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Table of content

UNDERSTANDING THE SCOPE OF INNOVATIVE PROJECTS FROM THE CLIENT-SIDE ASPECT
Ágnes Csiszárik-Kocsir p1.

UNDERSTANDING CYBER WARFARE FROM A PROJECT PERSPECTIVE IN THEORY AND IN PRACTICE
Oszkár Dobos p.14

PERCEPTION OF HEALTH AWARENESS AMONG YOUNG PEOPLE IN THE LIGHT OF PRIMARY RESULTS
Mónika Garai-Fodor p.26

HOW TO PROTECT THE YOUNG GENERATION FROM CONFINEMENT AND ISOLATION IN THE EVENT OF EDUCATION AT HOME
Judit Gombkötő Andras Keszthelyi p.34

CORPORATE EDUCATION IN HUNGARY
Olivér Kiss Albert Molnár p. 43

THE IMPACT OF INVESTMENTS IN THE DEFENSE INDUSTRY ON LOCAL ECONOMIES
Alexandra Ágnes Mészáros, István Márk Tóth, Ágnes Csiszárik-Kocsir p.52

THE INVERSION OF HUNGARIAN SOVEREIGN BOND YIELD CURVES. AN EMPIRICAL ANALYSIS OF ITS APPLICATION IN CRISIS FORECASTING FOR THE HUNGARIAN ECONOMY
Albert Molnár, Patrik Viktor p.62

COMPONENTS OF HAPPINESS IN HUNGARY IN THE LIGHT OF WORLD HAPPINESS REPORT
Viktor Nagy, Zsófia Keszthelyi, Antónia Béres p.75

EXAMINING THE SKILLS ESSENTIAL FOR HOME OFFICE WORK UNDER THE AGILE METHODOLOGY
István Márk Tóth, Alexandra Ágnes Mészáros and Ágnes Csiszárik-Kocsir
Óbuda University p.88

FINANCIAL AWARENESS DECISION-MAKING IN PUBLIC EDUCATION
Patrik Viktor, Csuzi Henrik, Agnes Szeghegyi p101.

GENERATION-SPECIFIC CONSUMER PERCEPTION OF SELF-DRIVING CARS
Patrik Viktor, Mónika Garai-Fodor p.111

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UNDERSTANDING THE SCOPE OF INNOVATIVE PROJECTS FROM THE CLIENT-SIDE ASPECT

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Abstract

Projects are a series of unique, novel activities with specific objectives that do not fit into the normal activities of a company because of their novelty and uniqueness. Projects are created to meet a specific need and demand and to respond to the challenges and tasks of the micro and macro environment. Defining the purpose or scope of a project is key to its success. There are many definitions of project success, but in this paper it will be interpreted as equivalent to user satisfaction. If a project has generated satisfaction among users, then its scope definition has been appropriate and has met the needs expressed beforehand. This study examines four projects selected from the Project Management Institute (PMI) 2021 top 50 projects list from the user perspective, taking into account the opinions and perceptions of potential users. The four projects highlighted in the study individually have a number of lessons and messages, but when complemented with the perception of potential end-users, they are certainly of value for the design of similar projects in the future.

Keywords: megaprojects, project scope, client, users' perspective

1. Literature review

Innovation is an important factor for social and economic development. Innovation enables an organisation or even a national economy to create new and unique products, services and infrastructure (Csiszárik-Kocsir - Dobos, 2022), thus it is a driver of economic growth (Varga, 2021; Csiszárik-Kocsir - Varga, 2023). The creation of new products and services creates new jobs, increases productivity and contributes to economic growth. Through innovation, new technologies, tools and developments are created that can improve people's quality of life, pointing towards sustainable development. The development of new environmentally friendly technologies and solutions can help to reduce environmental pressures and promote action to protect the environment (Johnson et.al, 2004). In addition, innovation is constantly advancing human knowledge and technology. New discoveries and developments inspire further research and development, leading to new innovations that are urgently needed in the light of recent events (Garai-Fodor, 2022; 2023).

Projects are the manifestation of innovation. A project is a periodic activity or initiative aimed at achieving a specific result, according to defined objectives and deadlines. Projects are usually one-off and specific tasks, carried out with specific resources (human resources, materials and financial resources) and a series of activities. The scope of a project summarises the processes and factors that need to be in place to make the project a success. Project success can be clearly defined in terms of the satisfaction of the end users, the stakeholders. Scope is the set of products and services that the project is intended to produce, i.e. the project itself is intended to achieve them. Scope is an important element of projects, the defining element of the iron triangle (project triangle), alongside time and cost. It is the achievement of scope that measures customer satisfaction and the level of project success. There are two aspects of scope definition (PMI, 2017):

- project scope - which is nothing other than the process of producing the deliverable, product or service, and the
- product scope - all important characteristics that define the product or service itself.

In the future, as the environment and circumstances change, customers will consider projects that meet their needs to be successful, rather than those that meet their predefined specifications. Needs can change over the life of a project, so it is important to monitor customer needs continuously (Neal, 1995). Incomplete definition of project scope occurs when the needs of one or more stakeholders are not included or are given less weight than justified (Sharma - Lutcham, 2006). Failure to clarify stakeholder expectations in a timely manner, ignoring risks, again increases the risk of project failure (Atkinson et.al, 2006).

Project success is interpreted as a measure of the project. Project success is complex and complex, and it is not possible to provide a clear definition of a value that, if met, a project can be considered successful. Customer and stakeholder satisfaction is very important and can only be achieved through accurate and continuously monitored scope definition. The interpretation of project success is clearly subjective. As long as one stakeholder considers a project to be successful because it meets his expectations, the other feels that it is nowhere near it. This is why several researchers, including co-authors Shenhar (2001), have attempted to define project success:

- meeting time, budget, and other requirements,
- impact on the client,
- impact on the implementing organisation, and
- impact on the future.

If we want to examine and analyse the sustainability of projects, it is important to state that many studies on the subject do not clearly define its content. Rather, sustainability has been understood in previous literatures as the transmission of results over time through projects (Scheirer, 2005). This interpretation includes timeliness, material sustainability, and even environmental sustainability. Undoubtedly, sustainability also includes an innovation dimension, with the introduction of the concept of sustainable innovation. Today, the environmental interpretation of sustainability is the one that has become the most familiar. It is also increasingly being incorporated by project managers into the definition of the scope of projects, making it an important element in increasing stakeholder satisfaction.

2. Material and method

The two projects presented in this paper are part of the list of priority projects for 2021 published by the Project Management Institute (PMI, 2021). The evaluation of the selected projects is presented from the perspective of ordinary people as users. No educational qualifications or previous knowledge of project management were required to be included in the sample, so the questionnaire on which the evaluation is based could be completed by anyone. Respondents were asked to rate the selected project on the basis of a number of factors related to the scope of the project. Respondents rated the factors on a scale of 1 to 4, with a value of 1 indicating a very weak factor and a value of 4 indicating a very strong factor. Respondents were then also asked to rate the project overall on a scale of 1 to 5, with 1 being the weakest and 5 the best. Finally, it was also examined whether there was a correlation between the specific characteristic and the overall evaluation of the project. The questionnaire was completed by 198 respondents, but only 172 of these responses were fully rated. In the survey, 14 projects were evaluated, including priority projects in the fields of transport, environment, energy, digitalisation and architecture. 39.5% of the sampled respondents had a tertiary level education, while 60.5% had a secondary level education. 12.2% of respondents are Generation Y, 23.3% are Generation X and 64.5% are Generation Z. The survey was conducted in April and May 2022. The 2022 survey was followed by a survey in 2023, the results of which I intend to publish in the future.

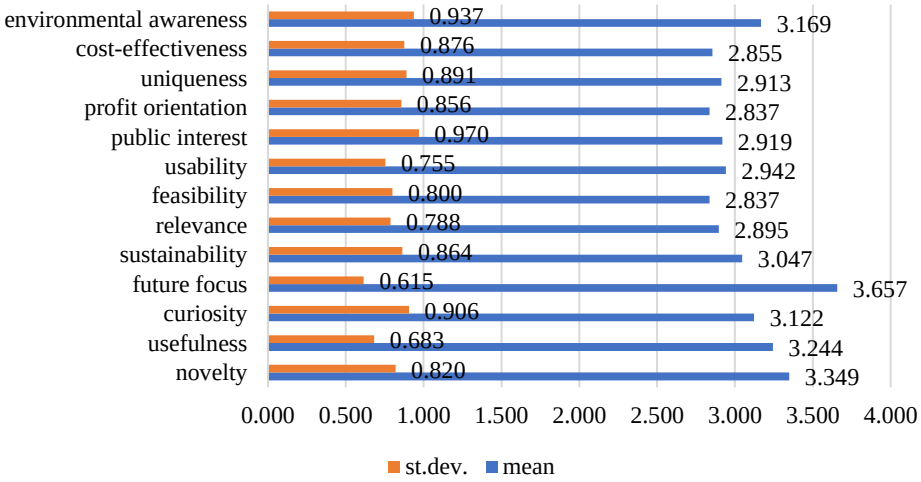
3. Results

3.1. User evaluation of the Sand Dollar project

The sand dollar is the first government-backed digital currency. The rationale behind the creation of the currency was that the Bahamas, as an archipelago of more than 30 islands, was a particularly dangerous place to transport cash due to the atrocities that were being committed against shipments. Another objective was to guarantee the security of tourism through the use of digital currency. The introduction of the currency itself is the first government-backed, blockchain-based digital currency. The sand dollar allows citizens to receive and make payments electronically from a digital wallet created for them. All they need is their mobile phone or they can make these transactions using a physical payment card. The project itself was launched in 2018 amid considerable bank resistance. The future goal of the project is to fully integrate the digital currency into the Bahamian tourism industry. The aim is to have widespread acceptance by hotels, taxi companies, cruise operators, tour operators and to be able to pay at major attractions. The sand dollar project could also serve as a learning experience for other countries. There are countries such as China and Sweden that are testing digital currencies, and the lessons that can be learned from the project could be of interest to them. Mastercard has also joined the project, working with the government to issue prepaid cards that allow users to convert their sand dollar into Bahamian dollars and pay anywhere.

In the course of the research, I was interested in how the characteristics of the project scope were assessed using a four-point scale. Future Focus received the highest rating, with an average score of 3.66. In addition, novelty was also highlighted, with a score of 3.35, as well as utility (3.24) and environmental awareness (3.17). All the other scores are mostly below a 3, but none of the attributes falls below 2.5. This shows that the initiative was positively received by potential future users and that its scope was ranked highly.

Figure 1: Assessment of the sand dollar project scope along each factor



Source: own research, 2022, N = 172

I was also interested to see how each of the characteristics of the scope of a given project influences how end-users perceive and evaluate the project overall. To determine the relationship, I used analysis of variance using ANOVA. In the table below, it is clear that in only two of the scope characteristics examined (profit orientation, feasibility) was there no detectable relationship between the overall evaluation of the project and the rating of the respective characteristic. It is therefore very important that potential end-users are won over by the project as a whole, that they see its characteristics and what it has to say, so that they can rate the individual characteristics positively in detail. The project presented here is a highly innovative initiative, in line with 21st century trends. As the vast majority of respondents were young people belonging to Generation Z, it is not surprising to see such a correlation with the project.

Table 1: Correlation between the perception of the scope of the Sand Dollar project and the overall evaluation of the project

		Sum of Squares	df	Mean Square	F	Sig.
novelty	Between Groups	11,943	4	2,986	4,835	**0,001**
	Within Groups	103,126	167	0,618		
	Total	115,070	171			
usefullness	Between Groups	23,296	4	5,824	17,231	**0,000**
	Within Groups	56,448	167	0,338		
	Total	79,744	171			
curisoity	Between Groups	20,801	4	5,200	7,259	**0,000**
	Within Groups	119,635	167	0,716		
	Total	140,436	171			
future focus	Between Groups	9,457	4	2,364	7,139	**0,000**
	Within Groups	55,305	167	0,331		
	Total	64,762	171			
sustainability	Between Groups	16,629	4	4,157	6,255	**0,000**
	Within Groups	110,998	167	0,665		
	Total	127,628	171			
relevance	Between Groups	20,176	4	5,044	9,801	**0,000**
	Within Groups	85,941	167	0,515		
	Total	106,116	171			
feasibility	Between Groups	5,470	4	1,368	2,197	0,072
	Within Groups	103,972	167	0,623		
	Total	109,442	171			
usability	Between Groups	11,146	4	2,786	5,394	**0,000**
	Within Groups	86,273	167	0,517		
	Total	97,419	171			
public interest	Between Groups	23,236	4	5,809	7,049	**0,000**
	Within Groups	137,625	167	0,824		
	Total	160,860	171			
profit orientation	Between Groups	4,977	4	1,244	1,725	0,147
	Within Groups	120,465	167	0,721		
	Total	125,442	171			
uniqueness	Between Groups	16,161	4	4,040	5,645	**0,000**
	Within Groups	119,531	167	0,716		
	Total	135,692	171			
cost-effectiveness	Between Groups	14,348	4	3,587	5,119	**0,001**
	Within Groups	117,018	167	0,701		
	Total	131,366	171			
	Between Groups	15,315	4	3,829	4,744	**0,001**

envionmental awareness	Within Groups	134,795	167	0,807		
	Total	150,110	171			

Source: own research, 2022, N = 172

3.2. User evaluation of the Kings of Leon NFT project

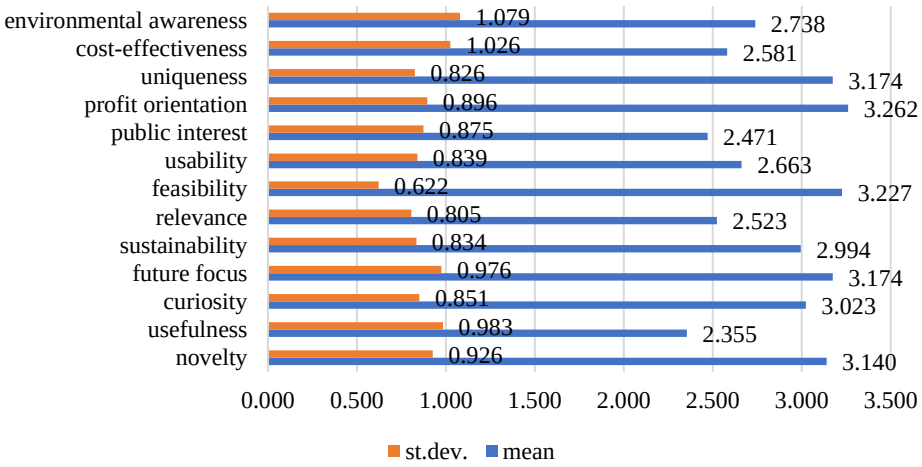
NFT are a series of codes linked to images, animations, videos, sound files, used to prove authenticity, are digital tools similar to cryptocurrencies, but their volume is much more limited, making them sought after and unique. The mass cancellations of concerts due to the coronavirus epidemic in 2020 have put performers and bands alike in a very difficult situation. The band Kings of Leon was the first major music artist to offer an album in the NFT format in order to survive. The content of the album "When You See Yourself" was released in early 2021, and three tokens were made available to fans from 5 March (PMI, 2021):

- The first was a $50 token that offered a specially minted album package with enhanced media elements, digital downloads of the music and a limited edition vinyl record,
- The second contained six elaborate audiovisual art kits, ranging in price from $95 to $2,500,
- Finally, the team also created 18 "golden ticket" value tickets, which included four front row tickets to each of Kings of Leon's concerts on current and future tours, plus backstage passes, doorman, chauffeur, and other VIP experiences (six of which were sold, the rest were placed in a vault to be upgraded in price) - $2m was donated,

Fans are getting used to using the crypto wallets and are ready to exchange and share assets. This is becoming more and more commonplace, which is proving to be the industry's saving grace in this aspect of the industry in similar situations. The success of the initiative is also helped by the fact that for 20 years fans have had nothing to buy, except perhaps a ticket or a T-shirt. So now fans have something to buy in a digital universe that is particularly relevant and attractive to the younger generation.

In this case, I also asked respondents to rate the project along the dimensions of the project scope. Survey respondents were asked to rate on a scale of one to four, with four being the top of the scale. The results showed that the highest average score, i.e. the highest score, was given to the profit orientation of the project (3.262), followed by feasibility, then uniqueness of the project, and with roughly the same score, the future focus of the project. The novelty of the project and its interest also scored above a three-point average. All the other scores were below the mean of three but above the mean of two. The least perceived usefulness of the project by respondents (2.355) and, moving up from the bottom of the list, public interest (2.471) and relevance of the project (2.523). This suggests that the value of the novelty of the project was clearly recognised by respondents, but was perceived as more revenue generating, as indicated by the one-word feature of the scope based on the word cloud obtained. The project was less perceived to be sustainable, environmentally friendly and usable, and did not gain clear support from respondents in terms of cost savings.

Figure 2: Evaluation of the Kings of Leon NFT project scope along each factor



Source: own research, 2022, N = 172

For the NFT project, I was also interested to see how the overall assessment of the project influenced the perception of each of the project scope characteristics, for which I again used analysis of variance. In this case, as the final product of the project is a novelty not widely known, the interactions are less clear. The essence of the NFT itself is not yet understood or known by many, which makes it difficult to clearly define its relevance. In the present case, fewer factors influence the overall perception of the project, as shown by the results in the table below. The project rating does not affect the rating of environmental awareness, feasibility, relevance and novelty, but it does affect all other factors.

Table 2: Correlation between the perception of the scope of the Kings of Leon NFT project and the overall evaluation of the project

		Sum of Squares	df	Mean Square	F	Sig.
novelty	Between Groups	6,491	4	1,623	1,933	0,107
	Within Groups	140,160	167	0,839		
	Total	146,651	171			
usefullness	Between Groups	26,690	4	6,673	8,035	**0,000**
	Within Groups	138,676	167	0,830		
	Total	165,366	171			
curisoity	Between Groups	34,058	4	8,514	15,825	**0,000**
	Within Groups	89,849	167	0,538		
	Total	123,907	171			
future focus	Between Groups	30,031	4	7,508	9,446	**0,000**
	Within Groups	132,736	167	0,795		
	Total	162,767	171			
sustainability	Between Groups	21,045	4	5,261	8,970	**0,000**
	Within Groups	97,950	167	0,587		
	Total	118,994	171			
relevance	Between Groups	4,048	4	1,012	1,582	0,181
	Within Groups	106,859	167	0,640		
	Total	110,907	171			
feasibility	Between Groups	2,851	4	0,713	1,880	0,116
	Within Groups	63,306	167	0,379		
	Total	66,157	171			
usability	Between Groups	22,751	4	5,688	9,723	**0,000**
	Within Groups	97,691	167	0,585		
	Total	120,442	171			
public interest	Between Groups	9,421	4	2,355	3,239	**0,014**
	Within Groups	121,434	167	0,727		
	Total	130,855	171			
profit orientation	Between Groups	16,444	4	4,111	5,684	**0,000**
	Within Groups	120,783	167	0,723		
	Total	137,227	171			
uniqueness	Between Groups	10,501	4	2,625	4,126	**0,003**
	Within Groups	106,267	167	0,636		
	Total	116,767	171			
cost-effectiveness	Between Groups	25,957	4	6,489	7,041	**0,000**
	Within Groups	153,904	167	0,922		
	Total	179,860	171			
envionmental awareness	Between Groups	5,469	4	1,367	1,178	0,322
	Within Groups	193,758	167	1,160		
	Total	199,227	171			

Source: own research, 2022, N = 172

4. Conclusions

The 21st century has brought many innovations and innovations into our lives. These innovation efforts have been given a huge boost by the epidemic situation in 2020, which has become an indicator and trigger for digitalisation solutions. New responses to new challenges have forced responses not only from the business sector, but also from national economies and the banking sector. Survival has become essential in all organisations. The projects presented in this paper examine the end products of these efforts, brought to life by the changed circumstances and constraints of the 21st century. Overall, the results show that, in this case as in all other projects, winning the end-user is key. The first impression of end-users determines the rating and evaluation of the project's further characteristics and thus its acceptance. It is therefore very important that the end-users who will use the final product of the project are properly addressed, for which the various social media platforms are an excellent platform. It is important that users understand the essence of the project and see the positive impact it has on them in order to adopt and use it. The two projects studied show that projects that are clearly tailored to user needs and serve wider societal interests are perceived more positively than projects that focus on a small subset of users. Therefore, it is advisable to design projects to reach out to a wider range of users, mapping trends and expectations, so that we can expect the project to be successful, sustainable and usable in the long term, given its acceptance.Atkinson, R., Crawford, L., Ward, S. 2006. Fundamental uncertainties in projects and the scope of project management. International Journal of Project Management, 24(8), pp. 687-698.

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Understanding cyber warfare from a project perspective in theory and in practice

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Abstract

Information operations may be the most important area of our time. It can be considered the most important because it is made up of the information itself and the environment in which it is created, stored and used. Cyberspace integrates all domains and, moreover, it is fair to say that cyberspace has become the foundation and driving force of all these fields; hence the term information society. Industry, economy and politics, and of course warfare, are all based on information: no matter what discipline we are talking about, data, information and digitalisation are certainly an integral part of it. Today, the world operates entirely based on information, and therefore the direction of development is reversed: it is not the population that adopts the development of the military, but it is the military that takes off from civilian development. Accordingly, the information sector, or more precisely the infocommunications (ICT) sector, provides the basis for developments which are then used in information operations. Today, the ICT industry and its developments are entirely project-based, both in terms of methodology, and economic and business models. This is why I consider it important to study project management and information operations, which is the subject of this publication.

Keywords: cyber operations, cybe warfare, cyber security, project management, project manager

1. Introduction

Several proverbs, which have become common parlance, demonstrate the importance of information. "Information is power" is a good illustration of the fact that the one who has it can gain the upper hand over the other, gaining a competitive advantage. "Information is the oil of the modern age" is a phrase that demonstrates the economic importance of information and also describes the workings of the tech giants. It is now a major "product" that is being traded, and it is also reported that economic gain is a major motive for data theft, meaning that information has a financial value attached to it. Although in a different area, the importance of information is also highlighted in the following two sentences: "Information is freedom" and "Information is the currency of democracy". In the areas of freedom, press and politics, information is also high in the ranking of importance. What these clichés have in common with information is that they are not really contested or refuted. And they shouldn't be, because these are indeed the main characteristics of the information society in which we live, and information makes up its main building blocks

and operating mechanisms. Private companies, organisations and professionals are important players and developers of the information environment, that is cyberspace. By analogy, I assume that these actors are also active agents of cyber warfare. In this case, project managers as professionals also have a role in cyber warfare. It is through them that I would like to explore the main question of this paper: is there any link between project management and cyber warfare?

The aim of this paper is to illustrate the importance of project management in cyber warfare, to show the current interfaces, and to analyse and categorise them, and then to look for further ways to expand them. I will show the inseparable relationship of cyber warfare with the ICT sector and civil society professionals. My hypothesis is that practicing project managers can be active actors in cyber warfare, possessing important competencies for the regular forces. For the purposes of this paper, information, the information environment, and the information and communications technology (ICT) industry are of particular relevance because, as I will show below, they connect cyber warfare and project management. Cyber warfare also brings cyber operations into focus, because of their close links to information and their close relationship with cyberspace. In the following section, I will briefly discuss the interpretation of both and their interrelationship as well, but will continue to use both as substitutes for each other within the scope of this paper.

In this paper, I will first discuss the definition and interpretation of the concepts I use, such as cyber warfare and cyber operations, with cyberspace being a key concept I discuss in detail, then I will analyse the relationship between them. The ICT sector and its relationship with cyberspace will be introduced, as well as project management. I will examine the role of project management in the ICT sector and its positioning within cyber warfare. Based on the above, I will derive and justify my hypothesis, and then, in the summary, I will highlight the main points and present further conclusions and possible research directions.

