29 measurement indicators, its value can range from 0 (lowest performance) to 1 (highest performance). With this index, innovation performance is synthesized by aggregating the

²⁸ Becheikh, N. et al (2006), Lessons from innovation empirical studies in the manufacturing sector: A systematic review of the literature from 1993-2003, *Technovation* 26 (2006), p.644-664. Quebec, QC, Canada

²⁹ European Commission: European Innovation Scoreboard. Comparative analysis of innovation performance, January, 2009

different indicators for each country in a single data. The study and the quantification of performances innovative activities in some European countries were carried out by Francesco Bogliacino and Mario Pianta³⁰.

1.1.8 Other metrics for innovation

At the EU level, other benchmarking tools and indicators have been introduced to assess the different dimensions of innovation in Europe. These innovation metrics include: Trend Chart on Innovation in Europe, Community Innovation Survey (CIS), Ino-Barometer, European Innovation Scoreboard in the Services Sector. "Sketch of Innovation Trends in Europe" is a practical tool introduced by the European Commission in 1998 to monitor policy changes of innovation in the Member States. CIS is a statistical analysis coordinated by the statistical office of the European Commission, EUROSTAT. The methodological basis of the CIS is provided by the Oslo Manual. Ino-Barometer is a collection of opinions obtained under the auspices of the European Commission, which explores the views of European managers on the needs of companies, investments in innovation and results.³¹ An innovation capacity index (ICI) was recently developed³², this index (indicator) being built on 5 pillars, composed of a total of 61 variables. The ICI index ranks countries according to their overall performance and provides scores based on pillars and sub-indices that give a general idea of performance in the respective fields. Switzerland is the world's most innovative country followed by Sweden, the United States of America (U.S.), the Netherlands and the United Kingdom (U.K.), according to the GII 2019.³³

1.1.9 Innovation in services

Services are an important area of modern economies, representing around 60-75% of economic activities in Europe and a similar percentage of private sector employees. The innovations produced in the services sector are different from those of the primary industries (for example, extractive industries) as well as from the secondary industries (manufacturing, construction, utilities), for example through the wider use of marketing innovations and organizational innovations. Moreover, innovations in services are often non-technological, that means, that they are possible and without the use of new technologies.

³⁰ Bogliacino,F.,Pianta,M.(2009),Innovation Performances in Europe:a long term perspective,March,2009

³¹ Celikel-Esser,F.et al.(2008). The Lisbon strategy and development of metrics to measure innovation in Europe.In: Yearbook on Productivity 2007,Statistics Sweden 2008,pp.7-33

³² Lopez, Claros, A., Mata, Yasmina N. (2009) The Innovation Capacity Index: Factors, Policies, and Institutions Driving Country Innovation

³³ World Intellectual Property, Global Innovation Index (GII) 2019 [online] - [cit. 07-01-2020] Available at: https://www.wipo.int/global_innovation_index/en/2019/

A comprehensive definition of innovation in the service sector was proposed by van Ark et al³⁴: Innovation in services is "a new or considerably improved service concept, a new customer interaction channel, a new service delivery system or technological concept that individually or in combination leads to one or more new (renewed) functions of the service, which are new to the company and change the services or goods offered on the market and require new technological, human or organizational of the service company ". This definition covers the notions of technological and non-technological innovation in services. A useful definition has been proposed by the Finnish Funding Agency for Technology and Innovation³⁵: "Service innovation is a new or significantly improved service concept that is adopted in practice. This can be, for example, a new interaction channel with customers, a new distribution system or a new technological concept or a combination of these. An innovation in services always includes reproducible elements that can be systematically identified and reproduced in other cases or environments".

For the sector of services, the following definitions of product and process innovation can be accepted:

Product innovations are services whose intended use or performance characteristics differ significantly from existing ones. The introduction of completely new services represents product innovations.

Process innovations are represented by the use of new or significantly improved methods, procedures, equipment and skills for the provision of services. For example, the introduction of the Global Positioning System (GPS) in transportation services represents a process innovation. Due to the common purpose between the production of the service and its consumption, the distinction between product and process innovations is less precise than in manufacturing; product and process innovations usually coincide in services.

The den Hertog model of innovations. Innovations in services may involve new product distribution channels, new forms of customer interactions, new technologies, etc. Pim den Hertog et al³⁶ identified four "dimensions" of the service innovation model: service concept, the customer interface, the service delivery system and new technological options.

³⁴ van Ark, Bart et al (2003), Services Innovation, Performance and Policy: A Review, June, 2003, Research Series No. 6, The Hague (with Dialogic)

³⁵ Finnish Funding Agency for Technology and Innovation [online] - [cit. 07-01-2019] Available at: <http://www.tekes.fi/>

³⁶ den Hertog, P. et al (1999), Conceptualising Service Innovation and Service Innovation Patterns, March, 1999

The dimension of "new service concept" refers to a new service idea or concept that are new to the market, in reality a new kind of service. Examples of this category of innovations may be: "low-cost" airlines (with small costs) or new information and communication technology services. *The "new customer interface" dimension.* The way the service provider interacts with the customer can be a source of innovation. Customers are often very involved in producing the service. Examples may include electronic banking (the introduction of ATMs for cash withdrawals), the delivery of databases via the Internet, etc. To highlight the interaction between the service provider and the beneficiary clients, the French researchers P.Eigler and E.Langeard³⁷ created the neologism "servuction", obtained by contracting the terms "SERVice" and "prodUCTION". The term "servuction" should be considered as the process of production (creation) of a service in which the customers are directly involved.

The dimension of "new service delivery system". This dimension refers to adjustments of the service delivery system, for example through new work routines. New service systems may require, for example, new organizational structures or new competencies of teams. An example of innovation that has led to changes in the supply system is e-commerce: this may require a re-engineering of the business process. The dimension of "new technological options" refers to the development and implementation of new forms of technology in the production of the service. Information technology is not the only technology relevant to innovation in services, yet it is an important technological source in many innovative services. The technological dimension of innovation can refer, for example, to a new computer or new individual software packages. Also, in some cases the companies provide physical products that accompany the services, for example customer loyalty cards. However, innovations in services are possible and without technological innovation or may incorporate limited technological content. In practice, new innovative services are a mixture of the four types of "dimensions" of innovations. To measure innovation in services was introduced the European Service sector Innovation Scoreboard. This indicator is a response to the increasing importance of services in general and innovation of services, in particular.

1.2 The evolution of payment tools

The payment system is inextricably linked to currency and its evolution has led to the emergence and improvement of the payment system as an organized framework for

³⁷ Eigler,P.,Langeard E.:La servuction:le marketing des services,McGraw Hill,1987, ISBN:2704211272

monetary transfers in order to complete economic transactions. The payment system appeared from the earliest times as a set of rules, first in the form of practices, then of written rules issued by the heads of states, later by banks and finally by monetary authorities as specialized state institutions. In the natural economies goods were exchanged for other goods without using a medium of exchange, such as money, the transactions being known as barter, a form of mutual exchange that assumed the double coincidence of the needs of the participants in the exchange. During this period we cannot speak of a payment that implies the existence of the currency and therefore of pecuniary relations, but of transactions that were made on the basis of certain commodities accepted by the community. The generalization of the notion „intermediate goods” generally valid led to the emergence of the metal currency (early currency), more and more transactions were made in this type of currency, as it offered incomparably more advantages than the exchange in nature. From this moment we can talk about payments in currency and even the emergence of elements of a payment system through unanimously accepted practices, such as manufacturing metals and the shape of the currency.

The growth of trade and the limited quantity of precious metals caused the emergence of paper currency in the Middle Ages, initially in the form of the deposit receipt issued by the custodians (goldsmiths, silversmiths) who received into keeping the precious metal coin with the promise of giving the metal to the one who brought the receipt. This paper became a coin-sign because it could be transmitted by the carrier in exchange for the goods he bought. About the same period, commercial banks appeared which have created an organized and secure framework for the payment of transactions. The decisive factor in the generalization of payments in the new type of currency, however, is the enforcement by the state of the use of paper currency (fiduciary currency)³⁸ to extinguish all public and private obligations, initially in England in 1708, than France in 1716 and then in Prussia in 1765 and then, gradually, in other states. The loss of paper currency convertibility made it to be no longer absolutely necessary in transactions, being replaced by the account currency (scriptural). The payments in scriptural currency are considered as a series of services provided to the clients by the banks on the basis of the exchange of information between the authorizing officer, the banker and the beneficiary regarding the transfer of a sum of money and its registration in the accounts of at least two holders. This mediation presupposes the

³⁸ Finkelstein, Stanley S. "The Currency Act of 1764: A Quantitative Reappraisal." *The American Economist* 12.2 (1968): pag 39

representative function of the banker's agent for transmitting at a fixed time a good, the money-information (the amount, the currency, the identification data of the partners, the participating banks and the nature of the transfer). The payments in scriptural currency are based first of all on the fiduciary currency and the monetary system of all participants in the monetary circuit (economic and non-economic agents, population and credit institutions) and on the responsibility for the currency assumed by the state through the central bank that holds the monopoly of the monetary issue and regulations regarding monetary circulation. This confidence in the currency (a bond on the central bank) and in the central bank is the basis of the evolution of the payment system. However, payments in scriptural currency also require specific payment instruments that include the instruction given by the debtor to honour the payment in favour of the creditor. The earliest documented payment instruments were bills of exchange, about which there is information that it were circulating in China in the 500-600s³⁹. Around 1200, the templars dealing with various international transactions began to issue transfers and bills of exchange on behalf of the merchants, monarchs or treasuries of the feudal states.⁴⁰ In 1349 a deposit and a current bank account was operating in Barcelona, which seems to be the oldest mention of a commercial bank⁴¹.

At the beginning of the seventeenth century in Amsterdam, bank deposit receipts were used with the function similar to the check, and in the second part of the same century in Hamburg, the bank note expressed in a conventional account currency (mark banco) appears, according to some opinions it is the most distant ancestor of today's euro. Next, the history of payment instruments is closely linked to the history of banks. The rapid progress in the fields of computer and communications in the last decades of the last century led to the emergence of electronic money and electronic payments that "compressed" the distances and reduced the settlement time until the time of the transaction and the payment time overlapped. The increasing volume of transactions and the increase of the degree of banking have determined the transition from the bilateral settlement of the transactions between banks through the system of correspondent accounts to the setting up of clearing houses with net settlement. The first clearing houses appeared in England in 1760 and then within 20 years in USA, France, Italy, Germany.⁴² In the modern period, have appeared multinational

³⁹ Gernet, Jacques (1962). *Daily Life in China on the Eve of the Mongol Invasion, 1250–1276*. Stanford University Press. ISBN 978-0-8047-0720-6. Gernet (1962), p. 80.

⁴⁰ Ebrey; Walthall; Palais (2006). *East Asia: A Cultural, Social, and Political History*. Boston: Houghton Mifflin Company. ISBN 978-0-6181-3384-0. Ebrey, Walthall & Palais (2006), p. 156.

⁴¹ Fundamental of Banking Prin. Dr. Babasaheb Sangale, Prin. Dr. T. N. Salve, Dr. M. U. Mulani FYBCom p. 1.8

⁴² Jones, Peter M. (2009). *Industrial Enlightenment: Science, technology and culture in Birmingham and the West Midlands, 1760–1820*. Manchester: Manchester University Press. p. 65. ISBN 978-0-7190-7770-8.; Chinn, Carl (15

clearing houses, and more recently the automatic clearing houses, which drastically reduced the settlement time. A graphical representation of evolution payment tools we can see in the Appendix fig. 1.

1.3 Payment system

The payment system has been defined in various ways by the credit institutions and the research institutions, being reconsidered according to the evolution of the currency and the recording and transmission technology. The most representative definition we consider to be the one elaborated by the CPSS (Committee for Payment System Systems) as a part of the Bank of International Regulations, according to which, the payment system represents a set of arrangements for the discharge of bonds assumed by the traders when purchasing real or financial resources, otherwise than by barter, so by transferring the title of ownership over some assets, which, by virtue of being widely accepted, are known as money. This definition is widely accepted by both international bodies and by central banks within the European Union. The payment system concentrates all exchange transactions from the economy for the discharge of pecuniary obligations and is constituted into an integrated mechanism known as the national interest payment system under the supervision of the central bank.⁴³

The payment system has two complementary functions: mediation of transactions and guarantee of exchanges. The mediation is provided by commercial banks and other non-bank agents (payment companies, brokers, post office)⁴⁴ which performs funds transfer and extinguish payment services. These agents carry out activities of public interest and are therefore subject of authorization, prudential supervision and other forms of control by the central bank. The guarantee is finally provided by the central bank by opening centralized accounts of commercial banks which are also a mechanism for guaranteeing all settlements in the economy, as well as through the lending system of last resort.

The component elements of a payment system include the institutions that provide payment services, various forms of transferred debt, methods and means of transfer, messages and the communication channels⁴⁵. In general, a payment system is in the form of a pyramid. On the first step there are the natural and legal persons who carry out activities

⁴³ Federal Reserve Bank of New York. October 13, 2000. Retrieved 23 July 2015.

⁴⁴ November 2008). "Brum's building society origins". Birmingham Mail. Birmingham Post and Mail Ltd. Retrieved 6 September 2010.

⁴⁵ Biago Bossone and Massimo Cirasino, "The Oversight of the Payment Systems: A Framework for the Development and Governance of Payment Systems in Emerging Economies" The World Bank, July 2001, p.7

that „born” payment obligations. The population represents the primary source of savings in the society that makes deposits and accepts the services of the banks of the retail activity. Legal entities are companies that carry out economic activities, other than those with money, as well as public and non-profit institutions. The second step is the banking system in which the agents have accounts or some specialized non-bank agents (brokers, post office). The preference of the natural and legal persons for the banks is determined by the receivables on them (the deposits) which have liquidity character and the transfers can be made immediately and at full value. The third step are the clearing houses that may be state or private, but under the control of the central bank. The fourth step is the settlement agent, one of the leading banks in the economy or in some cases this role is played by the central bank itself. The last step is the central bank which has the role of supervisor, lender of last resort and guarantor.

Payment and transfer of funds. Payment means the transfer of funds which has the effect of extinguishing the financial obligations between the parties involved in an economic transaction and the exchange of ownership of the asset, while the transfer of funds has a wider content and without an economic purpose, such as the transfer of money from one account to another, the transfer of money to another person for humanitarian or study purposes, the transfer of money from a person working abroad to the family in the country of residence, etc.

Interbank and intra-bank transfers. Transfers of funds for making payments may take place between different banks and in this case, these are called interbank transfers, unlike transfers of funds between units of the same bank which are called intra-bank transfers. The interbank transfers change statement of balances in bank accounts settlement agent, so a patrimonial change, the intra-bank ones determining only an internal movement, the balance from the settlement agent remaining unchanged⁴⁶. Settlement represent the transfer of funds between banks and the loading-unloading of the banks participating in the transfer, as well as the completion of the payment through the discharge of the payer’s account (debtor) to the payee (the creditor).

The assets circulating in the payment system (the money) represent debts to the government (the metallic currency), to the central bank (banknotes or money funds from the central bank’s records) and to banking institutions (bank deposits). These assets are known under the generic name- means of settlement, used especially in the activity of analysis of

⁴⁶ "Payment Systems: Design, Governance and Oversight", edited by Bruce J. Summers, Central Banking Publications Ltd, London, 2012, p.3

banking activity. Settlements are divided into two broad categories: gross and net. Gross settlements are those that are carried out transaction by transaction and are specific to high value payments, while the net settlements are those which are compensated, when the net debtor balance is paid or the net creditor balance is collected and they are specific to the small value payments. The notion of settlement is used more in the banking system and the notion of payment is used more in the practice of the economic agents and in the relations of the population with the banks, but there is a tendency of generalization of the notion of payments and in the sphere of the banking activity.

Electronic payments. The special progress made in computer science and communications have allowed the appearance of electronic payments and electronic payment systems. The new technology was first used in the field of inter-bank funds transfers, then in e-commerce transactions and in the field of services through card payments, internet and other technical payment systems (videotex, multicash, mobile phone, etc.). These technical systems allowed the remote payments without the presence at the bank's counter⁴⁷. From the point of view of the payment system, the pyramid scheme and the role of the central bank remain the same, but the circuits of the system meet important changes especially in the banking sector.

1.4 Means and payment instruments

During the negotiation of commercial contracts, their financial aspects are of primary importance. They are referring, among other things, to the billing currency, the payment terms, the method of payment, the payment techniques and the coverage procedures, some of which are specific to international trade (credit and payment documents). International trade operators must choose the most appropriate method of payment among many possibilities available to them, more or less complex and constraining that do not offer the same security conditions for the lender. The divergent interests of the co-contractors must be reconciled, the importer wishing to receive the goods at the best price and to pay it as late as possible, usually after its delivery, while the exporter would like to sell the goods for a profit and only after the importer made the payment.

In view of certain commercial necessities (conquering new markets, increasing market share in a particular country, selective distribution, etc.) the exporter often does not have a

⁴⁷ Schueffel, Patrick (2017). The Concise Fintech Compendium. School of Management Fribourg, Switzerland. Archived from the original on 2017-10-24. Retrieved 2017-11-03.

favourable and sufficient force ratio that would allow him to impose a payment condition. An improper choice can have serious financial and commercial consequences for the exporting company. As a very strict financial approach can lead to the loss of certain markets and a lax attitude can cause financial losses in the case of the debtor's bankruptcy. In the face of increased commercial competition, the exporter must know and use the different ways available to adapt his offer according to the target country, according to the characteristics of the client.

1.4.1 SWIFT transfer

SWIFT provides a network that enables financial institutions worldwide to send and receive information about financial transactions in a secure, standardized and reliable environment.⁴⁸ This is the most widely used payment method in international transactions between companies in developed countries. The debtor (the importer) orders his bank to pay the creditor (the exporter) through an international bank transfer. The classic means used by the banks to carry out international funds transfers were the courier and the telex. Both had disadvantages such as late payment, loss of messages on telephone networks, etc.

Several US banks in the early 1970s created their own private communications networks (MARTI network of First National City Bank, CHAMPS of Chase Manhattan Bank). These networks were efficient but were only a partial answer to the problems of money transfers, because, in most cases, these private networks were incompatible with each other and did not serve to external interbank transfers. On May 3, 1973, 239 banks in 15 countries founded the company SWIFT - Society for Worldwide Interbank Financial Telecommunication - which began operating effectively on May 3, 1977.⁴⁹ The SWIFT network started quickly to be used due to its qualities: speed, safety, cost.

The SWIFT network consists of⁵⁰:

- accumulators which are computers specially equipped to control the telecommunications network; the network has cumulators in Belgium (Brussels), the Netherlands (Zoeterwonde) and the USA (Culpeper)

⁴⁸ Arnold, Martin (6 June 2018). "Ripple and Swift slug it out over cross-border payments". Financial Times. Archived from the original on 27 September 2019. Retrieved 28 October 2019.

⁴⁹ SWIFT history [online] - [cit. 27-02-2020] Available at: <https://www.swift.com/about-us/history>

⁵⁰ Monod, Didier-Pierre, Moyens et techniques de paiement internationaux, 1993. Editions ESKA, Paris, p.42

- regional hubs that are computer equipment that concentrates traffic between members and switches, usually one for each country
- membership terminals: computers of bank users, which ensure the issuance, reception and control of messages.

Connections between hubs and terminals are provided by cable or satellite telephone lines, and those between satellite switches. The figure 2 in the appendix shows schematically how to make the payment through transfer to an import from Switzerland to France.

SWIFT network qualities are:

- a) *Speed*: The SWIFT system works 24 hours a day, 7 days a week, with network availability being 99.5%. The term of transmission of the message is practically independent of the size of the text and the distance travelled. Most messages are transmitted in a few seconds, provided that the recipient's terminal is at the reception and is not out of service due to a national holiday, time difference, messages are stored in the accumulator until they can be sent to the recipient. The member of the SWIFT network is always informed about the messages he has sent: every day he automatically receives the list of messages that have not reached the recipient.
- b) *Security*: The SWIFT system offers a range of automatic control measures to ensure continuity, confidentiality and security of the service. It is equipped with a lot of user access codes but also with procedures for detecting anomalies or traffic frauds. A system of order numbers of messages allows the detection of missing, double, and false messages.
- c) *Low Cost*: The *Cost* of the transfers consists of a fee paid to the telecommunication company and amounts paid to the SWIFT network. Pricing is modified by message type. This is a cheap, very fast, secure way and covers the risk of non-payment if the shipment is made before the shipment of the goods. However there is a disadvantage: the initiative of the transfer order is left at the disposal of the debtor and may pose a risk of exchange in the case of a transfer in foreign currency.

1.5 Instruments and methods of International Payment

The buying or selling contracts in the international trade transactions include a series of special clauses. The purpose of every transaction, especially in international transactions,

is to obtain profit. Therefore, the clauses regarding the prices, the payment conditions and the payment methods are extremely important both for the importer and for the exporter. They will focus on them not only during the negotiation of the contract but also during its unfolding. Also, these clauses state how much, how and where the merchandise will be delivered by the exporter. Due to the fact that from the moment the merchandise is shipped and until the corresponding payments are received there is a considerably long period of time, both contracting parties try to obtain as many warranties as possible during the negotiation process – the exporter will try to obtain guarantees that the payments will be made on time, while the importer will want guarantees that it will receive on time the precise quantity of merchandise requested and having the price and quality stated in the contract.

Based on the degree of trust and relationship existing between the contracting parties, there are a series of techniques and payment instruments meant to offer them both the above-mentioned warranties. Basically, one might say that the more solid the reputation of the importer, the less warranties will the exporter request. This reputation is the outcome of all the factors involved in the company's activity within the past several years, or even decades. By adopting at a global scale a standardization regarding the payment instruments and techniques, the international forums involved in this activity struggle to reduce the risks, not to eliminate them altogether since this is practically impossible. The payment instruments used in international trade are: national currencies, international currencies, bills of exchange, the promissory note, the checks, and, lately, also the card.

National currencies are characterized by: buying power, can be used in almost all possible transactions and can be used as reserves also in states other than the issuing one. The currency in the form of coins and banknotes is called cash currency, while the one available in a bank account is called account currency. Based on the way the currency account was deposited in the bank, it can be: on-sight currency account or due-date currency account. Based on the exchange capability characterizing the currency, there can be: convertible currency (currencies which can be exchanged with other national or international currencies), non-convertible currencies (currencies which can be exchanged for other currencies but not the other way around), transferable currencies (they enjoy a limited convertibility determined by regional agreements), or freely used currencies (which are fully convertible, this category includes the American Dollar, the British Pound, the Japanese Yen, and the Euro). International currencies are those national currencies which are used outside the borders of the issuing state and represent, on the international market, instruments

of payment and reserve. In this category there may be included also the SDR (Special Drawing Rights)- the E.C.U (The European Currency Unit) and the Euro.

Payment and Credit Instruments. The bill of exchange, the promissory note and the check are payment as well as credit instruments. The quality of payment instruments is given by their ability to be exchanged into liquidities, whereas their credit instrument ability results from the period of time which passes between the day when the merchandise was received and the payment date.

The Bill of Exchange (Draft). In what regards the bill of exchange, it can be defined as a document used by a person, in this case the drawer, to order unconditionally another person, meaning the drawee, to pay a certain amount of money to a beneficiary at the due date or on sight.⁵¹ In the Appendix pic.1 shows us an example of The Bill of Exchange.

The promissory note is a document by which a physical or legal person called issuer commits itself to pay on sight or at the due date a certain amount of money to a third person, called beneficiary⁵². In the Appendix pic.2 shows us an example of the promissory note.

Both the bill of exchange and the promissory note can be endorsed and, usually, all the stipulations applicable to the bill of exchange can also be applied to the promissory note. The discounting, the prescription, the payment and the forfeiting are examples of such stipulations applicable to both instruments.

The Check. In what regards the check, it is mainly used for payments and is payable only on sight. It can be defined as a document that a natural or legal person uses to order a bank to pay on sight to a third party the amount of money written on the check. The beneficiary's role is to verify that amount of money that is available in the issuer's bank account⁵³.

The Documentary collection is the method by which the transfer of the payment from the buyer to the seller is made only after the buyer is announced by its bank that the documents which prove that the merchandise had been delivered have arrived⁵⁴. Transmitting the documents from the exporter to the importer is made through two banks:

⁵¹ Prachi M, Bill of Exchange Vs Promissory Note [online] 18.01.2019 [cit. 28-02-2020] Available at: <https://theinvestorsbook.com/bill-of-exchange-vs-promissory-note.html>

⁵² Mariana Negru-International payments and guarantees, Ed. ALL, 1996, pg. 83

⁵³ Petru V. Patrascu, Ovid Sachelarie-Credit securities in international trade, Ed. Nemira, 1998, pg: 188

⁵⁴ Victor Danciu, Marcel Duhaneanu, Roxana Jdelea- - *International transactions: policies, techniques, tools*, Ed. Recif, 1992, pg: 229

the exporter's bank where it deposits the shipment documents (the same as in the case of the Documentary Credit) and the importer's bank which holds its client account.

The Payment Order is the instruction made by a person to a bank. The latter must pay a specified amount of money to a person called beneficiary, thus cancelling a debt that resulted from a direct relation between the caller and the beneficiary. The payment is made through the use of bank accounts⁵⁵.

The Documentary Credit is the commitment made by a bank to pay on the behalf of a buyer a certain amount of money which represents the value of the merchandise. The bank's commitment to pay is guaranteed by the bank deposit especially created either from the money of the importer's account or through a loan which the bank itself offers to the buyer in order to pay for the import. The Documentary Credit can either be a Letter of Credit or a Commercial Letter of Credit .

The Letter of Credit is a document issued by a bank at the order of its client (the buyer) by which the bank commits itself to pay the amount of money specified in the L/C to its beneficiary (the exporter). In order for the seller to receive the due amount, it must prove through documents that the merchandise has been delivered.

The Commercial Letter of Credit (CL/C) is a document by which the issuing bank commits itself irrevocably towards the exporter to make the payment by obeying the conditions stated in the commercial L/C. This document is issued by the importer's bank at the request of its client and is made in favour of the exporter whom it authorizes to withdraw "on sight" or "at term" bills of exchange. The issuing bank will credit the bills of exchange through payment (if they are "on sight") or through acceptance (if they are "at term") with the sole condition that, together with the bill of exchange, there are presented also the documents specified in the commercial letter of credit which guarantee that the merchandise had been delivered. The documents and the bills of exchange are offered to the issuing bank up to a certain date specified in the commercial L/C⁵⁶.

Other Payment Instruments and methods. Other such methods are: payment in advance (this is mostly favoured by the exporter and, therefore, least favoured by the

⁵⁵ Ibidem, pg: 232

⁵⁶ World Bank, Commercial Letter of Credit [online] 18.01.2019 [cit. 28-02-2020] Available at: inweb18.worldbank.org

importer), payment at delivery date, payment after sale of delivered goods, and transactions on open accounts (especially used by companies in the USA).

Since each of the above stated payment instruments or payment methods has its own characteristic, choosing the one which will bring the most benefits to the company is task which falls on the managers and on the group of specialists. They must all have a very good knowledge of international management and marketing, and of both national and international legislation in the commercial, financial and banking domains. Of course, this decision is also greatly influenced by the national legislation which must be aligned to the international one, by the experience gathered when using the payment methods and instruments, by the company's rating on the international market, by its relationship with the bank(s), as well as by the economic and financial strength of the company.

2 The Aim of the Work, the Methodology of the thesis and research methods

The main purpose of this diploma thesis is to define innovations in payment system and to provide insight into the news that has arrived on the financial market. To achieve the main goal, we established certain partial objectives:

- to define the term innovations and payment system and to analyse the instruments and methods of international payment
- to characterize instant payment services around the world and in Slovakia
- to identify what are the high technologies in payments and how are they being implemented in the new methods of payment in different countries
- to identify new challenges and opportunities in the payments market and how are being solved the challenges of digital transformation

The main benefit of thesis is that it highlights the main trends that will define banking this year and answer the question: How will future payments look like? This will help individuals and legal entities reading this paper to become familiar with the innovations and tendencies in international payments and will help them prepare for what is coming up next in future payments.

The work methodology was chosen based on the goal of the work. In order to process to the writing of the thesis we have choose the following procedure of steps:

- obtaining available material that is related to the analyzed problem,
- selection of relevant sources of information what we will use for writing of our paper,
- study of professional literature and finding the most relevant aspects,
- analysis of the obtained data and forming a personal opinion based on it.

The subject of our research is International Payments. In order the thesis on this topic, we used secondary research based on the collection, processing, analysis of obtained sources and evaluation of data obtained from published sources (especially books and journal sources, as well as from various Internet documents and professional articles on Internet). The figures on which the diploma thesis is based are: BIS (Bank for international settlements), ECB (European Central Bank) Eurostat, World Bank. Through these sources, we gained a wide range of knowledge and statistics data.

Our thesis is based on several methodological approaches. In order to accomplish the defined objectives, the diploma thesis was divided into four chapters and several subchapters. In the first chapter is a theoretical framework inevitable for subsequent exploration of the issue at hand was established. The theoretical part of the thesis relies on the analysis and reviews of existent researches, mainly the works of prominent academics dealing with the issue of innovation, and payments. The practical part is based on the analysis of the instant payments systems in the world and in Slovakia. In the practical part of the thesis we answer the following research questions:

- What are the high technologies in payments?
- How are they being implemented in the new methods of payment in different countries?
- What are the trends in payments and what will be the payments of the future?

The basic theoretical research methods we used in this work are mainly: analysis, synthesis, description, induction, deduction and abstraction. Analysis is the way we divided the entire research into individual parts. In the diploma thesis we used this method mainly in the first chapter, where we described individual instruments and methods of international payment. The method of synthesis which makes it possible to use the results obtained by analysis and get to know the investigated phenomenon as a whole, interrelationships between them and structures, it is the opposite of analysis. We used this method when we identified high technologies in payments in order to understand how are they used in new methods of payment. We used abstraction method when we characterized instant payments in Slovakia. We excluded external influences on this matter relationship between countries. We have excluded other entities from the international relations that unite all the countries of the world. Using abstraction, we wanted to point out where Slovakia currently stand and possible implication in international relation with other countries on this issue. In the last part of the work we used deduction method. In this section we issued a forecast of how trends that will future payments look like based on actual trends in financial technology. We applied the method of comparison in the first chapter where we compared the main instruments and methods of International Payment as well as in the 3rd chapter comparing the implementation of instant payment in individual banks in Slovakia. Through synthesis we wrote the conclusion of the work, in which we evaluated the partial goals achieved in individual chapters, conclusion as well provides a comprehensive view of the analyzed issue.

3 The results of the thesis

The free movement of capital has made settlement and payment systems more and more important worldwide. Especially in the last two decades, the global volume of commercial transactions, as well as their value increased, this upward trend being present even today. This is also true for the current economy and economic context in Slovakia. Accession to the European Union market has increased the interest of many economic operators and this has materialized through a significant increase in the volume and value of the transactions, as well as a much more intense concern of participants directly involved in intermediating transactions, to make them more efficient and the establishment of a legal and operational framework characterized by safety, efficiency and speed.

Nowadays it is absolutely necessary to develop secure, efficient, innovative, even competitive electronic payment systems, so that all members involved in the global economic chain, manufacturers, developers, intermediaries, sellers, consumers, enjoy the benefits offered by the market. We are seeing more and more the transition from physical commerce (in person) to electronic commerce. Currently, the biggest success in the economy are retailers who have created an infrastructure and a distribution network characterized by low prices, supplier stocks, fast delivery and quality after-sales services. Large international corporations are increasingly outsourcing production lines to other countries so that the exchange of financial resources becomes more and more essential and the safety and speed of these exchanges becomes a vital element of the economic cycle.

The most important step taken lately is the establishment of a single euro payment area (SEPA) which has as its fundamental concept the fact that in all European Union countries must be in same system for electronic payments, both at national and at cross-border level. Europe has the chance to advance to new technologies in this field, whether the payments are made via internet-banking, card or even mobile phone or smartphone. The Single Euro Payments Area (SEPA) system is a reference instrument that covers the most important payment instruments used in the retail area: credit transfer operations, credit cards but also direct debit operations. These are the foundations which SEPA developers seek to be a starting point for establishing a single European payments market, characterized by competitiveness and innovation. The performance as well as the rules developed within SEPA can be used and adapted for other currencies, or more precisely for other corresponding payment instruments of other currencies, so that the limits imposed by the borders of the single market disappear and SEPA becomes a reference system within all

existing currencies. Considering all these advantages mentioned above, the "Single Euro Payments Area (SEPA)" is a topic of great importance and topicality.

3.1 SEPA Components and participants

SEPA represents a European milestone in payments and at the same time the fulfilment of a desire developed since the second half of the 20th century. Single Euro Payments Area - SEPA is a system that goes beyond the geographical boundaries, constituting a single payment area, in whose territory the differences of payments (and even of commissions) will be eliminated both internally and cross-border, in the EURO currency. In this system, the customers have the possibility to make payments in euro in the European territory, safely, fast and efficiently, using a set of standardized tools which allows them to make international transfers in the period of time similar to the national ones. The following banking instruments are included in this set of transactions: card payments, credit transfers, direct debit collections, as well as other transfer payments from personal accounts.

The objective of SEPA was and is to increase the competitiveness and transparency of the economic relations carried out in the EU, especially in the economic environment, and to contribute to the achievement of European integration, by consolidating the market for the small payments, to obtain less expensive products but also much more efficient. All the features and fundamentals of SEPA were established and elaborated by the Lisbon agenda, which had the objective of transforming the EU economy, until 2012, into "the most dynamic and competitive economy in the world consolidated on the concept of knowledge" and to make the transition from the classical economy to the computerized economy. The premises of the establishment of the Single Euro Payments Area consist of the launch of the euro as a script currency in 1999, the distribution and use of the euro in the countries of the euro area, starting with 2002, but also the promotion of the large payment system TARGET 1 until January 1, 1999, as well as the launch of TARGET 2 until November 19, 2007⁵⁷.

Single Euro Payments Area has a permanent and maximum impact on national payments but also on small national markets and aims to unify these fragments into a single unit, of high speed, efficiency, harmonization and reorganization. The foundations and mission of SEPA are to enable or facilitate the access of individuals but also corporations, to make payments in euros through electronic money, within SEPA, through a set of payment

⁵⁷ EUROPEAN CENTRAL BANK, SEPA [online] - [cit. 03-03-2020] Available at: <https://www.ecb.europa.eu/paym/target/target2/html/index.en.html>

instruments, secure and efficient, similar with transactions carried out at local or national level. SEPA does not end the cycle of development and progress in terms of payments at international level because it developed these services by introducing an electronic payment area without the use of paper money.

3.1.1 SEPA components

Single Euro Payments Area (SEPA) has several components: use of the single euro currency, unique payment instruments in euro, acquiring efficient processing infrastructure, common technical standards, standardized forms and processes, uniform, harmonized legal framework and services in continuous development for consumer's satisfaction. With the development of the SEPA project, the so-called schemes containing rules and standards for the safe and rapid conduct of direct debit and credit transfer operations were set up. All national institutions, responsible for managing and clearing supervising, settlement and payment activities, are obliged, once SEPA is established, to comply with all practices according to the requirements and demands imposed by the new European system. Not the same thing happen in the case of the cards, more precisely the card payments, because the scheme will continue to be the same, but an European framework has been set up that will have to be adopted by all the SEPA card schemes but also by the issuing institutions of these cards.

*SEPA Cards*⁵⁸ - the Sepa department in charge of the card sector, constantly encourages and proposes through more and more research projects and meetings, the implementation and use of chip and PIN codes throughout the European Union, in order to improve and increase the security of the development and authorization of card transactions.

3.1.2 SEPA participants

From the pic. 3 in the appendix we can notice that the area in which the payment schemes (for euro credit transfers and direct debits) are available is broader than the European Union. SEPA consists of 36 countries:⁵⁹ There are the 27 member states of the European Union: including the 19 states that are in the Eurozone⁶⁰, the eight states that are not in the Eurozone⁶¹

– The four member states of the European Free Trade Association

⁵⁸ THE SINGLE EURO PAYMENT SEPA (S EPA) 978-92-899-0453-7 p. 22 European Central Bank, 2009, Imprimerie Centrale s.a., Luxembourg

⁵⁹ B2B PAY, LIST OF COUNTRIES [online] - [cit. 05-03-2020] Available at: <https://www.b2bpay.co/sepa-countries>

⁶⁰ Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia, Spain

⁶¹ Bulgaria, Croatia, Czechia, Denmark, Hungary, Poland, Romania, Sweden

- The three states having signed the European Economic Area agreement⁶².
- The one EFTA member that has not joined the EEA, but instead has a series of bilateral agreements with the EU: Switzerland.
- Four microstates which have monetary agreements with the EU: Andorra (from 1 March 2019),⁶³ Monaco, San Marino, Vatican City (from 1 March 2019).⁶⁴
- One state which has withdrawn from the European Union but is under a transitional period until 31 December 2020: United Kingdom.

All parts of a country are normally part of SEPA. However, the following countries have special territories which are not part of SEPA:

- Cyprus: Northern Cyprus is excluded.
- Denmark: the Faroe Islands and Greenland are excluded.
- France: the French Southern and Antarctic Lands, French Polynesia, New Caledonia and Wallis and Futuna are excluded. Nevertheless, the last three are part of SEPA COM Pacifique.
- Netherlands: Aruba, the Caribbean Netherlands, Curaçao and Sint Maarten are excluded.
- Norway: Svalbard and Jan Mayen are excluded.
- United Kingdom: British Overseas Territories are excluded,⁶⁵ save for Gibraltar and the Crown dependencies.

Jurisdictions using the euro that are not in SEPA are in: Akrotiri and Dhekelia, French Southern and Antarctic Lands, Kosovo, and Montenegro.⁶⁶

The institution responsible for making payments decisions is the European Payments is the European Payments Council, the institution that was inaugurated in June 2002, and aims to create and support a single SEPA payment area, a European market where domestic payments they are open and self-regulated. This institution has 74 members made up of banks and banking institutions and 360 specialists from all sectors of the economy and sectors of the European market. The success of the SEPA program depends to a large extent on the cooperation and the efficient and fast links between the credit institutions, the big corporations and the public and local administrations. In recent years, coordinating bodies

⁶² Iceland, Liechtenstein, Norway

⁶³ Extension of the geographical scope of SEPA schemes in March 2019

⁶⁴ Comunicato della Sala Stampa della Santa Sede, [online] 30.11.2018 [cit. 06-03-2020] 30.11.2018 <http://press.vatican.va/content/salastampa/it/bollettino/pubblico/2018/11/30/0885/01934.html>

⁶⁵ "The Boundaries of SEPA-land" (PDF). Skandinaviska Enskilda Banken. 9 April 2013. Archived from the original (PDF) on 26 June 2013. Retrieved 26 June 2013.

⁶⁶ "The Boundaries of SEPA-land" (PDF). Skandinaviska Enskilda Banken. 9 April 2013. Archived from the original (PDF) on 26 June 2013. Retrieved 26 June 2013.

have been set up in all areas, consisting of representatives of private, commercial and even national banks and representatives of the authorities aimed at ensuring the basic principles of SEPA and their implementation in the territory of the European Union. The SEPA project is closely monitored by the European Union and even by the European Central Bank, being seen as the next step in European economic integration and even in the introduction of the single Euro currency. Among the most important features of the SCT project are the following: use of the euro, supporting the accessibility of all members to all the services and facilities offered by SEPA in all its areas, eliminating the limits on the value of the payments made, reducing the settlement period from 2-3 working days at 1 business day, the automatic processing of payments through the system developed by SEPA Straight Through Processing (STP), setting standards in payment messages, namely UNIFI ISO 20022 (XML), the use of absolutely mandatory identification elements such as IBAN code or the BIC code. SEPA standards have become absolutely mandatory in conducting client-bank relationships in order to increase the efficiency and safety of the clearing and settlement operations of interbank payments⁶⁷. The most important features of the SCT scheme are that any client in the SEPA area can be accessed, the beneficiary receives the full amount in the account, elimination of restrictions on the size or value of payments, and maximum settlement period is 1 business day.⁶⁸

*SEPA Direct Debit*⁶⁹ or SDD is by far the most innovative payment instrument used and developed in SEPA and its applicability is cross-border. Any customer who has a single account opened at a bank in SEPA area may perform direct debit transactions in any other account opened at any bank in any country in SEPA, without encountering any major restrictions or commissions. This scheme, a SEPA component, has the following major characteristics: all payments are expressed in euro, ensuring accessibility throughout the SEPA area, inclusion of payments by direct debit (frequent or occasional), the barrier of limiting the value of payments is eliminated, the payment order can be sent in electronic form, the debtor's bank no longer has the obligation to verify the payment order. The persons involved in the partnership, i.e. the lender and the debtor must have open accounts with SEPA credit institutions and the institutions executing the transactions must be participants

⁶⁷ Groenfeldt, Tom. "Payments Are Moving To Real-Time Around The World, The U.S. Plays Catch-Up". Forbes. Retrieved 7 December 2018. The use of credit cards isn't as prevalent in Europe where retailers are using the SEPA instant payment scheme.