2. The concept and role of cyberspace today

Cyberspace is the main environment for cyber warfare and information operations, so it is useful to give a primary introduction on it. Among the many existing and well-established definitions, the most important aspect of cyberspace in my own interpretation is information and its location and availability. Therefore, I base my definition of cyberspace on Zsolt Haig's description: "Cyberspace is the artificially man-made, dynamically changing domain in which interconnected infocommunication devices and systems that collect, store, process, transmit and use information, and that use the electromagnetic spectrum, operate, enabling continuous and global connectivity between people and devices." (Haig 2018)

In his explanation, he also highlights information as the core and driving force of cyberspace. He highlights the technological and logical links between the machine-to-machine, the human-to-human and the human-to-machine. He goes on to point to the flow of information through the actors and their relationships, i.e. the virtual dimension. This leads directly to the networking that is a prerequisite for today's knowledge-based and information-based society. Complementing and supporting the ideas of Haig, Kovács reflects the perspective of the modern ICT age to the fullest. According to Kovács, cyberspace is a complex set that is a union of all the elements and smaller sets that interact with information, i.e. processes, their actors, technical and software tools, the systems involved, and the network of all these interconnected either directly or indirectly. (Kovács 2018)

3. Cyber warfare and cyber operations

Cyber warfare is a conscious act in the NATO-recognised theatre of war, cyberspace, as described above. Conventional warfare is essentially, in terms of actors, actions of regular forces against regular forces, i.e. the professional forces of one nation attempting to carry out an operation against another. In terms of the time dimension, there is a clear distinction between peace and war, with a known date of outbreak and end of war. In addition, the area of operations can be delimited physically or geographically. In contrast, in cyberspace, the boundaries of all three aspects are blurred.

An important feature of the virtual world is its geographic boundarylessness: once connected to the web, it can be accessed from anywhere in the world with minimal latency, so distance as a physical factor is eliminated. The difference in terms of actors is also important. The technologies presented later will demonstrate that the actors in the virtual world are mostly civilian citizens, who in most cases are only the victims of cyber warfare, but even if we make a more sophisticated analysis, they appear at most in a defensive role. However, the results of this analysis also point to other groups of actors who are also involved in attacks, whether consciously, as a fight against nation versus another nation, as independent activists or for financial gain. (Gémes 2018) There is also an important change in the time factor: there is no precise beginning and end to this kind of activity. The easiest way to demonstrate this is to review the currently known activities and technologies that are used to either attack or defend in cyberspace. The technologies, software and hardware developed for defence are not only war-ready, but also have high availability at all times. And rightly so, because we need to constantly defend against the data-gathering software robots, ransomware, and automated phishing emails that we encounter every day. These exemplary tools and technologies are only a fraction of the cyber threats that are constantly present on the internet, and there are also countless deliberate, coordinated attacks against targets whose breach could compromise the security of a nation through its citizens. In this case, I don't think the motive for the attack is relevant if the result is damage to, or shutdown of, a vital entity, such as a critical infrastructure element.

Cyber warfare and cyberspace operations are linked by cyberspace, and therefore the properties of cyberspace apply to both. Understanding cyber operations according to Haig (2018): "Cyberspace operations are a set of activities aimed at the integrated, coordinated and orchestrated application of information capabilities in cyberspace, using cyberspace networked infocommunications systems to achieve the objectives of operations, by influencing the intentions, situational awareness and capabilities of the target audience participating in the operations, directly through cognitive capabilities and indirectly through technical capabilities."

4. Technologies and development of the cyberspace

Due to the physical constraints of the present work, I will not fully discuss all the technologies that are currently or could potentially be used in cyberspace in the future. I will focus on those that contribute most to the expansion of cyberspace and the channelling of citizens into cyberspace. The first thing that comes to everyone's mind, and to which many people - wrongly - associate cyberspace itself, is the internet. It is a fundamental misconception to equate cyberspace with the internet, although we are not very far away from it, because if by networked we mean

global network, then we are most likely connected to the internet at some point. This could be a direct connection or a device that is also accessible over the internet. This way, we also become part of the internet and, thus, available. This is also the basis of the Internet of Things (IoT) technology that we will discuss later.

The internet is both enabling and stimulating the development of a digital ecosystem, where both public and private services and data are available over broadband (Csiszárik-Kocsir, 2022; Garai-Fodor et al, 2022). The development of this ecosystem and the development of the Internet are mutually reinforcing, so that the range and quality of services is constantly expanding as coverage and bandwidth continue to increase. The next level of networking among Internet-based technologies is cloud technology. As bandwidth has increased, a new approach has become possible. Data is no longer stored and processed on networked devices, but in a central location on the network. This is an important shift in approach, because it fundamentally changes the way digital functions work, allowing complex data processing and the interconnection of independent systems. Another benefit for users is scalability: it always uses the resources it needs, so the device being used does not need extreme capacity to meet infrequent performance peaks. Information and services can be accessed from multiple devices, without the need to multiply across devices. It is called cloud technology because in most cases the actual location of the data is unknown. Information is stored and processed in huge server centres, but performance optimisation and load balancing can mean that the content displayed is physically present on two separate continents. With the rise of wireless communication, it is like simply sending data to the "cloud". With the development of cloud technology, it is now possible to deploy services from virtual infrastructure-as-a-service (IaaS), to platform-as-a-service (PaaS), to full software-as-a-service (SaaS) in a stable and secure way.3 An illustrative example is the Google Chrome Book notebook, which has no native operating system. A Chrome browser runs on the device and all other applications can be run online from the cloud with a SaaS solution.

Tech companies in the ICT sector are constantly developing new technologies based on existing ones through RDI projects. Cloud-based computing and evolving mobile communications, in contrast to the smart device networks of the past, allow almost any electronic device to be networked and then remotely monitored or even controlled. Thus, the condition reverses direction and networking transforms anything into a smart device. We call this the Internet of Things (IoT). In many cases with IoT, it really is all about information in the cloud. A networked device contains just a sensor and a microchip that enables network connectivity. This is an important milestone for cyberspace, as much of the real physical world can be converted into data through sensors and thus moved into cyberspace. IoT technology forms the basis for the entire smart ecosystem, such as smart cities, smart homes, smart cars and their further development into connected vehicles and the resulting self-driving vehicle technology. (Farhan et al., 2018) This is a huge amount of data, which is growing exponentially as infocommunication technologies proliferate. Cisco predicts that the number of internet users will grow from 3.9 billion to 5.3 billion in 2018-2023, and that there will be even more networked devices available; from 18.4 billion to 29.3 billion. (Cisco 2020) This will of course lead to an increase in data volume: based on the forecast made a year earlier, personal data traffic will rise from 13 Gbyte to 35 Gbyte from 2017 to 2021. (Cisco 2019) The classical data processing methods used and the structured databases are not suitable for processing such volumes and, more importantly, such complexity of data sets, and therefore a new technological development is underway, called big data. Big data works differently from traditional data operations; there is no data processing on the networked device or sensor, it is done in the cloud,

where huge amounts of data are collected and connected. Then, servers, which also have huge resources and capacity, are used to execute the operations issued at the endpoints. This, in addition to the advantages of cloud computing, allows for the interconnection of completely independent data, thus enabling the use and visualisation of information in ways that have not been used or even known before.

In addition to the technologies already in use and widely accepted, the future will of course be about developing these and similar technological solutions. Although, according to the technological singularity defined by Raymond Kurzweil, we cannot predict the technologies of the future because we will reach a point in our development where, due to the rapid pace of development, we will not be able to grasp the functioning of tomorrow, (Kurzweil 2013) estimates do exist: various research institutes are trying to identify trends that attempt to predict the future of the next few years. The Gartner research institute is constantly analysing trends and uses a hype curve to determine trends. Their latest available 2019 hype curve identifies five areas:

- Sensors and mobility: this trend brings together technologies that increasingly enable mobility and the management of associated devices, including 3D sensor cameras and advanced autonomous driving. With advances in sensors and AI, autonomous robots can operate more autonomously in their environment. For example, new technologies such as lightweight transport drones (both flying and on-wheels types) will be more advanced in navigating and aware of surrounding objects. This technology is currently hampered by the legal environment, but technological development will continue. The technologies involved are cloud-based augmented reality (AR), fourth and fifth level self-driving and flying self-driving vehicles.
- Human robotic technologies: the trend is to enhance human physical and psychological capabilities with biochips and emotional artificial intelligence. A robotic arm can exert a force significantly greater than human strength, but it is also possible to implant other more efficient and resistant organs. With these tools, human health, strength and intelligence can be improved. The technologies involved in this trend are: personalisation, augmented intelligence and biotechnology.
- Post-classical computing and communication: classical or binary computing, which uses binary bits, evolves by changing existing traditional architectures. These changes result in faster CPUs, improved memory and increased performance. This includes 5G and next generation cellular standards, but also next generation chips and 3D printing
- Digital ecosystems, which are sharing platforms connecting cyberspace actors. These ecosystems have evolved as a result of digitalisation, transforming traditional value chains and enabling dynamic relationships with different actors and organisations across geographical and industry boundaries. In the future, these will be decentralised organisations operating automatically, without human intervention. This includes various distributed, decentralised technologies and data sciences.
- High level artificial intelligence and analytics. The next generation of analytics is the autonomous or semi-autonomous examination of data or content, using sophisticated tools, beyond the traditional business aspects. Technologies based on machine learning models will enable the further development of AI and, through it, data analytics. This trend includes adaptive machine learning, AI and graph analytics. (Gartner 2019)

In addition to the benefits, the new technologies and developments described above pose increased risks, as they ensure that the entire society and economy are connected to cyberspace. For this reason, the physical boundaries of cyber warfare are blurred and can be characterised as asymmetric warfare, where non-regular forces are also active (Csiszárik-Kocsir – Varga, 2017).

5. ICT and cyber operations

To summarise the above, I have shown the strong logical link between cyberspace and cyber devices and the ICT sector. What follows is an overview of the links between cyber warfare and cyber operations and ICT. The link can be illustrated through the information capability of cyberspace operations. I will focus on information capabilities that specifically use civilian ICT technologies, thus pointing to the importance of ICT actors in cyber operations.

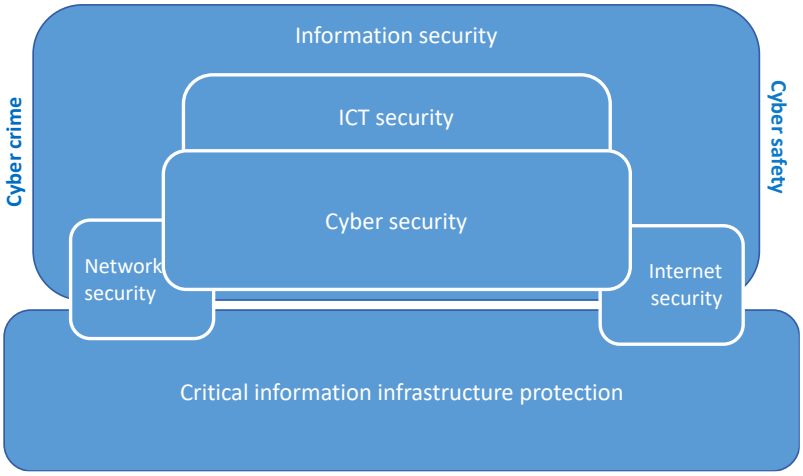
Computer network operations are the information capabilities that define cyberspace operations and are best suited to cyberspace itself. They include attack, defence and reconnaissance over networks. These activities can take place at either the physical or logical layer in terms of their impact. Basically logical activities target the logical parts of the network: software, databases, operating systems or even the network itself. The informational ability to *deceive* is when we typically influence the other party's decision making with information that is not true. We mislead in order to make our reaction help us achieve our own goal. In cyberspace, in terms of ICT technologies, this means false information, fake news, but it can also mean manipulated network or sensor data.

Psychological operations is a specialised communication skill where people are specifically targeted with the content of the information. The aim is to manipulate and influence their decisions. It can be negative, in such cases very similar to disinformation used in deception, or even social engineering techniques. It can also be positive, such as gaining acceptance or support for something. Mass information is an essential information capability, especially in cyberspace, because it can be very effective in reaching large communities through websites, forums and news portals. It is also important to include social media, which is fully embedded in the information society. There is perhaps no other offline media, TV or radio, that can compete in terms of speed and volume of information (Haig 2018)

Computer networking operations are clearly also used and operated by civilians in the ICT sector. Any organisation, service or actor accessible on the World Wide Web can be a target of this activity: infocommunications companies, systems critical or vital to the country, as well as the masses of citizens. Deception, psychological operations and mass media also use products and services from the ICT sector and their target groups are located on networks operated by ICT. The consequence of this high penetration of digital services is the need for digital security; the ability to defend in cyber warfare, i.e. the creation of cyber defence. Taking this idea further, it is apparent that ICT organisations and professionals are essential actors in cyberspace and should therefore be important actors in cyber defence. According to Alexander Klimburg, ICT actors are also integral parts of information security. The products and services of ICT companies, which are accepted and globally distributed, are also a source of vulnerability. Because of the products and services used worldwide, no country is able to secure the entire ICT supply chain on its own, from sources it can trust and control. Areas where the products of multiple suppliers need to be integrated are key risk factors, compounded by cases where unreliable or uncontrollable products are integrated by

organisations or even countries. The figure below illustrates the role of ICT security in cyber security. (Klimburg 2012)

Figure 1.: ICT security in cyber security



Source: own edition based on Klimburg (2012)

Therefore, the most demonstrable link between cyber warfare and ICT sector actors is in cyber defence and cyber security. Of course, with these tools and actors, an organisation may be able to do reconnaissance or counter-intelligence type activities, which are indeed contrary to law, but we can mention a few recent ones. So-called soft attacks, where no data or systems are compromised, currently exist. Such are disinformation campaigns, fake news factories and even false announcements that manipulate the stock market, if they become sufficiently widespread in the digital world. (Haig 2018)

6. The ICT and the defence sector's relationship with project management

All the closely cyberspace-related technologies described above are being developed in the ICT sector or with the involvement of the sector's stakeholders. The best evidence of the connection between cyber operations and project management is apparent through the information and communication industry and its evolution. Therefore, I consider it important to examine the relationship between the sector and formal project management.

The organisations that created and continue to develop the formal project methodologies most widely used by most large organisations in the world were established in the mid-20th century. The International Project Management Associoation (IPMA) was founded in 1965 (IPMA 2015), the Project Management Institute (PMI) in 1969 (PMI 2013) and the British government's Projects In Controlled Environment (PRINCE) methodology was established in 1989 (PMI 2013). Since then, they have continuously developed their models, revising them several times, always adapting them to the specific environment and technological tools, and disseminating them with a view to the effective management of projects. It is important to note that these are only the formal methodologies, the origins of project-based operations and management can be dated back to the beginning of the 20th century. Frederic Taylor defined the scientific principles of management in his work (Taylor 1911) and, even more closely related to project management, the Gantt chart

created by Henry Gantt (Clark & Trabold 1922), is still considered one of the fundamental tools of project management. The history of project management is closely linked to warfare through the defence industry and also to information technology.Prior to the creation of these formal organisations, project management had been used more narrowly by the US Department of Defense since 1958 (Malcolm & Fazar 1959) in a number of research and development and prototyping areas. The emergence of the IT link can be seen directly in the PRINCE2 methodology and the Agile Manifesto of 2001, which was more of a concept than a concrete model at the time, but was developed specifically for the management of IT and software development projects. (Agile Manifesto 2001) The evolutionary history of project management also demonstrates its continuing links to warfare and defence, as well as to developments in the ICT industry.

Currently, according to the Project Management Institute 2018 survey, 93% of companies use some form of standard project management (PMI 2018). An earlier survey by Price Waterhouse Coopers in 2007 found a similarly high proportion, with 77% of companies using some form of documented, enterprise-wide project management methodology. (PMI 2018) The structure of today's organisations in the ICT sector is generally twofold. The first is the project organisation itself, where operations are explicitly project-based, i.e. outside of projects, colleagues only participate in training, education or internal efficiency improvement projects. Typically, after a project concludes, employees are placed in a so-called resource pool, from where they can be freely involved in an already ongoing or a start-up project. Another form of organisation is the matrix organisation, where, if we imagine a matrix, the columns represent the functional units and the rows represent the projects. Both the functional unit and the project have their respective managers (Varga – Csiszárik-Kocsir, 2019). In a matrix organisation, the functional unit has basic tasks that have to be performed. With the proliferation of the agile methodology, a third organisational structure is coming to the fore, which is more similar to the project organisation, however, in this case the project team does not fall apart after completing a task, but stays together and is dedicated as a team to the next task. This is only possible in an agile, flexible environment, which is why even fewer organisations opt for it, and those are exclusively software development companies. (Gaál, Szabó 2003)

The focus of both main organisational structures is on effective project management, and the vast majority of their operations and work is project-based. It can be seen that the emergence and development of project management has been driven primarily by information technology and the defence industry. This relationship has been transformed into a kind of interaction, with project management and ICT actors forming a symbiosis generating mutual development. The way organisations operate and their organisational structures have been transformed for effective project management. And project-based operations have become a fundamental methodology for everyday work and, very importantly, for RDI activities as well.

7. ICT projects and cyber operations

Because of the vastness and pervasiveness of cyberspace, infocommunications projects are extremely complex, they are almost never exclusively IT-related, and are certainly part of a programme or system that requires knowledge of another type of domain. They therefore have the following characteristics:

- Many actors, some of whom come from within the organisation, but in most cases also from outside the organisation. Since each project is a temporary entity, these structures are constantly changing over time, even within a running project.
- Linking different areas of knowledge and many actors requires the integration of several, completely independent areas of expertise, which makes these complex and high-risk projects.
- The IT field is a very dynamic discipline, and the many stakeholders involved mean that project objectives are very complex and constantly changing.
- These factors and the completely unique project products make ICT projects high risk projects.

Looking at the types of IT projects, it is easy to place the following in cyberspace operations:

- Software development project
- Hardware development project
- Software development project
- Systems integration project
- System integration project Implementation project
- Infrastructure Development Project
- Relocation/migration project
- Testing project

It is important to note that the complexity of the projects is also relevant here, because although these projects can be construed separately, the global projects, which are also realised in cyberspace operations, are comprised of a certain proportion mixture of them. The project types describe the activities of information capabilities for cyberspace operations and the development of the tools and services used for them. I can mainly focus on defense because of the legal reasons mentioned above.

8. Cyber defence as a cyber warfare activity and project management

There are distinct types of cyber defence activities in the ICT sector. One such type is preparation for defence. This includes the development of methodologies, models, technological developments in software and hardware as well as that of physical assets. This is followed by the design, construction, testing and commissioning of the defence system and its handover to operations. The second area is more dynamic, covering complex tasks during and after an attack that are not included in emergency plans or require planning and approval for implementation. These may include a relocation and migration during a damage control operation, the introduction of new technology, the modification of existing infrastructure, the re-configuration of systems, the release of new software versions, and remote intervention in the devices used by users. Although little information is available regarding civil actors, this category may also include detection or a possible counter-attack against the server, system or attacking party associated with the attack. This is not an option for civil society organisations under current legislation and therefore remains a theoretical possibility. The two types presented are the ones that I see as defensive:

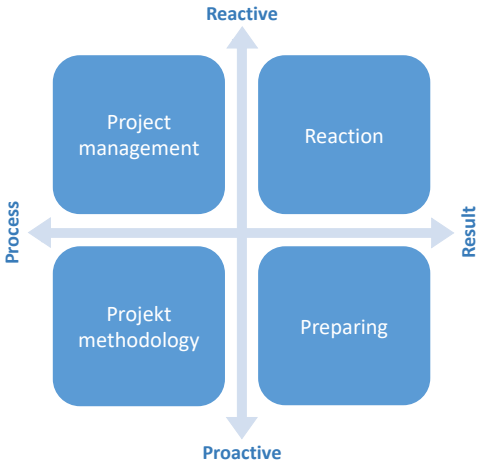
- Proactive, i.e. preparation projects.
- Reactive, i.e. projects related to response.

From another perspective, focusing on the implementation process, I can also identify two categories.

The first is the activity related to the project management process, i.e. protection during project implementation - this is the responsibility of the project manager. The currently used and accepted models treat cyber-attacks in projects as a risk and provide ongoing, reactive protection against them, partly by adapting organisational policy and tools and partly by adapting temporary ad hoc defensive elements. The other category is a more proactive activity from a project management perspective. The project management model used itself includes specifications and standards for cyber security. This means that there is no need to validate and select them, the focus is on the appropriate use of the established environment.

With the two categories, a matrix can be drawn up to give a complete picture of the relationship between project management and cyber defence.

Figure 2.: Project management role in cyber defence



Source: own edition

Reading the matrix in the light of what is shown:

- Process and proactive: passive defense from a project management point of view, because the defense is defined in the project management methodology used, so there is no possibility to override the standards at project level. Pre-defined tools and processes must be used.
- Process and reactive: this is where the cyber defence aspect of project management comes in. The project manager has the authority and responsibility for proper defence and needs to be constantly involved, in a reactive manner, responding to all threats and risks as they occur.
- Outcome and reactive: the focus is on the outcome of projects. Reaction to security incidents that have occurred, countermeasure neutralisation, mitigation and remediation may be included.
- Outcome and passive: focus is on the outcome of the project. The main objective is to plan and design cyber defences and develop the necessary tools. The project lasts until the delivered results are handed over, after which a passive defence is set up from the point of view of the attack**,** which is attempted to be breached or bypassed.

9. Summary

The relationship between cyber warfare and information operations was presented, and I analysed in detail the cyberspace as the environment in which these activities take place. I have highlighted the inseparable link between the ICT domain and cyberspace, and thus the importance, and indeed the indispensability, of the role of the actors in the ICT sector, organisations and professionals. The development of ICT and project management are mutually influential and mutually reinforcing. The organisational structures currently in use have evolved to support project-based operations and effective project management. Consequently, IT projects are present in all areas. Two aspects of project management can be identified, one focused on the methodology itself and the other, the more active one that is used during project management. In the matrix I have developed I have mentioned the theoretical possibility of reconnaissance and possible countermeasures, but a detailed analysis of this is beyond the scope of this paper. Based on my summary, I still maintain my hypothesis: practicing project managers can be active actors in cyber warfare, possessing important competencies even for regular forces. Covering the full spectrum of cyber warfare and further strengthening the above hypothesis, I identify the relationship of project management to cyber intelligence and counter-intelligence as a future research and publication target.

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Perception of health awareness among young people in the light of primary results

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Abstract

As part of the general culture, health culture includes knowledge and habits related to maintaining health and avoiding disease. Health culture is constantly changing, evolving and improving through experience and learning, both at individual and community level. Health awareness already emphasises the responsibility and role of the individual in maintaining and protecting their health. Health awareness is the responsibility of the individual to take care of him/herself, to maintain his/her well-being, to take care of his/her own well-being, to maintain a healthy physical and mental balance and to maintain a healthy relationship. In the context of health-conscious consumer behaviour, the question arises as to what factors, motivations, habits or preferences determine the demand for health-conscious products and services in the health market.
In this study, I examine Generation Z from the perspective of health awareness. Using a quantitative methodology, I summarise the results of primary research conducted through a pre-tested standardised online questionnaire survey. The research question is to what extent young people consider health as a value and what they do to protect and preserve this value. The results of the research will also help in practical terms to develop young people's health awareness, how to encourage young people to develop active health behaviour and increase their health literacy.

Keywords: health awareness, primary research, generation

1. Literature overview

According to the WHO, health is not just the absence of disease or disability. Health is a state of complete physical, mental and social well-being (OEFI, 2004). The whole population and the state of the population have an impact on the economy and competitiveness of a country (Varga – Csiszárik-Kocsir, 2015a; 2015b; Varga, 2021). The Piskóti et al. give a more complex approach to the concept of health: health is defined as the unity and balance of body-mind-spirit. This balance is not a stable, permanent state (Piskóti et al, 2012). Kozák (2009) points out that for the postmodern consumer, the understanding of health is becoming increasingly holistic. It is not only about the harmony of body and soul, but also about the understanding, family, occupation and learning as components of complex health. Balatoni (2011) also defines health in a multidimensional approach, as a state defined by a certain quality of somatic, psychological and

social functioning. According to Falusi, health consciousness and a healthy lifestyle also consist of several components. Nutrition fundamentally determines and influences our lives, but also our health in the long term. It is important to choose the right nutrients for the body, i.e. to focus on eating healthy foods. Another important component is exercise, i.e. maintaining our bodies. It is also important to mention the avoidance of harmful addictions as an important component of a healthy lifestyle (FALUS, 2015).

A culture of health is closely linked to the complexity of health. It encompasses knowledge and habits related to health maintenance and disease prevention. Through these, it helps individuals to regulate and optimise their health status and meet their health-related needs (Balatoni, 2011). Following Hofmeister-Tóth and Törőcsik's (1996) definition of culture, health culture is defined as the learned beliefs, values and habits related to health values and values that guide the behaviour of individuals in a given society. health-related behaviour of individuals in a society. Health culture, as part of the general culture, is, like health culture, constantly changing, evolving and improving through experience and learning, both at individual and community level. A further concept is health literacy, which is the degree to which individuals are able to acquire, process and understand the basic health information and services needed to make good decisions about their health (Nutbeam, 2000).

Today, we see that there is no shortage of information in terms of quantity and availability. In fact, in many cases it is the overabundance of information that makes it difficult for the recipient to find his way around. The main obstacle to achieving a higher level of health literacy is the ability to process information intelligently. What is considered credible information, how we can decide whether something is sufficiently well-founded, relevant and reliable, is all a matter of the ability to process information. In many cases, it is this very lack of information that causes low levels of health literacy in some sections of society, often seriously compromising certain levels of information, which in the long term can lead to their health-related decisions in the long term. Health behaviour already emphasises the role and responsibility of individual activity, the individual's role and responsibility in how health is managed, by which is meant any activity that the individual believes he or she is doing for his or her health in order to prevent disease (Kasl - Cobb, 1996, in: Urbán, 2001).

Within this, we can also distinguish between active and passive status: active health behaviour is the set of actions that an individual takes consciously, in a planned way, mostly for the sake of his or her health, with the aim of restoring/maintaining/enhancing health in connection with other sides of awreness (Csiszárik-Kocsir, 2016; 2021; 2022; Garai-Fodor et al., 2022; Csiszárik-Kocsir et al., 2016). Passive health behaviours include all activities that has an impact on the health of the individual in the present or the future, but the unplanned, unconscious in terms of its impact on health. Füge also refers to the individual's responsibility for a healthy lifestyle, defining it as a way of life. A way of life that can change at any time under pressure from external influences, but can be changed at any time by the individual according to his or her own inner needs (Füge, 2015). A growing body of literature points to the role of individual responsibility in maintaining health. Health awareness now explicitly emphasises the importance and role of individual responsibility in maintaining health. Health-conscious behaviour is the responsibility of the individual to take care of oneself and one's well-being, physical, mental and relational balance Bagdy (2010).

As a result of a national survey, Ferenci and his co-author report that the biggest problem in people's current lifestyles is the lack of conscious behaviour. Most people are unaware of the impact of lifestyle on health. The authors argue that effective programmes should be implemented to make people aware of the health benefits of a healthy lifestyle. On the part of professionals, it would be important to create and implement programmes related to healthy lifestyles as widely as possible (Ferenci, Lenténé, 2021). There is a large body of national and international research on the health benefits of regular exercise and physical activity (Fülöp and Szakály, 2008; Járomi et al., 2016; Gyulavári et al., 2018; Lenténé et al., 2018). Regular, active physical activity is one of the pillars of a healthy lifestyle, but a significant proportion of people rarely associate it with it. Physical activity and playing sports has a large number of beneficial physiological effects, which is supported by numerous research findings (Járomi et al., 2016; Bíró et al., 2018). Füredine (2008) points out that there is an improving trend in health awareness in Hungarian society, and its emergence is observed in younger and younger age groups.

2. Material and method

In my primary research, I also investigate the role of active physical activity in the development of a healthy lifestyle among young people. The quantitative research was carried out through a pre-tested, standardised online questionnaire survey. Subjects were recruited using an arbitrary sampling method. In terms of sociodemographic characteristics of the sample, half of the subjects were male and half female respondents. In terms of age, the largest proportion of respondents (62%) were aged between 19-35 years. The majority of the respondents (58%) had secondary or higher education, with a regional distribution that was evenly distributed: the participation rate was between 12% and 15% of respondents from all regions. By type of residence, 66% of respondents live in cities, 16% in the capital and only 18% in rural areas. In terms of marital status, the majority (61%) are unmarried or single, and the majority (31%) are married. 31% of the respondents already have a child, the youngest child is three months old and the oldest in the sample is 32 years old.

3. Results

Leisure time habits from a health perspective

The sample was also asked about what they do in their free time, in order to find out which surfaces would be optimal for an "ad force" campaign.For the first time, subjects were asked to make a free association on their leisure habits.The results show that the most frequently associated concepts in people's value judgements of leisure are relaxation, recreation, friends and family. An absolutely positive result was that the mention of sports, running and exercise was also a dominant factor. The association also suggests that leisure is mainly linked to social and community experiences, which could be important information for future campaign design. This is also evidenced by the time balance of leisure time, where spending time with family and socialising with friends became the most popular alternatives to passive leisure. Sport is not far behind (18%), which is a positive result in terms of the opportunities for personal campaigning.

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Table 1.: Leisure time habits (average %)

Activities	mentions (%) (relative frequency)
Learning, self-training	33
Having fun, socialising with friends	49
Passive relaxation, recreation	13
Housekeeping work	2
Doing sports	10
Being together with the family	18
Active recreation, hiking, nature walks	19
Cultural programmes, theatre, opera, exhibition, concert	1

Source: own research, 2018, N = 829

If they could spend more time having fun, spending time with friends, studying or self-education, respondents would do so. On average 10% voted for sports. Not surprisingly, if they could, 66% of the sample would spend less on housework, 18% on studying and 15% said they would put passive leisure on the back burner. Mention of other alternatives was minimal (1-2% or less). I also asked respondents when they thought they could do more sport. The results show that people have more opportunity (32%) and time to do so at the weekend, but weekdays (28%) and a combination of the two also received high mentions (24%). A good result in terms of attitudes towards sport is that only 16% said that they would not have time to spend more time exercising either at the weekend or on weekdays.

Examination of sporting habits, attitudes to sport

I wanted to find out about the respondents' sporting habits and consumer attitudes towards sport in general, using a Likert scale (also known as the "agree scale"). The results showed that health consciousness, such as regular exercise and dietary awareness, received the highest average score, but even this was below 3.0, which means that the most basic aspects of a healthy lifestyle are not sufficiently characteristic of Hungarians. In light of this, there is still much to be done. The

main task of education is to make people aware of the importance of physical, mental and spiritual balance, and even more, to make them want to take action for their health.

In the list of statements, I specifically asked who the subjects consider to be a so-called reference person, i.e. a source of information whom they trust and whose opinion they listen to on sports and health promotion issues. The results show that doctors' opinions are the most influential when it comes to musculoskeletal complaints, and that they are the people people people turn to first. In second place, and quite a long way behind, people trust the expertise of trainers. Nor do they seek the professional advice and guidance of physiotherapists and sports psychologists. This clearly shows that it is important to make these expert sources known and popularised, as they could play a major role in promoting health promotion and preventive behaviour and could be an important professional reference alongside doctors. However, this requires establishing, strengthening and promoting their credibility and reputation.

Table 2.: Evaluation of sport and prevention activities
(average, where, 1=not at all typical of me, 4= very typical of me)

Statements	average
I exercise regularly (at least 3 times a week)	2.45
I pay attention to what and how much I eat	2.64
I count the calories I eat	1.59
I make sure I get enough rest and sleep	2.67
I go for regular medical check-ups	2.23
If I have musculoskeletal problems, I consult a specialist immediately	2.22
I believe in the positive effects of natural medicine	2.20
If I have musculoskeletal problems, I consult my trainer first	1.58
I see a physiotherapist regularly	1.32
I consult a physiotherapist first if I have musculoskeletal problems	1.41
I regularly seek advice from a sports psychologist	1.18

Source: own research, 2018, N = 829

When I asked subjects whose opinion they listened to when choosing the right form of exercise/sport. The results showed that social channels were the main channel. Friends and family are the most important source of information (54%, 37%). Not surprising, since the family is the most basic social unit and plays a decisive role in the development of basic human values and behaviour. And the role of friends and acquaintances demonstrates the importance of social contacts and informal groups. The fact that coaches came third (26%) for this question, ahead of medical doctors and physiotherapists, shows that their role is very important in the choice of the right form of exercise and sport, and that they are trusted by the people surveyed.

The results show that when the desire to play sport has arisen in the subject, he or she relies on the experience and guidance of coaches in choosing the right form of exercise. In order to nuance the attitude towards sport, I analysed the subjects' attitudes with a list of statements. Basically, we can speak of a positive attitude, with no absolute rejection of sport. It seems that there is still doubt in people's minds about the importance of active exercise as part of a healthy lifestyle, and the

results also show that there is still a lot of work to be done and more to be done in creating (or re-creating) a love of sport.

Table 3.: Sports-related consumer attitudes

(average, where, 1=not at all typical of me, 4= very typical of me)

Statements	average
For me, sport is my passion	2.11
I do sports to keep healthy	2.71
Sport is a compulsion for me	1.59
I want to get in better shape - lose weight, get pretty - that's why I do sport	2.64
Sport is therapy for me - it's a mental and spiritual recharge	2.60
I do sports on doctor's orders for rehabilitation	1.28

Source: own research, 2018. N=829

4. Summary

In this study, I investigated the health-consciousness aspect of sporting habits through a pre-tested, standardised online questionnaire. The main question of the research is to what extent the respondents consider health as a value and what they do to protect and preserve this value. The results of the research show that the majority of people have no negative attitudes towards sport. Social and societal channels are the most important for obtaining information on sport and choice of physical activity, both in terms of physical activity, prevention and information on sporting opportunities. The results show that the importance of sport and active exercise in health promotion is very strong among the sample and that the attitude towards sport is basically positive. I believe that the positive nature of the affective element of the attitude provides a good basis for developing health awareness. The role of social channels in particular is crucial in this respect, and I believe that a meaningful and effective campaign - differentiated, of course, by target groups - can be developed in the future, even using social marketing tools to enhance the effectiveness of the campaign.

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How to protect the young generation from CONFINEMENT and isolation in the event of education AT HOME

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Abstract

Based on the experience of the recent years, there is always a risk that the education of the young generation will be supported on their own place of residence. In view of the possible economic and health crisis we are facing now, it is necessary to be prepared for such cases, learning from previous experience. Question: What can society and parents do at this time to protect their children from confinement, mental regression or living in a virtual world, which affects their development, especially in adolescence? Within this topic, there is talk of joining groups, which is very important in a pubertal age, online shopping, online games, constant use of technical tools and the dangers of this, disconnection from real tasks, devaluation of knowledge acquisition, inadequate way of accountability, which is dangerous for their further learning. The aim of the thesis is to show the dangers of a possible stay at home for the young generation, so that we can protect it from the harmful effects of what society and parents can do for their children. Based on own research, factors that can be harmful and have an impact on the young society are identified. We used a questionnaire method by interviewing about 80-100 parents who have school-age children, broken down into primary, upper and middle school age groups.

Keywords: : education, basic and high school, online education, parent protection, development of the young generation

1. Introduction

From this year (2022) September, the possibility of homeschooling has come to the front again, as a possibility. Closing the schools especially in wintertime became quite realistic, because of the increasing number of covid diseases, but also because of the runaway energy prices. Heating up schools, public institutions will be quite expensive. The question is, how can be prepared for such a period from students, parents, school, and society perspective. Do we get enough time to be prepare and is it possible to be prepared at all? In my opinion, technically partly yes, but mentally not in long term.

We asked parents with children between the ages of 8 and 20 on my questionnaire survey, what they think about online education, what kind of positive and negative experiences they had. How they were able to help their child during this time, so that their childhood would have not been harmed, they would also have had friends, family, and social life.

We tried to determine the age of the children in such a way that they would fall into the previous school closure and the parents could have their experiences, thoughts. We divided the children into 3 groups, primary school between 6-10 years, primary school upper school between 11-14 years and secondary school between 15-18 years. My opinion, that parents might have different experiences related to each age groups like in independence, abuse of numbers, adolescent relationships, duration of their attention and tiredness during learning.
Based on my personal experience, my children got far from the real tasks, as they did not have to work hard to get the good result. The quality of the knowledge transfer was not proper, as the schools should have been prepared for online education rapidly. Children started to use electronic equipment all day from morning till evening, as they needed. They could play games, order staff, and keep contact with their friends, classmates via internet. I could not control my children' activities all day, as I had my own activities.

2. Literature

The concept of web-based learning and e-learning: The e-learning system includes online training (which can be synchronous or asynchronous), knowledge management and related electronic performance support systems (EPSS Electronic Performance Support System).(Hamza et al.,2022)

E-learning applications are broadly understood as computer-based education (CBT), web-based education (WBT), virtual classrooms (teaching-learning environment integrated into a computer communication system) and digital collaborations (collaborations). It includes the transmission of content via the Internet, intranet/extranet, audio and video cassettes, satellites, CD-ROM, mobile phones (m-learning), interactive TV (t-learning).(Viktor& Szeghegyi, 2022)

One of the variants of the forms of education available with the help of e-learning solutions is synchronous, online (live e-learning) learning, during which students in geographically different places and the teacher access the training surface at the same time. (Csercsa et al., 2022) The student can master the curriculum according to his/her own schedule. The student and teacher communicate via live stream. (Fodor et al., 2018) Through technological solutions, the instructor can establish frequent information exchange with students, as well as provide them with audio and video material. You can apply for the synchronous online training, ask a question orally or in writing, and answer it immediately. (Viktor et al., 2021) It is possible to build online discussion forums, in which students can communicate with each other and with the person leading the education live.(Viktor et al., 2021)

Another variant of the forms of education available with the help of e-learning solutions is asynchronous learning, during which the content is available online, but teacher assistance is constantly not available during learning, in which case interactivity is reduced. (Viktor & Kárpáti, 2020) The student can learn the selected curriculum within the specified time limits, at any pace. The possibility of direct communication with fellow students or the teacher does not cease.(Simon & Viktor, 2021)

In Hungary both synchronous and asynchronous online education is accented especially in higher education.

Based on the research of Anna Sun and Xiufang Chen Rowan University (2016) the answers of the question "Why do we need distance education?" Moore and Kearsley (2012, p. 8) in their study identified the following reasons as to:

- increase access to learning and training as a matter of equity
- provide opportunities for updating skills of the workforce
- improve the cost effectiveness of educational resources
- improve the quality of existing educational structures
- enhance the capacity of the educational system
- balance inequalities between age groups
- deliver educational campaigns to specific target audiences
- provide emergency training for key target areas
- expand the capacity for education in new subject areas
- offer combination of education with work and family life
- add an international dimension to the educational experience

In discussing the best practices of online education, Finch and Jacobs (2012) stated these advantages: reducing the time and costs for travel; increasing opportunities to access and collaborate with expert professionals in a global range; providing students with flexibility to access courses at their convenience; and allowing adjustments to subjects and content need.(Simon et al.,2021)

Referring to the study of Gary James about the disadvantage of online learning, the below list shows the picture of barriers of online education.

- Limited formatting of content in current browsers
- Bandwidth/browser limitations may restrict instructional methodologies – technology concerns. If the teacher 'content relies on a lot of video, audio, or intense graphics, and their audience isn't on proper line, Net delivery will only frustrate the children
- Limited bandwidth means slower performance for sound, video, and large graphics.
- Someone must provide web server access, control usage, and bill users (if applicable)
- Time required for downloading applications - Again, be very, very aware of download times
- Student assessment and feedback is limited
- Many, if not most, of today's web-based training programs are too static, with little if any interactivity - This is probably due to the bandwidth limitation, but if we deliver poor, page-turning training, we can't expect stellar results from our learners.
- Cannot design and develop robust multimedia courses
- Are computers replacing human contact? - The Net is not right for all training.
- Newness - New technologies always require time, experience, and money in order to take full advantage of its capabilities.
- Web-based training has high-fixed costs

Referring to the study of the Ball State University (2012) the research question one documented student perceptions of the expected advantages and disadvantages of taking courses online. The convenience factors of not having to pay attention to dress, worry about how to get to class (car

issues), or dealing with bad weather was rated as the main advantage of taking courses online. Flexibility was also rated highly, as the expectation of being able to work on the course at your own time and pace was seen as quite desirable. As most classroom teachers would anticipate, another advantage perceived by a large number of students was not having to sit through lectures and being able to view/review lectures as needed. Somewhat unanticipated, however, was the high number of students who expected that a major advantage of online courses was not having to deal with other students disrupting class and not having to deal with other students asking questions. Females were more likely to rate expected advantages of taking online courses as higher than males, which could play a part in online enrollment. Information systems faculty and advisors should use this information not only to strengthen their online courses, but their traditional courses as well.

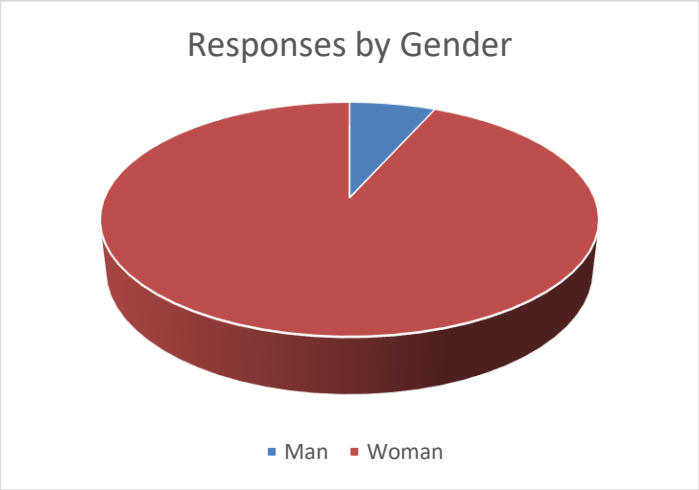
The main disadvantages of taking online courses were perceived as the likelihood of procrastinating, not understanding content when not face-to-face with the instructor and more self-discipline for reading and learning. Misunderstanding assignment directions, trying to contact the instructor for help, and technology issues were all reported as potentially frustrating and stressful disadvantages of online learning. In addition, many students indicated that using the computer for other non-related course activities, such as Facebook, while working on the course would be a drawback. This comes as no surprise to teachers in traditional classrooms who are continually reminding students to get off Facebook, but it is surprising that students also realize this is a major distraction. Other concerns included the increased use of communicating through email and ease of cheating by other students. As with the advantages, females perceived some expected disadvantages would be significantly more of a disadvantage of taking online courses when compared with males. Information systems faculty and advisors need to address these perceived disadvantages by taking steps to ensure these concerns are minimized.

3. Material and methodology

Some of our questions concerned online education itself, others concerned separation from the real world, the dangers associated with online education and life, and our questions were about parental responsibility, what to do, and possible experiences. There questions are like: What do you think about the abuse of learning in online education? What can parents do to help their child's development and break away them from virtual world? What can parents do to keep their child's friends and family connections?, What are the main development problems in the life of a teenager during online education

The aim of our questionnaire at the end to get answers whether there is a real fear on the online learning and online life and how we, parents can help our children to keep them motivated and support them not to lose their friends, relationships. What the main points are, that parents can keep in mind to avoid big troubles with their children.

The questionnaire was sent to a database of thousands of people mixed with men and women. I have asked for parental opinions from those who have experience with their children. It was a guided questionnaire that was easy and simple to fill out. It was filled mainly by women,



only a small number of men, 7% of those surveyed.

Figure 1: Parents responses by gender, source: own research

Among the parents who responded to our questionnaire, the age group of primary basic school students and secondary school students were the same, with slightly fewer responses from parents with upper primary school children. It may have been because primary schools were less affected by school closures, but parents of small school children suffered the online learning most from home by teaching them children for writing, reading, and accounting.

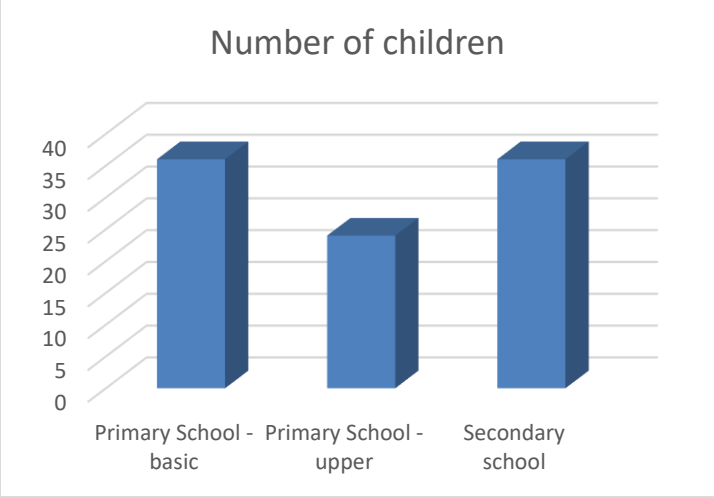


Figure 2: Summary of children split by school age, source: own research

4. Research

The experience of the online learning, especially for basic primary school, aged between 6 and 10, was not effective at all. Most of the parents were disappointed, sometimes frustrated, that

they had to deal with all the tasks of the teachers. It might have a positive benefit, but from maintain attention and get proper support perspective, most parents want to have offline education.

In the parents' opinion of primary school students, the effectiveness of education was quite poor, the teachers were unprepared, and, in many cases, they did not have any tools or educational materials in their hands so that they could smoothly transfer knowledge to the online space. For weeks, months, they mainly just put out the tasks in the "kréta" system, they didn't even hold a lesson. There were several parents' opinions that their child did not learn anything during that time, except that knowledge, the parents taught them. Pupils became quite demotivated.

Secondary school age groups had online education for a longer period. The experience of online education was better, about 20% of parents thought, the education was sufficient especially from convenience perspective, although they found difficult to carry out practical tasks. Most of the signaling, I received about education are disorganized and inefficient. In this age group, probably because of the longer term, the children abused the online space, rifled, searched for answers online, students worked together, no longer even studied consciously, but relied on their peers and parents to solve tasks and assessments. To the question of how a parent can help their child with online education, We received quite uniform answers for lockdown period. The question concerned not only education itself, but also mental, social assistance to keep in touch with peers, friends, and family. Almost all parents emphasized conversations, more attention. High school students and upper school parents tried to capture the attention of teenagers with meaningful engagement, incorporating more outdoor exercise, preferably outside the yard. Several people played board games at home, they also played card games. Many parents reported that at first this surreal situation brought the tight family closer together, but over time the children became more and more frustrated and demotivated.