⁶⁸ "Successful go-live for EBA CLEARING's instant payment system RT1". www.ebaclearing.eu. 21 November 2017. Retrieved 2 September 2018.

⁶⁹ Palade G., Single Euro Payments Area, Statistical Review, No. 7/2011, Bucharest.

in the SEPA direct debit scheme. The settlement periods are modified, the first payment will be settled within a maximum of 5 working days, following which the following periodic payments will be settled within a maximum of 2 working days. Payment processing is done automatically through the STP(straight-through processing) system. SEPA Direct Debit Scheme⁷⁰ (SDD) is an interbank payment scheme that defines a common set of rules and processes applicable to debit transactions directly expressed in euro. The project establishes certain parameters that will be common to all members, namely identical times of management, identical conditions and procedures, as well as common service.

The SEPA Cards Framework (SCF) forms the SEPA regulated and harmonized framework for card payments. It is constituted by a set of rules and principles that must be strictly followed by all participants in these exchanges or intermediaries of money resources. These include the banks that issue the cards, the banks that accept certain payment cards, the card schemes, as well as all the processors that mediate and help the smooth running of the card transactions. The main advantages offered by the SEPA system consist in the possibility of withdrawing cash in euro and making payments in euro, in the territory of SEPA, benefiting from the ease, speed and safety of such operations as those carried out in the national territory. Through this mechanism SEPA eliminates the territorial boundaries of each country and creates a common space that favours the exchange of money resources at European level. The SEPA Card Framework uses the following features: accepted payment transactions are commercial payments and cash withdrawals made in the SEPA space and using payment instruments (cards) issued by banks that have joined the SEPA system. The sole currency of transactions between the issuer and the acceptor is the euro. Payments to merchants using gift cards are accepted directly because both the card holder and the merchant are present at the same place. For the security of transactions and for the prevention of possible fraud, the use of chip cards and PINs is increasingly promoted and used.

3.1.3 Single Euro Cash Area and other optional services

Single Euro Cash Arena is a SEPA component for cash processors. This system is supervised by the European Central Bank, which has drawn up a protocol that contains rules and measures for forming an open and transparent competitive environment for cash processing services within the Eurosystem formed by all the central banks of the euro area countries, under the coordination of the European Central Bank. which has the title of bank

⁷⁰ EUROPA – Press Releases – Single Euro Payments Area (SEPA): cross-border direct debits now a reality EUROPA (European Union), 3 November 2009; Retrieved 4 February 2011

of banks. This system had major influences on the banking system first and then on the amount of cash in circulation. In addition to the systems or schemes listed above, the SEPA project also contains other optional services, as important and innovative as the ones presented. These, although very efficient, are not a finality for the development of the European payment system, but, on the contrary, along with the main European banking institutions, are in development and will continue in the coming years with at least surprising and efficient results, for thanking customers in the European Union. The main improvements made through the SEPA project aim to increase the speed of payment settlement, the introduction of the electronic invoicing system, the mapping of the BIC code on the basis, the electronic reconciliation and the optimization of the payment methods and alternatives through the internet banking system, which is gaining more and more popularity in Europe, even among the citizens of the poor or medium categories, due to the low costs, the speed in carrying out the transactions, but more because of the simplicity of the formalities of conducting the transactions.

An important improvement is the possibility of making payments in open accounts to banks in the SEPA system, using only the IBAN code and renouncing the BIC or SWIFT code, because the IBAN code can quickly identify the country of the beneficiary's country without any other documentation.⁷¹ The e-invoicing project, embodied by the possibility of electronic invoicing, is perhaps the most innovative and most beneficial, being in line with the big projects carried out worldwide in nature protection. Thus, invoices in material format (paper) are and will continue to be increasingly replaced by electronic invoices. Thus, the issuer of invoices has the possibility to send invoices directly through the virtual internet systems, which will then be accepted for payment through the internet banking application, along with all the necessary information. This saves money, time and eases the work in accounting, because the records will be kept predominantly electronic.

3.2 Instant payment services around the world

From projects currently initiated and carried out nationally in large developed countries, such as the USA and Australia, to systems already launched in production in a number of small but open, flexible and high-performing economies, such as Denmark and Singapore, passing through areas where instant payments in the retail field already have a consistent history (Japan and Great Britain), the “Instant Payments” service aims to register Europe in

⁷¹ "Instant payments (section "For consumers")". Euro Retail Payments Board (ERPB).

a trend that is being felt all over the globe. It can be said that at the moment, at least in Europe, there are very few automatic clearing houses that have not launched at least an own-initiative analysis, if not a project to implement such a service in the communities in which they operate. In the next paragraph will be presented how were implemented such projects in different countries⁷²:

In Poland, the Express Elixir system⁷³ (operated by KIR) is a project started in July 2011 and launched into production in June 2012, initially with only three participating banks. The system is available 24/7/365⁷⁴ and has an escrow guarantee scheme (RTGS), set up by each bank, based on estimates of its customers' payments. KIR has the right to "fill in the reserve" as needed. So far, 12 commercial banks, 60 cooperative banks and the central bank have joined the system, the volume of instant payments processed reached, in May 2018, over 899,000 transactions. A transaction is processed on average in less than 3 seconds end-2-end. According to KIR representatives, the level of innovation shown by Polish banks participating in the formation of products based on the new infrastructure exceeded expectations, the fast payment infrastructure, combined with the inventiveness of banks, generated a tool capable of reducing the number of cash transactions.

The Faster Payments system in Great Britain (Vocalink operator) is used by consumers, individuals and corporations alike, being available 24/7/365, with the credit of the payee's account within seconds of starting the transaction⁷⁵. The settlement takes place 3 times a day (on bank days) and is guaranteed by the common guarantee scheme (loss sharing scheme⁷⁶). It was found that this new service did not reduce the transactions of existing systems, but created new transactions (being associated with payments through non-traditional channels: telephone, mobile, internet). The system provides the basis for the development of new products for banks and consumers and innovation, especially for mobile payments, payments that automatically induce the expectation of a service with instant delivery. The system processed for example in June 2018, over 163 million transactions.

⁷² EUROPEAN CENTRAL BANK, TARGET instant payment [online] - [cit. 03-03-2020] Available at: https://www.ecb.europa.eu/paym/intro/mip-online/2017/html/201706_article_tips.en.html

⁷³ Instant Payments Systems – analysis of selected systems, role of the central bank and development directions Narodowy Bank Polski June 2015 r. Payment Systems Department Warszawa, 2015 . p. 50

⁷⁴ KIR ELIXIR [online] - [cit.10-03-2020] Available at: <https://www.kir.pl/en/banks/elixir/system-elixir/>

⁷⁵ Global move towards real-time systems [online] - [cit.10-03-2020] Available at: <https://www.fintechfutures.com/files/2017/08/VocaLink-Supplement-2014.pdf> p. 3

⁷⁶ Because settlements occur only three times per day, banks in the United Kingdom have signed a loss-sharing agreement in case one of the banks fails before funds are settled

In the Nordic countries, consumers believe that current payments should be instant, like an order made via the internet or mobile. In the case of the service provided by the Nets operator in Denmark, within the Real Time24/7 system, the settlement in the payer's / beneficiary's accounts takes less than one second; the interbank settlement is executed in RTGS in 6 daily sessions, only on banking days, and the guarantee of transactions is pre-financed through a mechanism of dynamic allocation of the necessary liquidities. The holder of the instant scheme is the Danish Banking Association.⁷⁷

The Swedish company Bankgirot⁷⁸ launched, in December 2012, the instant payment service BIR, processing transactions 24/7/365 in maximum 2 seconds, account-2-account. Currently, the system has as participants the first nine banks on the local market. On the same platform developed, the company implemented mobile payments, as a new business direction, reaching over 35 million transactions processed in June 2018⁷⁹.

3.2.1 Instant payments in Slovakia

The Bank Board of the National Bank of Slovakia (NBS) approved the National Plan for the Introduction of Immediate Payments in Slovakia, the so-called instant payments, i.e. their processing in real time. The national plan was prepared in cooperation with the NBS, the Slovak Banking Association, the State Treasury and the Ministry of Finance of the Slovak Republic.

"Immediate payment is a payment that is available to the bank's client every day of the year, Saturday, Sunday, weekdays, holidays and such payment is credited to the payee's account within 10 seconds of initiating payment by the payer's bank about a revolutionary matter, so in terms of customer service, this is a revolutionary matter." explained Governor of NBS. In the present, the maximum amount of the transaction is set at EUR 15,000, and from 1 July 2020, this amount will be increased to EUR 100,000. "Slovakia has its own action plan, in which the banking association is also involved, said " Kažimír, adding that immediate payments will bring several benefits for clients, companies and the public sector. Instant payments will require significant adjustments to banking systems. After the arrival of immediate, so-called instant payments, it will be possible to send money between banks in a few seconds - even on weekends or at night. The main advantages of instant payments:

⁷⁷ ACCENTURE NETS REALTIME24/7 [online] - [cit.10-03-2020] Available at:

https://www.nets.eu/solutions/InstantPayments/Documents/RealTime247_Instant_Payments_Report.pdf p.10

⁷⁸ Bankgirot [online] - [cit.10-03-2020] Available at: <https://www.bankgirot.se/en/about-bankgirot/our-offer/payment-systems/payments-real-time/>

⁷⁹ UK Finance [online] - [cit.10-03-2020] Available at: <https://www.ukfinance.org.uk/area-of-expertise/payments>

they are available 24 hours a day, 365 days a year. They will enable the settlement of transactions - including their crediting - within 10 seconds to the payee's account. The advantage is that instant payments work even at night or on holidays.

They should be launched from February 1, 2022. In its opinion, the National Bank of Slovakia states that in order to provide immediate payments, banks must have entered into the "SEPA Instant Credit Transfer" scheme. It is voluntary and sets the rules and technical standards for the implementation of these payments. At the same time, banks must be connected to one of the payment infrastructures that provides instant payment settlement. "One of these payment infrastructures is the TARGET payment system with its TIPS service," says the NBS Communications Department, which supports this solution.⁸⁰

Despite the fact that we live in a fast time full of modern technologies, the implementation of electronic payment can still take a whole working day. And if we make an electronic payment over the weekend or during the holidays, it is possible that it will not be credited to the recipient's account until the next business day. Immediate payments are not new in Europe. They already have such a service in the neighbouring Czech Republic, but the situation is different there, this country is not part of the eurozone and has its own domestic currency. Experience from countries that already use immediate payments, such as Denmark and Sweden, shows a rapid increase in their popularity.

The introduction of this type of payment is perceived by ČSOB as another logical development stage of the payment system. "ČSOB plans to join the SEPA IP scheme. Instant payments are another, logical development stage of the payment system. Consumers are demanding increasing comfort and faster services and their availability. This also applies to the payment system" says ČSOB spokeswoman Anna Jamborová. ČSOB Bank states that initiatives are already emerging in the EU, there where is a connection between the euro area and individual domestic solutions. This would allow immediate payments to be made across Europe and not just between banks in one country, but between banks from different countries. The bank claims that it wants to bring fast payments to its clients, but other details are still missing. Anyway the bank supports fast payments and wants to provide them.⁸¹

⁸⁰ NBS, Statement from the NBS Bank Board's 24th meeting of 2019 [online] 17.12.19 [cit.10-03-2020] Available at: https://www.nbs.sk/en/press/all-press-releases/press-releases-common/press-release/_statement-from-the-nbs-bank-board-s-24th-meeting-of-2019

⁸¹ TA3, Slovensko zavedie instantné platby, peniaze prídu okamžite, [online] cit. [10-03-2020] Available at: <https://www.ta3.com/clanok/1171731/slovensko-zavedie-instantne-platby-peniaze-pridu-okamzite.html>

The largest bank in our country, Slovenská sporiteľňa, states that the introduction of instant payments is voluntary for banks and it is therefore up to them whether to get or not involved. "We anticipate that this type of payment will prevail in the future, and sooner or later instant payments will be completely normal. We want to implement the changes so that the new service is as useful as possible for clients. At our bank, of course, we are preparing for instant payments," said spokeswoman Marta Cesnaková without further details. Sporiteľňa claims that most banks should offer fast payments from 2020, according to European authorities. It does not yet say whether it will charge extra for such payments if it starts offering them. Nevertheless, it specifies that they will be revolutionary in the way payments are processed. "We assume that they will gradually replace cash payments and partially increase security payments, clients will be able to make immediate payments for goods and services within the EU countries, and cash management of corporate clients will become more efficient," adds Cesnaková. However she does not say exactly when it will be introduced. But she adds it will make sense if as many banks as possible get involved.

VUB Bank also said that the participation of banks in the mentioned schemes is up to them. "Participation in both schemes is voluntary for banks and is a matter of each bank's business policy. VUB is still able to make standard payments to banks in the EU within the normal banking day within the SEPA area" says spokeswoman Lucia Luptáková about the current situation. For payments in euros, such a guaranteed service currently costs 50 euros and it has to be done by 11 o'clock and. The institution stated that involvement in the schemes is not an agreement between the banks, but is intended to be an "individual decision of the bank concerned." "In the past, VUB co-initiated a solution for a similar type of payment for retail clients through Viamo, but only VUB and Tatra banka were involved," mentioned as well Luptáková⁸². The Bank anticipate that immediate payments to clients will not be free. It is a technically and financially relatively expensive solution for the bank. According to the bank, the National Bank of Slovakia itself has implemented the TIPS solution in its systems, but it does not lead to active communication leading to further involvement of the banks. Such steps are allegedly not implemented by other state bodies either. "Currently, the plan for the introduction of immediate payments in euros in the Slovak Republic at the level of the NBS working group and commercial banks has begun. The assumption of the

⁸² TA3, Slovensko zavedie instantné platby, peniaze prídu okamžite, [online] cit. [10-03-2020] Available at: <https://www.ta3.com/clanok/1171731/slovensko-zavedie-instantne-platby-peniaze-pridu-okamzite.html>

implementation is in the second half of 2020, "said PR manager Dominik Miša. The bank expects to offer a solution in this matter.

Tatra banka also expects that banks will gradually start offering fast payments. "From a medium-term perspective, however, it can be expected that SEPA Instant Payments will become a standard additional service provided by several Slovak banks," said spokeswoman Zuzana Žiaranová. However, she did not say whether the bank would be involved and whether they would charge extra for customers if fast payment would be introduced. *Tatra banka* merely states that it expects the banks to gradually join the immediate payment scheme.⁸³

A representative of *Poštová banka* claims that the company is currently analyzing the possible introduction of fast payments. But it does not specify details. At the same time, she says that she cannot assess whether she can agree on the entire banking market to introduce such payments. She also did not comment on whether the bank would charge additionally. However, instant payments could partially replace, for example, card payments. "This is a possible alternative to card payments, as the client pays directly and immediately to the merchant's account through the application of his bank (or third party)," explains Lýdia Žáčková, a spokeswoman for *Poštová banka*. Without a specific deadline, she states that the bank wants to get involved.⁸⁴

These are statements of other Slovak banks on the topic, details are not offered by them either⁸⁵:

UniCredit bank: "The bank monitors the needs of the market, projects in this area are launched, but not at an end-phase," said Zuzana Ďuďáková, a representative of the bank. She mentioned that it will publish the possible date and details well in advance. The bank is working on it, and it will announce the date in time.

Prima banka: The company states that the system for immediate payments is ready, none of the Slovak banks is involved in it yet. "This is one of the reasons why it is still premature to assess this topic from our point of view at this time," says spokeswoman Eva Čonková.

⁸³ ZIVE, Okamžité platby medzi bankami: Zistovali sme, či ich plánujú, Filip Maxa [online] 05.02.2019 cit. [10-03-2020] Available at: <https://zive.aktuality.sk/clanok/138040/okamzite-platby-medzi-bankami-zistovali-sme-ci-ich-planuju/>

⁸⁴ ZIVE, Okamžité platby medzi bankami: Zistovali sme, či ich plánujú, Filip Maxa [online] 05.02.2019 cit. [10-03-2020] Available at: <https://zive.aktuality.sk/clanok/138040/okamzite-platby-medzi-bankami-zistovali-sme-ci-ich-planuju/>

⁸⁵ ZIVE, Platby do inej banky za pár sekúnd: Kedy prídu?, Filip Maxa [online]20.08.2019 cit. [10-03-2020] Available at:<https://zive.aktuality.sk/clanok/141938/platby-do-inej-banky-za-par-sekund-kedy-pridu/>

Prima banka did not state in the opinion whether they plan to participate. She only pointed out that none of the Slovak banks is still involved in the instant payment system.

mBank: The introduction of instant payments is expected to be financially and technically demanding. "In any case, we are currently analyzing the topic of Instant Payments internally," the bank explains. However, it emphasizes that it is not mandatory for banks and it is up to individual companies whether to introduce instant payments. "This solution requires demanding operational and technical preparation, so we are currently analyzing the introduction of such payments in mBank and we will inform you about their implementation on the Slovak and Czech markets in time," said Milada Pivníková, mBank's product manager for payment services.

OTP banka: The bank said that since it does not offer instant payments in Slovakia yet, it cannot estimate the possible availability date or fees. The bank says that the topic has been resonating in the market for a long time, but it is a demanding project both financially and technically. "We estimate the real introduction of immediate payments on the Slovak banking market in the next four-five years," says Miroslava Juráčiková from the institution's marketing department.

365 bank: Is newcomer to the banking market and says that it is ready for discussions on this topic. However, the bank itself states that the topic of fast payments only makes sense if all the big banks are involved - then supposedly 365 would also join. "However, it is too early to talk about details at the moment," the bank said. 365 belongs to Poštová banka. It is very likely that if the parent bank would join, 365 would also offer instant payments. 365 also relies on the NBS National Plan for the Introduction of Instant Payments. "Analyses are currently underway and as a bank we plan to join the immediate payment scheme. However, in order for it to be fulfilled, it is necessary for the majority of banks in our market to participate," said spokeswoman Linda Valko Gáliková.

3.3 Innovation hub

Bank for International Settlements creates Innovation hub to enhance cooperation of central banks in fintech. Central banks, which are facing rapid changes in financial technology and companies such as Facebook, which want to enter the financial market, and want to work more closely through an innovation center approved by the Bank for International Settlements, according to Reuters. BIS said that the purpose of the center,

which will have headquarters in Basel, Hong Kong and Singapore, is to improve the functioning of the global financial system and to identify and develop perspectives of the technological trends affecting the central banking sector. Facebook's plan to launch its own cryptocurrency was not mentioned in the BIS statement, but the social media giants' movement has helped settling opinion among central bankers about the urgency of coordinating regulatory responses to financial technology trends.⁸⁶"The IT revolution knows no bounds and therefore has repercussions simultaneously in several parts," said Jens Weidmann BIS President in a statement followed by the decision to create the hub. The hub will focus on supporting central banks to "identify relevant trends in technology, to support these developments when they are in line with their mandate and keep pace with regulatory requirements to protect financial stability." he added.⁸⁷

BIS, has already called on politicians to look closely at Big Tech's financial incursion, a move that raises issues of data confidentiality, competition, markets and the banking sector. General details of the hub have been announced, however BIS said that is unable to provide details regarding the investment or the new staff in the hub. The Facebook announcement has raised concerns among US politicians and determined several governors of major central banks in Europe to warn Facebook it that it should expect a lot of questions from regulators about the digital currency Libra. Thomas Jordan, president of the Central Bank of Switzerland (SNB), has assured that efforts to verify new financial technologies will be accelerated⁸⁸. So far, major central banks have abstained from regulating digital currencies because they failed to reach an agreement on how this should be done and after concluding that digital currencies are too small to endanger the financial system.