For schoolchildren between 6-10 years, the parenting experience is very disheartening. Most said the children found it very difficult to cope with being at home, being confined and having almost no opportunity to move. In the secondary school age, the demotivation and depression became quite worrisome, as they had to stay home for the longer period and for months, they didn't even know when they could go back to the offline space. Fortunately, the gyms opened in the second part of the closure and students who played sports regularly before or signed up for clubs had been able to walk out of their homes and met their peers and friends in the afternoons. At this age, social activities are very important from the children' development perspective. The below table shows the summary of the answers from parent support and barriers perspective.

Age group	Socialization, sports facilities	Effects caused by confinement	Supports by parents	Parental barriers
6-10	almost nothing sports in case of private garden telephone, online contact with classmates	boredom, depression, demotivation, confinement, inertia	tutoring teacher if the parent cannot study with the child conversation development games	continuous work more attention more patience and understanding nutrition attention extra cost for the parent
11-14	online aerobics, youtube dances, online contact with friends	lameness, depression, boredom, demotivation	card, board game constant attention and conversation with the children	
15-18	treadmill, dumbbell kit, aerobics - indoor sport activities connecting with online friends	depression, turning into oneself - lack of friends, joint programs	lots of conversation cooperation, family, listening to each other board game	

Figure 3: Parent support and barriers perspective . Source: authoring

The start of the online education was a huge challenge for schools, pupils, and teachers. The teachers tried their best to provide the right quality online education and We are convinced that they did not receive adequate support and training at first from the government. All students and teachers had to have the appropriate technical conditions for distance learning e.g. internet, computer, knowledge of programs. According to statements the 20% of Hungarian students did not even had access to digital distance learning, which further increased inequalities among students.

We think that is a false statement, that the today's children are already born with laptops and phones in their hands, and they do not need help with the support of technical means. There are serious privacy and security risks, especially at a younger age by using the internet without limits and controls. We can hear about many frauds on the net what the younger generation cannot avoid. I asked if the parents had experienced any abuse, but they didn't report anything other than unlicensed shopping or phone calls.

Zoom or messenger were mainly the online platform that students used during their online education. Teachers studied the usage of zoom during their lessons in real life, so it is questionable how much technical help they were able to give to students. It is important to mention that videos and pictures could also be made during the online sessions, which they could even share among themselves. Teachers should have only been used for educational purposes, paying attention to personal data, not published, not shared with others, not stored longer than necessary.

In our opinion, educational institutions have outperformed the unexpected situation. They tried to build the technical and methodological conditions of digital education, it is feared that they could not pay proper attention to privacy aspects, even they could not draw students' attention to possible internet abuse.

The primary task of the school in such a situation is to ensure that all members of their teachers are properly informed about the data protection rules and education on the use of digital tools. Our own experience is that with an aging teaching society, this is already difficult.

5. Summary of our research

Overall, the expectations of online education did not meet the technical and quality readiness of students and teachers based on the parents' opinion. Support is needed in every group age to educate our children and keep the kids' mental and physical condition. Parents mentioned various sport activities, they suggested outside and inside the house as well. Children needed a lot of open conversations, especially when they were desperate because they couldn't see the end of confinement. Parents had to support their children with vary, healthy eating, as they should solve the whole day feeding from home. Not only the meals were important aspect but the sufficient time of sleeping as well. Some parents mentioned that their children liked to chat, speak, play long hours at night and they had to control them to get the right number of hours sleep.

Parents mentioned that the closure period was hard for them as well to be patient and calm with their children, especially in teenager age. They tried to give option to keep friends and offer opportunities to build social environment. Some parents lost their job temporary or permanently during this period so managing their children online life was challenging for them. The waited the support of the school and/or teacher, but it was not always enough to get the result smoothly. Online learning might have given extra cost for the families not only with the technical and internet equipment's, but with extra time and support to their children education.

Learning in the online area reinforced rapidly the lack of conflict management of students and the lack of friendship. The stress of life and learning remained at home, so it affected the family.

Children became unmotivated and their creativity reduced a lot. They could not concentrate for a longer period, especially the younger generation.
Parents were partners in helping their children, but sometimes the way was not proper, as they were manipulated by their children by asking support just immediately before a test or in case of homework writing. Students and parents got fake picture of their performance, that might have caused further problem with their further education.
Our opinion, that parents should direct their children into increase their creativity, growth their knowledge with realistic plans and regular exercises. Internet, technical platforms are not only for play and chat, but we also need to move the young generation (in case it is needed) in the right direction of media consumption. They should use it for something that creates value. This Z generation is no longer just a media consumer, but also a creator as well. Still parents should control the children's media consumptions.

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Corporate Education in Hungary

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Abstract

In our research we looked at corporate coaching goals and training based on in-depth interviews with experts. This involved expert interviews with 40 corporate managers. The focus of our research was on consulting firms, including medium-sized enterprises. The interviews were structured and assessed according to a five-point system. These are: age of managers (by generation), hierarchical structure, corporate culture, internal turnover. The focus of the research is on the issue of corporate education in firms trading in corporate value. The results are used to make recommendations for the development of corporate training in the sector.

Keywords: Education, coaching, training, generation

1. Introduction

Our research so far has given us the greatest insight into the importance of balancing not only the physical but also the mental world of both the boss and the employee. We asked ourselves a few questions. What do we need to do to allow our creativity and perseverance to soar in our work, not only to find the best job for ourselves but also to ensure that the workplace has the right workforce and thus runs smoothly in the digital world (Garai-Fodor et al, 2022; Csiszárik-Kocsir et al, 2016; Csiszárik-Kocsir, 2022; 2023). Which are the main competences (Garai-Fodor, 2022; 2023; Varga et al, 2022; Varga, 2021; Mizser et al, 2022). But are companies investing time, energy, and money to help their own operations by developing their workforce? Have they even seen the parallel that continuous improvement of workers can increase their effectiveness and the profitability of the company? These questions were explored to understand the role corporate training plays from the perspective of consultancies, and to evaluate the importance of team building activities by the very companies that trade on human capital values. In our research, we looked at the concept of training and its types. Within the framework of the primary research, we present, through expert interviews with 40 coaches, their approach to this problem and how they solve it. On this basis, we draw our conclusions and findings.

2. Literature Review

2.1. Training

A group method of skill development, usually in small groups (5-6 people), around a narrow topic. These sessions are led and facilitated by a trained leader or trainer. The aim is to develop a specific

skill, alongside self and peer learning and personal development. The most common topics are self-awareness, peer awareness, communication, group development, problem solving and cooperation (Adams, 2022).

- learning to do parts of the action;
- coordinating and integrating partial actions into a smoothly rolling whole action;
- abandoning unnecessary movement and effort;
- reduction of external control;
- mastery of variants of operations and
- a shift to continuous independent work.

2.2.History

We believe that in order to understand the concept of corporate training, we must first understand its history. To do so, we need to look back to the ancient Greeks, where we might first mention, for example, the peripatetic school of Aristotle (similar to today's T-groups/training groups) or the youth of Socrates, who surrounded him in his daily life, thus observing the art of eloquence and argumentation. We can consider all this as the basis of today's training methods, but the most similar groups for behaviour change can be observed in the early 1900s. (Timonen & Ruokamo, 2021) According to Erika Juhász (2009), we can consider Kurt Lewin as the father of training, creating the T-group mentioned above, Carl Rogers and Abraham Maslow, who created their encounter groups, which used the feelings and interactions of group members to facilitate self-discovery without a specific theme (Juhász, 2009)

2.3.Groupings

As already mentioned, initially the target groups for the training were salespeople and the aim was to achieve effective sales. Today, training is given to everyone and to all units (not just within a particular company) and the aim is no longer just to promote sales, but to increase the productivity of the company and to increase the effectiveness of the individual/group (Viktor & Reicher, 2020B).

2.3.1. By time use

The first type is the longer-term training, where participants meet several times at the same fixed time over a longer period. In this case, the training can last for weeks. The next type, distinguished by the use of time, is the multi-day training, when the training location is away from both the workplace and the home (Shams, & Law, 2022). This is one of the most popular forms of training in our country today, usually lasting 2-3 days. (Fodor & Popovics, 2022) The third type is the so-called marathon or continuous interval training group. This time interval can range from 12 hours to several days, in which often participants even skip sleep to maintain continuity. This type of training is not so well-known in our country. (Fodor,& Popovics,2022)

2.3.2. By purpose

The training courses could be grouped endlessly according to their purpose. But the purpose of the

training is determined by the person who needs the training, be it a company or an individual. There is no activity, knowledge or skill for which we cannot organise training. In our country, there are eight most common groupings according to the (Csercsa et al., 2021) (i) Leadership training; (ii) Communication training: the aim is for participants to find ways of expressing themselves effectively and confidently; (iii) Team-building training: this type of training enables participants to learn better and more effective cooperation techniques and teamwork, to get to know each other better and thus become a better team in which they can solve problems and perform their tasks more easily; (iv) Self-awareness training: in these trainings, individuals can get to know their inner selves more accurately, so that they can improve in all other areas as well, such as improving communication, self-assertion, building and maintaining social relationships and achieving different goals; (v) Time management training; (vi) Stress management training, which provides theoretical and practical knowledge to help you deal with everyday stressful situations; (vii) Negotiation training: this provides a comprehensive knowledge and understanding of negotiation techniques, as well as develops negotiation communication techniques and helps to understand non-verbal communication; Finally, (viii) Conflict management training.

2.3.3. Grouping by location

Training can also be grouped according to where it is organised. Many things can influence the place of organization: the time, the purpose, and of course, the financial possibilities. Offices designed for corporate training have the necessary space, technical equipment, and other facilities. The rooms can be easily adapted to different tasks. Off-site training rooms: More and more hotels and hotels are setting up conference and training facilities inside their buildings. Management and the employees often choose hotels, restaurants, conference halls, etc. It is important to know in advance what environmental and technical conditions the location has for the training, as the practical tasks are greatly influenced by the environmental conditions. (Fodor,2022) Outdoor training is usually off the city or town premises: More and more training sessions are being organised in forests, in boarding houses, or as part of a forest excursion (Viktor et al., 2020). The participant's attention is completely focused on the training and they are dependent on each other. This develops group cooperation and communication and also makes many problems between groups or within groups easily identifiable. (Kemendi et al., 2021).

2.3.4. Varieties

Typically, training courses can be classified into five types, according to how many of the features are implemented in the course of a particular training or training course. Thus, we can talk about basic training, full training, video training and blended training (Noll et al., 2021)

2.3.5. The basic training

In these training sessions, the exercises are performed without recording and are analysed and evaluated (feedback) on the basis of memory. The discussion and analysis take place immediately after the exercise, when the subjects give their opinion on the solution and the lessons learned from memory and also make further suggestions.(Fodor et al., 202

2.3.6. Full Training

It includes all the elements of the training processes, so they require that the exercises are recorded, either visually or audibly (but at least audibly), so that they can be recalled in their full, detailed form at any time. These elements are: (Atkinson et al., 2021)

- Processing knowledge
- Application of knowledge in practice
- analysis-evaluation based on feedback
- personality exploration-development.

2.3.7. Videotraining

It could also be classified as a sub-genre of full training, as it is a complex intensive process that combines all the elements of the training process and makes it complete. The processing of theoretical knowledge is tailored to the participants and the workplace and builds on the knowledge and experience of the students (Pianta et al), (Viktor & Szeghegyi, 2022) The analysis and evaluation of the practical activities are based on their objective recall, thus showing the actor the traits he/she had at the beginning and the evolution and development he/she has undergone at the end of the practices. A fundamental feature of video training is that each exercise is recorded so that the whole exercise can be reviewed, either in its entirety or in detail. The video feedback gives everyone the opportunity to see themselves in a situation modeling their daily work (and other) situation, from the outside, as they are known to their partners and peers. It is important for the individual, whatever his or her form of work and job, to have feedback on how others see him or her from the outside, on his or her behaviour and communication, and on his or her advantages and disadvantages. This gives very good feedback on what it is that he needs to change and what things will help them to move forward. (Noll et al., 2021) It is in this feedback that the so-called 'self-confrontation', the confrontation with oneself, occurs. Here, however, it should be ensured that the viewer can accept, process, and identify with the image of him/herself that he/she has received while watching the video. Usually, there are differences between the perceived and the real appearance, and the feedback captures the realistic image of these differences in the actor. Video-training exercises must take this into account, and progressivity must be respected in terms of both quantity and quality.(hamza et al., 2022) The quality of personality and activity can only be developed if each person carries out a continuous comparison of his or her own actions and identifies the positive and negative aspects, and determines, on the basis of his or her own standards, what he or she needs to improve, what or what the person needs to do differently, what is an advantage or disadvantage for the person. Of course, this not only helps the individual to process and learn but also helps the other participants. The analysis that takes place here has a profound impact on both the actors and their peers. A positive or negative "pattern" in the intimate setting of the training can also be very powerful. "It can be said that the participants themselves shape and mould their personalities through continuous feedback" (Chidir et al., 2021).

2.4. The coaching process

The most widely accepted process model for the coaching process to date is the so-called GROW model. The model was originally developed by Graham Alexander in the 1980s and adapted for business coaching by John Whitmore (Kelló, 2014):

1. Here, goal setting is the objective and the formulation of the desired vision. It is important to note that the coach must remain in a supportive role here, he/she cannot control the goal setting, as this is the task of the participant.
2. Reality. The next step is to assess the current situation and establish a situational picture of the starting point.
3. Options. Identification of the options that will lead to the defined goal.
4. Wrap-up (What will you do?) - action.

3. Material and method

For our research, we interviewed 40 consultancy training companies that mainly focus on team building. The in-depth interviews were conducted from 10.03.2022 to 10.08.2022. The in-depth interview questionnaire consisted of structured questions. The interview subject's' firm characteristics are the following:

1.Figure Structure of consultancy firms, Source own research

Size (Persons)	Revenue (Million HUF)	Area of advice
5-20 000	10-6571	Banking sector, SMEs

The first question we asked the coaches was to explain what they meant by training. They were almost unanimous in saying that training should be looked at as a market, product, and service capability to understand the key strategic tasks.
In their opinion, corporate training can greatly help a company's development. Successful training help employees to cope psychologically, thus enhancing their performance. Team building, has a big impact, as how employees get along with each other plays a big role in achieving company goals. Training sessions can help to build understanding between participants and to help or share experiences in different work processes. It was important to note that corporate training can be very good at improving communication, both between employees and with management. When a properly communicative team works together, there is better understanding and effectiveness. Versatility is a feature, as training can be organized for a company on a myriad of topics. It depends on what the company's real objectives are and whether you want to train individually (coaching) or as a team.
It is considered important that the trainer or coach is fully prepared for the training, as this would not be profitable for him or for the company hosting the training. Although they feel that the profession has become very diluted due to the many certificate training courses and that prices often do not reflect quality if the company does not receive the right training or education.
They believe that inadequately delivered corporate training has many weaknesses, which are multi-dimensional. One such weakness is the inability of the trainer to devote sufficient time to or develop a person in a focused way because of the large number of participants. In addition, if the company has a large number of employees, the training sessions have to be broken up. This can multiply costs, as there is more than one trainer to employ, or it may be that several training sessions can run in parallel at the same time. There are also often training courses where attendance is compulsory. The risk here, according to them, is that there is no independent

interest on the part of the employees, so the company does not invest in it either, as it sees no point, at most, it is only carrying out the mandatory training, so there is no positive impact of the training.

According to the coaches, the aforementioned reason is that the participants do not attend the training on their own initiative, which is not only a weakness but can also be a risk. Not only does it not bring any positive benefits for the company, but it may also have a negative impact on production and profitability because participants will not behave as expected out of defiance. During the training, the trainer may not be able to handle a conflict properly, so the participant may experience the training as a negative, or even a negative relationship may develop between two people because of a poorly solved problem, which may not be good for the efficient functioning of the company.

According to them, there is a lot of potential in training, which is a major barrier for companies, especially where management and organizational structures are not changing and evolving. But taking advantage of this can open up new areas of interest for employees, and they can be encouraged to learn new methods. These can provide a big efficiency boost for the company. Training can introduce new forms of learning or perhaps work facilitation tasks that take the burden off workers. During the training, there may be opportunities to build up different contacts, in any field (e.g. a venue; an invited speaker; etc.)

During the in-depth interview, the coaches specifically stressed that it is mainly multinational companies and smaller companies who, due to tendering obligations, can afford to spend on training and implement a post-performance appraisal training program every year. However, according to the interviewees' experience, the SME sector is already starting to make a move in this area. In addition to these, he mentioned training funded by EU grants, mainly under GINOP and EFOP. During our interview, I also gained insight into the qualities a trainer should have. In addition to empathy, the ability to work together and flexibility, professional experience, and what you have learned on the job is also very important. According to Nóra Róbert, personal and professional development is not only up to the participants, but the participants also take home from the training as much as they want to take in, as much as they are open to. The trainer can give the participants as much as he or she can from his or her own knowledge and self-awareness. In their experience, training companies approach the company's HR manager, who is sent an introduction with a list of references, followed by a personal introduction. Trainers and training companies with whom they have established a good relationship are invited by the company. Training companies are strongly advised to keep up their sales efforts, as companies are also looking for new topics and training courses, and after about 3 years, there is usually a change. After the inquiries, the training courses are tailored to the company. In their opinion, trainers who can be credible are those who agree in advance with the client on the objectives and the paths to achieve them, thus designing the training that is right for the company. Digitalization is gaining ground, so they are also keen to include it in their training programs, but the coaches we interviewed are specifically focused on group training, so they introduced us to it. They also break down larger groups into smaller groups, in which participants are asked to complete and perform set situations that will help them to be successful employees within the company. Effectiveness is multiplied when individual people in the team building process come together as a team and work in a mutually supportive way. At the end of the training sessions, they also owe the companies feedback on their effectiveness. This is the so-called follow-up and it is definitely worth doing, giving feedback to the client. This is also good for them as it builds trust and helps them to plan the next steps. For the client, feedback is also important so that they can decide on future training. The participants also owe feedback to the trainers and to their company. In team

building, where up to a hundred people are involved, the company surveys the participants internally through an online questionnaire. As a new method in the largest IT company, the evaluation can also be done on the intranet interface of the training palette. According to the coaches, companies that spend money on this are more resilient to staff shortages within their own departments and more responsive to market changes.

4. Conclusion

The research explores a very important question. How involved are the firms that stimulate innovation in corporate training. Our research identified 3 very important findings. Most of the companies that operate in human resources only use tender funds for employee development. In other words, they try to recruit employees who are qualified in this field. Here a distinction is made between multinationals and the SME sector. While the multinationals have only limited but basic training, the SME sector does not even show any signs of this, except in the case of tenders.

Secondly, they believe, and experience shows, that there is a great need for training. It is essential for a company to address not only the tangible work of its employees, but also their mental world, for example by helping them to develop self-awareness, in order to function properly. In summary, employee development serves organisational goals and opens up individual career opportunities for people. This type of workforce development is in the mutual interest of both parties, as it allows both to gain a high degree of cooperation.

According to the coaches, the following values are upheld in companies trading in human resources: (before covid)

1. profit
2. professional success
3. a good workplace
4. internal training
5. trainings

According to the coaches, the following values are upheld in companies trading in human resources: (after covid)

1. profit
2. retention
3. professional success
4. good workplace
5. internal training
6. Training

As the research shows, these companies have not invested in workforce development until covid. Then, due to the subsequent shortage of staff and the shrinking of the profession, they had to adapt their internal promotion and training systems, as it is not easy to find the right recruits. Whereas in the past 65% of recruits were external recruits, now it is more like 10-20% because there is no supply on the market, even if there is a person who does not fit the profile or does not have the qualifications.

Companies still consider training (coaching) in this area unnecessary, but as they have no other choice they are forced to train their own people and even smaller companies are forced to spend money on this. Our research has led us to these conclusions.

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The impact of investments in the defense industry on local economies

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Abstract

The defense industry, beyond its crucial function in national security, has a significant role in the area's economic growth and greatly affects the whole national industry during both wartime and peacetime. The defense industry participates in manufacturing civilian, military, aerospace, and defense equipment, has an essential role in globalization, education, development of global infrastructure, and international trade, and consequently provides highly skilled jobs, creates income, and reduces the unemployment rate. As a consequence of the current geopolitical circumstances, the industry is experiencing an increase in its demand, trade, and production globally which justifies the research on this topic. The defense industry gains a significant amount of government funds and civilian investments that have economic, strategic, and also political reasons to improve the country's ability to defend its national interests against potential threats, strengthen diplomatic relationships and establish strategic cooperation. This research aims to explore the aspects of local economies that relish the advantages of the growing defense industry and also to study the factors that are being affected unfavorably. This exploratory research approaches the problem with a qualitative method, the data was collected through in-depth interviews and analyzed with content analysis.

Keywords: Defense Industry; Defense Investment; Economic Growth; International Trade

1. Introduction

The end of the Cold War fundamentally changed the global defense industry and initiated comprehensive globalization in this field. The governments reduced their participation in the industry, and the high demand for mass-produced and conventionally applied defense equipment decreased. As a consequence, nations began to reduce protectionism to provide optimal circumstances for international collaborations in the defense industry, that not only lead to a more competitive and sustainable industry but also laid the foundations for long-term strategic cooperation between nations. The global aspirations for collaborations in the industry for R&D&I, education, manufacturing, and assembling, provided an opportunity for developing countries to participate in the industry besides the big defense manufacturing powers. With the reduced protectionism and lowered entry barriers, states created conditions for a significant amount of foreign capital to flow into the local industry.

Following the occurred changes in the defense industry, private supply and demand appeared on the market. While state companies generally focus on defense equipment that has been used for years or even decades, private defense companies show a willingness to perform R&D&I activities and spread more effective novelties on the market. Today, in most nations the outstanding innovations of the industry are related to the private defense sector with civil research, development, and education (Cheung, 2021). For large companies that have been mass-producing for years, it's not profitable to respond to the unique demand that appears on the market, but private companies can profitably serve market niches with their innovative products in the sight of digitalization (Garai-Fodor, 2022; 2023; Csiszárik-Kocsir – Varga, 2023; Varga – Csiszárik-Kocsir, 2023; Varga et al., 2022; Garai-Fodor et al., 2022).

The defense industry, beyond its crucial function in national security, has a significant role in the state's economic growth and greatly affects the whole national industry. It promotes the local economy, education, and healthcare and employs a wide range of employees. It also supports the development of the local infrastructure. Defense export strengthens international diplomatic relationships, creates new opportunities for cooperation, and builds allies. It also strengthens the state's security, regional and global political position, which can prevent involvement in an armed conflict. The defense industry also has high business potential and can produce a very high profit.

The recent geopolitical circumstances justify the research on this topic, as it creates a higher demand for defense equipment, transforms the global system of allies, and has a stimulating effect on innovations. This paper investigates the problem from an economic point of view. The results provide a comprehensive picture of the economic factors, that are most affected by the local defense industry. This research aims to explore the aspects of local economies that relish the advantages of the growing defense industry and also to study the factors that are being affected unfavorably.

2. Literature review

From an economic point of view, defense investments generate numerous positive impacts on labor, capital, economic growth, and also the efficient use of resources in the economic sector, at the national level, that is favorable to all citizens (Lobont et al., 2019). Despite that, there is no agreement among scholars, on whether defense spending is beneficial or detrimental to the nation's economic growth (Azam, 2020; Yildirim & Sezgin, 2002), the relationship between defense expenditures and economic growth is an important and controversial topic among the researchers, and has attracted the interest of many economists (Khalid & Razaq, 2015; Ali & Ather, 2014). Even though there are a variety of studies, the results concerning the relationship between the defense industry and economic growth are heterogenous (Yildirim & Sezgin, 2002). Understanding the relationship between defense investment and the local economy is important for decision-makers because it impacts several macroeconomic indicators, such as economic development and productivity, investments, unemployment, or other variables reflecting the well-being of the society, as well as the monetary system (Lobont et al., 2019).