3.4 The future bank: where?

The competition between traditional banks, the new technological era and the client's demands, all put together will transform the entire banking system. Therefore, banks of the future should create a stylish and user-friendly atmosphere. The banks of the future make banking simple, easy and offer a variety of services which allow the customer to deal with his money independently and flexibly. However, the sector will benefit from moves that are making

⁸⁶ Reuters, EURONEWS [online] 9.12.19 [cit.11-03-2020] Available at:<https://www.euronews.com/2019/06/30/worlds-central-banks-to-tackle-technology-with-bis-innovation-hub>

⁸⁷ BIS, BIS to set up Innovation Hub for central banks [online] 30.06.19 [cit.11-03-2020] Available at: <https://www.bis.org/press/p190630a.htm>

⁸⁸ SNB, Currencies, money and digital tokens Thomas Jordan, Chairman of the Governing Board [online] 9.12.19 [cit.11-03-2020] Available at: https://www.snb.ch/en/mmr/speeches/id/ref_20190905_tjn

it more globally competitive and enabling the creation of integrated financial service providers. The fierce competition in the financial services market has determined banks to diversify their products and increase their quality. As a result, the future Banking services revolve around the facilities that banks will be able to provide for their customers and depends on the promptness and efficiency with which customer requests will be honoured. In this context, information technology is a crucial area that will be the success of banks and financial service providers in general. The pace of progress is incredible. Computer systems have a substantial impact on product development, marketing and back-office activities and after-sales services. Some banks have realized that the future revolves around their IT systems and they have invested in their modernization. Others are now starting such work. Such behaviour can only be perceived as promising in terms of their future in business and implicitly in the fate of banking system.

3.4.1 Factors influencing the future of banks

In the context of this information era five factors are relevant to the organizational - structural and practical future of banks.

Changes in legislation Current trends in increasing consumer protection measures can and will affect banking structures and obviously their practices. Regulations (legislations) however, at macro level can produce structural changes. These provisions can produce vast banking changes. Anti-money laundering legislation is not uniform, but unification efforts are being made. However, electronic money poses new problems in this area, problems that are not fully inventoried in order to identify ways to prevent money laundering. The global trend towards the universalization or diversification of banking activities will give a whole new impetus to marketing activities both in terms of amplitude and their content.

New technologies Undoubtedly, we are in the midst of a period of transformation in which revolutionary changes in technology and communications produce major changes in how the activity are being carried out by all organizations and especially by banks and financial institutions. In this era of decentralization, electronic and digital technology, a number of more and more companies will recognize the importance of offering of information for the proper conduct of banking, but these companies will not be necessarily banks, it can be information brokers, retailers of a certain type or technology companies.

The trend has already materialized through the increase in the number of non-banking entities that enter the banking market. Therefore, competition from non-traditional banks, revolutionary technological developments and increased customer demands are working in

tandem for the transformation of the traditional banking sector. Banks that want to survive and prosper in this new and challenging world must change radically and fast. The model of the future retail banking is clearly outlined and should not be underestimated. The "virtual bank", as it has been called, is defined as a model in full development of banking activity, in which several companies are involved in the creation of banking products and services and in which customers can access banking services through several distribution channels.

"The term" virtual "implies independence from physical location or, in extreme case, banking without branches. Technology is the key element of this development, allowing the electronic realization of communications and financial transactions between customer and bank, without the need for the customer's physical presence at the branch office. Banks that react to the opportunities and challenges of the electronic age are already introducing a range of new distribution channels through which to offer their services to customers.

A recent study by Ernst & Young⁸⁹ on banking and technology clearly provides important elements regarding the model that will follow banking activity. An important conclusion emphasizes that it is expected that retail banking transactions processed by subsidiaries to shrink, while banks plan a dramatic increase in alternative distribution channels, including ATMs bank, bank kiosks, debit cards, telephone service centers, electronic banking services via "smart" cards and home banking / Internet banking. Despite this development of alternative distribution channels, the subsidiary is still the main point of contact and will continue to play an important role for many banks. Its role will change by focusing on personal banking, leaving customers to carry out several routine transactions through electronic distribution channels. Just as ATMs allow customers to do banking without entering a branch, the phone also allows us to solve banking problems without leaving the office or home. The number of transactions estimated to be made by telephone will grow. This new distribution channel now offers the customer the opportunity to benefit from banking services 24 hours a day, 365 days a year.

Home banking, personal computer banking and Internet banking, are predicted - from the Ernst & Young report⁹⁰ - to increase by offering or intending to offer personal computer services. This can be done by a direct line contact with the bank or through a continuous

⁸⁹ EY, Building the bank of 2030 and beyond [online] [cit.12-03-2020] Available on: [https://www.ey.com/Publication/vwLUAssets/EY_-_Building_the_bank_of_2030_and_beyond/\\$FILE/EY-Building-the-bank-of-2030-and-beyond.pdf](https://www.ey.com/Publication/vwLUAssets/EY_-_Building_the_bank_of_2030_and_beyond/$FILE/EY-Building-the-bank-of-2030-and-beyond.pdf)

⁹⁰ EY, How retail banks must rethink their customer relationships [online] 15.06.16 [cit.12-03-2020] Available on: https://www.ey.com/en_gl/banking-capital-markets/how-retail-banks-must-rethink-their-customer-relationships

information service provider on Internet. With the development of home banking, tele-banking terminals, business terminal, even the functions of the bank clerk begin to be viewed differently. The expansion of the credit card system illustrates that it will be possible to avoid any contact of the client with the staff of the bank for obtaining loans. By introducing computers, bank clerk has more time and can use it for the development of other more efficient business services and customer serving.

Changes in the activity of banks. Mainly, the changes caused by customer needs are rather evolutionary than revolutionary. As a result, we notice a rapid increase in the demand for more and more diverse types of financial services and information. Making available to all those interested to more and more information that will lead to increasing competition between banks and therefore to reduction of the response time to any new customer claim.

Changes in the activity of banks due to the new needs of companies. The pressure exerted by customers is more relevant in the case of companies. In the past, banks have responded extensively to the growing needs of industrialists and traders, especially for exporters. In the field of services this financial situation will inevitably continue. Globalization of many industrial or service companies (automotive industry, telecommunications, food industry - Coca Cola, McDonald's - accounting services - Price Waterhouse / Koopers & Librand, Ernst & Young, etc.) also imposed globalization of the banking activities. CITIBANK, CHASE, ABN AMRO, ING BARINGS, CREDIT SUISSE FIRST BOSTON, SBC WARTBURG are examples of banks that think globally depending on their industrial and business partners that globalize. An example is given by financing trade services (trade finance, forfaiting, factoring) or risk prevention in international trade (hedging, swap, derivatives).

3.5 High technologies in payments

High technology will soon move to a new stage of application in the banking field, gradually implementing Artificial Intelligence in various areas of activity. Payment services would be the next target in this regard. Improving the quality of these services will be real and auspicious for both customers and banks. The faster and cheaper- the better is motto of basis payment principles. First of all, we can talk about an improvement of the customer experience in the relationship with the bank. The interaction will be easier and more comfortable. If a minimum of technical skills (use of a computer, smartphone, dedicated applications) is currently required to use certain banking products and services through high technology, Artificial Intelligence could eliminate a number of such shortcomings. For

example, chatbots, smart alerts and voice commands will create "shortcuts" and save customers time. Also, the interactive nature of the applications will be able to eliminate certain errors in the payment processes. Embedded Artificial Intelligence applications will be able to provide solutions to customers for the following query. Of course, the instant answers as a result of the voice command "How much money do I have in my account?" are useful, but, for example, the application can also give you answers to questions such as: "What did I spend more on this month" or "How to spend less this month?". Thus, we can always have with us the financial advisor who would give us solutions without failing and being objectively. We can also set up alerts if we spend money on the account on purchases that we consider an unnecessary impulse. It can alert us when we have payment deadlines and ask our permission to do them for us. It can create a profile of our payment service user and then provide us with various useful information that would simplify our lives. We will no longer need bulky wallets for cash and cards, everything will be integrated into a smartwatch or mobile phone. Thus, at the click of a finger (literally and figuratively) we could trigger a transfer of funds. The virtual assistant will save us from delays and payment penalties. We will save time and money, and the banks, in turn, will streamline their processes and will have lower operating costs. Payment incidents and related risks will decrease.

The biggest challenge would be to gain customers' trust in the use of payment banking services in this way. Many perceive the use of Artificial Intelligence as a form of loss of control over our actions and, in the case of payments, over financial resources. Some go further with the idea of losing control over Artificial Intelligence, which could become independent and even in conflict with us, there is also the issue of privacy and protection of personal data, especially due to the fact that these applications have access to our personal profile. Moreover, applications have access and control over our finances, and in case of unexpected failure we could have significant damage.

Another challenge could be the *high costs of implementation and research* - development. Also, the competition will become more and more fierce on the payment services market by increasing the role of fintechs and diminishing the brand image. Customers will no longer be able to differentiate between providers of such services if they become standard on the offered facilities and the cost differences will be insignificant. Thus, barriers are not only financial and economic, but also social and psychological, depending

on how open we become as individuals in the use of Artificial Intelligence. Basically, we are talking about another we machine that participates with us in financial transactions.

3.5.1 Robotic Process Automation

To automate the painstaking and repetitive tasks that employees can fail at, and at the same time to make their costs more efficient, more and more large companies are using RPA (Robotic Process Automation). Statistics show that more and more executives are opting for the digital transformation of the company by implementing RPA technology⁹¹.

RPA is a technology based on artificial intelligence, created to quickly execute various back office and front office processes, the goal being to save time for employees and resources for employers. From human resources, to the financial or marketing department, RPA is a technology used in almost all functions of a business. With this, companies can configure a robot or software, manipulate data, trigger automated responses, or communicate with other digital systems. While robots take on boring and repetitive tasks for employees, they may be involved in activities with a greater strategic impact for the company, or in creative tasks. Implementing an RPA platform means, in fact, improving a company's productivity. The robots work 24 hours a day, 7/7 days, without getting tired and paying the same attention to the first process, as well as to the 100th.⁹²

Robotic Process Automation (RPA) can be implemented and used successfully in any type of company or department, such as accounting - finance (processing of payments and invoices, database acquisition), human resources (time, payroll, takeovers from databases), or logistics (inventory, order processing). Globally, the top industries that have resorted to Robotic Process Automation are: banks, telecommunications services, healthcare and insurance companies. It should be noted that RPA has a much wider applicability in any field where workflows are repetitive or involve a large volume of data. For example, a winemaker can increase order accuracy up to 99.7% and reduce costs, all through the implementation of RPA technology. If in the past the automatization of employees' tasks depended on the ability to perceive and analyze people, now the whole process changes with the help of robots, respectively RPA technology. Currently, the RPA market is booming, with a huge potential of implementation in both large and small companies, as the applicability of RPA does not depend on the size of the company. Automation is one of the most important stages in the

⁹¹ Brandon Buccowich (2016). What is Robotic Process Automation. [online] - [cit.17-03-2020] Accessed dated on: <https://www.laserfiche.com/ecmblog/what-is-robotic-process-automation-rpa/>.

⁹² Margaret Rouse, SEARCHCIO, [online] - [cit.17-03-2020] Available on: <https://searchcio.techtarget.com/definition/RPA>

process of digital transformation of businesses. This means that in the future, Robotic Process Automation (RPA) will be a standard in business, currently being a method that facilitates continuous development.

Robotic Process Automation, although a relatively new technology, has managed to gain a lot of attention in the business world. Statistics show that more and more executives are opting for the digital transformation of the company by implementing RPA technology. RPA technology allows a software robot to imitate human behaviour. For example, it can navigate enterprise software, such as an Enterprise Resource Planning (ERP) system, using the application's user interfaces just like a human.⁹³ In addition, a software robot does not sleep, does not make mistakes and costs much less than an employee. In other words, we can talk about a digital workforce. In a highly competitive business world, when the emphasis is heavily on efficiency, the use of RPA technology comes as a great help in achieving automatic workflows without human intervention. Software robots thus become useful with process of invoice matchings and payment processing, order processing, inventory, data acquisition and much more. Any entrepreneur wants to gain a competitive advantage. This means adapting to change and using technology as a business partner. Software robots provide business efficiency, leaving more and more room for innovation, creativity and strategies. RPA advantages are:

cost reduction- task automation involves cost savings, and software robots have a much lower cost than an employee.

operating speed-as well, a software robot works much faster than an employee, performing tasks even instantly, so that the results appear in a much shorter time.

elimination of human errors -a software robot is not affected by fatigue, distraction, so there are no errors in execution

improving productivity-in addition to the fact that a software robot performs tasks quickly, it works 24 hours a day, does not have to sleep or take a lunch break.

use of existing systems- no new investment in programs should be made, the software robot uses the company's existing systems, like an employee.

⁹³ Brady, M. (1985). Artificial intelligence and robotics. *Artificial intelligence*, 26(1), 79-121.

adaptation of robotic operations - software robots are programmed to work according to the requirements desired by the company

employee retention - eliminating routine tasks from team members' activity means greater employee retention

customer satisfaction- a satisfied customer is the key to any business, and due to the automated work process, therefore precise and fast, the quality of customer support service is ensured.⁹⁴

As with any other automation technology, it is inevitable that there will be concerns about job losses. That is totally wrong. RPA technology does not threaten employees whose work cannot be fully automated based on existing technologies. The software robot comes to replace the repetitive tasks, those annoying tasks, thus encouraging innovation and work that brings added value to the company. The change is happening right now, the operating paradigm is changing from people who respect and execute processes with the support of technology, to technology (I.e. software robots) that executes processes with human surveillance.

3.5.2 Distributed Ledger Technology

Distributed ledger technology is a technology that underlies various virtual currencies (including Bitcoin) that could lead in the future to the transformation of the current way of conducting transactions in the financial sector, as well as outside it⁹⁵. In 2016, even many banks tested the registers distributed for transactions (international payments). The increase in computing power and discoveries in the field of cryptography, together with the use of new algorithms, have allowed the creation of these distributed registers. In its simplest form, a distributed registry is a database maintained and updated independently by each participant (or node) in a network. The distribution is unique: the records are not transmitted to the different nodes by a central authority, but are built independently and kept by each node. Meaning, each node in the network processes each transaction, reaches its own conclusions and then "vote" on those conclusions to ensure that the majority agrees. The essence of these new types of relationships is in fact to avoid the costs of "trust" or certification, normally provided by notaries, lawyers, banks, compliance regulators or governments, through this

⁹⁴ ACCENTURE, Niels Neelis [online] 31.03.17 [cit.19-03-2020] Available on: <https://www.accenture.com/nl-en/blogs/insights/robotic-process-automation-4-huge-benefits-for-businesses>

⁹⁵ Legal Working Paper Series Impact of digital innovation on the processing of electronic payments and contracting: an overview of legal risks, No 16 / October 2017, Phoebus Athanassiou pag 27, ISSN 1830-2696

type of technical architecture. The invention of distributed registers is a revolution in the way information is collected and communicated, applying both to static data (a register) and dynamic data (transactions)⁹⁶.

3.5.3 Hybrid Cloud

A hybrid cloud is an integrated cloud service that uses both private and public cloud systems to perform distinct functions within the same organization. In general, all cloud services must offer a certain level of efficiency in response to different degrees of use. From this point of view, public cloud solutions are likely to be more cost-effective and scalable than private ones. Therefore, an organization can maximize efficiency by using integrated, public cloud solutions for all current operations, and rely on private cloud solutions only where a higher degree of security is required.⁹⁷

Hybrid cloud models can be implemented in several ways: Different cloud service providers associate and provide both public and private cloud services as an integrated service. Individual cloud service providers offer complete hybrid cloud packages. Some companies and organizations manage private cloud systems, but also contract a public cloud service which they later integrate into their own infrastructure.⁹⁸

Some practical examples of using hybrid cloud modules are:

1. A company that owns an online store. The online store itself is hosted using a private cloud - the most secure and measurable solution, but brochures and presentation catalogues are hosted in a public cloud - the most cost effective solution (in this case the main concern is cost, not the level of security).
2. A service IaaS (Infrastructure as a Service) service offered to a financial company. Private cloud for storing the customer database and public cloud for documents used in collaborative projects, documents that can be accessed by multiple users from any convenient location. A hybrid cloud configuration such as hybrid hosting can provide its users with the following benefits: scalability, cost efficiency, security and flexibility⁹⁹.

⁹⁶ DEVELOPER IBM, Bhargav Perepa [online] 18.03.18 [cit.19-03-2020] Available on:

<https://developer.ibm.com/technologies/blockchain/tutorials/cl-blockchain-basics-intro-bluemix-trs/>

⁹⁷ AZURE, What is a public cloud? [online] - [cit.19-03-2020]Available on: <https://azure.microsoft.com/en-us/overview/what-are-private-public-hybrid-clouds/>

⁹⁸ CLOUDFLARE, What is a private cloud? [online] - [cit.19-03-2020] <https://www.cloudflare.com/learning/cloud/what-is-a-private-cloud/>

⁹⁹ ARROWSOLUTIONSGROUP, The pros & cons of public, private, or hybrid cloud ?[online] - [cit.19-03-2020] <https://www.arrowsolutionsgroup.com/pros-cons-public-private-hybrid-cloud/>

While the private cloud offers a certain level of scalability depending on its configurations (whether hosted internally or externally), public cloud services will offer less limited scalability because they generally have the resources of a larger cloud infrastructure. By moving as many less sensitive security functions as possible to the public cloud, the benefits of a high degree of scalability are achieved while reducing the requirements for the private cloud.

According to the same principle, public cloud solutions are likely to provide more significant savings in terms of scalability (such as centralized management), being more cost-effective than private cloud solutions. Therefore, hybrid cloud systems allow its users to benefit from these savings for all less sensitive functions used, which do not require a high degree of specific security to the private cloud. The private cloud element of the hybrid cloud model not only provides the desired level of security when needed, but can also meet any regulations regarding the handling and storage of data where are applicable. The availability of both types of resources: secure (private cloud) and cost-effectively scalable (public cloud), can provide organizations with more opportunities to explore new ways to earn operating income.

3.6 New methods of payment

3.6.1 Palm payment

The American giant Amazon, led by Jeff Bezos, is developing a solution to allow customers to connect their credit or debit cards with their own hands, so that they can scan their palm when paying in physical stores, according to sources quoted by Wall Street Journal. Simply, instead of a card, smartphone or smartwatch, the user puts his palm on a scanner to pay for purchases or consumption. The principle is very simple. The imprint of the palm is unique to each person. So are the indicators on a card. Thus, the data of a card is "attached" to the image of a palm in a computer system. The initial attachment of the card can be done directly at the payment terminal. The palm will be scanned and both will be touched with the card for registration in the system. From then on, it will be enough to touch the scanner with your palm. Each time the palm is scanned, the terminal identifies the person, sends the image to the system, which finds the corresponding card and process the payment. Paying with the palm of our hand would be more convenient, more practical and more natural

than with any object¹⁰⁰. We as customer should no longer take the card out of the wallet or out of our pocket or awkwardly turn the wrist to pay with the watch. We shouldn't even worry about the means of payment or wake up at home because we don't have the card with us. The project is being developed in collaboration with Visa and is currently being tested in physical stores Amazon Go and Whole Foods.

Although the project is still in its infancy, Amazon has already begun work on testing various terminal prototypes with Mastercard, JPMorgan Chase, Wells Fargo and Synchrony Financial¹⁰¹. The company run by the world's richest man, Jeff Bezos, who has filed a patent for a "non-biometric identification system" that involves a "handheld scanner" that should scan the way an individual's palm looks. Even though the project is still in its initial phase, Amazon is projecting an image of the ideas it has for transforming the financial and payments industry. The company has already announced a massive plan to expand its physical presence, through Amazon Go locations - which operate without cashiers and where customers can pay even through a voice payment service. Payment methods are changing more and more often. Payment with our phone or smartphone will be soon considered outdated if Amazon's newest project succeeds and is widely adopted¹⁰².

3.6.2 New methods developed by Mastercard

The Mastercard brings into attention, three payment methods of the future. Mastercard included access and testing of a range of innovative payment methods, including Pepper-humanoid robot, for Pepper, Mastercard created the first shopping app, Smart Mirror - smart shopping mirror and Smart Table - which allows contactless payments, and biometric card - which combines chip technology with biometric authentication.¹⁰³

So far, hundreds of stores have started using the humanoid robot as a new way of interaction with customers. Pepper, developed by SoftBank Robotics, can help restaurant with customers' orders, in that way saving time and resources, is useful for airlines, who can use it at check-in, and, last but not least, can provide advice about specific goods and

¹⁰⁰ Report: Amazon joins hands with partners in palm payment plan, Dan Berthiaume [online] 21.1.2020 [cit20-03-2020] Available on: <https://chainstoreage.com/report-amazon-joins-hands-partners-palm-payment-plan>

¹⁰¹ Report: Amazon joins hands with partners in palm payment plan, Dan Berthiaume [online] 21.1.2020 [cit20-03-2020] Available on: <https://chainstoreage.com/report-amazon-joins-hands-partners-palm-payment-plan>

¹⁰² CNBC, Amazon reportedly wants to turn your hand into a credit card, Emma Newburger [online] 18.1.2020 [cit 24-03-2020] Available on: <https://www.cnbc.com/2020/01/18/amazon-reportedly-wants-to-turn-your-hand-into-a-credit-card.html>

¹⁰³ REVOBLG, Tehnologii noi de plată de la MasterCard, Revo Newburger [online] 30.10.2018 [cit 24-03-2020] Available on: <https://www.revoblog.ro/tehnologii-noi-de-plata-de-la-mastercard/>

services, ensuring that all customers they interact with have a pleasant experience. We can see a picture of Pepper in the Appendix- Pic.4

Retail Mirror - the mirror created by OAK Labs, benefits from RFID - radio frequency identification technology. It is intended for test booths and can record the size and color requirements of customers, recommends what other clothing items in the store match the products added to the cart and allow payment directly from the test booth.¹⁰⁴ We can see a picture of Retail Mirror in the Appendix- Pic.5

The biometric card combines chip technology and biometric authentication, through fingerprinting, to easily and conveniently identify cardholders when making store purchases. We can see a picture of the biometric card in the Appendix- Pic.7

Smart Table is an interactive table designed and developed by Mastercard for relaxation areas and for those with restaurants in airports. The smart table also allows contactless payments through mobile applications. Smart Table is already located in Rome's Fumicino Airport, where customers can order from one of the airport's restaurant, during which time they will see real-time information about the flight, as well as boarding and other functions. Mastercard also introduced a number of wearables, wearable devices, such as smart watches, fitness bracelets, jewelry and other accessories, that receive payment features through the Mastercard Digital Eanblement Service (MDES).¹⁰⁵ We can see a picture of the *Smart Table* in the Appendix- Pic.6

3.6.3 Digital payments

Phos and Mastercard are launching a pilot project to introduce an innovative payment solution compatible with Android mobile devices that will allow small merchants to accept contactless payments without the need of additional equipment. The simple and effective and effective solution , will facilitate the acceptance of cashless payments for millions of SMEs and will contribute therefore to their development. Micro, small and medium-sized traders are the core of the European economy, but traditionally their mode of operation only involves accepting cash payments, insecure and disadvantageous payment methods due to hidden costs and inherent security problems. Through this partnership, Phos and Mastercard

¹⁰⁴ ANGLOAFRICAN, The union of fashion and tech brings you the digital fitting room for a greater shopping experience Berthiaume [online] 24.2.2016 [cit20-03-2020] Available on <http://infosystems.mu/the-union-of-fashion-and-tech-brings-you-the-digital-fitting-room-for-a-greater-shopping-experience>

¹⁰⁵ BUSINESS REVIEW, The future of payments: Pepper the robot, chatbots and smart mirrors, Aurel Dragan [online] 29.10.18 [cit 24-03-2020] Available on: <https://business-review.eu/tech/the-future-of-payments-pepper-the-robot-chatbots-and-smart-mirrors-188988>

come up with an alternative solution to allow SMEs to accept electronic payments in a simple, secure and efficient way¹⁰⁶.

The pilot project will benefit from the support of Paynetics, a licensed e-money institution valid in the European Union, as a guardian bank, and is scheduled to run until April 2020. In collaboration with approximately 200 SMEs from participating countries (United Kingdom, Germany, Romania and Bulgaria) it will facilitate the adaptation of this innovative payment solution in line with current market conditions. The Phos app is already available in the Google Play Store and allows all Android devices on which it is installed to accept either contactless card payments or payments through other devices with NFC technology, such as smartphones, watches and smart bracelets. Except for simplification of use, the advantages of the utilization include the verification of traders through a fully digitized process, which takes into account protocols to prevent tax evasion and money laundering, as well as other applicable local regulations. Insisting on the security of the solution, Mastercard, through the Mastercard Digital Enablement Service, certified Phos as one of the first digital POS solutions for Android devices.¹⁰⁷

3.7 Increasing receptive of European Union to Blockchain

Europe is fast becoming a fertile ground for blockchain ID projects. Although the EU has a number of initiatives to promote blockchain innovation across its borders, Estonia and Catalonia are leaders in digital identity. Despite the political uncertainty surrounding Catalonia in recent years, its government has been at the top of blockchain research, especially with the launch of IdentiCAT. IdentiCAT is a project that aims to make citizens "exclusive owners" of their digital identity. At the launch of the project on 9 September 2019, the Department for Digital Policy and Administration affirmed about the project: "IdentiCAT intends to be the first digital identity in Europe, which will be led by the public sphere and self-managed by citizens themselves with full legal guarantee and efficiency to operate not only with public authorities but also with private entities, thus ensuring full compliance with regulations on the protection of personal data." Although the IdentiCAT project of Catalonia is ambitious, Ali considers that: "Although it is certainly a positive step

¹⁰⁶ NEWSROOM, phos and Mastercard boost the backbone of Europe's economy by enabling micro, small and medium-sized companies to accept digital payments, Press Releases [online] - [cit25-03-2020] Available on: <https://newsroom.mastercard.com/eu/press-releases/phos-and-mastercard-enable-msmes-to-accept-digital-payments/>

¹⁰⁷ FINANCIALIT, phos and mastercard boost digital payment acceptance for micro, small and medium-sized companies [online]13.03.2020 [cit25-03-2020] Available on: <https://finacialit.net/news/payments/phos-and-mastercard-boost-digital-payment-acceptance-micro-small-and-medium-sized>

for the citizens of Catalonia, it is still too early to comment. In addition, for digital identity to be truly meaningful, it would be needed government support at the national level. "

Estonia is perhaps the most important country in the world when it comes to blockchain technology. The country's advanced digital identification system does not stop at identifying Estonian citizens. The country's electronic services are now available online, allowing legal travel to EU countries, national health insurance, proof of identity when connecting to banks, digital signatures, voting, medical records and more. Abbas Ali, the global head of digital identity at R3, expressed his view that Estonia is the leader in the blockchain ID sector: "Today, in Estonia, every citizen has access to a state-issued digital identity, which can be used to provide digital signatures. It is therefore logical that Estonia would like to use blockchain technology to add a layer of data security, trust and integrity to all the data it holds on its citizens. However, few details are available on the actual implementation and it is not clear how to actually use blockchain today. "

Both blockchain and cryptocurrencies are technologies that go hand in hand with libertarian ideas. An important goal is to minimize the state's ability to violate individual freedom at the same time for many people interested in decentralization, for technology and finance. Boris Johnson believes that state involvement in blockchain ID projects is not necessarily to be avoided. He explained to Cointelegraph¹⁰⁸ that it depends on the type of government involved he stated the ultimate goals of the project are: "U.K. focused particularly well on private blockchain ID projects and then worked hard. But on the other hand, there is China, which has a lot of state control. It is easy to see how identity could be associated and the debate on state involvement can be good or bad. But then you have the opposite situation in America, USA there are regulators fighting against any change in terms of progress. "

Abbas Ali explained that there is no clear example to show whether government involvement in the blockchain ID would be necessary or not: "Identity is contextual, which means the type of verification and data needed to identify a legal person, a natural person or a thing, varies depending on the nature and context of the transaction. Some use cases may require verification by the governing bodies, but others do not. The criteria for accepting digital identity are ultimately based on the parties who are based on defining them. One of

¹⁰⁸ Cointelegraph, Blockchain Digital ID — Putting People in Control of Their Data, Joseph Birch [online] 23.03.20 [cit.28-03-2020] Available on: <https://cointelegraph.com/news/blockchain-digital-id-putting-people-in-control-of-their-data>

the most ambitious goals of cryptocurrency, especially given the current state of the markets, is to replace mainstream finance. For Ali, this is where blockchain and crypto ID projects differ greatly: “Blockchain-based digital identity is not meant to replace the role of governments in issuing citizens' national identities. Unlike central bank digital currencies, which many government and regulatory actors believe pose a direct threat to sovereign financial security, the blockchain ID is not a decentralized approach to overcoming the national identity of states, as Ali believes: "Blockchain simply provides a secure, private and scalable way to exchange verified digital beliefs between the parties." In other words, blockchain-based identity systems simply provide a platform for issuing, exchanging and verifying digital identity.

3.7.1 Visa payments through open source blockchain

Distributed registry technology, such as blockchain, lends itself to this type of network where trusted partners can connect sensitive data and processes transparently to all participants. Blockchain will be integrated with Visa's core systems and will create a network that allows participating companies to make cross-border payments to other participants directly from bank to bank. The software that makes up the system, known as Visa B2B Connect, gives corporations a unique digital identity on network through tokens. Traditional B2B payments made by check, automatic clearing house and bank transfer require multiple data exchanges between the home bank, the beneficiary bank and non-partner intermediary banks around the globe.¹⁰⁹ This less efficient system can create challenges such as data truncation, late payments and compliance issues, and make the whole process of exchanging money inefficient and unpredictable.

The system, built with technology vendors Bottomline, FIS and IBM, will initially covered more than 30 global trade corridors and then expanded to 90 markets by the end of the last year.¹¹⁰ Its modern way of making cross-border B2B payments will create substantial added value for corporate customers. The speed, security and control of transactions, as well as low risks of counter parties are essential for a successful business with international partners. Visa is one of the first blockchain users. According to a recent Gartner study, there is generally a lack of understanding of how blockchain can be used in

¹⁰⁹ Visa B2B Connect, A Network Solution for Global Large-Value Payments [online] -[cit25-03-2020] Available on: <https://usa.review.visa.com/dam/VCOM/global/partner-with-us/documents/visa-b2b-connect-white-paper.pdf>

¹¹⁰ COMPUTERWEEKLY, Visa modernises B2B global payments through open source blockchain, KarlFlinders [online] -[cit28-06-2019] Available on: <https://www.computerweekly.com/news/252465953/Visa-modernises-B2B-global-payments-through-open-source-blockchain>

companies. Only 11% of executives have developed or have short-term blockchain plans. According to Gartner, most projects fail to pass the initial testing phase.¹¹¹

3.7.2 England-digital currency

The Bank of England is considering introducing electronic banknotes for consumers and businesses, according to the BBC. "We are in the midst of a payment revolution," said Governor Mark Carney, adding that the Bank needs to investigate in detail how electronic money work. Carney also said that the change will complete (but not replace) the classic banknotes, given that people still need cash. But the move could open the door to programmable money for increasing integration into the tax system or household appliances.¹¹²

Banknotes have been the main means of payment between individuals and central banks for 300 years, the bank says, adding that the total value of banknotes in the UK was close to an all-time high, but people have made fewer and fewer cash transactions¹¹³. The governor said that financial technology companies have started offering new forms of money and new payment methods, but it is important to have a currency created by a reliable central bank. Thus, the Bank is considering a Central Bank Digital Currency, which would be expressed in sterling pounds, just like the banknotes we are used to, as a result, £ 10 would be worth as much as a £ 10 banknote.

The system would be different from digital money kept in a bank account and cryptocurrencies, being guaranteed by the bank, not by a commercial business. Customers will be able to pay without registering all the transaction data, which would generate a level of anonymity similar to that of cash. In 2020, it is estimated that one billion people use a mobile payment application, the number will increase to 1.31 billion by 2023. In 2008, the global mobile payments market was about \$ 881 billion. By 2024, the number will reach 3,081 billion.¹¹⁴

¹¹¹ GARTNER, Gartner Predicts 90% of Current Enterprise Blockchain Platform Implementations Will Require Replacement by 2021, Katie Costello, [online] 03.06.19[cit.01-04-2020] Available on: <https://www.gartner.com/en/newsroom/press-releases/2019-07-03-gartner-predicts-90--of-current-enterprise-blockchain>

¹¹² BBC, Is this the digital future for Bank of England banknotes?, Kevin Peachey [online] -[cit.01-04-2020] Available on: <https://www.bbc.com/news/business-51851523>

¹¹³ BANKOFENGLAND, Our History [online] -[cit.01-04-2020] Available on: <https://www.bankofengland.co.uk/about/history>

¹¹⁴ MERCHANTSAVVY, Amazing Stats Demonstrating The Unstoppable Rise of Mobile Payments, [online]1 02.2020[cit.01-04-2020] Available on: <https://www.merchantsavvy.co.uk/mobile-payment-stats-trends/>

4 Discussion

The international financial market, especially the European one, is in a process of adaptation to the re-establishment of the distribution chains of products and services in a context of hyper-competition, effect of the globalization of economic activities. Thus, financial institutions are forced to redefine their products and their own services to strengthen their position on national market and to be able to expand into new markets, to make more efficient processes related to local and international market infrastructures, to improve the security of transactions and access, to streamline the internal consolidation of operations to allow real-time management of the activity. Some of the strongest local and global financial infrastructures are: SWIFT, TARGET-Trans European Automated Real Time Gross Settlement Express Transfer System, RTGS - Gross Real-Time Gross Settlement Subsystem, LVPS – Low Value Payment Settlement Subsystem and ACH - Automatic clearing house, GSRS -Subsystem for registration, transfer and settlement of government securities. These trends are reflected in the regulations and standards issued by international institutions such as: Bank of International Settlement¹¹⁵ (BIS), World Bank, European Central Bank, S.W.I.F.T., local governments and parliaments, local and international market communities concerned with reducing system risk both globally and regionally. In order for financial institutions to remain in the market, they must comply with standards and regulations, while in order to be competitive and therefore profitable, they must anticipate market developments and ensure a high degree of adaptability to its dynamics.

In the banking field, the regulations that will become mandatory in terms of operational risk and credit risk, regulations developed by the Basel Committee, lead to the need to introduce, for the first time, procedures to quantify and control banking activities possibly generating risk . One of the major trends in the evolution of the financial market is the realization of global transactions in real time. At the level of a financial institution, this evolution leads to the need for continuous, integrated and real-time processing of transactions, ensuring the management of exposures and the alignment of its own performance to that of the global market. These changes lead to new operational risks and exposures, which must be determined, quantified and managed in order to reduce the impact on the results of operations and the image of the institution.

¹¹⁵ BIS - international organization for solving the problems of repatriation of German payments after World War II, owned and controlled by central banks of 32 states, including industrialized economies, most Eastern European states, Turkey and South Africa, also called the central bank of central banks.

Customers want services that are best suited to their needs and as fast as possible. They want to know that the bank is in step with the pace of business and that it will be able to offer them all the products of technology to run their business in line with trends. On the one hand, from tradition, stability and trust, customers expectations regarding the banking system have passed to a higher level: flexibility, diversity, accessibility and speed. On the other hand, the banking culture is on an upward trend, customers are becoming more sophisticated and demanding. So banks are increasingly customer-oriented, which they have to satisfy at an unprecedented rate. Innovation in the banking sector is more related to organizational processes and changes and less to the development of new products in the traditional sense¹¹⁶. The competition has generated a rapid pace of change for organizations that want to maintain their market position. This force of change is manifested more than anywhere else in the banking field, where competition has increased due to the entry into the market of non-bank competitors, such as mutual funds, brokerage firms, etc. This competition, along with the explosive changes generated by information technology, fuels the need of banks to innovate products, services and distribution channels.

The innovation process in the banking organization has several sources. Thus, one of the most important is considered the acquisition strategy due to the changes it generates at all levels. This continues to be a major trend in the international banking system today. Mergers and acquisitions are one of the most important forces of change in this field, with an important impact not only on the geographical distribution and variety of products of the organization, but also on the technological and managerial infrastructure of the banks involved.

Another major source for the innovation process in the structure of a bank is represented by the evolution of technology. Although there are no indicators to assess all aspects, it is known that technology has a significant influence on increasing the efficiency of financial services. The consolidation of back office operations was due to investments in IT, but the future is that of concentrating efforts towards the front office¹¹⁷.

These aspects require a special structural flexibility at the level of banking organization, a trend noticed by Philip KOTLER¹¹⁸: the bank should no longer be seen as a standardized

¹¹⁶ FREI, X. Frances, HARKER, T. Patrick, HUNTER W. Larry - "Innovation in Retail Banking", The Wharton School, University of Pennsylvania, 1998

¹¹⁷ ROACH, R.B. - "Making Technology Work", Economic Research Unit, Morgan Stanley & Co., New York, 1993

¹¹⁸ Philip KOTLER is a professor of international marketing at Kellogg University Graduate School of Management in Chicago. He has been named by the European Management Center "the most famous specialist in the world in marketing practice strategy" (source: <http://www.kotlermarketing.com>).

service provider, but as an organization with flexible production capabilities, generating new specializations.¹¹⁹ In the „heart“ of the bank there must be both a comprehensive customer database and a profit report on the product, which allows analysis to identify profitable services and customer needs, which is in fact a transition from marketing production, and mass distribution to the personalization of financial services¹²⁰ . The last, but perhaps the most important source of innovation and at the same time a force of change in the banking industry is the rapid evolution of customer requirements, oriented in two main directions: creating distribution channels accessible permanently and from anywhere, in parallel with increasing the diversity of products and services offered.

As a general trend, customers use a combination of distribution channels, and a market segment of a bank can only be expanded by diversifying products. Although electronic distribution channels have emerged a lot , the traditional branch still remains important. The banks must continue the innovation process in order to meet the increasingly sophisticated requirements of customers. At the same time, the development of distribution channels allows customers to migrate to less expensive channels, which leads to increased bank profitability. Innovation and constant behavior change are at the core of a modern banking organization.

4.1 Payment instruments

The Collection, although used in around four out of ten transactions, does not offer many advantages to the buyer. On the contrary, if the importer fails to make the payment, although the exporter still owns the merchandise, it will suffer expenses with storing the merchandise while searching for another buyer. Documentary Credit offers products for each possible situation that a company might encounter in international trade. Also it gives the possibility for both the exporter and the importer to use a letter of credit that will cover the risks and that will bring the most benefits out of the transaction. Although Documentary Credit usually offer no great advantage to one contract partner over the other, concentrating mainly on ensuring that the transaction will successfully be concluded, there are some D/Cs that represent in the present some advantages and some risks for one of the parties.

¹¹⁹ PINE, B. - Mass Customization : The New Frontier in Business Competition ”, Harvard Business School Press, Boston,1993

¹²⁰ FREY, X. Frances, HARKER, T. Patrick, HUNTER W. Larry - “Innovation in Retail Banking”, The Wharton School,Univerisy of Pennsylvania, p. 10.

Although the regular L/Cs guarantee that, unless the delivery documents are presented, no payment will be made. In the case of a Red Clause L/C the situation is exactly the opposite, meaning the importer will pay the exporter before the merchandise is delivered. Of course, this payment is actually a prepayment that helps the exporter to purchase the needed raw materials and pay some part of the workers' wages. As it can be seen, it is only up to the contract partners to choose a letter of credit best suited for their transaction type as well as for their own particular needs. With some exceptions, the more guaranties it offered the more expensive the letter of credit is.

4.2 SEPA

The European area where SEPA was developed is of great benefit to all citizens because this project is for their benefit, for the benefit of large companies or international corporations, but also for all other protagonists or intermediaries of the economic environment. The European economic relations are very complex and deepening, especially in the light of the consolidation of the big international import-export partnerships. SEPA eliminates the differences but also the stubborn procedures in the banking sector, especially in the case of international, cross-border payments and optimizes economic relations. This system mainly promotes competition and competitiveness in the benefit of the final consumer. The central objective of SEPA is to create progress at the level of European integration by forming an innovative and competitive market for low value payments in the euro area that can bring high quality services, most useful and efficient products as well as alternatives to costs and the fees for making payments.