2.1. The benefits of the national defense industry

Defense is a high-tech industry that includes the manufacturing of civil, military, aerospace, and defense equipment, and plays an important role in the protection of citizens, ensuring domestic security, and exploring space (Wang et al., 2018). The defense industry is economically important

and has direct and indirect impacts on a country's external and internal security postures (Pamp et al., 2018). The industry also has a crucial role in a nation's sustainable economic growth, in infrastructure development, provides employment, supports education, healthcare and stimulates international trade (Briones- Peñalver et al., 2020; Lobont et al., 2019; Wang et al., 2018). The defense industry requires various critical infrastructures, that includes production facilities, transport networks involving roads, rails, and airports, water systems, electric systems, communication systems, schools, education centers, and hospitals (Stanford et al., 2022). The industry generates employment opportunities for unemployed people (Ali & Ather, 2014), employing a wide range of personnel from engineers to manual workers and also individuals who are employed in offices (Stroup & Heckelman, 2001). The defense system has a unique health system that recruits and trains its own medical staff, delivering quality healthcare to a diverse population, includes maintaining peacetime healthcare delivery capacity while ensuring the deployment readiness of active forces, deploying, establishing, and operating deployed healthcare facilities to provide the necessary health service support for wartime, stability, peacekeeping, and humanitarian assistance operations (Bastian, 2017). Defense investment promotes national industry, directly affects national security, the political stability (Lin & Wang, 2019), and also represents an instrument for public policies with a multiplier effect on the real economy, especially in creating social infrastructure and other forms of public goods (Lobont et al., 2019).

As a consequence of the inconstant geopolitical environment, governmental and also civil defense sectors invest more into defense, which stimulates economic growth through improving the application, employment, and aggregate demand in the presence of spare capacity, increases capital utilization, and allows countries to export strategically important equipment while making strategic allies (Xu et al., 2022; Yakovlev, 2007). The global defense industry is characterized by a high level of aspiration for international collaborations that provides a sustainable and more competitive approach and ensure opportunity for developing countries to attend the defense market. Before the end of the Cold War era, the local defense industry had been bounded by national borders, but as a consequence of the increasing aspiration for multinational defense collaboration, emerging of transnational networks, and an increased level of cooperation between defense firms involving development, co-production, mergers, acquisitions, partnerships, and joint ventures expanding beyond borders (Cheung, 2021), it has become a critical success factor for defense companies to find a mutually beneficial alliance partner (Wang et al., 2018). These conditions provide an opportunity for less industrialized nations to develop their own industry, and social infrastructure, and also enhance human capital that is likely to contribute to future economic growth (Yakovlev, 2007). Nevertheless, there is an intense discussion among scholars on this matter, whether the benefits accrued by the globalization of the defense industry outweigh the risk of national dependence on foreign suppliers (Calcara & Simón, 2021).

In the recent unpredictable geopolitical environment, the local defense industry became a more important area of public diplomacy (Harutyunyan & Davtyan, 2019), because provides a tool to gain international long-term relationships, allies, and other economic advantages in a peaceful manner (Muthana, 2011). A country that exports strategically important defense equipment, besides its financial advantages, also strengthen its regional, geostrategic and global political positions (Harutyunyan & Davtyan, 2019), and also increases foreign exchange reserves (Azam & Feng, 2017). Defense production and export also promote the lobby opportunities of the state when big transactions are being implemented, thus increasing political influence and political rating in the global community (Terziev & Nichev, 2017). States use defense equipment production and

export to ensure the country's security on the global stage (Pamp et al., 2018). Countries, that have a network of alliances in international defense trade are less likely to go into an interstate war because these countries are economically and politically stable, thus peaceful and less vulnerable to attack, and also have less motive to attack an ally (Jackson & Nei, 2015). Scholars argue that a high level of government funding may negatively impact economic growth, but production and trade of defense equipment produce extremely high profits, for this reason, higher defense spending has a less destructive impact on the economy if the country is exporting these products (Khalid & Razaq, 2015; Yakovlev, 2007).

The national defense industry is not only vital due to its role in national security and economic growth, but also because of its leading position in cutting-edge technologies and for the reason that it heavily promotes R&D activities and education (Xu et al., 2022). Within the border of NATO members, defense education is being developed under national legislation and following NATO directives (Hristov, 2018). The industry requires a wide range of educated workforce, from professional engineers with outstanding knowledge to manual workers, which has a greater impact on economic growth in countries with relatively higher levels of adult male education attainment (Stroup & Heckelman, 2001). Competitiveness in this field no longer matches with size or power, which means education, R&D activities, and speed of movement matter, so smaller participants in the market can potentially have success (Frunzeti et al., 2021). Defense engineering is not only providing mobility and contra-mobility in a static military setting but also controlling the environment, providing safety for civilian and military personnel in complex surroundings (Dado et al., 2019).

2.2. The questionable positive impacts of the national defense industry

Increasing defense investment does not mean that it linearly impacts economic growth with expenditures. The national development, manufacturing, and trading of defense equipment affect the economic growth through several different channels in a non-linear way, indicating that economic growth increases with higher defense spending when a state faces higher national threats and that economic growth decreases with higher defense spending when the state experiences high levels of corruption (Aizenman & Glick, 2003). According to this statement, lower defense expenditures would have a more positive effect on the state's economic growth. Stroup and Heckelman (2001) also studied the non-linear nature of the relation between the defense industry and economic growth, stating that lower levels of defense spending increase economic growth but higher levels of defense spending decrease growth. At low levels of defense spending, the net effect on growth is positive, but after a certain maximum point, growth declines as defense expenditures continue to expand and may even become negative (Stroup & Heckelman, 2001).

The classical school argues that a high level of governmental defense investment has a negative impact on the nation's economic growth (Lin & Wang, 2019). According to the empirical tests, defense spending has negative consequences on the development of the economy by reducing capital investments from other sectors (Lobont et al., 2019), because it may shift resources away from the private sector, and crowd out public and private investments in the social sector (Xu et al., 2022). A high level of governmental defense investment may increase external debt (Azam & Feng, 2017). When a government invests more in the defense industry from the limited national budget, it must be financed by budget cuts in other public fields, higher taxes, higher debt, or some combination of these methods, but the negative impact of the high level of defense expenditures

can be reduced if the country exports defense equipment (Khalid & Razaq, 2015; Yakovlev, 2007). The illegal trade of defense equipment is also a huge problem, because it creates even greater profits, for the reason that such trade is mainly conducted with customers who cannot buy equipment legally, as it is not allowed by the international community, and due to this reason, they are willing to pay more than the real cost of these products (Petreski et al., 2016).
According to Yakovlev (2007), the trend of international collaborations in the industry provides an opportunity for less industrialized nations to develop their own competitive defense industry that contributes to the economic growth of the area. On the contrary, as stated by Azam (2020), the biggest obstacle in the economic system of developing countries is governmental defense investment, because the growth of defense expenditure increases the government debt, therefore reducing public and private capital investment and precluding long-term economic growth.

The development, production, and trade of defense equipment produce extremely high profit, for this reason, nations do not manufacture these products only for their use, but to participate in international trade (Petreski et al., 2016). Some individuals view defense expenditures as a guarantee of peace and security, while others see it as a wasteful enterprise potentially leading to direct military confrontations, however, regardless of one's perspective, the defense industry involves big business opportunities with significant economic consequences worthy of study (Yakovlev, 2007).

3. Materials and Methods

This paper aims to explore the aspects of local economies that relish the advantages of the growing defense industry and the factors that are being affected unfavorably. This study approached the problem from a qualitative perspective and collected data during in-depth interviews. The main strengths of free-flowing semi-structured in-depth interviews are this method allows access to rich personal data, as this extremely versatile technique enables the interviewees to talk about what they think is important and also permits an understanding of the context and motivation of the latter (Morris, 2015).
Ten in-depth interviews were conducted during this research, with individuals from the European Union, who have a great experience in the economic aspect of the defense industry. Each interview lasted thirty minutes, on average. The data were analyzed with qualitative content analysis. Content analysis is an easily accessible, robust method of analyzing qualitative data, that is designed to identify and interpret communication by isolating small pieces of the data that represent concepts and then applying or creating a framework to organize the pieces in a way that can be used to describe or explain a phenomenon (Kleinheksel et al., 2020).

4. Results

This research aims to study the aspects of local economies that relish the advantages of the defense industry and also to study the factors that are being affected unfavorably. This exploratory research approaches the problem with a qualitative method, ten in-depth interviews were conducted, with individuals who have outstanding experience in the defense sector. The interviewees are located in the European Union. The collected data was analyzed with content analysis.

The national defense industry has strategic importance for every country. It promotes the local economy, education, and healthcare and reduces unemployment. Provides safety and infrastructure

for the citizens. The export of strategically important defense equipment strengthens international diplomatic relationships, which creates new opportunities for cooperation in other fields for the affected countries, which contributes to other economic advantages and external capital inflow. It also strengthens the state's security, and regional and global political position, which can prevent involvement in an interstate war. Under uncertain geopolitical circumstances, it has become more important what kind of strategic alliances a state has.

The defense industry has high business potential and can produce a very high profit. On the market, private demand has a prominent role, although the main buyers are still the governments. For the regularized equipment, that is being utilized by armed forces like the military, national guard, police, and border guard for a long time, the demand is always high. Unlike in most industries, in the defense industry, not only the recently utilized or traded supplies are being manufactured. It is also crucial to have reserves, strategic stocks, and supplies for diplomatic offerings. Besides the private demand, civil defense companies with private supply also have an important role in the defense market. Private companies are more willing to invest in R&D and implement new, innovative equipment, than governmental companies, which usually mass-produce the regularized equipment. On the market besides the regularized equipment, there is a rising demand for novel, personalized products. As for the big manufacturer companies it is not profitable to develop new manufacturing technology and recalibrate the machinery to respond to unique demands, this provides a profitable opportunity for the private companies and states with the smaller defense industry. Small- and medium-sized defense companies can profitably serve market niches with their innovative products.

The independence of the defense industry from external suppliers or from other entities is a crucial question for every country from a strategic point of view, although autarky in defense is very expensive, and just a very small number of countries can afford it, this is the reason why international alliances and cooperation are common in this sector. The dependence can appear in lack of professionals, inadequate technology, obsolete machinery, or lack of own extracted raw material. If any of these factors emerge, those have to be replaced outside of the country. For a country, to possess mines to extract raw materials for defense production and also for export is a very favorable strategic position. Mining also employs numerous workers in the area.

The national defense industry contributes to the local development of crucial infrastructure. Because the defense industry is a strategically important entity of the nation, many factors have to be considered when its location is chosen. The components of the defense industry are installed at a location that does not attract the potential offensive’s attention, is easily protectable, not close to the borders, capitals, or other strategically important cities, so it has a great impact on the less-developed areas. The industry has to be located with good access to a transportation network, close to the airport or harbor. If the nation has mines, the factories and warehouses have to be installed close to the extraction point of the raw material. The industry utilizes a high level of energy during production, so it requires a well-developed energy network. Because of the strategic nature of the defense industry, if any of these factors of the infrastructure does not available, it will be installed around the components of the defense industry.

Defense is a knowledge-intensive sector that employs a large number of people, recruits and trains its employees. The industry provides jobs for those companies that contribute to the installation of the factories, warehouses, and in the development of the critical infrastructure. Because these

entities usually being implemented in less-developed areas, it reduces unemployment in underdeveloped regions. The defense industry requires a wide scale of employees, manual workers, engineers, different specialists, and office workers. The industry experiences a shortage of professionals, therefore highly promoting education. As a result of the intense R&D activities in the industry, it provides numerous innovations for all citizens. Dual-use products are appropriate for both civilian and military applications. Some dual-use products are highly regulated, but others such as the internet, the communication network, artificial intelligence, Teflon, aluminum alloy, satellites, and navigation systems shape many aspects of our daily life.

The unfavorable impact of the defense industry on the local economy is it requires a large number of funds, that are withdrawn from other important sectors, although defense can generate a high level of profit. The strategic risk of the industry is that as it serves as a tool for creating favorable international alliances and cooperation, with the transformations of the geopolitical circumstances, an earlier propitious ally may jeopardize the safety of the nation. Despite the defense trade is globally highly regulated, illegal trade is still a flourishing issue. The illegal trade and uncontrolled circulation of defense equipment can toss the manufacturing entities into an unfavorable diplomatic situation if the products are reached by embargoed states or extremist groups. The industry also can be very harmful to the natural environment.

5. Conclusion

According to the findings, the defense industry, beyond its crucial function in national security, has undoubtedly an important role in the local economic growth and greatly affects the whole national industry during both wartime and peacetime. After the end of the Cold War era, nations endeavored to create optimal circumstances for international collaborations in the defense industry, which enabled them to maintain a competitive and more sustainable industry, and also laid the foundations for long-term strategical cooperation between states. As a consequence of the current geopolitical environment, the defense industry gains a significant amount of governmental and civilian investments that have economic, strategic, and also political reasons. Xu and his co-authors (2022) also concluded in their paper, that the defense industry gains an increasing amount of government funds and civilian investments in the last few years.

In the defense market, the demand is constant for both regularized and also for unique, personalized equipment, therefore it has great business potential and highly profitable industry. Besides the increasing private demand, the governments are the main buyers in the industry, usually with long-term contracts, which reduces the risk of defense investments. The private companies are outstanding in defense innovation, governmental companies mass-manufacture the regularized equipment. This provides opportunities for small and medium-sized businesses to supply market niches that are not profitable for big defense companies.

The national defense industry is a crucial sector of the country, of which independence has strategic importance, although very expensive and only a few countries can sustain it long-term, this is why defense cooperation and alliances are common in the industry. Mines, local extraction, and export of raw-material provide a powerful global position for countries in the industry. The industry also contributes to the local development of infrastructure. Stanford and his co-authors (2022) findings verify the results of this study, that the defense industry requires various critical infrastructures, including production facilities, transport networks involving roads, rails, and airports, water

systems, electrical systems, communication systems, schools, education centers, and hospitals. The location of the industry has to be easily protected and usually established in less-industrialized areas, with the critical infrastructure installed around it, therefore it has a developmental impact on its locations. The defense industry provides jobs for a large scale of employees. As the industry specified by lack-of professionals, it highly promotes education and R&D&I and provides several novel technologies for both military and civilian applications.

The negative impact of the defense industry on the local economy is that it's expensive to maintain and that fund is being withdrawn from other sectors. The environmental disadvantage of the industry is that raw-material extraction, manufacturing, and trading are very harmful to the natural environment. Strategic risks are the possible negative impacts of illegal trading and earlier propitious allies with a decreased international reputation. Petreski (2016) also explained in his paper that the illegal trade of defense equipment is a huge global problem.
The results of this study may provide a deeper understanding for decision-makers on the issue of the relationship between the local economies and defense investments because it has a great impact on several macroeconomic indicators. It also provides useful information for those individuals, who intend to participate in this strategic industry. The limitation of this paper is that the defense industry has economic, strategic, and also political significance, so a plenary picture cannot be provided on this issue from an academic viewpoint.

A future research direction is to investigate the features of the potential locations where the defense industry can be installed. A possible future research line is to explore the advantages of those diplomatic relations that depend on the common defense industry. Also, a possible future research track is to investigate the correlation between the replacement of obsolete defense equipment stocks and the increase of illegal defense equipment trade in that area. The recent issue of the rising raw material and energy prices/lack of raw materials and energy, and its impact on defense equipment manufacturing is also a possible future research direction.

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The inversion of Hungarian sovereign bond yield curves. An empirical analysis of its application in crisis forecasting for the Hungarian economy.

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Abstract

The inversion of the 2- and 10-year United States treasury bond yields has been notoriously accurate in predicting recessions. Empirical evidence to this can be found as early as 1990. So far, an inversion of the yield curve has predicted every single recession in the US economy since 1955. Although there are ample studies on modelling and decomposing yield curves through principal component analysis, and recently, much breakthrough has been made in macro-yield modelling for emerging markets, the field of applying yield curve inversions for macroeconomic forecasting in emerging markets requires more research. Due to a lack of critically acknowledged research on the true relationship between the sovereign bond yield curve and the economy, it is still challenging to explain the extent of the influence of investor sentiment on the dynamics of the yield curve and whether speculation can artificially cause an inversion. Therefore, this paper aims to statistically determine the relationship between the yield curve inversion and GDP growth asymmetry through a Markov switching dynamic regression model. The actuality of the research is also reflected in the current market environment – rising interest rates, rising inflation and as of writing this paper -an inverted yield curve, with 1-5-year bonds outpacing returns on 10-year bonds.

Keywords: Hungarian bonds, Markov Switching dynamic regression model, recession probabilities, yield curve inversion

1. Introduction

To represent the expansions and recessions inherent to the free market, Burns and Mitchell (1946) introduce the concept of the business cycle. The authors ascertain that macroeconomic variables are capable of capturing the state of the business cycle, and therefore, are hypothesized to possess predictive properties. Hamilton (1989) takes the idea further by implementing the Markov regime shifting process into a non-linear model. Other notable works on the subject include Goldfeld and Quandt (1973), where the housing demand and supply functions are modelled through a regime-switching framework. Furthermore, Neftçi (1984) analyzed the asymmetry between the US unemployment rate and the business cycle. Filardo's (1994)

contribution to the application of Markov regime-switching models to economic variables, was relaxing the assumption that the probabilities of regime switching are constant. Nevertheless, despite the novelty, there was hardly any improvement in terms of the symmetry of business cycles and unemployment.

One of the key economic indicators that is closely monitored by policymakers and financial analysts alike is the spread between long-term and short-term sovereign bonds. It is stipulated by Mishkin (1990), that the yield curve bakes in the information about expectations of inflation and interest rates, as a result it has the effect of a Delphi forecast of the monetary policy.

Few studies have dealt with regime shifts in sovereign bond yield spreads. Dai et.al., (2007) and more recently Puglia (2021) have used the Markov switching model and a variation of a probit analysis to forecast recessions with US treasury yield spreads. Bekiros and Avdoulas (2020) conducted the same research for BRICS countries – developing market economies. We were unable to find any evidence to this methodology being applied for Hungarian economic variables, particularly treasury bond yield spreads. For further reference, the terms sovereign bond and treasury bond will be used interchangeably.

Figure 1 presents current yield curve dynamics in Hungary, which point to the fact that investors are not as confident in the short-term as in the long term. Hence, the demand for short-term bonds is low, bringing their yield up and price down, while the demand for bonds with longer duration is incredibly high, suppressing yields and increasing the price. In the latest April dataset, the 10-year yield is 6.86%, while the 3-month yield is 7.06%, which is a difference of 20 basis points. Essentially, investors are willing to accept a smaller payoff for a higher risk, than a higher payoff for a smaller risk, because of uncertainty. If we take into consideration how the yield curve looked like in in February, for instance, we notice that that is about the month, when an inflection point happened - the 10-Year yield was exactly the same as 3-Month yield. Following the terminology, this is considered to be the flattening of the curve. A ‘healthy’ yield curve should be upward sloping. An example of when the yield curve was actually upward-sloping was back in January, marked with blue on the graph. We can see that the lowest yield would have been around 3.5%, while the yield for 15-year bonds would be 5%. The interest rate in January of 2020 was 4%, and it is always more attractive for the investor to hold their money in treasury bonds rather than deposits in a bank.

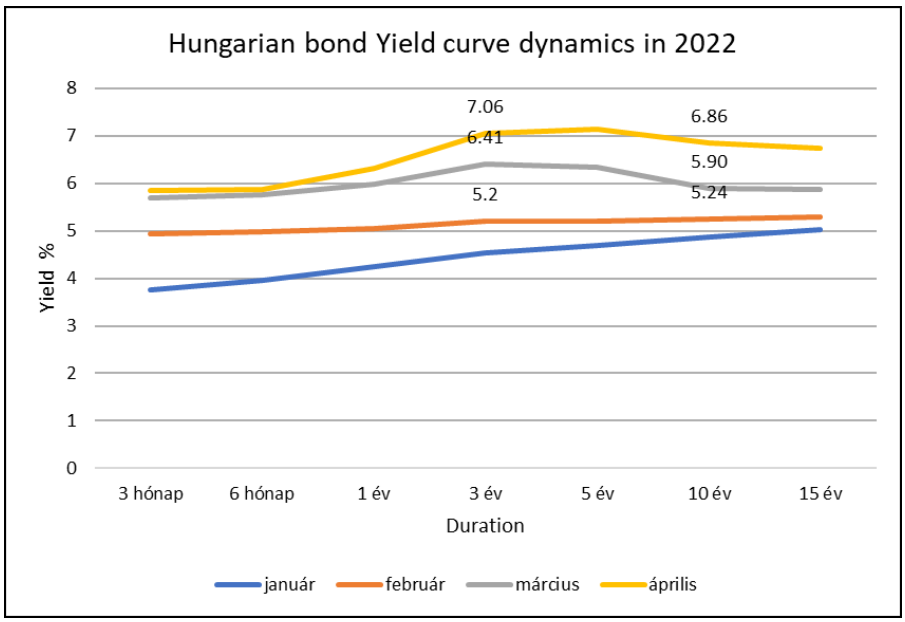

Figure 1 Hungarian sovereign bond Yield curve dynamics in Q1 2022. Source: MNB Compiled by author

The aim of the research is to determine if the spread between the 10 year and 3 month Hungarian treasury bills can be regarded as an efficient crisis predictor through the assessment of the assymentry of the financial variable with Hungarian business cycles measured by OECD. The assessment of the asymmetry is conducted with the Markov switching dynamic regression model that incorporates an exogenous variable into the regression.

The rest of the research is structured the following way. In section two, a literature review is conducted together with a reasoning as to why the choice of this research is specifically sovereign bond yield spreads. Section three details the methodology implemented in the study. Section four combines data and results obtained from the regime switching model. In section five the results are interpreted, and conclusions are drawn from the research.

2. Literature review

Understanding how the macro-economy works is a crucial part of financial literacy and culture in the world of digitalisation (Garai-Fodor et al, 2022; Csiszárik-Kocsir et al, 2016; Csiszárik-Kocsir, 2016; 2022; 2023). The importance of this has been explored in several dimensions in several studies (Garai-Fodor, 2022; 2023; Varga et al, 2022; Varga, 2021). Following the reasoning of Dueker (1997), the yield curve is an upward-sloping economic indicator – this is evident, because the longer the duration of the bond, the higher the risk, therefore, the higher the payoff – yield. From the point of view of interest rates, a higher yield ensures that the opportunity cost of investing the same amount of money in the bank is as small as possible. Slowdown in economic activity, a cooling off in financial markets, lower sales, low unemployment, low interest rates, the chase for yield – are all early signs of the end of a business cycle. Estrella and Hardouvelis (1991) explain the flattening of the yield curve with policy tightening – the result of monetary policy. During these times, the premise of investors is that long

Evidence from Hamilton and Kim's (2002) study shows strong support for the yield curve to be a predictor of GDP. As for evidence in case of European financial variables, we can note that for Germany, Plosser and Rouwenhorst (1994) found term spreads useful in predicting GDP. Switching and dynamic factor models were introduced by Diebold and Rudebusch (1996) and Chauvet (1998).