4.3 The banks of the future are already here

The accelerated development of technology in the last decade has led to the transformation of the banking industry. In the fight for customers, banks have digitized their operations, but also the business model and the way they communicate with users. But how do customers perceive these changes and what do they expect from the banks of the future? Experts have said in unison that the bank of the future will be a digital majority, but human interaction will not completely disappear from financial services offerings, face-to-face communication as it must be maintained to provide greater comfort to customers, depending on the degree of complexity of the accessed services. Therefore, the human factor will continue to play a significant role in the banking business, but technology will have an essential contribution in

carrying out operations - with an impact on the brand, infrastructure and IT solutions and digital distribution.

The bank of the future will be digital or it will not be relevant at all, so that it can be talked about and attract of attention and preferences of the clients. In fact, banks will have to offer speed, flexibility, agility and interaction with customers, at any time and in any situation. Consumers seek speed, interact a lot with specialists by phone, web banking and wearables accessories, have unlimited high-speed internet access, often use the card in daily payments and prefer contactless transactions, according to representatives of banking associations.

Digitalization can play a key role in increasing the degree of banking. At the moment, there are two categories of people in the EU: the first are those who live in rural areas and not everybody have access to banking services, do not have a bank card, do not know how to use a POS and do not even have access to an ATM while the other part of reality that is represented by corporate people who drink coffee from Starbucks, go on electric scooters, use Revolut and Apple Pay and want digital services, doesn't likes to go to branches, but is looking for personal bankers. Banks target everyone in promoting financial services and think of their business strategies taking into account both realities, analyzing all the points.

So what are the main trends in the bank of the future? Some of them are a reality, others are being transformed and only a few remain at the project stage. Banking operations will become mostly digital - it will be virtually, no office specializing in digital services, and employees will have to think and act digitally, because customers of tomorrow will be 100% digital. The number of bank branches will decrease in the coming years, while the level of digitization will increase. In the future, banks will grant loans entirely digitally. Currently only 20% of loans are granted in this way.¹²¹ Customers want efficient and transparent communication and personalized services from banks, both now and in the future, and remote video interaction will play an increasingly important role. Banks will enter into partnerships with more and more fintechs and non-banking companies that provide financial services, this is already happening. Smarter and more "humane" robots and chatbots will be promoted - the bank of the future, at least in the retail area, will be a bank based on artificial intelligence. However, bankers will not disappear, because someone will have to think about processes and systems, but also to interact with customers, depending on the level of complexity of the service offered. Security will become increasingly important, and new methods of identification and

¹²¹ PwC, Blurred lines: How FinTech is shaping Financial Services , Global FinTech Report March 2016, https://www.pwc.com/il/en/home/assets/pwc_fintech_global_report.pdf , [online] March 2016 [cit.13-04-2020]

authentication based on personal characteristics (fingerprint, facial identification) will be widely used.

Given all these trends in the banking industry, IT&C companies will become increasingly present in partnerships with banking institutions. In fact, the responsibility of suppliers will take on new proportions, given the technological progress, but also the expectations of customers - increasingly agile, increasingly digital, as well as the expectations of banks - increasing revenue and profitability, reducing costs on back-office operations, digital transformation, migration of cloud services, mobility, IoT, attracting customers, increasing bank financing, etc. At the same time, among the priorities of banks everywhere are the optimization of bank branch networks, in terms of the number, size and performance of branches, and especially the optimization of the infrastructure of these networks. Among the digitization solutions offered are the implementation of an integrated multichannel infrastructure and specialized digital consulting for real-time banking operations, but also the efficiency of sales through digital channels, configuration of behaviours and tools, promotion of paperless operations, process automation and information governance.

The multichannel type of customer experience - combination of online and offline activities - can be improved through dedicated consulting services (remote or digital). In fact, customers can interact with the bank's specialists from anywhere, anytime (service dedicated to customers 24 hours a day), and even receive financial products and services depending on their preferences and needs through their preferred channels. Reducing costs by implementing digital, paperless operations, electronic document and archive management is a flexible and simple way to quickly and securely access information, from anywhere, anytime, using any device (including mobile devices).

4.4 New challenges and opportunities in the payments market

Nowadays consumers of financial services no longer compare institutions, but experiences. A provider can be selected with a few clicks and can be changed just as quickly. Real-time services through smart mobile devices are: online shopping, booking a flight, planning a vacation - everything is solved easily, quickly and conveniently with the help of technology. In the global banking sector, the new priorities of banks are growth, digitalization and innovation. The digital model has changed the game forever: staying relevant in the field of financial banking services means becoming an active part of the customer's digital life. The traditional business model is rethought, the banks' attention being

focused on customer's requirements and the opportunities offered by technology: electronic tools, Internet and mobile access, electronics, as well as automated electronic processing and internal and external processes.

The competition is growing, new players are operating in the market that are proving agility and applying innovation offering customers new types of services that meet their changing requirements. From the perspective of innovation and digitalization, the payments industry is one of the most dynamic, carrying out a series of projects aimed to lead to important structural changes. The changes concern the increase of the performance of the services offered to the clients, but also the automation and modernization of the internal systems in accordance with the technological novelties.

Instant payments were launched in Europe at the end of November 2017, and these services are currently offered by around 2000 payment service providers across Europe. Consumers, businesses, corporations and general government can make and receive instant credit transfers of up to € 15,000¹²², both nationally and cross-border, in less than ten seconds, at any time and on any day of the year, including weekends and holidays. Instant Payments will become the rule in how payments are made.

Concerned about increasing the speed of payment processing, the European Central Bank initiated the Target Instant Payment Settlement (TIPS) project, while SWIFT launched the SWIFT Net Instant service, designed to operate anywhere in Europe and around the world, allowing its members to connect to the mechanisms for clearing and settling immediate payments. Also at European level, the European Central Bank has launched the Eurosystem Single Market Infrastructure Gateway (ESMIG) project for the modernization of European payment infrastructure. The project aims to update the TARGET2 system, following the technological development and the new European regulatory framework in the financial field of banking and is being carried out between 2019 and 2021¹²³. The changes brought by this project are far-reaching, aiming at telecommunications network independence, improving architecture system, changing the messaging system to ISO20022 and recently bringing guarantee mechanisms.¹²⁴

¹²² Occasional Paper Series Are instant payments becoming the new normal? A comparative study, Monika Hartmann, Lola Hernandez-van Gijssel, Mirjam Plooi, Quentin Vandeweyer No 229 / August 2019, ISSN 1725-6534, pag 36

¹²³ BIS, Sabine Lautenschläger: Transformation of the retail and wholesale payments landscape in Europe, Sabine Lautenschläger, [online]14.06.19[cit.14-04-2020] Available on: <https://www.bis.org/review/r190617c.htm>

¹²⁴ SWIFT, European MI projects - Single Market Infrastructure Gateway (ESMIG) and EURO1, [online]-[cit.15-04-2020] Available on: https://www.swift.com/your-needs/industry-themes/european-market-infrastructure-projects-esmig-and-euro1/what-is-changing_

Globally, SWIFT has launched the GPI service - Global Payments Initiative, a Scheme for payments between correspondent banks in any currency, based on SWIFT infrastructure and messaging, within a closed User Group, with the approval of SLA (Service Level Agreement) contracts between participants signed up in a register of participants. With this new service, which transforms cross-border interbank payments, 50% of current GPI payments reach the payee in 30 minutes and almost all payments are credited within 24 hours, compared to a classic payment method of correspondent banks, which can take up to 5 days¹²⁵. Through GPI, payments can be tracked throughout the flow, so there is the possibility to know at any time what their status is, a desktop & recall mechanism has been implemented and other new features are being developed.

GPI has been rapidly adopted by the community, with the global generalization of this service being planned by the end of 2020. By now, around 4000 banks have joined and broadcast live GPI messages, and 76 trillion USD was sent over SWIFT GPI during last year. 56% of all international trade SWIFT payments are sent as GPI payments, which means over 1 million payments per day, with large banks and key major corridors (e.g. US-China) approaching adoption of 100%¹²⁶. Another important project is the migration to ISO 20022 standards, a complex process that will require careful planning and rigorous execution by credit institutions. Between November 2021 and November 2025, SWIFT will facilitate the migration of cross-border payment traffic from FIN (MT) to ISO 20022 (MX) standards. This migration is mandatory for all users, so after November 2025, MT-type messages will no longer be used in the SWIFT network for payment transactions. During the four years of coexistence of those two types of standards, a centrally managed translation service will be provided to facilitate the migration to ISO 20022 standards.¹²⁷ Given the complexity of the changes involved in this migration to IT systems and applications, it is necessary for SWIFT users to plan and initiate this project in the near future.

These are just a few projects carried out by the payments industry, to which we must add the application of a series of European regulations on increasing financial inclusion, the

¹²⁵ SWIFT, European MI projects - Single Market Infrastructure Gateway (ESMIG) and EURO1, [online]-[cit.15-04-2020] Available on: https://www.swift.com/your-needs/industry-themes/european-market-infrastructure-projects-esmig-and-euro1/what-is-changing_

¹²⁶ FINEXTRA, Swift gpi transferred \$77 trillion in 2019 , [online]18.02.2020[cit.15-04-2020] Available on: <https://www.finextra.com/newsarticle/35299/swift-gpi-transferred-77-trillion-in-2019>

¹²⁷ SWIFT, SWIFT gpi reaches major adoption milestone surpassing \$40 trillion in sent payments, [online]28.02.19 [cit.15-04-2020] Available on: https://www.swift.com/your-needs/industry-themes/european-market-infrastructure-projects-esmig-and-euro1/what-is-changing_https://www.swift.com/news-events/news/swift-gpi-reaches-major-adoption-milestone-surpassing-40-trillion-in-sent-payments

integrated market of payments, personal data protection, trust and electronic signature services, cyber security and many others. From these, the most important role in transforming the industry is the Revised Payment Services Directive (PSD2), which aims to create greater openness, transparency, competitiveness and stimulate innovation in the area of payment services. Although it generates important challenges, PSD2 brings new opportunities for banks, which will have the opportunity to diversify their services, through innovation and by entering into partnerships with Fintech companies.

4.4.1 Addressing the challenges of digital transformation from the start to the end

The financial services industry is a constantly changing market. The rapid pace of change and the multitude of technological solutions, competitors and new entrants are changing the course and setting new rules. Consumption will continue to change the appetite in direct banking, and the digitization of payments has already led to changes in the way we use credit and cash cards, which has implications for trading points. Similarly, the growth of growth platforms and capital lending has changed not only the process, but also the players in this sector. In response, the industry has developed relationships with start-ups by investing in innovation hubs as well as in-house programs. Specifically, we have seen rapid growth and continued major investment in artificial intelligence and other forms of automation in the industry. Of course, investing in technology is important, but a more focused approach, in which organizations can define the specific challenges of digital transformation in the context of their own business, to help to achieve better results. For example, Fujitsu's Digital Annealer technology is used by Natwest to solve some of the most complex, challenging, and time-consuming financial investment problems by optimizing its mix of high-quality liquid assets, including bonds, cash, and government securities.¹²⁸

A deeper analysis is essential for the development of innovative concepts. This helps bringing together people who understand the financial services industry and experts from other industries who have a broader perspective on technology, operating effectively and to meeting these challenges. That is the time when co-creation comes into play, and there are three key challenges that financial services institutions need to address before they can unlock the full potential of their investments and concentration in the digital transformation. The introduction of new digital financial technologies is changing the way banking and insurance customers uses services. Today, there is a new generation of digital users who have very different expectations

¹²⁸ FUJITSU, White Paper The case for quantum and quantum-inspired computing in financial services [online]- [cit.15-04-2020] Available on: <https://www.fujitsu.com/global/digitalannealer/pdf/wp-da-financialsector-ww-en.pdf> p.7

about their banking and customer insurance experience, based on their quick, responsible reactions from consumers in other industries. They are more nervous about behaviour and decision-making, and this anxiety needs to be understood by the organizations they interact with. As a result, organizations need to become open-minded, pursuing more varied thinking in and out of their own business, to address the dynamic change in their customer base.

In addition, regulatory changes in financial services mean that the market is now more fluid, with more favourable conditions for new entrants, which means that time passes quickly for the innovation of older players, otherwise they risk losing market share and become less relevant. Relying on the knowledge and experience of the partner ecosystem, which is based on ideas from other parts of the financial industry services or even from other industries, makes sense. They can bring ideas on how to innovate standard work processes, as well as proven technologies that can be adopted faster. Working in a proven industry experience, while easy to understand, can inhibit the pace of digital transformation. Many organizations can become instinctively resistant to external ideas, returning to what they know. This may be especially true in a booming market, such as the financial services industry, where there is pressure for change, but also the need to address daily demands. If we add to that a workforce that is steeped in long-standing business traditions and rules, and we can begin to understand the challenges that need to be addressed.

The best way to stay open to new ideas is to be brave enough to overcome common suspicions and seek people's opinions on the outer edge of our ecosystem. Collaborating with colleagues in business lines, as well as with partners and third-party agencies, is a sure way to build a more diverse idea and accelerate the digital innovation process. Coupling this broader coverage outside the organization, with a deeper embrace in our own lines of business, leads to real co-creation. A deeper internal implementation can be a cultural change, through which, for example, we help people who are trying to change things, as well as those people with a calm voice but a great idea. This requires active demonstrations of leadership in which teams are encouraged to engage, not only in generating ideas, but also in collaborating with colleagues, to turn ideas into practical and deliverable solutions. More importantly, people need to be given space and time to test their thinking. Methods such as design thinking for concept development can allow diverse teams to share perspectives and opinions to ensure that digital solutions are truly person-oriented.

With the current pace of change, the market and customers are not willing to wait. An example comes from the insurance market. Internal customers currently have access to comparison sites, where they can choose the best deals and move quickly through suppliers. It is only a matter of time before these principles are applied in many aspects of the industry. What will happen next is that many organizations will be forced to evolve faster, and to do this, they have to try new solutions? When several organizations develop agile projects that gradually demonstrate that change can make a material difference, experimentation will be essential. As a result, shortening the time to market and improving employee engagement has been a key reason behind ING's agile work. This again demonstrates that whether it is a B2B market or a consumer market, consumers' appetites are approaching their workplace.¹²⁹ And consumers are not only expecting more personalization and flexibility, but they are also more aware of the knowledge about trust and privacy. What we see in the financial services industry is a storm of consumer turmoil and rapidly deployable technologies. While the day job remains critical, reducing the time takes for people to work at a pace is of paramount importance, and we can create it by working with a trusted partner.

4.5 Implementation of national Blockchain platforms and state sovereignty

It is anticipated that the implementation of the blockchain will affect the end of the contemporary sovereign order. Some go so far as to say that a strong decentralization based on blockchain technology would challenge the continued functioning of world capitalism. Are such assertions substantiated? Sovereignty and blockchain technology present possible common paths of evolution, I.e. we can say that there is sovereignty in a blockchain world. These possibilities include various forms of individual, popular, technological, corporate and teoto-totalitarian sovereignty. There are several structural trends in blockchain technology that contribute to the construction of new forms of sovereignty. The future of sovereignty in a blockchain world will be articulated in a conjuncture in which a stronger alliance between technologists and democrats will be reached.

Blockchain technology allows to redesign the interests of individuals and communities, in terms of a number of factors such as their interactions in politics, business and society in general, with an unprecedented process. This process could quickly change even the

¹²⁹McKinsey, ING's agile transformation, [online]10.01.2017 [cit.20-04-2020] Available on: <https://www.mckinsey.com/~media/McKinsey/Industries/Financial%20Services/Our%20Insights/INGs%20agile%20transformation/INGs-agile-transformation.ashx>

elements underlying existing political systems and governance, calling into question the traditional role of the state and centralized institutions. Indeed, many blockchain advocates argue that civil society could organize and protect its own interests more effectively by replacing traditional state functions with blockchain-based services and decentralized, open source platforms (e.g., Ethereum, Omni, etc.).

Driven by enthusiasm for the new possibilities offered by information technology, together with a deep dissatisfaction with current political systems, the adoption of national Blockchain platforms encourages citizens to be part of the blockchain revolution and create their own systems of government, in which centralization, constraint and hierarchies are replaced by distributed consensus mechanisms.

In the current context, many states are choosing to use international concerns to protect their national security. Blockchain is an option for this area because it is based on privacy and supervision of all network entries. In addition, companies in the field have a prestige to defend and the possibility of compromising the security system of a state is minimal, because, once compromised, the company will lose contracts on the market, or in this field, any failure is equivalent to the disappearance of on market.

4.6 Technological trends that will define banking in 2020

2019 was a tense year for the banking sector. Despite the large number of challenges that financial institutions are facing in the coming years, we are undoubtedly in an interesting period for banking. This year, banks we will have to invest in technologies such as artificial intelligence, cloud computing, digital security and video banking if they want to reap the benefits in the years to come.

Top 4 technological trends that will define banking in 2020:¹³⁰

1. *Smarter banking with Artificial intelligence.* AI has already had a major impact on the banking sector. According to estimates by IDC, the banking industry spent \$ 5 billion globally in 2019 on AI systems. IDC predicts that by 2023, the global industry will spend \$ 97.9 billion, making AI one of the most debated technologies this year. Thus, if a major company wants to remain relevant, it must invest in AI. One of the main

¹³⁰ TECHTALK, Trends that will shape Technology industry in 2020 and beyond, Prashant Rohatgi [online]19.05.2020 [cit.25-04-2020] <https://cio.economicstimes.indiatimes.com/tech-talk/trends-that-will-shape-technology-industry-in-2020-and-beyond/3955>

reasons why AI is so tempting is its applicability. Artificial intelligence systems can be used for a more complex understanding of customer needs, can provide personalized services and can automate more customer-focused services. AI can be used in Big Data analysis and is able to study bank data and identify trends in user behaviour.

2. *Banks will benefit from cloud systems.* Cloud computing is another booming force in today's banking. The transition to cloud systems can be more advantageous, keeping infrastructure costs at reasonable levels and stimulating technological adaptability. In addition, the cloud can have an advantage in the way banks more easily analyze their data. Cloud and edge computing systems allow organizations to stop processing data through a central location, thus processing at more accessible distances, which will make the process itself faster, shortening the response time of analysis systems.
3. *Business leaders will take cybersecurity more seriously.* In 2020, financial organizations need to be aware of the wide range of threats, including virtual activities, from potential malware attacks to identity theft. In an increasingly digitalized world that is gradually giving up cash, cybersecurity is truly vital. In this regard, AI and the cloud can be used to improve the detection and prevention systems of such activities.
4. *The spread of lean banking.* The "lean" principles can be applied in the banking system by improving credit, reducing losses and creating a growing organizational culture. Thus, customers will constantly turn to the use of mobile and banking services, with services in full development such as video banking, the classic branches will be seen as a last resort that will appeal to most customers in the coming years.

However, branches continue to be the main place for customers to value the security of interacting with a real person. Consequently, 2020 may be the year in which financial companies will rethink the way and format that traditional banks are presented.

4.7 How will payments of future look like?

How will payments look like in 20, 30 or 100 years? More and more experts say that the current monetary system has already sufficiently compromised itself. Therefore, in the coming years, it will inevitably go through significant changes. Cons of the modern monetary system are: inflations, shadow economy and counterfeiting. It cannot satisfy the increased demand for money: when money was "born", the population of our planet was about 2 million people. Today there are more than seven billion of us, and the system is

under pressure. The increase in inequality. Economic growth requires increased funding. As a result, the historically highest level of economic debt in the world has been created, which, in turn, causes an increase in inequality. The “system” simply does not contain enough money to pay off all debts in the modern world. The “system” can actually prevent people, countries, and governments from working together more optimally.

The virus will finish the cash. The current crisis will only accelerate the process of transformation of the global monetary system. This is not the first year in the world that the use of cash has been rapidly declining. The leaders in terms of penetration of non-cash payments are the countries of Scandinavia, where stores have the right to refuse to accept cash. For example, in Sweden, only 2% of transactions are cash, and even many banks in the country work completely without cash.¹³¹ The rest are moving in the same direction. According to the latest data, in the UK only 30% of payments are made using banknotes and coins.¹³²

Beside “plastic”, cashless payments can already be carried out using smartphones and smartwatches with support for NFC payments. In addition, banks begin issuing virtual cards, which are displayed in mobile applications, but do not physically exist. Previously, experts predicted that cashless payments would be able to crowd out the cash in at least a few decades. However, the spread of coronavirus will make its own adjustments to this process. Banknotes are one of the sources of infection, therefore, the central banks of many countries urge citizens to switch to cashless payments. Quarantine will force more and more people to develop more actively mobile banking and more often conduct remote payments. Therefore, the process of weaning from cash can go much faster.

Show your face Online payment technologies are developing with leaps and limits. For example, the KFC fast-food restaurant chain, together with the Chinese payment system Alipay, launch smile-to-pay technology. The client must smile at the camera and his image is compared with an account in the Alipay payment system and confirmed by a phone number.¹³³ We can see a picture of smile-to-pay technology in the Appendix-Pic 8. In 2018, Amazon began experimenting with a new payment format, opening its own store without

¹³¹ Henley, Jon (June 4, 2016). "Sweden leads the race to become cashless society" – via www.theguardian.com.

¹³² QUARTZ, The UK is going cashless and, like most of the world, has no plan for what happens next, John Detrixhe [online] 20.02.2020 [cit. 28-04-2020] Available on: <https://qz.com/1553642/britain-is-going-cashless-without-a-plan-for-what-happens-next/>

¹³³ INTERNETRETAILING, New Mastercard digital smart mirror enables shoppers to pay from the changing room, Sasha Fedorenko [online] 15.06.2018 [cit. 28-04-2020] Available on: <https://internetretailing.net/technology/technology/new-mastercard-digital-smart-mirror-enables-shoppers-to-pay-from-the-changing-room-17902>

cash desks. In it, cameras and sensors monitor which customers take goods from the shelves, what they put in place, and which ones they take. When the buyer leaves, funds are automatically deducted from his card for the goods taken. Amazon will launch 3 thousand stores without cash desks by 2021.¹³⁴ It is true, it was not without problems. For example, the code in the store was the same for people of similar build, or when the children played with the goods and misplaced it. In addition, to buy in this store, you still need a phone - at the entrance you should consider the QR code as a special application. Biometric identification technologies will be developed. Perhaps the key tool for identity verification will be not only a fingerprint, retina or voice check, but also a DNA scan.

With a bank card in the head Another advanced technology is human chipping. In particular, the Belgian start-up Epicenter put such a service on stream. Chips embedded in the hands of employees of organizations open doors, start printing on printers and allow you to pay for meals. Epicenter chips use NFC, a technology that, among other things, is used with contactless cards. For example, in Sweden about 4 thousand people already have a similar chip under their skin.¹³⁵

Further it will be even more interesting. If billionaire Elon Musk does not change his plans due to coronavirus, then by the end of the year a Neuralink implant will be introduced into the patient's brain.¹³⁶ It gives paralyzed people the ability to control a computer with the power of thought. Therapeutic stimulation of the brain of patients with various serious illnesses is the primary goal of many neural interfaces. In the future, such implants may have a wider range of applications - from managing devices to managing a bank account. We can see a picture of Neuralink implant in the Appendix-Pic 9.

Bitcoin is still in the game It is not excluded that the world may choose cryptocurrency as a mean of settlement. Blockchain ideologists said that thanks to the crypt, the state will lose its monopoly on the issue of money. And then, they say, real financial freedom will begin. In their conception, the future of money looks something like this: cryptocurrencies (Bitcoin and Ether e.g.) replaced the currencies issued by central banks, crypto contracts are

¹³⁴ THEVERGE, How amazon's retail revolution is changing the way we shop, Nick Statt, [online]23.18.2018 [cit.28-04-2020] Available on: <https://www.theverge.com/2018/10/23/17970466/amazon-prime-shopping-behavior-streaming-alexa-minimum-wage>

¹³⁵ MEDICALFUTURIST, Everything You Need To Know Before Getting An RFID Implant [online]18.07.2019[cit.28-04-2020] Available on: <https://medicalfuturist.com/rfid-implant-chip/>

¹³⁶ DAILYMAIL, Elon Musk says his Neuralink company will do human brain implants 'within a year' to help cure injuries - and the device could eventually enable symbiosis with AI Stacy Liberatore, [online]07.05.2020 [cit.28-04-2020] Available on: <https://www.dailymail.co.uk/sciencetech/article-8298575/Elon-Musk-says-Neuralink-company-human-brain-implants-year-cure-injuries.html>

the dominant form of contracts, and digital services are in the form of open source. However, global regulators do not intend to give up so quickly. Central banks of the world are actively working on their own digital currencies (CBDC). And the IMF is actively supporting them in this.

An effective payment system will appear, thanks to the introduction of digital currencies by world central banks. This was recently stated by IMF deputy head of the board Tao Zhang.¹³⁷ Among the advantages, he also noted that CBCD will expand financial affordability and strengthen monetary policy. And finally, this system will prevent the launch of new digital currencies. Central banks of the world are actively preparing for this event. Thus, Tim Bank Lane, Deputy Head of the Bank of Canada, said that the regulator is already working on creating an infrastructure that will allow the quick launch of digital currency., he said this at the FinTech 2020 conference, which was held in Montreal in late February¹³⁸. He has already described how the digital currency and the central bank of England will work. Public discussion of the relevant document will last until June 12. Over 10 years, bitcoin has risen in price by 9 million percent.¹³⁹ Adherents of cryptocurrency do not lose optimism. According to one of the most famous bitcoin ideologists Andreas Antonopoulos, if one cryptocurrency fails, you can always launch a new one. “If this protocol stops working, a fourteen-year-old boy with a copy of my book will be able to arrange everything from scratch over the weekend in any programming language! Run everything again with a new name. Again and again until we manage to connect the whole world. Finance is now an application, and money is now a type of content” he says.

Full control Another direction in the evolution of financial instruments is the emergence of programmable money. Protocols of modern cryptocurrencies already allow you to program them for specific purposes. For example, you can transfer funds to a child for the purchase of stationery and not be afraid that he will spend them on sweets. This direction of cryptocurrency has not yet gained popularity, but the first signs are already there.

¹³⁷ IMF, Stablecoins, Central Bank Digital Currencies, and Cross-Border Payments: A New Look at the International Monetary System, Tobias Adrian, [online]14.05.2019 [cit.05-05-2020] Available on: <https://www.imf.org/en/News/Articles/2019/05/13/sp051419-stablecoins-central-bank-digital-currencies-and-cross-border-payments>

¹³⁸ CTVNEWS, Bank of Canada to create its own digital currency as 'contingency,' deputy says Jordan and cCanadian Press, online]25.02.2019 [cit.05-05-2020] Available on: <https://www.ctvnews.ca/business/bank-of-canada-to-create-its-own-digital-currency-as-contingency-deputy-says-1.4826966>

¹³⁹ BLOOMBERG, Bitcoin's 9,000,000% Rise This Decade Leaves the Skeptics Aghast, Vildana Hajric, [online]31.12.2019 [cit.05-05-2020] Available on: <https://www.bloomberg.com/news/articles/2019-12-31/bitcoin-s-9-000-000-rise-this-decade-leaves-the-skeptics-aghast>

In 2018, VeganCoin appeared - a cryptocurrency that can only be spent on vegetarian products.¹⁴⁰

The development of money in this direction will provide great opportunities for the formation of personal finances. For example, it can be established that 40% of income is spent on food, the same amount on clothing. If a person has problems with bad habits, he can completely block the purchase of cigarettes or alcohol. Or relatives can do it. Programmable money will open up enormous opportunities for the state. For example, the state can program money so that the subsidy can only be spent on utilities, and unemployment benefits - on vital things.

What will look like a world without money? Now it's hard to imagine that in the future money will disappear as a phenomenon. And even futurologists do not reflect very often on this topic. And yet, could there be a world without money at all? Here is one of the versions that are now being actively discussed: there is no longer such a thing as money, and there is no consensus on an asset as a medium of exchange, accumulation or unit of account. Different people use different assets (or sets of assets) as a store of value and as their unit of account. We can pay with any assets we want - from "rights to use out data" and our own credit rating to "rights to use an apartment", financial instruments that we own (for example, equity or debt securities) or sovereign currencies. Employees may ask to be paid directly on those assets that they prefer as a drive. We don't know exactly how the future of money will look like but we developed possible likely scenarios: the most likely is that cash still persists in a fragmented world where are digital rules .The medium likely scenarios is that cash still persist in form of digital currency. In the medium low-scenario there are two different ways of the things to evolve: the rise of central bank digital currency and the central banks are dead-long live central banks. And finally low likelihood scenarios are: it is a bitcoin world, moneyless begins and a cashless world is born. A representation of this scenarios in in the Appendix-Fig.3.

¹⁴⁰ GLOBALPOLICY, VeganCoin: New Kid on the Block(chain), Daniel Kirby, Michael Pinney and Paul Reilly, [online] 11.04.2019 [cit.05-05-2020] Available on: <https://www.globalpolicyjournal.com/blog/11/04/2019/vegancoin-new-kid-blockchain>

Conclusion

In this diploma thesis we analyzed the most important aspects that helped us achieve the main goal of the thesis: to define innovations in payment system and to provide insight into the news that has arrived on the financial market.

In the first chapter we achieved the first purpose by defining the term innovations and payment system and by analysing the instruments and methods of international payment. Innovation is both creation and bringing into profitable the use of new technologies, new products, new services, new marketing ideas, new systems and new ways of operating. Payment system represents a set of arrangements for the discharge of bonds assumed by the traders when purchasing real or financial resources, otherwise than by barter, so by transferring the title of ownership over some assets, which, by virtue of being widely accepted, are known as money. SWIFT is the most widely used payment method in international transactions between companies in developed countries. The payment instruments used in international trade are: national currencies, international currencies, bills of exchange, checks and, more recently, the card. Payment methods are: payment in advance, payment at delivery date, payment after sale of delivered goods, and transactions on open accounts.

The second chapter entitled “The Aim of the Work, the Methodology of the thesis and research methods” In this chapter there is described the main goal of this diploma thesis: to define innovations in payment system and to provide insight into the news that has arrived on the financial market as well as partial goals for achieving this main goal. In this chapter we focus on the methodology, the steps of procedures taken before writing the thesis, the written resources and there are mentioned the figures on which the diploma thesis is based on. In developing the topic, we used secondary research based on the collection, processing, analysis of obtained sources and evaluation of data got from published sources As well there is mentioned basic theoretical research methods which are based on concrete examples how are they used in the work.

The third chapter is the practical part of the thesis and provides an overview of the results of the work. In this chapter we achieved the second purpose by characterizing instant payment services around the world and in Slovakia. We first get acquainted with the theoretical aspects of SEPA. In SEPA system, customers have the opportunity to make payments in euros on European territory securely, quickly and efficiently using a set of

standardized tools that allow them to make international transfers over a period similar to national one. Next, we look at how immediate payments are being implemented in some countries. As an example we have chosen: Poland, Great Britain, Denmark and Sweden. They are available 24 hours a day, 7 days a week 365days a year, while the payee's account is credited within 2 seconds. As well it is presented how it is implemented in Slovakia at individual banks like: ČSOB, VUB Bank, Tatra Banka, Poštová banka, UniCredit bank, and other banks. These payments are available to the bank's client every day of the year, day and night, Saturday, Sunday, weekdays, holidays, and this payment is credited to the payee's account within 10 seconds of payment by the payer's bank. The introduction of immediate payments is voluntary for banks, and it is therefore up to them whether or not to join. Next we can see in which direction the banks are heading and what their future is. In this chapter we achieved as well the third goal: to identify what are the high technologies in payments and how are they being implemented in the new methods of payment in different countries. Relevant are: robotic process automation, distributed ledger technology and hybrid cloud. These technologies are being used in new payment methods such as: Palm Payment, Pepper-humanoid robot, Smart Mirror, Smart Table and biometric card. We see countries are implementing and reacting to digital payments mainly Blockchain. Estonia and Catalonia are leaders in digital identity and England is considering the introduction of electronic banknotes.

The last chapter of the thesis is called a discussion, and there are curved conclusions from the other chapters. In this chapter we achieved the fourth goal and identified new challenges and opportunities in the payments market and how are being solved the challenges of digital transformation. From the perspective of innovation and digitalization, the payments industry is one of the most dynamic, carrying out a series of projects aimed to lead to important structural changes. The changes concern the increase of the performance of the services offered to the clients, but also the automation and modernization of internal systems in accordance with the technological novelties. We further discuss about the the technological trends that will define banking in 2020. They are: smarter banking with artificial intelligence, banks will benefit from cloud systems, business leaders will take cyber security seriously and the spread of "lean banking". Based on this, we have determined the assumption of what payments will look like in the future. The quarantine will finish the cash, banknotes are one of the sources of infection, therefore, the central banks of many countries urge citizens to switch to cashless payments. Bitcoin is still in the game, another direction in

the development of financial instruments is the emergence of programmable money. Modern cryptome protocols already allow them to be programmed for specific purposes.

In this way, with fulfillment of partial goals, we reached the main goal and we have provided the reader of this work with a broad overview of the issue and enriched his knowledge with the assumption of what will happen next in the future of payments. In this way individuals and legal entities reading this paper became familiar with the innovations and tendencies in international payments and can prepare for what is coming up next in payments.

Resumé

Témou diplomovej práce sú “Inovácie v medzinárodnom platobnom styku“. Hlavným cieľom tejto diplomovej práce je definovať, aké sú inovácie v platobnom styku, teda poskytnúť prehľad o novinkách, ktoré vznikli na finančnom trhu. Jednou z najrelevantnejších otázok, na ktorú sa snažíme odpovedať, je, ako budú vyzerat’ platby budúcnosti.

Prvá kapitola poskytuje prehľad súčasného stavu v doma a v zahraničí. Oboznamujeme sa s termínom inovácia. Inovácie sú definované rôznymi odborníkmi a rôznymi spôsobmi bez všeobecne akceptovanej definície. Inovácia je proces aj výsledok tohto procesu, takže existuje polysémia tohto pojmu. Jedna komplexná definícia inovácií, ktorá zahŕňa produkty a procesy je definovaná ako: „Vytváranie, ako aj prinášanie efektívneho využívania nových technológií, produktov, služieb, marketingových nápadov, systémov a nové spôsoby fungovania.“ Inovácia sa vo všeobecnosti považuje za hlavnú hnaciu silu hospodárskeho rastu v dnešnej globálnej ekonomike. Zavedením inovácií do praxe môžeme získať: produkty so zlepšenými kvalitatívnymi funkciami, kvalitnejšie služby, nové, účinnejšie a ekologickejšie výrobné procesy, vylepšené modely systému riadenia podniku, moderné metódy riadenia pracovných síl atď. Inovácie sú neoddeliteľne spojené s tvorivosťou. Procesy inovácií a tvorivosti sú vzájomne prepojené, pretože nájdenie riešenia problémov, ktoré vznikajú v inovačnom procese, si vyžaduje tvorivosť. Inovácia je zameraná na obchodovateľné uplatnenie vynálezu v praxi, avšak inovácia je možná aj bez potreby nového vynálezu.

Platobný systém sa od začiatku objavoval ako súbor pravidiel, najskôr vo forme praxe, potom písomných pravidiel vydávaných hlavami štátov, neskôr bankami a nakoniec menovými orgánmi ako špecializovanými štátnymi inštitúciami. Na začiatku sa tovar vymieňal za iný tovar bez použitia prostriedku výmeny, napríklad peňazí, pod názvom barter. Zvyšovanie objemu výmeny ako aj potreby univerzálneho platidla viedlo k vzniku kovovej meny (prvé mince). Rast obchodu a obmedzené množstvo drahých kovov spôsobilo vznik papierových peňazí. Zvyšujúci sa objem transakcií a zvyšovanie stupňa bankovníctva určili prechod od dvojstranného zúčtovania transakcií medzi bankami cez systém korešpondenčných účtov k zriaďovaniu zúčtovacích stredísk s čistým zúčtovaním. Prvé zúčtovacie domy sa objavili v Anglicku v roku 1760 a potom v priebehu ďalších 20 rokov v USA, Francúzsku, Taliansku, Nemecku. V modernom období sa objavili nadnárodné zúčtovacie domy, a nedávno aj automatické zúčtovacie domy, ktoré enormne skrátili čas

vyrovnania. Za najreprezentatívnejšiu definíciu platobného systému považujeme definíciu, podľa ktorej platobný systém predstavuje súbor opatrení na vyrovnanie záväzkov prevzatých obchodníkom pri nákupe reálnych alebo finančných zdrojov inak ako prostredníctvom výmenného obchodu, a to prevodom vlastníckeho práva na niektoré aktíva, ktoré sú na základe široko akceptovaného stavu známe ako peniaze. Platobný systém má dve doplnkové funkcie: sprostredkovanie transakcií a garancia výmeny. Súčasťou platobného systému sú inštitúcie, ktoré poskytujú platobné služby, rôzne formy prevedeného dlhu, spôsoby a prostriedky prevodu, správy a komunikačné kanály.

Založením medzinárodnej telekomunikačnej organizácie SWIFT, sa v medzinárodnom platobnom styku rozšírilo používanie úhrad (tzv. hladkých platieb), ktoré sú v súčasnosti najpoužívanejším spôsobom platieb v medzinárodných transakciách medzi spoločnosťami v rozvinutých krajinách a vo veľkej miere už aj v rozvinutých krajinách. Dlžník (dovozca) prikazuje svojej banke zaplatiť veriteľovi (vývozcovi) prostredníctvom medzinárodného bankového prevodu. Klasické prostriedky, ktoré používali banky a uskutočňovali medzinárodné prevody finančných prostriedkov, boli písomné a telegrafické resp. ďalekopisné úhrady. Tieto mali mnohé nevýhody, ako napríklad oneskorené platby, strata správ v telefónnych sieťach atď. Výhody SWIFT sú: rýchlosť, bezpečnosť a nízke náklady. Platobné nástroje používané v medzinárodnom obchode sú: národné meny, medzinárodné meny, zmenky, šeky a v poslednej dobe aj platobné karty. Národné meny sa vyznačujú: kúpnu silou, môžu sa použiť takmer vo všetkých možných transakciách a môžu sa použiť ako aj rezervné meny v iných štátoch, taj aj ako emisné meny. Kvalita platobných nástrojov je daná ich schopnosťou výmeny za hotové peniaze, zatiaľ čo ich schopnosť úverových nástrojov vyplýva z obdobia, ktoré uplynie medzi dňom prijatia tovaru a dátumom platby. Iné také metódy sú: platba vopred, platba k dátumu dodania, platba po predaji dodaného tovaru a transakcie na otvorených účtoch.

V druhej kapitole je uvedený cieľ práce, metodika práce a výskumné metódy. Hlavným cieľom tejto diplomovej je definovať inovácie v platobnom styku a poskytnúť prehľad o novinkách, ktoré sa dostali na finančný trh. Parciálne ciele sú: definovať pojem inovácie a platobný systém a analyzovať nástroje a spôsoby medzinárodných platieb, charakterizovať služby okamžitých platieb po celom svete a na Slovensku, zistiť, aké sú najmodernejšie technológie v oblasti platieb a ich implementácia v nových spôsobov platieb v rôznych krajinách, identifikácia nových výziev a príležitosti v platobnom styku a riešenie problémov digitálnej transformácie. Hlavným prínosom práce je, že poukazuje na hlavné trendy, ktoré

v súčasnosti definujú bankovníctvo, a odpovedá na otázku, ako budú vyzerat' platby v budúcnosti? Pomôže to jednotlivcom ako aj právnickým osobám, ktoré si prečítajú túto diplomovú prácu, aby sa oboznámili s inováciami a tendenciami v medzinárodných platbách a pomohli im pripraviť sa na to, čo ich čaká v budúcnosti.