Markov regime switching models are generally tested for economic variables, such as industrial production index, unemployment rate, construction index, inflation, among others. The literature on the application of Markov regime switching dynamic regression models for financial variables like stock indexes, corporate bond spreads, derivatives and yield spreads has been quite sparse, especially, for Central and Eastern Europe economies.(Viktor& Simon,2021) On one hand, there is ample evidence of the methods success, for instance, Bandholz's (2005) analysis of the industrial production index for Poland and Hungary. Siničáková (2017), having conducted the analysis with the same endogenous variable came to the conclusion that for most economic indicators CEE countries are symmetrical with Euro area business cycles, except Hungary.(Viktor et al.,2021) Synchronization between domestic business cycles and Euro area business cycles has, in fact, been the main research field where the methodology has been applied. Krolzig (2000) improved Hamilton's original work with the multivariate vector error correction model. Like Diebold and Li (2006), Hevia et. al., (2014) implement the Nelson Siegel model and find further support of yield curve dynamics being significant in recession forecasting. (Michelberger & Kemendi,2020) What the latter study reveals, however, is that, notwithstanding the complexity of the Nelson Siegel model, there are other less complicated models which outperform the model proposed by Diebold. In our research, we disregard the effect of zero coupon and other types of bonds on the Hungarian yield curve and proceed with a simple multivariate model.

3. Methodology

A discrete-time Markov chain characterizes the transitioning probabilities of a system from one state to another. Given an unobservable random variable s_t that determines the state of the system at time t, and $s_t = 1..k$, where k is the discrete number of states, the probability of the variable of being in any of the k states, based on a previous value of s_{t-1} is expressed through the conditional probability given by

$$p_{ij} = P(s_t = j | s_{t-1} = 1) \quad (1)$$

The transition probability matrix, therefore, is as follows:

$$P = \begin{bmatrix} p_{11} & \cdots & p_{k1} \\ \vdots & \ddots & \vdots \\ p_{1k} & \cdots & p_{kk} \end{bmatrix} \quad (2)$$

The dynamics of the switching process are controlled by the transition matrix. We follow the assumption that the transition probabilities are constant.

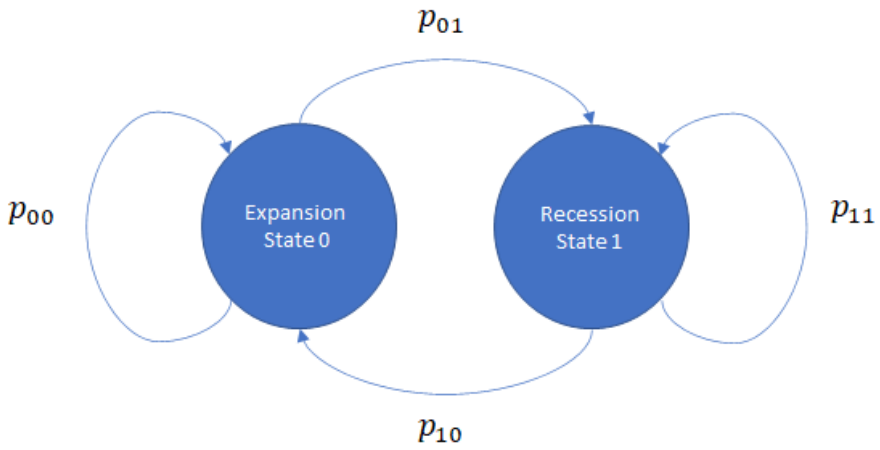

Figure 2 Scheme of the Markov switch with transition probabilities. Source compiled by author

There are a few notable properties of the transition matrix that must be mentioned. Firstly, the sum of an i-th row is 1, as in

$$p_i = \sum_{j=1}^{k} p_{ij} = 1 \tag{3}$$

Secondly, in order to determine the n-th step transition probability of the matrix, it should be multiplied with itself n times.

$$P_n = P^n \tag{4}$$

Finally, extending the second property, given an initial probability distribution of s_t, it is possible to formalize the second property with a state probability distribution using the following notation

$$\pi_t = \pi_0 P^n \tag{5}$$

Where π_0 is the initial probability distribution of s_t.

Having introduced the concept of the Markov chain and state probability distribution, let us now consider the following case of a regime switching regression.

$$\begin{gathered} y_t = \widehat{\mu_{st}} + \varepsilon_t \\ \varepsilon_t \sim N(0, \sigma^2) \end{gathered} \tag{6}$$

Where the unobserved variable is the sum of the modelled mean μ_{st} depending on the state and the residual error ε_t. We introduce a vector of regression coefficients $\hat{\beta}_i$ that depend on the state s_t and link it to another vector of explanatory variables which we can observe, denoted as x_t. The predicted mean can therefore be expressed as

$$\widehat{\mu_{st}} = \widehat{\beta}_\iota x_t \tag{7}$$

By rewriting (6) we get

$$\begin{gathered} y_t = \widehat{\beta}_\iota x_t + \varepsilon_t \\ \varepsilon_t \sim N(0, \sigma^2) \end{gathered} \tag{8}$$

If we define s_t to be moving between two states: 0 and 1, we can formulate the process as:

$$y_t = \beta_1 + \varepsilon_t \quad when\ s_t = 0$$
$$y_t = \beta_2 + \varepsilon_t \quad when\ s_t = 1 \tag{9}$$

Following the notation of Date (2022), the log likelihood is as follows:

$$L\left(\widehat{\beta_\iota}; \sigma^2; P\middle|y\right) = \sum_{t=1}^{n} \ln\left(f(y = y_t)\right) \tag{10}$$

Where L is the likelihood of observing y and $f(y = y_t)$ is the probability density of observing y_t given $\widehat{\beta_\iota}$ and P. The conditional probability density function is

$$f\left(y = y_t\middle|X = x_t; \widehat{\beta_\iota}\right) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{1}{2}\left(\frac{y_t - \widehat{\mu_{st}}}{\sigma}\right)^2} \tag{11}$$

Where X is a vector of regression variables.

The state space model equations are given by

$$GDP\ \%Chng = \{\beta_0 + \beta_1 10Y - 3M\ yield\ + \varepsilon_t\} \tag{12}$$

4. Data and results

To define recessions, we use the binary recession indicator that is based on the OECD indicator retrieved from the St. Louis FED database. 1 stands for periods of recessions and 0 stands for periods of expansions. As for the explaining variable, we use the quarterly Hungarian benchmark treasury bill dataset retrieved from the national bank of Hungary (MNB). The dataset covers Q1-1999 to Q1-2022.There are 93 observations in total. The mean of the spread between the maturities is 0.10. This shows that over the course of 20 years on average the yield curve has been mostly flat. The standard deviation is 1.42 – meaning spreads of over 2.82 should fall over the 5% probability, nevertheless, we can see in Figure 3, for example, that yield spreads (primarily in the negative direction) can occur quite often. The largest positive spread occurred in July of 2017, while the largest negative spread was in 1999.

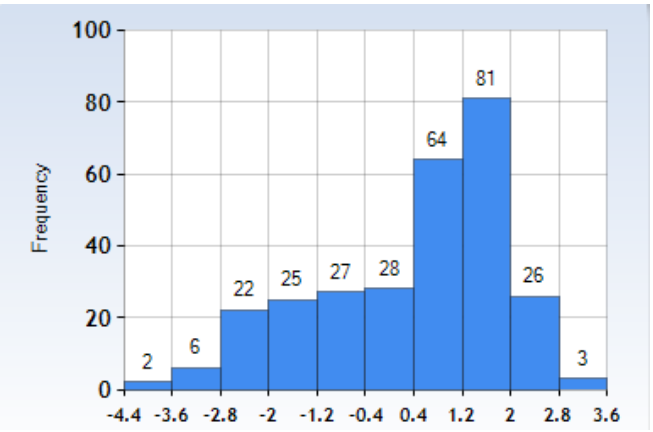

Figure 3 Frequqncy of observed spreads. Source: MNB. Compiled by author

To measure the business cycle, we implement the Hungarian OECD recession index. The start of a recession is defined by two consecutive quarters of negative GDP growth. There were 7

recessions in Hungary in the past 20 years. In 1995, followed by the 1998 recession, caused by the global ripple of Russia defaulting on debt and the crash of the oil market. That was succeeded by the 2001 recession – the American dot-com bubble burst resulted in the contagion of global demand. The 2008 global financial crisis was the longest recession in Hungary so far – totalling 1 year. During this time, short year yields reached up to 12%, however the curve was mostly flat. This was the result of high interest rates set to stabilize inflation dynamics in Hungary. The 2012 recession is connected with the Euro area credit crisis and the 2016 recession was a local Hungarian recession that was a compounding result of weak industrial activity. The shortest recession captured by the OECD business cycle indicator is the 2020 recession caused by the COVID-19 pandemic. As of writing this paper, it can be observed that the yields of various term maturities converge at 6-7 percent, which is supported by Figure 1.

We use the monthly data provided by the national bank of Hungary (MNB) as the dataset for the hidden Markov model.

Before we move further with the results, it is worth pointing out a few observations from Figure 4. The chart shows the historical yield dynamics of bills of different maturities represented with the corresponding dotted lines. The first remark that should be made is that for more than 3 years (2002-2005) short-term bond yields surpassed long-term bond yields. The yield curve was inverted continuously during the better half of the first decade of the millennium. Only in 2009 Q1 can an inflection point be observed. From 2012 to 2021 a healthy upward sloping curve can be traced with relatively high positive spreads.

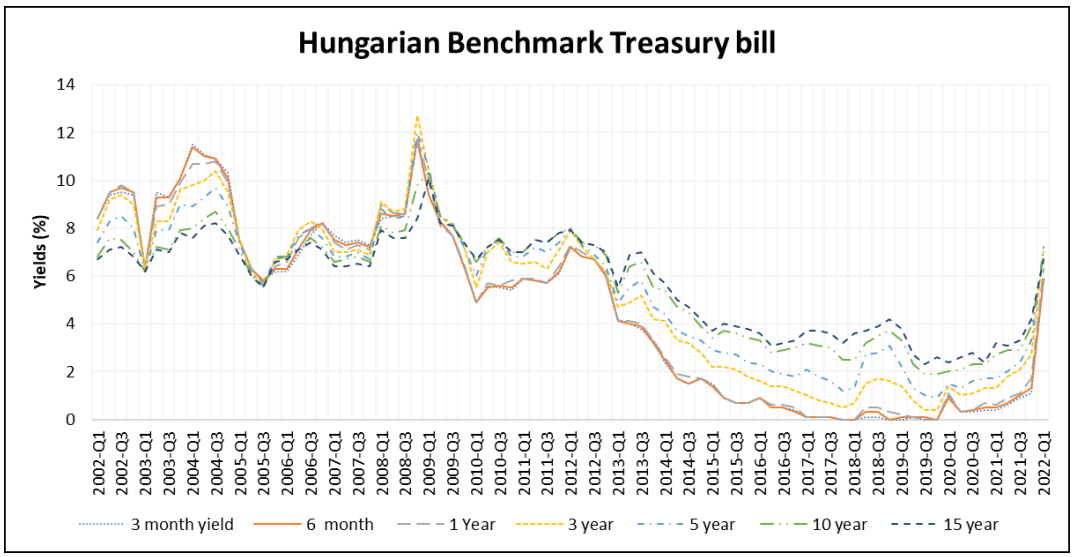

Figure 4 Hungarian benchmark treasury bill historical yields. Source: MNB. Compiled by author

Diebold and Li (2006) propose a more complicated Nelson Siegel model for the Markov switching dynamic regression. The ide is basically the same – two regimes (1 and 0) with a parametrization coefficient that captures the effects of the business cycle.

In Table 1 we present the estimates of the linear Markov-switching dynamic regression model for the 10 year and 3-month yield spreads. The trend is constant, and the variance of the error term switches.

Table 1 Markov regime switching model for 10year and 3-month yield spreads. The explanatory variable is Hungarian GDP. Source: compiled by author

10y-3mo	β_0	β_1	σ^2	P>|z|β_0	P>|z|β_1	P>|z| σ^2	p_{11}	p_{21}
0	4.37	0.00	0.40	0.00	0.97	0.00	0.929	0.061
1	0.62	0.07	21.80	0.38	0.89	0.00		

With the data estimated in Table 1, it is possible to make inferences on the two models for two different regimes.

Regime 1: GDP %Change $= 4.37 + 0.00241 YSpread + 0.40$;

Regime 2: GDP %Change $= 0.6287 + 0.07 YSpread + 21.80$

Keeping in mind that estimating p_{12} and p_{22} would essentially mean subtracting the values of p_{11} and p_{21} from 1 correspondingly, we can work out the transition probability matrix:

$$P = \begin{bmatrix} 0.9294 & 0.0716 \\ 0.0616 & 0.9384 \end{bmatrix}$$

The estimates for the durations of the individual regimes are given below:

Regimes 0 – 14.16 quarters (3 years)

Regime 1 – 16.22 quarters (4 years)

To determine the state space probability of switching to state 1 after state 0, given the initial $\pi_0 = 0.5$, is 0.53. Conversely, the state space probability of switching to state 0 after state 1 is 0.46.

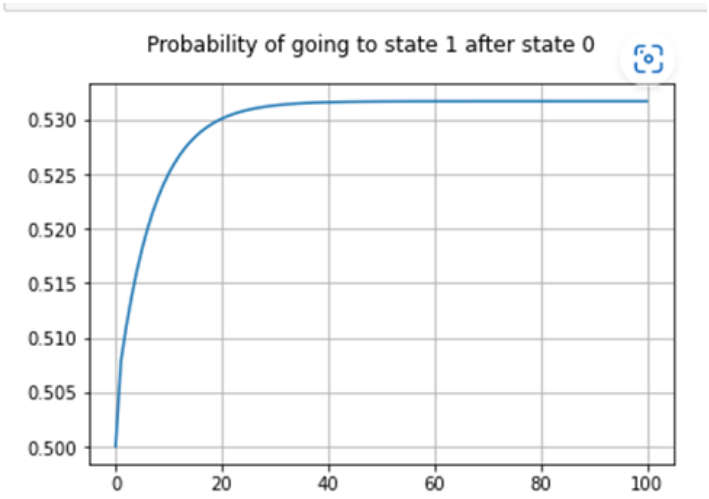

Figure 5 State probability of switching to recession after expansion after 100 iterations. Source: OECD. Compiled by author

Finally, the smoothed and the filtered probabilities of the regime shifts can be plotted against actual Hungarian recessions.

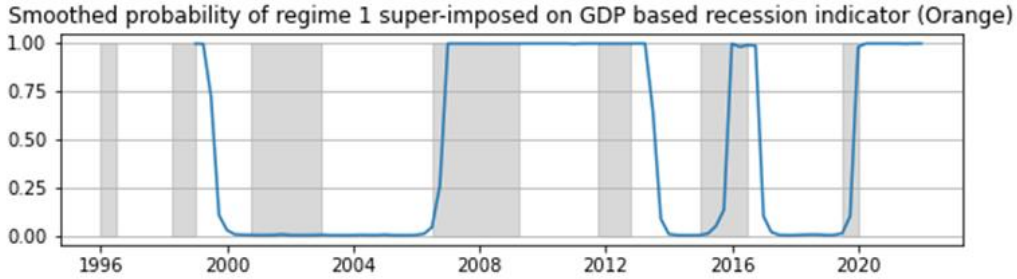

Figure 6 Smoothed probability of recessions based on yield curve spreads superimposed on actual recessions provided by OECD indicator. Source: OECD. Compiled by author

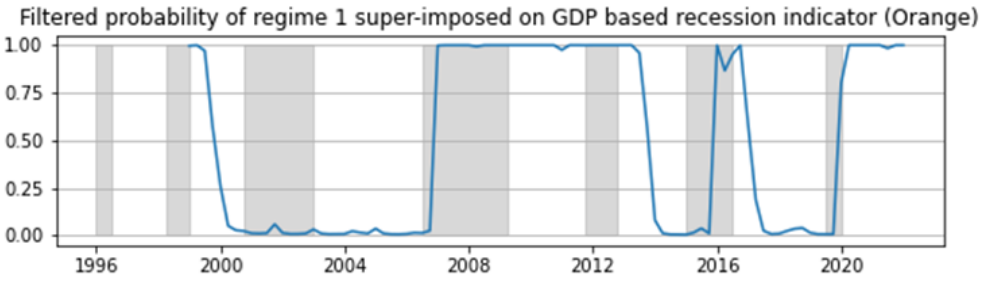

Figure 7 Smoothed probability of recessions based on yield curve spreads superimposed on actual recessions provided by OECD indicator. Source: OECD. Compiled by author

The advantage of the filtered probability is it allows to capture the recession probabilities in greater detail. For instance, ideally, the aim of a similar research might be to establish a threshold beyond which the likelihood of a recession is 100%. Unfortunately, in case of our data we see the

indicator moving discretely between 1 and 0 independently of the smoothed or filtered probability.

Table 2 Table of predicted and actual regimes. Source: OECD. Compiled by author

Actual Regime 1 or 0	0	1	0	1	0	1	0	1	0	1	0
Cycles	1998 - 2001	2001 - 2002	2002 - 2007	2007 - 2009	2009 - 2012	2012 - 2012	2013 - 2016	2016 - 2016	2017 - 2020	2020 - 2020	2020 - 2022
Model	1	0	1	1	0	1	0.5	0.5	1	1	0

To make statistical inferences, it is useful to represent the data in Table 2. 0's and 1's are assigned to expansions and recessions correspondingly and 0.5 is assigned in the model if the indicator captures the given cycle point but at a lag.

5. Discussion and conclusions

The model assumes that regime 0 occur when spreads are positive, and just before a recession it switches to regime 1, when the spreads are negative. In interpreting the chart, it should be noted that the probability of a recession and a signal for an upcoming recession may should not be confused. Figure 7 shows a number of fluctuations in probabilities between 2000 and 2008. Although our model failed to predict the 2001 recession, some spikes of at most 7-10% can be observed in the indicator. The spikes can be attributed to the anomalous spreads between the 10 year and 3-month bills, where the curve had been inverted for the better half of a decade. As a result, the forecasting probability threshold can be determined at around 10%. The asymmetries of the yield spread predictor with the Hungarian business cycles become more evident during the 2008 recession, when the yield curve flattens and later reverses. The indicator fails to capture the brief expansion between 2009 and 2012. The reason for this is the anomalous behaviour of yield spreads producing a positively sloping curve in times of recovery and 5% interest rate. Regime 1 continues after the 2012 recession, while the expansion in the reference business cycle had already begun. The indicator failed to produce the threshold warning signal before the 2016 recession, however a spike in 2019 can be observed, potentially predicting harsher economic conditions going into 2020. The indicator peaked after the recession had passed and remained in regime 1 up until now.

Let us turn to the regime-specific equations. The first notable thing is that the β_1 coefficient in both regimes is near zero. Therefore, the spread between the 10 year and 3 month yield has a limited influence on GDP growth rate. While theoretically, yield spreads should be positive during expansionary periods, in fact evidence shows that the spreads are in fact quite flat. The probability that an expansionary period continues in the economy is 95%, the chance that a recessionary quarter is succeeded by another quarter, where the economy is still in a recession is 94%.

As a possible extension to the model, it is worth exploring the recession probability in 4 regimes. Regime 0 – how the 10 year and 3 months spread behaves during an expansion; regime 1 – how the spread behaves before a recession; regime 2 – how the spread moves during a recession, and

finally, regime 3 – spread dynamics in a recovery. The reasoning for including 2 extra regimes, is that in regime 1, an inversion is most likely, because during recessions, inversions do not occur, as monetary policy raises interest rates to combat inflation. Spreads during expansions – regime 0 are usually the smallest, as investors hunt for yield in a low interest rate environment and low inflationary environment. In regime 3, the spread is usually the greatest with a steep and high yield curve, as this is the period of recovery. Furthermore, the assumption that the initial π_0 value is 0.5 might seem arbitrary. The value basically indicates that the original probability of a recession is about 50% - this assumption might need revision as the long-term average recession probability is 14% (Stephens, 2022). Additional research is required in unveiling what is the 'black box' of the hidden Markov model. The significance of the hidden part of the model needs to be researched further. Lastly, it is important to address the probability of the transition matrix to be constant over time. An extension of this research would be conducting a similar study with variable.This paper has achieved its objectives of producing a recession probability model of the spread between benchmark treasury bills, and we have determined the threshold at which the indicator signals of recessions, which can be drawn at 10%. There exists an asymmetry between the two regimes of the indicators and actual Hungarian business cycles. The indicator captures recession correctly 63% of the time.

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The Macrotheme Review
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Components of Happiness in Hungary in the Light of World Happiness Report

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Abstract

The societies of the developed world are currently mostly made up of people who live in their monotonous everyday lives and have no idea to seriously deal with the question of happiness. Yet the feeling of satisfaction and happiness had a fundamental effect on performance. Based on the assessment of a country's performance, GDP and similar macroeconomic indicators are provided. Purchasing power parity may also be discussed in connection with a broader examination of the standard of living. The question of people's inner world, however, the measurement of happiness is very much relegated to the background, if it takes place at all. The purpose of this paper is to investigate happiness in Hungary compared to the world. Based on own research, the factors that can be components of the feeling of happiness, which can be influenced by raising the level of satisfaction and happiness of people or a society, are to be identified.

Keywords: GDP, Hapiness index,macroeconomic,indicators

1. Introduction

Basically, happiness as a concept, feeling, and indicator is difficult to determine. Due to its diversity, there is no adequate definition to present it. Turning happiness into an indicator is a big task itself, especially if we even want to characterize a given society with it. Nowadays, this type of approach to social well-being is advancing, and the assessment of society's situation is already determined by the happiness index. How does this relate to society? How can one measure with this and what exactly? Is there any point measuring anything with this? The answer is far from clear.

There are countries that no longer use GDP indicators, and categorize individual countries solely on the basis of the happiness index. Is it possible that this is the future and we don't need anything else? But really, what is true happiness? What components does it have? We believe many things about it, we can often believe that we are happy, but in reality we are not. We desire more and more: a bigger apartment, a better car, more money, a better career, but in the meantime we forget what is really important, ourselves and our own feelings. The world rushes through us without us experiencing anything from it. Perhaps this is the reason for the general unhappiness that settles on the whole world and does not allow us to live happily.

2. Literature review

How can we define happiness? We have not come closer to this question since the time of Aristotle. To date, only vague formulations and various cause-and-effect relationships have been created for the question of what happiness really is. Although the concept is very difficult to define, one thing is for sure, people want happiness more than anything else. Many people waste their lives never really being happy, never finding the way to it.

The most tangible explanation of happiness sounds like happiness is a series of perfect experiences. We call this perfect experience a flow experience. This experience is the possibility of mastery and control over the activity. These factors are extremely tempting for a person, he feels really good in such situations. A person can live truly happily who has already mastered the ability to override the processes taking place in his consciousness and exercises this control over himself. Man is the only creature on earth that can make itself happy or unhappy, solely by changing the content of its consciousness. Our consciousness is actually the subjectively experienced reality, that is, only those things become reality in our mind that we pay attention to. That's why we can change our mood and sense of happiness with just our thoughts. There are people who by nature see the world much more positively, these are the personalities who can be happy even in a prison, because they don't look at the fence, but look over it. They are able to make something good out of even the worst situation. On the other hand, there are people who are unhappy even in luxurious conditions. Interestingly, egocentric, self-centered people are those who can never become a complex personality, because they are too busy with themselves, they focus on their own self. In contrast, autotelic personalities are those who are able to be happy where others are not. [1]

Although it is indisputable that in order to reach this level of fulfillment and experience flow experiences continuously one after the other, we need a "foundation". Similar to Maslow's pyramid, we have to imagine a pyramid with 4 levels. In order to be able to move up the levels, the most important thing is self-knowledge and the creation of inner harmony. This is the key to being aware of ourselves, our abilities and our goals.If we accept that the universe should not be ruled, but cooperated with, we will come home with the relief of the exiled wanderer. As one's goals merge with the universal flow, life gains meaning. (Mihály Csíkszentmihályi) [2] [3]

3. Happiness Index

The measurement of the happiness index in the countries of the world will show different results everywhere, because if we take a poorer region as an example, what the poorer people see as values far exceed the values of the residents of the richer countries. In a society at a low level of development, such essential things as adequate food supply, (well) paying jobs, access to health care, safe homes, clean water and proper hygiene, and educational opportunities are often not present in a person's life. On the other hand, in richer areas, these are mostly given. So, if we ask a family living in deep poverty, for example, what would make the family happier, these basic needs will obviously prevail, but if we ask a person or family from a richer area - since they probably have these opportunities - their needs will be different. Someone else will make them happier. When we think about increasing happiness, one of the most important questions is how to measure it. There are ways to accurately measure people's well-being and happiness within society. In order to understand what influences these factors, we must first examine the causes of happiness and misery, because both conditions determine well-being. Some important factors are, for example,

income, work, community and governance, religion, but additional factors are, for example, mental and physical health, family, education, gender and age. These factors interact with each other.

At the same time, politics could also play an important role in the fulfillment of happiness: economic stability or increasing the GDP does not necessarily have to be higher in the order of importance than people-centeredness, the happiness of the people who shape the country. After all, if the basic mood of the people in a country is dissatisfied and depressed, the country won't differ either, and it will be more difficult for the state to achieve development. Many politicians and experts around the world think that it would be more important to measure the happiness index of the residents instead of the country's GDP. GDP is only an economic factor, which does not show how satisfied/happy the country's residents really are. [4] The Gallup World Poll (GWP), the World Values Survey (WVS), the European Values Survey (EVS), and the European Social Survey (ESS) all address the question of what defines happiness and publish questionnaires that, which help show the evolution of the happiness index.

People's happiness can be devided into six main factors, namely:

- material well-being based on gross domestic product (GDP) per capita
- -support within society
- the expected healthy life expectancy at birth
- freedom in life decisions
- generosity
- -corruption within the country.

Countries where people are less corrupt can develop better. This fact is supported by several statistical data and research.
The forms of corruption are, for example: bribery, embezzlement, various frauds, conspiracies, blackmail, etc. Corruption spread in the circles of those people who have control in their hands or have a larger amount of money, so they can subjugate the poorer and powerless. If the leader of a country, or those who make up the government, politicize or lead the country in a corrupt way, it does not lead to much good. Dissatisfaction will be greater, and the country will become even more unhappy. [5]
As it can be seen in Table 1, Hungary ranks 51 in 2022 on a 0-10 scale with a point of 6.086.

Table 1: World Happiness Index of Hungary

Hungary - World Happiness Index		
Date	World Happiness Ranking	World Happiness Index
2022	51°	6.086
2021	53°	5.992
2020	53°	6.000
2019	62°	5.758
2018	69°	5.620
2017	75°	5.324
2016	91°	5.145
2015	104°	4.800
2013	110°	4.775

Source: https://countryeconomy.com/demography/world-happiness-index/hungary (available: 24.08.2022)

According to another source (https://www.theglobaleconomy.com/) Hungary with its 5.992 point ranks 50th in the world (out of 141 countries), and 29th (out of 41) in Europe in 2021. It is somewhat different. Table 2 shows some statistics.

Table 2: Some statistics of the 2021 report

	Europe	World
Mean	6,4220	5.5655
Median	6.4500	5.5900
Std. Deviation	.77615	1.09597
Range	3.08	5.42
Minimum	4.74	2.40
Maximum	7.82	7.82

Source: own compilation based on data of https://www.theglobaleconomy.com/

The happiness index was originally intended as a secondary indicator alongside GDP. The principle was that even though the GDP represents the state of the economy and income well, the happiness index would show the state of mind of the given country very well. Joseph Stiglitz, an American economist, is a great believer in measuring happiness, and he has great faith and confidence in the quantification of happiness. Although we are talking about something that is infinitely complex and influenced by many factors, the world would be better if we managed to create somewhat numerical data from a fictitious concept. [4][6]

Bhutan was the first country in 1972 to completely abolish GDP and focus only on the happiness index instead. At that time, the measurement of happiness was not accepted at all, and even the rest of the world did not sympathize with the idea that only the happiness index should be the measure of well-being.

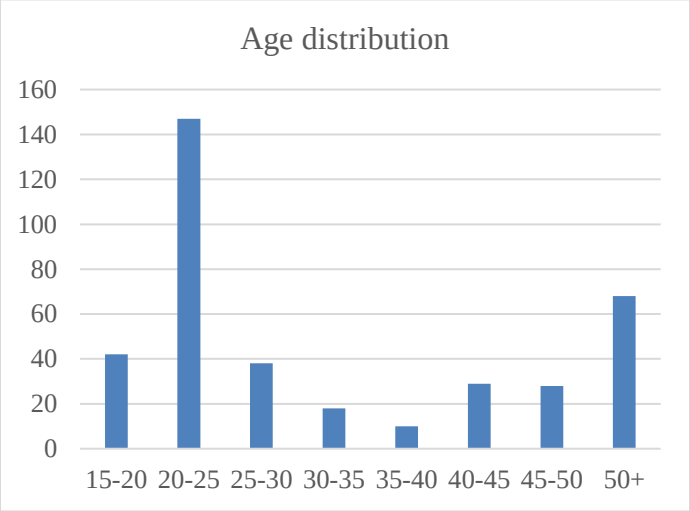
How are income and happiness related? The example of Bhutan is extremely interesting, among other things, because it is the poorest country in the world, yet every second person claims to be happy. But if this is the poorest country in the world, why are the people here so happy? Perhaps based on their Buddhist religious identity, the Bhutanese are aware that happiness does not depend on material possessions, but only comes from the person. [7]

From this illustrative example, it follows, despite all assumptions, that happiness and income are not closely related to each other by all means.

4. Materials and methods

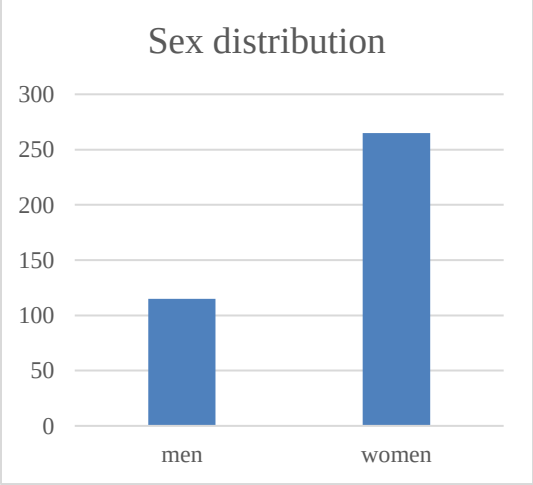
The purpose of our research was to support that happiness does not depend on any external factors - be it money or material possessions. Also, to try to find correlations between factors such as education level, income, and feeling of satisfaction. We were also curious as to what is the order of importance for people these days: family, income or career.
The survey was conducted with a google questionnaire and was available on the internet from 25.01.2022 to 25.03.2022. In some cases SPSS was used.
Figure 1 shows the age distribution and Figure 2 shows the distribution based on sex.

Figure 1: Age distribution



Source: own research

Figure 2: Sex distribution



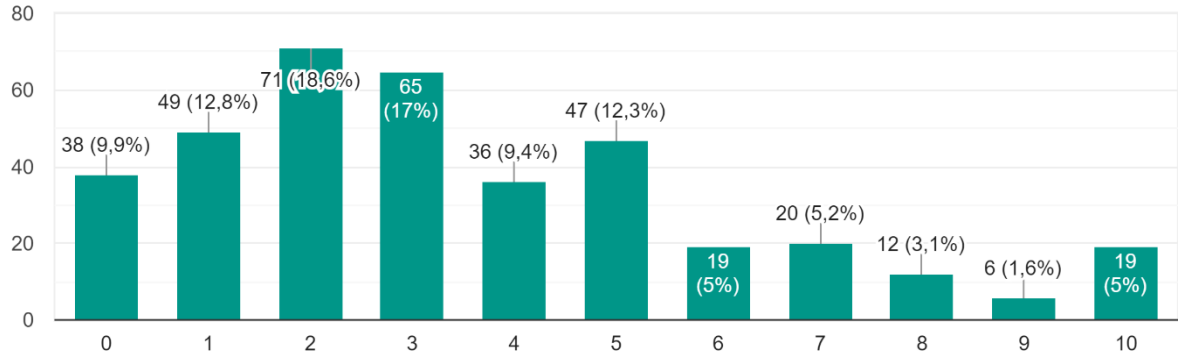
Source: own research

5. Results and discussion

Although our research is not representative, we used the data to try to draw some consequencies and we performed calculations with it. The sample with which we worked is not clearly a random sample, as the majority of the data of the respondents came from the capital Budapest and the agglomeration. As well as the age group to which the questionnaire reached, the majority were 15-25 years old and people over 50 years old. Nevertheless, due to the high number of respondents, we processed the data as a random sample. After cleaning the data, we performed the evaluation with 380 received responses.

In Hungary nowadays, due to the increasing inflation, the epidemic situation and the foreign policy adversities surrounding our country, it is becoming more and more difficult to make a living. It also became difficult to maintain our previous standard of living and live our lives as if nothing had happened. That is why it has become an even more difficult question to determine what percentage of their income individuals can set aside, if at all, due to the current situation.
We also looked for the answer to this question in our questionnaire, and the statement below in Figure 3 clearly illustrates the results:

Figure 3: Savings



Source: own research

The horizontal axis shows what percentage of their income people can save. A value of 0 means 0%, while a value of 1 means 10%, etc.
The vertical axis shows how many people can save the amount of income corresponding to the percentage values.
It follows from the data that 10% of people cannot save anything at the end of the month and 68% cannot even save half of their income.
After that, we investigated the relationship between the highest level of education and satisfaction with salary, and in this case we also got a weak relationship as shown is Table 3

Table 3: Eta values

Directional Measures

			Value
Nominal by Interval	Eta	Highest level of education: Dependent	.120
		Satisfaction with salary: Dependent	.108

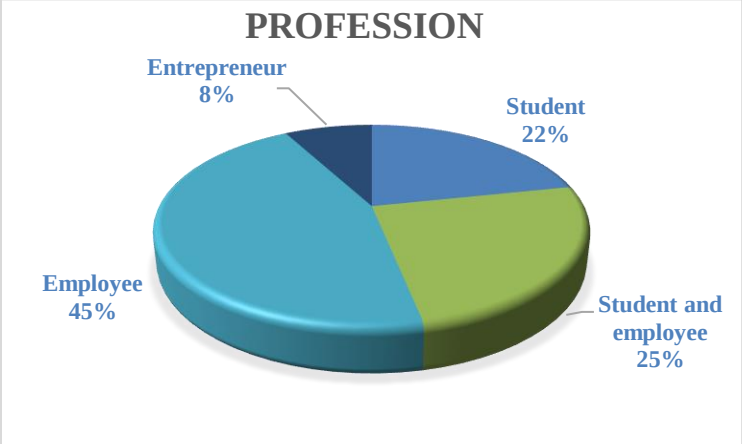
Source: own research

At the beginning of our research, we thought that people who have a higher education and -probably- a higher salary as well, could be happier than people who have a less well-paying job, because for some reason they did not continue their education. We believed that individuals with higher salaries can create better living conditions for themselves and their families, so they can be satisfied with both their lives and their salaries.

However, with the values of eta above, we have to reject this hypothesis, because when examining the two factors, we thought we discovered a weak relationship between education and satisfaction with salary. This leads us to conclude that it does not matter how high a person's education is, they will be dissatisfied with their salary.

Figure 4 shows the profession distribution.

Figure 4: Profession of respondents



Source: own research

These data show that 45% of our respondents are employed and 47% are students, as well as 53% of students are employed in addition to studying, so they take on some kind of work. 8% of the respondents are entrepreneurs.

Our research shows that there is not as much of a relationship between life satisfaction and relationship status as we expected. From this, we can conclude that the relationship that every person desires, does not bring as much happiness in life as we would expect.

We can observe a slightly higher correlation between satisfaction with salary and satisfaction with life than in the former cases between relationship and satisfied life. From all this, we can conclude that earnings have a greater influence on satisfaction and happiness than a relationship.

After all this, we examined life satisfaction in relation to friends, living environment and family. In these calculations, we also observed very interesting results, according to which the living environment has a greater influence on life satisfaction than friends. Still, the family is the biggest influencing factor, although even in this case we can speak of a relatively weak dependence. [8]

Before our research, we thought that the majority of people drink alcohol and smoke because these narcotics give them a sense of happiness. However, there is a very weak relationship between smoking, alcohol consumption and life satisfaction. In conclusion, neither smoking nor alcohol consumption is an authoritative influencing factor of happiness and life satisfaction. [9]

A paper from the National Library of Medicine also formulated this problem: they found little correlation between alcohol consumption and well-being and happiness. [10]

Many scientific articles only write about how harmful alcohol consumption is to health and the negative consequences of drinking. It is clear that the main purpose of these products is to obtain instant gratification and achieve a kind of drugged, numb state in individuals, and from a marketing point of view, to buy more of the products. 14.9% of respondents think that drinking alcohol helps them to be happier, 78% believed that alcohol does not help them to achieve happiness, and the remaining 7.1% did not even think about it will drinking actually make you happier. [11]

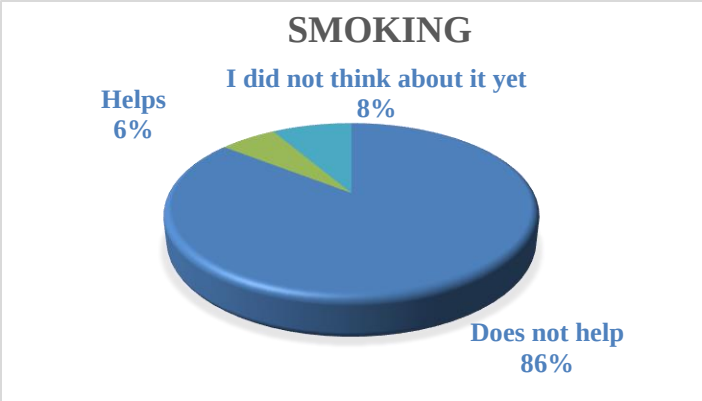
In the case of smoking, 6% of respondents think that smoking helps them to achieve happiness, 85.6% think that it does not help them and 8.4% did not think about whether it would make them happier to smoke.

The data for both alcohol consumption and smoking are illustrated in Figure 5 and 6 below.

Figure 5: The helps of alcohol consumption

Source: own research

Figure 6: The help of smoking



Source: own research

Crosstabs can help understand the relationship between the frequency of smoking and feeling the happiness of life (Table 4).

Table 4: Crosstab using happier life and smoking

How often do you smoke, do you think smoking helps you have a happier life: Crosstab

		Do you think smoking helps you to have a happier life?			
		yes	no	I haven't thought about it yet	Total
How often do you smoke?	never	5	226	17	248
	occasionally	5	51	4	60
	every day	11	50	11	72
Total		21	327	32	380

Source: own research

The table above also shows that, although relatively many people think that smoking does not make them happy, they still do it. Also, those who have never smoked are the ones who condemn smoking the most and think that smoking does not make you happy.

The rate is similar for those who drink alcohol. The majority, especially those who drink alcohol occasionally, believe that drinking alcohol does not bring a sense of happiness at all. [12]

Another crosstabs can help understand the relationship between the frequency of alcohol consumption and feeling the happiness of life (Table 5).

Table 5: Crosstab using happier life and alcohol consumption

How often do you drink alcohol, do you think that drinking alcohol helps you to have a happier life: Crosstab

		Do you think that drinking alcohol helps you to have a happier life?			
		yes	no	I haven't thought about it yet	Total
How often do you consume alcohol?	never	0	57	4	61
	occasionally	49	235	21	305
	every day	6	6	2	14
Total		55	298	27	380

Source: own research

We now compared smoking and alcohol consumption with the highest educational level, where we also did not find a strong relationship. At the beginning of our research, we thought that people who are more educated and have better living conditions will have a lower rate of alcohol consumption, nevertheless, the values when determining the éta allow us to conclude that there is no correlation between education and alcohol consumption.

During the independence test, we examined whether a relationship can be discovered between the questions "How satisfied are you with your life" and "How satisfied are you with your salary" and, if so, how strong/weak is the relationship between the two criteria. The sample was examined in a 95% confidence interval.

During our null hypothesis, we established that the relationship between a satisfied life and a satisfied salary is independent. During the alternative hypothesis, we determined that there is a relationship between the two criteria.

Since the significance level is less than 0.001, we reject the null hypothesis, so there is a relationship between the two years of knowledge (see Table 6).

Table 6: statistics of one-sample tests.

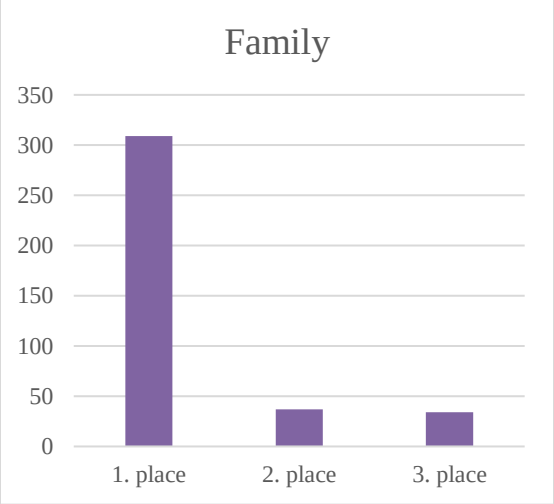
One-Sample Test [1]

	t	df	Significance One-Sided p	Significance Two-Sided p	Mean Difference	95% Confidence Interval of the Difference Lower	95% Confidence Interval of the Difference Upper
How satisfied are you with your life?	78.327	379	<.001	<.001	3.742	3.65	3.84
How satisfied are you with your salary?	50.654	379	<.001	<.001	3.184	3.06	3.31

Source: own research

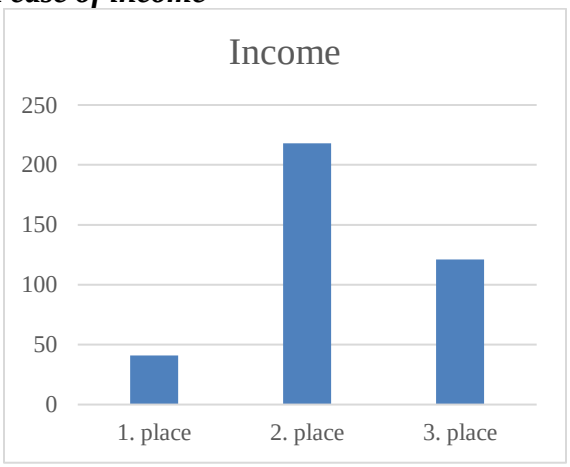
Among our questions, we asked the respondents to put the above three life goals in order. In accordance with our expectations, it is clearly seen that family comes first for people, they consider this to be the most important. Income comes second, followed by career, see Figure 7-9.

Figure 7: Prioritization in case of family



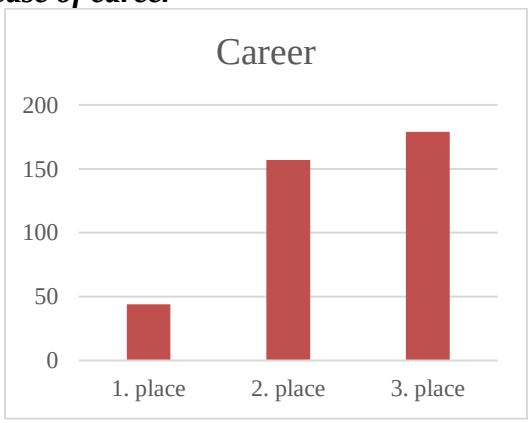
Source: own research

Figure 8: Prioritization in case of income



Source: own research

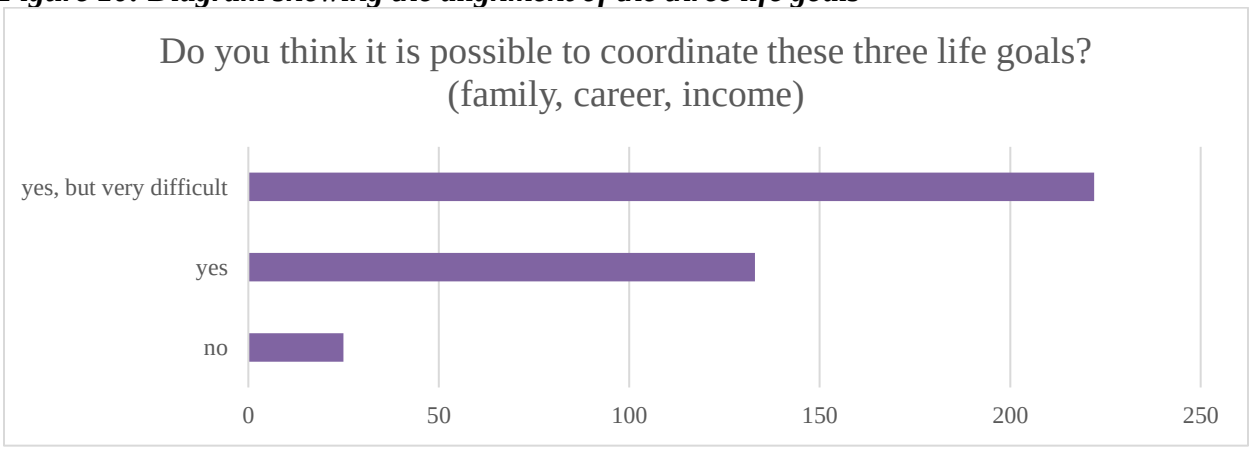
Figure 9: Prioritization in case of career



Source: own research

Then we also asked how well the respondents think it is possible to coordinate these three life goals. They could choose from three options, "yes", "no", "yes, but very difficult". Most of the answers to this question were yes, it is possible to coordinate, but very difficult (see Figure 10).

Figure 10: Diagram showing the alignment of the three life goals



Source: own research

6. Conclusions

Our basic hypothesis was that happiness and average income, environment, family, friends, place of residence, etc. they do not affect each other. This theory is supported by several researches and several psychological theories. Although the most common belief is that we will be happy if we earn more, if we have a bigger house, if we have a better car, etc. It is true that it is really essential to a certain level to be able to live on something, to know where to live, yet all these things prove to be insufficient for real happiness.

This theory is also supported by our research, since we did not find strong correlations anywhere. It follows that the true, real happiness that we have formulated comes from within and not from material pleasures.

In the questionnaire, we asked a question about what the respondents do to be happier. Traveling, building social relationships, self-improvement and sports were among the outstanding fillers.

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Examining the skills essential for home office work under the agile methodology

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Abstract

The last two and a half years have brought significant changes to our lives: the pandemic of the coronavirus and the measures and regulations it has brought in have had a profound impact on our daily lives and it have brought many challenges. Organizations had to react quickly and swiftly to protect their business continuity, and where it was possible and provided or could be provided, some or all of the workplaces and jobs have introduced, enabled or extended the possibility of home office. But truly effective home office requires specific skills, especially when working with non-classical methodologies. This research aims to identify the competences, skills and abilities that are specifically needed in a home office working using agile methodologies, which has emerged from the world of software development and promises flexibility, responsiveness and effective change management. This research was conducted through an online questionnaire survey.