Tretia kapitola je praktická časť a poskytuje prehľad o výsledkoch práce. Najprv sa oboznamujeme s teoretickými aspektami SEPA. SEPA je systém, ktorý presahuje geografické hranice, predstavuje jednotnú oblasť platieb v eurách, na území ktorej sa rozdiely v platbách odstraňujú interne aj mimo hraníc. V tomto systéme majú zákazníci možnosť uskutočňovať platby v eurách na európskom území bezpečne, rýchlo a efektívne pomocou súboru štandardizovaných nástrojov, ktoré im umožňujú uskutočňovať medzinárodné prevody v časovom období podobnom národným. Cieľom SEPA je zvýšiť konkurencieschopnosť a transparentnosť hospodárskych vzťahov uskutočňovaných v EÚ, najmä v ekonomickom prostredí, a prispieť k dosiahnutiu európskej integrácie konsolidáciou trhu s malými platbami, získať lacnejšie výrobky, ale aj omnoho efektívnejšie. Jednotná oblasť platieb v eurách (SEPA) má niekoľko zložiek: používanie jednotnej meny euro, jedinečné platobné nástroje v eurách, získanie efektívnej spracovateľskej infraštruktúry, spoločné technické normy, štandardizované formuláre a procesy, jednotný, harmonizovaný právny rámec a služby v neustálom vývoji pre spotrebiteľov. Súčasne oblasť, v ktorej sú dostupné platobné schémy, je širšia ako Európska únia a pozostáva z 36 krajín. Ďalej sa pozeráme na to, ako sa v niektorých krajinách implementujú okamžité platby. V Poľsku sa používa systém Express Elixir. Doteraz bolo zapojených do systému 12 komerčných bánk, 60 družstevných bánk a centrálna banka. Systém rýchlych platieb vo Veľkej Británii používajú spotrebiteľia (jednotlivci aj spoločnosti), keďže sú k dispozícii 24 hodín denne, 7 dní v týždni 365 dní v roku, pričom účet príjemcu je kreditovaný do niekoľkých sekúnd od začatia transakcie. Tento systém je k dispozícii 24/7/365 a má systém záruk na úschovy (RTGS) zriadený každou bankou na základe odhadov platieb zákazníkov. V prípade služby poskytovanej operátorom sietí v Dánsku trvá zúčtovanie na účtoch platiteľa / príjemcu v systéme Real Time 24/7 menej ako jednu sekundu; medzibankové zúčtovanie sa vykonáva v RTGS na 6 denných báze, iba v bankových dňoch, a zárukou transakcií je predfinancovanie prostredníctvom mechanizmu dynamického pridelovania potrebnej likvidity. Švédsko spoločnosť Bankgirot spustila službu okamžitých platieb BIR, ktorá spracováva prevodu na druhý účet 24/7/365 v maximálnom trvaní 2 sekúnd. V súčasnosti sa tento systém používa na miestnom trhu v prvých deviatich bankách.

Banková rada Národnej banky Slovenska (NBS) schválila Národný plán zavedenia okamžitých platieb na Slovensku t.j. ich spracovanie v reálnom čase. Tieto platby sú klientovi k dispozícii banky každý deň v roku, vo dne aj v noci, v pracovné dni a sviatky, v sobotu aj nedeľu. Platby sa pripisujú na účet príjemcu do 10 sekúnd od začatia platby bankou platiteľa. Mali by sa spustiť od 1. februára 2022. Zavedenie okamžitých platieb je pre banky dobrovoľné, a preto je na nich, či sa zapoja alebo nie.

Ďalej môžeme vidieť akým smerom sa orientujú banky a aká je ich budúcnosť. V kontexte tejto informačnej éry sú relevantné tieto faktory - štruktúrna a praktická budúcnosť bánk, ktoré ovplyvňujú zmeny v právnych predpisoch, nové technológie, používanie mien v bankách, zmeny v činnosti bánk. Ďalej sa pozeráme na to, aká je možná implementácia špičkovej technológie v platbách. RPA je technológia založená na umelej inteligencii, ktorá bola vytvorená na rýchle vykonávanie rôznych procesov back office a front office, s cieľom ušetriť čas zamestnancov a zdroje zamestnávateľov. Výhody používania RPA sú zníženie nákladov, prevádzková rýchlosť, odstránenie ľudských chýb, zvýšenie produktivity, využitie existujúcich systémov, prispôsobenie robotických operácií a udržanie zamestnancov. DLT je technológia, ktorá je základom rôznych virtuálnych mien (vrátane bitcoinov), ktoré by v budúcnosti mohli viesť k transformácii súčasného spôsobu vykonávania transakcií vo finančnom sektore, ako aj mimo neho. Hybridný cloud je integrovaná cloudová služba, ktorá využíva súkromné aj verejné cloudové systémy na vykonávanie rôznych funkcií v rámci tej istej organizácie. Vo všeobecnosti musia všetky cloudové služby ponúkať určitú úroveň účinnosti v reakcii na rôzne stupne používania. Tieto technológie sú použité pri nových platobných prostriedkoch ako: napr. platba dľaňou. Amazon vyvíja riešenie, ktoré umožní zákazníkovi spojiť svoje kreditné alebo debetné karty vlastnými rukami, aby si mohli naskenovať svoju dľaň. Nové metódy vyvinuté spoločnosťou Mastercard upozorňujú na nové spôsoby platieb v budúcnosti, ako napríklad: Pepper-humanoidný robot, pre ktorého Mastercard vytvoril prvú nákupnú aplikáciu, Smart Mirror - nákupné zrkadlo, Smart Table - ktoré umožňujú bezkontaktné platby, a biometrickú kartu - ktorá kombinuje čipovú technológiu s biometrickou autentifikáciou. Phos a Mastercard začínajú pilotný projekt na zavedenie inovatívneho platobného riešenia kompatibilného s mobilnými zariadeniami Android, ktoré umožní malým obchodníkom prijímať bezkontaktné platby bez potreby ďalšieho vybavenia. Jednoduché a efektívne riešenie uľahčí prijímanie bezhotovostných platieb pre milióny MSP, a preto prispeje k ich rozvoju. Európa sa rýchlo stáva úrodnou pôdou pre projekty blockchainu. Aj keď EÚ má niekoľko iniciatív na podporu inovácií

blockchainu za svoje hranice, Estónsko a Katalánsko sú lídrami v oblasti digitálnej identity. Estónsko je zrejme najdôležitejšou krajinou na svete v oblasti technológie blockchainu. Pokročilý systém digitálnej identifikácie krajín sa nezastavuje pri identifikácii estónskych občanov. Elektronické služby krajín sú teraz k dispozícii online, čo umožňuje legálne cestovanie do krajín EÚ, národné zdravotné poistenie, dôkaz totožnosti pri pripojení k bankám, digitálne podpisy, hlasovanie, lekárske záznamy a ďalšie. Napriek politickej neistote v Katalánsku v posledných rokoch bola jej vláda na špici výskumu v oblasti blockchainu, najmä so zavedením IdentiCATu. IdentiCAT je projekt, ktorého cieľom je, aby sa občania stali výhradnými vlastníkami ich digitálnej identity. DRT, ako je blockchain, sa hodí pre tento typ siete, kde dôveryhodní partneri môžu transparentne spájať citlivé údaje a procesy so všetkými účastníkmi. Blockchain bude integrovaný do základných systémov Visa a vytvorí sieť, ktorá umožní zúčastneným spoločnostiam uskutočňovať cezhraničné platby ostatným účastníkom priamo z banky do banky. Bank of England zvažuje zavedenie elektronických bankoviek pre spotrebiteľov a podniky. Systém by sa líšil od digitálnych peňazí vedených na bankovom účte a kryptomien, ktoré by boli zaručené bankou, nie komerčným podnikom. Zákazníci budú môcť platiť bez registrácie všetkých transakčných údajov, ktoré by generovali úroveň anonymity podobnú úrovni hotovosti.

V poslednej kapitole diplomovej práce sú zhrnuté závery z ostatných kapitol. Ďalej sa zaoberáme novými výzvami a príležitosťami na platobnom trhu a ako riešiť problémy digitálnej transformácie. Technologické trendy, ktoré budú definovať bankovníctvo v roku 2020 sú: inteligentnejšie bankovníctvo s umelou inteligenciou, banky budú ťažiť z cloudových systémov, vedúci firiem budú brať kybernetickú bezpečnosť vážne, šírenie „úzkého bankovníctva“. Na základe toho sme naznačili, ako budú platby vyzerat' v budúcnosti. Karanténa bude nútiť stále viac ľudí, aby aktívnejšie rozvíjali mobilné bankovníctvo a častejšie vykonávali vzdialené platby. Preto proces odstavenia hotovosti môže nastať oveľa rýchlejšie. Ďalej sa budú vyvíjať technológie biometrickej identifikácie. Kľúčovým nástrojom na overenie identity bude pravdepodobne nielen odtlačok prsta, očná sietnica alebo hlasová kontrola alebo skenovanie DNA. Ďalšou pokrokovou technológiou je implementácia čipov do ľudí. Bitcoin je stále v hre a nie je vylúčené, že by si svet mohol zvoliť kryptomeny ako prostriedok vyrovnávania. Blockchain ideológovia tvrdia, že vďaka kryptomenám stratí štát monopol v otázke peňazí. Ďalej hovoria, že sa začne skutočná finančná sloboda. Ďalším smerom vývoja finančných nástrojov je vznik programovateľných peňazí. Protokoly moderných kryptomien už umožňujú ich programovanie na konkrétne

účely. Ako bude vyzerat' svet bez peňazí? Predstavme si, že už nebudú peniaze a nedochádza ku konsenzu majetku ako prostriedku výmeny, akumulácie alebo zúčtovacej jednotky. Rôzni ľudia používajú rôzne aktíva (alebo skupiny aktív) ako úložisko hodnoty a ako svoju účtovnú jednotku. Môžu platiť akýmkoľvek majetkom, ktorý chcú - od „práv na využívanie údajov“ a vlastného úverového ratingu až po „práva na používanie bytu“, finančné nástroje, ktoré vlastnia alebo suverénne meny. Zamestnanci môžu požadovať, aby boli platení priamo v aktívach, ktoré uprednostňujú ako úložisko.

Splnením a analýzou vyššie uvedených parciálnych cieľov sme splnili hlavný cieľ práce: definovať aké sú inovácie v platobnom styku a poskytnúť čitateľovi široký prehľad danej problematiky a obohatenie jeho vedomostí o predpokladanom vývoji a budúcnosti platobného styku. Týmto spôsobom sa jednotlivci a právnické osoby, ktorí budú čítať túto diplomovú prácu, môžu oboznámiť s inováciami a tendenciami v oblasti medzinárodných platieb a môžu sa pripraviť na to, čo bude ďalej v oblasti platieb.

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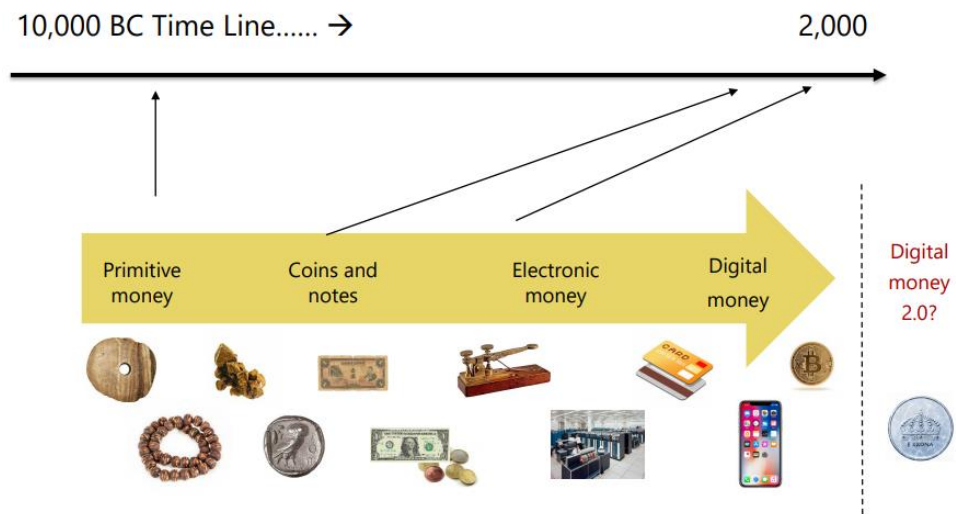
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Appendix

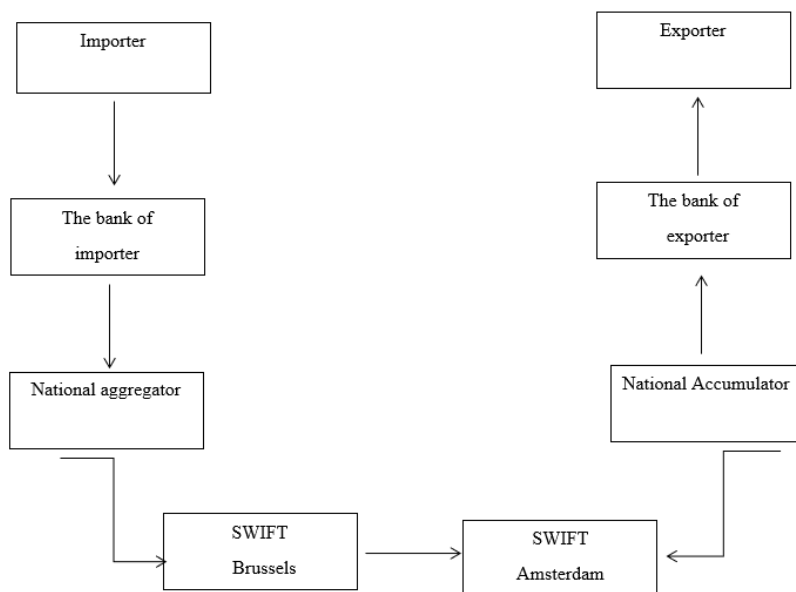
Figure 1 The evolution of payment tools



Source: Innovations in retail payments: past, present and future... Luiz Awazu Pereira and Silva with Takeshi Shirakami available at:

https://www.ecb.europa.eu/pub/conferences/shared/pdf/20191126_payments_conference/keynote_pereira_da_silva_bis.pdf

Figure 2 SWIFT payment



Source: Monod, Didier-Pierre, Moyens et techniques de paiement internationaux, 1993. Editions ESKA, Paris, p.42

Picture 1 Bill of Exchange

BILL OF EXCHANGE	
<div style="border: 1px solid black; width: 50px; height: 50px; display: flex; align-items: center; justify-content: center;">STAMP</div>	
₹ 1,50,000	Mumbai, India January 15, 2019
Three months after date, pay Mr. R or his order, a sum of rupees one lakh fifty thousand, value received.	
To, Mrs. Q Pune, India	Sd/- Mr. P Mumbai, India
<div style="border: 1px solid black; padding: 5px; transform: rotate(-2deg); display: inline-block;">ACCEPTED Sd/- Mrs. Q January 18, 2019</div>	

Source: Bill of Exchange Vs Promissory Note, Prachi M, available at : <https://theinvestorsbook.com/bill-of-exchange-vs-promissory-note.html>

Picture 2 Promissory Note

PROMISSORY NOTE	
Amount: ₹ 1,50,000	Date: January 15, 2019
Place: Mumbai, India	
I Mrs. Q, make commitment to pay Mr. P, the sum of ₹ 1,50,000. Repayment is to be made in the form of 50 equal payments at 10% interest, or ₹ 3300 payable on 1 st of each month, beginning February 1, 2019 until the total debt is paid.	
IN WITNESS WHEREOF, I set my hand under seal this 15 th of January, 2019 and I acknowledge receipt of a completed copy of this instrument.	
Sd/- Mrs. Q Pune, India	Sd/- Notary Public

Source: Bill of Exchange Vs Promissory Note, Prachi M, available at : <https://theinvestorsbook.com/bill-of-exchange-vs-promissory-note.html>

Picture 3 SEPA Participants



Source:European Council, About SEPA, available at: <https://www.europeanpaymentscouncil.eu/about-sepa>

Picture 4 Papper-the humanoid robot



Source: Daily Mail, interview with Papper the robot by Ash Tulett available on:<https://www.dailymail.co.uk/sciencetech/article-3691117/Do-want-rule-world-Watch-Dailymail-com-interview-Pepper-robot-worryingly-refuses-answer.html>

Picture 5 Retail Mirror Mirror



Source: New Mastercard digital smart mirror enables shoppers to pay from the changing room by [Sasha Fedorenko](#)
Available at: <https://internetretailing.net/technology/technology/new-mastercard-digital-smart-mirror-enables-shoppers-to-pay-from-the-changing-room-17902>

Picture 6 Smart Table



Source: Tehnologii noi de plată de la MasterCard by Revo available on: <https://www.revoblog.ro/tehnologii-noi-de-plata-de-la-mastercard/>

Picture 7 The biometric card



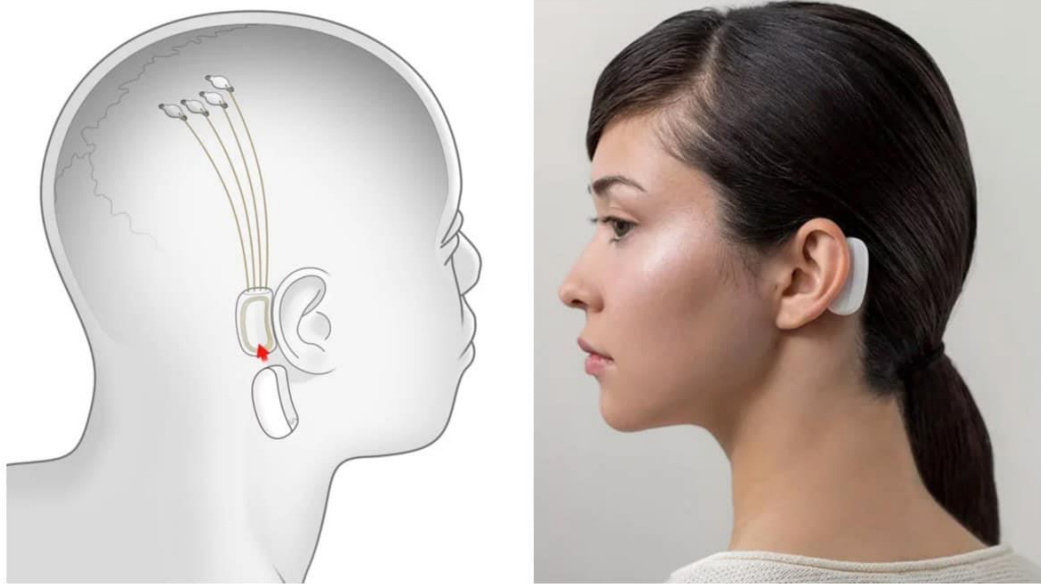
Source: Tehnologii noi de plată de la MasterCard by Revo available on: <https://www.revoblog.ro/tehnologii-noi-de-plata-de-la-mastercard/https://www.revoblog.ro/tehnologii-noi-de-plata-de-la-mastercard/>

Picture 8 Smile-to-pay technology



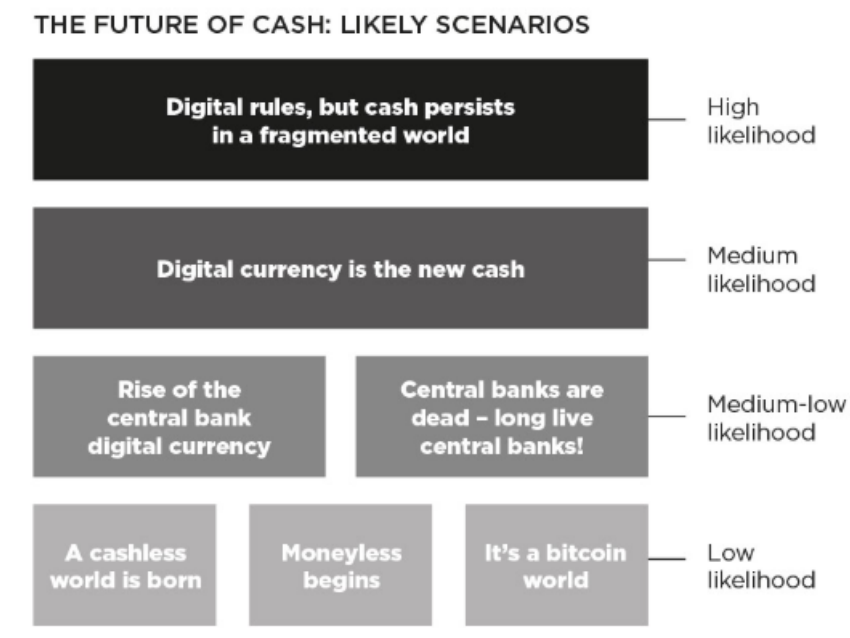
Source: Alibaba launches 'smile to pay' facial recognition system at KFC in China by available on: <https://www.dailyreportnow.com/alibaba-launches-smile-to-pay-facial-recognition-system-at-kfc-in-china/>

Picture 9 Neuralink implant



Source: Elon Musk's Neuralink reveals brain implant technology to control devices by Amit Malewar available on: <https://www.inceptivemind.com/elon-musks-neuralink-reveals-brain-implant-technology-control-devices/8107/>

Figure 3 The Future of cash



Source: personal editing