Keywords: agility, home office, efficiency, skills

1. Introduction

In the two and a half years since the worldwide spread of the Covid-19 coronavirus epidemic, we have experienced changes in many respects: the measures, restrictions and proposals that have been introduced have changed our purchasing habits and preferences (Csiszárik-Kocsir et al, 2021; Garai-Fodor, 2022; 2023; Varga et al, 2022; Varga, 2021; Garai-Fodor et al, 2022; Csiszárik-Kocsir et al, 2016), we have experienced the advantages and disadvantages of online education and have had to adapt to them (Csercsa et al., 2022), and the workplace has seen an unprecedented increase in the number of teleworkers and home office workers, almost overnight (Tóth & Csiszárik-Kocsir, 2022). All of these have meant global change on a scale that would be difficult to compare with anything in recent decades. And while we had often heard in the period before that how important and essential it is to manage change appropriately and effectively, the pandemic put all of humanity to the test: we had to prove that we could indeed adapt to sudden changes in circumstances and manage the situation with minimal losses.

Resilience, the ability to manage change appropriately and effectively, is therefore crucial for both individuals and organisations in today's world. This is one of the main reasons why an agile approach is becoming increasingly widespread, as it is precisely the ability to adapt to change that is one of its main strengths. However, a key prerequisite for this is, among other things, regular and frequent consultation, which can be much more difficult when working remotely or from a home office than when working in person at a single location. And efficiency can depend to a large extent on the human factor, on the qualities of the individual.

The aim of our research was to find out which human qualities people consider important or indispensable when applying an agile approach to teleworking or home office, based on their experiences over the past two years. Although there are differences between teleworking and home office (e.g. in terms of duration, continuity and regularity), for methodological reasons we do not distinguish between the two in this study, as we assume that there is no material difference between longer-term teleworking and (by default) ad-hoc home office for the respondents.

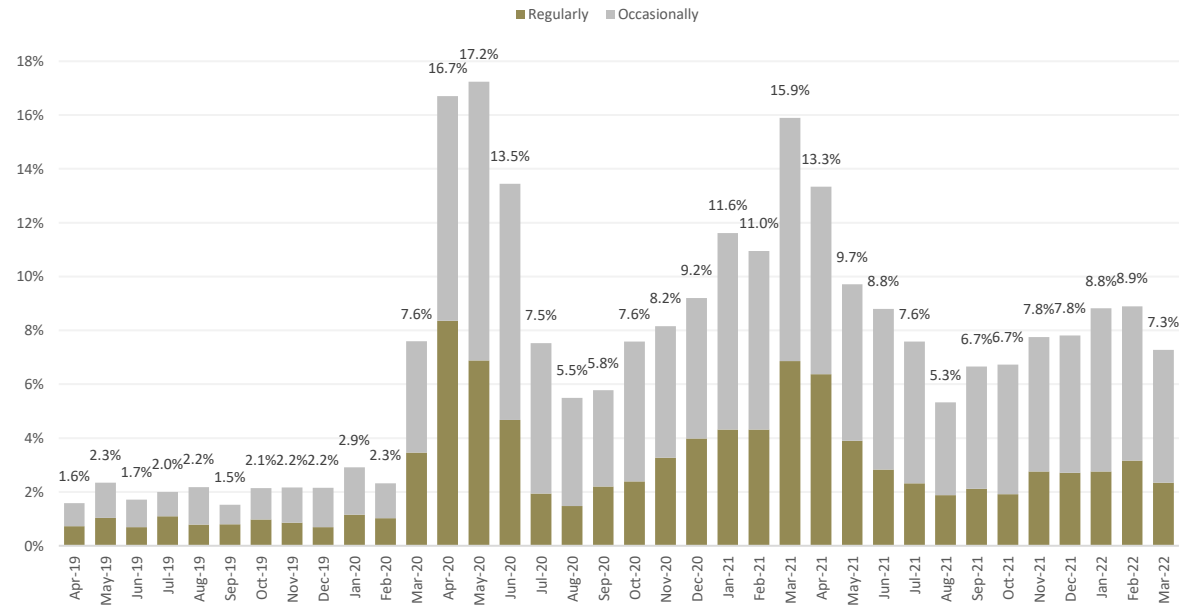
2. Literature review

First, let us briefly review the history of teleworking or home office, its spread and recent uptake in Hungary, and the foundations and essence of the agile approach.

2.1. The spread of teleworking and home office

The first use of teleworking in the modern sense of the term dates back to the energy crisis of the 1970s (Nilles, 1975). Its widespread spread in recent decades has been made possible by the development of the information society and infocommunication technology. According to a formulation from the 1990s, it is a flexible way of organising work in which the worker does not need to be physically present at the workplace during his working hours and uses information technology tools to perform his work and the tasks assigned to him (Gray et al, According to this definition, a teleworker is a person who is employed and works at least 50% of his or her working time away from the employer's premises, using a computer and a telecommunication connection (Barnard, 2006). By the early 2000s, teleworking had become so widespread that the European Commission summarised and presented its situation in a special report. As defined in this report, teleworking is defined as a type of work organisation and/or performance in which work, which may be carried out at the employer's premises using information technology, is regularly performed at a location other than the employer's premises (European Commission 2006). In Hungary, according to the Hungarian Central Statistical Office, before the pandemic, only about 2% of all employees worked regularly or occasionally in a teleworking or home office environment. After the outbreak of the coronavirus pandemic, this proportion increased severalfold in a short time, exceeding 17% in May 2020 (KSH, 2021).

Figure 1: Monthly evolution of the share of teleworkers and home office workers in Hungary between April 2019 and March 2022.



Source: based on KSH (2021), KSH (2022) own editing, 2022

Although, as shown in Figure 1, by August 2020 the rate had fallen back to below 6%, this later proved to be temporary, as it started to rise again in the autumn with the new wave of the epidemic, and by March 2021 it was close to 16%. And experience in recent months shows that the rate seems to be stabilising between 5% and 9%.

2.2. The basics of an agile approach

The Agile approach has become widespread worldwide over the last twenty years, since the Agile Manifesto was formulated in 2001. It is essentially based on four pillars - or, as the Manifesto puts it, values:

- individuals, and personal communication between them, is more important than the methods and tools used;
- working software is more important than detailed documentation;
- cooperation with the client is more important than contractual negotiation;
- effective change management is more important than adherence to plans (Beck et al., 2001).

These four core values are broken down and detailed in twelve principles by the authors of the Agile Manifesto, which are: delivering valuable software, change management, frequent delivery, continuous communication, motivated team members and trust between them, personal communication, progress, sustainable improvement, technical excellence, simplicity, self-organising team and frequent fine-tuning (Beck et al. 2001).

These four values and twelve principles summarise the essence and foundations of the agile approach. These characteristics help to identify what can be considered agile, and from these can be derived the various agile approaches, techniques and methods used, which have been the subject of numerous books in the more than twenty years since the manifesto was first drafted (Chin, 2004; Wysocki, 2007; Cohen, 2010; Cobb, 2011).

Agility is thus not only (and together with) an approach, but also a framework within which different approaches and methods can be found. The most common of these is Scrum (PMI, 2017). It is a method that adopts an iterative approach: the process is broken down into several smaller cycles, called sprints (Conforto et al., 2014). Thanks to iterations, participants can continuously learn and improve during the sprints (Sauer & Reich, 2009). It also allows for regular feedback, which is essential in agile development (Conforto & Amaral, 2014). And while the most important features of the traditional approach are traceability and predictability, agility focuses on adaptability and effective change management (DeCarlo, 2004). In short, agility is the ability to balance flexibility and stability (Špundak, 2014).

3. Material and methodology

For the primary research, an online questionnaire survey was conducted in Hungary in the spring of 2022 using Google Forms. Using a snowball method, we surveyed working-age people who had applied the agile methodology in their work in the last 2 years and had worked in home office or hybrid working hours for a longer period of time. A total of 144 evaluable responses met the criteria and were therefore considered as a sample for the analysis (N=144).

The data collected were analysed and evaluated using IBM's statistical software SPSS Statistics 25 and the Microsoft Office suite Excel spreadsheet to produce the charts.
The questions were used to assess the perception of the need for a total of 13 competencies, skills and abilities in home office work according to an agile approach: flexibility, openness, teamwork, autonomy, punctuality, responsibility, trust, proactivity, empathy, assertiveness, effective time management, personal effectiveness, and focused attention.
In order to get a more accurate picture of respondents' opinions, respondents were asked to indicate on a scale of 1 to 6 how much they think the attribute is needed, with a negative endpoint of 1 (strongly disagree) and a positive endpoint of 6 (strongly agree). This is illustrated in Figure 2.

Table 1: Scale of responses to questions

1	2	3	4	5	6
I absolutely disagree	I disagree	Rather disagree	Moderately agree	Rather agree	Strongly agree

Source: own editing, 2022

The research was used to test the following hypotheses:

- H1: Flexibility is one of the most important competencies when applying an agile approach in home office.

- H2: The same competencies are the most important for managers and subordinates when applying an agile approach in home office.

In order to present the results in a more understandable and illustrative way, a tabular layout and a graphical representation were used (Sajtos-Mitev, 2007).

Of the total 144 respondents, 86 were managers at some level (middle or senior) (60%) and 58 (40%) were subordinates, i.e. they did not have a managerial or supervisory role.

4. Results

Firstly, the ratings given by the 144 respondents on a scale of 1 to 6 were considered together, whether they were from a manager or a subordinate. The SPSS Statistics 25 program was used to examine the arithmetic mean (mean), positional mean (median), most frequent value (mode), standard deviation, and minimum and maximum of the ratings. Their results and values are presented in Figure 3.

Table 2: Analysis of perceptions of competences, skills and abilities required in home office operations according to agile methodologies

	N Valid	Mean	Median	Mode	Std. Deviation	Minimum	Maximum
Flexibility	144	5,319	6	6	,944	2	6
Openness	144	5,222	5	5	,806	2	6
Team play	144	4,958	5	5	,981	2	6
Ability to work independently	144	5,319	6	6	1,042	1	6
Punctuality	144	4,958	5	5	1,023	1	6
Accountability	144	5,111	5	6	1,038	2	6
Trust	144	5,222	6	6	1,047	2	6
Proactivity	144	4,833	5	5	1,044	1	6
Empathy	144	4,194	4	4[a]	1,270	1	6
Assertiveness	144	4,389	4	4[a]	1,011	1	6
Effective time management	144	5,403	6	6	,814	2	6
Personal effectiveness	144	5,222	5	5	,904	1	6
Focused attention	144	5,208	5	6	,960	1	6

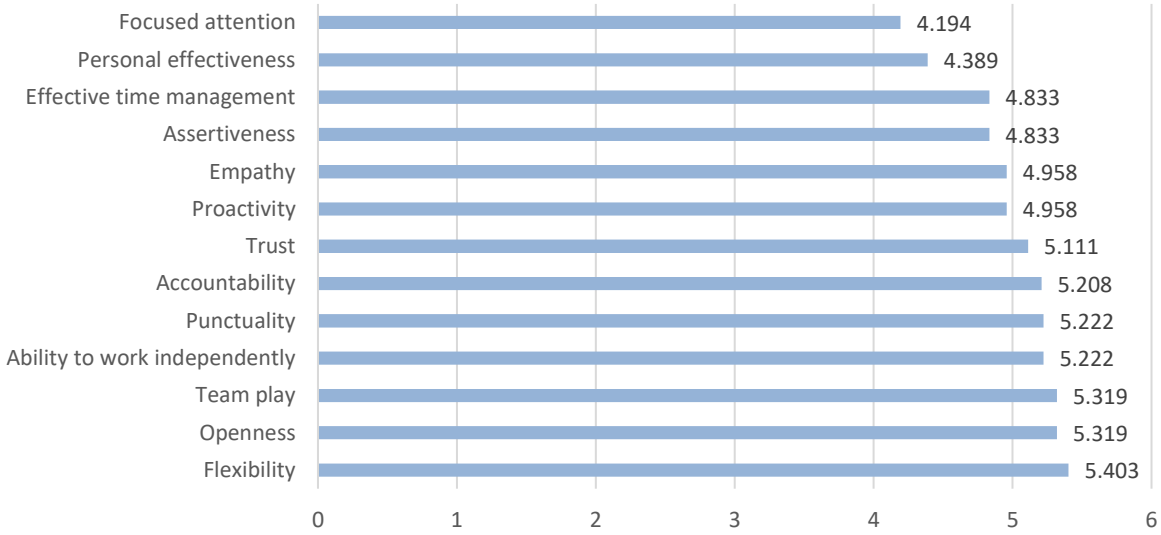
a. Multiple modes exist. The smallest value is shown

Source: own research, SPSS25, 2022

To start with, the mean for each of the traits examined ranges between 4.1 and 5.5; the difference between the smallest and largest mean is 1.209. The traits with the highest mean scores were effective time management (5.403), flexibility, autonomy (both 5.319), openness, personal effectiveness and trust (all three 5.222). All of these results were obtained with the median (position mean) and mode (most frequent value) of both effective time management, flexibility, autonomy, and trust being at the maximum of the scale, i.e. 6. Respondents were most in agreement on the perception of openness and effective time management, with the lowest standard deviation (0.806 and 0.814 respectively).

Empathy (4.194) and Assertiveness (4.389) had the lowest mean scores: while the other traits all scored above 4.8, they scored below 4.4. It may be interesting to note that the largest variance is found for empathy (1.27), which was ranked last on the list; thus, in addition to being the least important of the traits listed overall, it also proved to be the most shared. The order of the mean scores for the traits examined is presented and illustrated in descending order in Figure 4 (with equal means, lower dispersion resulted in a higher ranking).

Figure 2: Ranking of competences, skills and abilities required to operate a home office according to agile methodologies according to respondents' perceptions



Source: own research, 2022

A slightly different picture emerges if we look separately at the answers given by managers (Nv=86) and non-managers (Nb=58). For managers, the average rating of the qualities examined, as shown in Figure 5, yielded results between 4.2 and 5.4, i.e. a smaller range (1.093 to be precise) than that seen for all respondents (1.209).

Table 3: Analysis of managers' perceptions of the competences, skills and abilities required to operate a home office according to agile methodologies

	N_v Valid	Mean	Median	Mode	Std. Deviation	Minimum	Maximum
Flexibility	86	5,186	5	6	1,068	2	6
Openness	86	5,233	5	5	,746	2	6
Team play	86	4,953	5	5	,919	2	6
Ability to work independently	86	5,349	6	6	1,104	1	6
Punctuality	86	4,884	5	5	1,192	1	6
Accountability	86	5,140	5	6	1,053	2	6
Trust	86	5,279	6	6	1,048	2	6
Proactivity	86	4,767	5	6	1,185	1	6
Empathy	86	4,256	4	4	1,170	1	6
Assertiveness	86	4,372	4	4	,868	1	6
Effective time management	86	5,349	6	6	,917	2	6
Personal effectiveness	86	5,070	5	5	1,049	1	6
Focused attention	86	5,209	6	6	1,075	1	6

Source: own research, SPSS25, 2022

As shown in Figure 6, the average score for the subordinates for the traits examined ranged between 4.1 and 5.6, i.e. on a significantly larger scale (1.414 to be precise) than that seen for managers (1.093).

Table 4: Analysis of subordinates' perceptions of the competences, skills and abilities required to operate a home office according to agile methodologies

	N[b] Valid	Mean	Median	Mode	Std. Deviation	Minimum	Maximum
Rugalmasság	58	5,517	6	6	,682	3	6
Flexibility	58	5,207	5	5	,894	2	6
Openness	58	4,966	5	5	1,075	2	6
Team play	58	5,276	5	6	,951	2	6
Ability to work independently	58	5,069	5	5	,697	3	6
Punctuality	58	5,069	5	6	1,024	2	6
Accountability	58	5,138	5	6	1,050	2	6
Trust	58	4,931	5	5	,792	3	6
Proactivity	58	4,103	4	5	1,410	1	6
Empathy	58	4,414	5	5	1,200	1	6
Assertiveness	58	5,483	6	6	,628	4	6
Effective time management	58	5,448	5	5[a]	,567	4	6
Personal effectiveness	58	5,207	5	5	,767	3	6

a. Multiple modes exist. The smallest value is shown

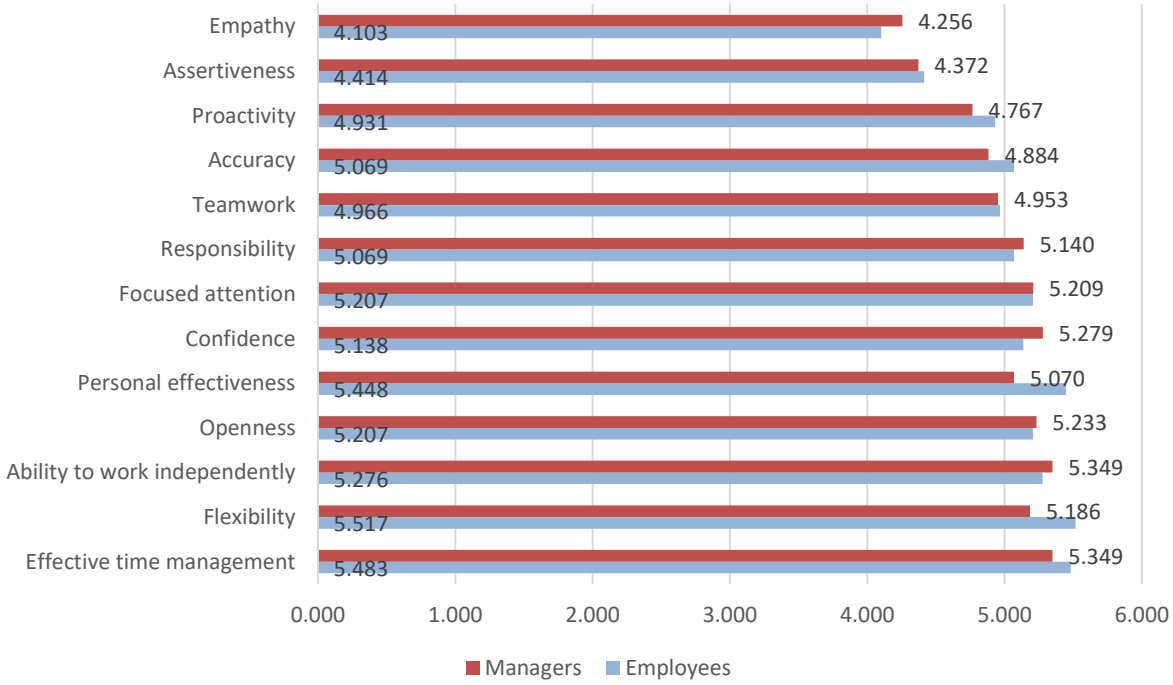
Source: own research, SPSS25, 2022

Based on the mean scores for the responses, effective time management and working independently were the top scores for managers (both 5.349), followed by trust (5.279), openness (5.233) and focused attention (5.209), and only followed by flexibility (5.186), which is so important for agility. In contrast, flexibility was the most important attribute for subordinates (5.517), followed by effective time management (5.483), then personal effectiveness (5.448) and autonomy (5.276), which managers consider so important, followed by focused attention and openness (both 5.207). There was no difference between managers and subordinates in the last three attributes: empathy (4.256 and 4.103 respectively), assertiveness (4.372 and 4.414) and proactiveness (4.767 and 4.931). For managers, punctuality (4.884) and teamwork (4.953) were only slightly more important than these, and only slightly ahead of these were the personal effectiveness (5.070), which was ranked first among subordinates. For non-managers, teamwork (4.966) and responsibility and punctuality (both 5.069) came immediately ahead of the last three attributes.

In terms of agreement, the lowest variance among managers was found for openness, ranked third, and assertiveness, ranked last, with the lowest variance (0.746 and 0.868 respectively). In contrast, personal effectiveness, ranked third, and effective time management

had the lowest standard deviations (0.567 and 0.628 respectively), due to the fact that all subordinates agreed to some extent on their importance (i.e. only and exclusively scored 4, 5 and 6). The differences between the opinions of managers and subordinates are illustrated in Figure 7, where the order is given by the aggregated result (shown in Figure 4).

Figure 3: Analysis of managers' and subordinates' perceptions of the competences, skills and abilities required to run a home office according to agile methodologies



Source: own research, 2022

Here again, the smallest difference between the means of the two groups studied is for team play (4.966 and 4.953 respectively). However, it can also be seen that one of the most important advantages and virtues of agility, flexibility as a human trait, is more important among subordinates than among managers: the mean is 5.517 compared to 5.186. The situation is similar for personal effectiveness: the average for subordinates (5.448) is significantly higher than for managers (5.07). Overall, it can be concluded that, on a scale of 1 to 6, the average for flexibility across the whole range of respondents was 5.319, with only effective time management scoring higher at 5.403. It can therefore be said that flexibility is one of the most important competences when applying an agile approach in the home office.

Thus, hypothesis H1 is accepted. Evaluating the answers given by managers and subordinates separately and then comparing the averages obtained, we found that there is a difference between the attributes considered most important - suffice it to think of personal effectiveness, which received the third highest average for subordinates, while it only came eighth for managers. All this leads us to reject hypothesis H2.

5. Summary and conclusion

In summary, we can say that in the home office operation according to agile methodologies, managers ranked autonomy as more important than subordinates and also ranked trust higher than subordinates. In contrast, subordinates rank flexibility and personal effectiveness much higher than managers.

Two hypotheses were formulated prior to the research. As a result of the quantitative research, hypothesis H1, that flexibility is one of the most important competencies when applying an agile approach in the home office, was accepted. In contrast, hypothesis H2, that the same competencies are the most important for managers and subordinates when applying an agile approach in the home office, was rejected. The results of our research provide feedback to the research participants on the extent to which their personal opinions agree or diverge from the general opinions of the respondents.
On the other hand, we are confident that the results of our research can also be used by managers of organisations adopting an agile approach and can help them to identify which characteristics might be worth developing when using teleworking or home office.

This may also be timely because, even if we are optimistic and assume that the coronavirus pandemic will not lead to a return to the widespread adoption of home working, the energy crisis of our day (or pessimistically, the unfolding energy crisis of our day) may bring the expansion of teleworking back on the agenda in the heating season to reduce the costs of energy-intensive office buildings.

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The Macrotheme Review
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Financial awareness decision-making in public education

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Abstract

Our research focuses on the development of financial literacy and the possibilities and successful methods of developing financial awareness in secondary schools by developing a decision making system. The focus of our research is to identify decision making systems for the entrepreneurial activity of automotive high school students. Our research was conducted in a questionnaire format by interviewing 317 students. The attributes table was examined based on the weighted decision criteria systems of these respondents. The results obtained were subjected to data cleaning. Then, using the decision analysis software Doctus, the data obtained from the questionnaire research was fed and the results were obtained as the decision graph. Based on the results obtained in this way, the results extracted from the graph were analysed. Based on which, how the financial awareness of automobile mechanic students in high school influences their decision to become an entrepreneur and what other factors influence this. Having this expert framework, we can improve the entrepreneurial activity of automotive students in terms of financial capability awareness

Keywords: Financial, decision making, high school, student

1. Introduction

The topic of our research is the development of financial literacy, the possibilities and successful methods of developing financial awareness in secondary schools. This topic is close to our heart for several reasons, besides the fact that we consider it extremely important that the future generation is able to navigate and make informed decisions in the world of finance (Garai-Fodor et al, 2022; Garai-Fodor – Csiszárik-Kocsir, 2018; Csiszárik-Kocsir et al, 2016a; 2016b; Csiszárik-Kocsir, 2016; 2022; 2023; Csiszárik-Kocsir – Varga, 2017). The importance of this has been explored in several dimensions in several studies (Garai-Fodor, 2022; 2023; Varga et al, 2022; Varga, 2021).

It was in the early 2000s that employers switched from paying salaries in cash to transferring salaries to a personal current account, which resulted in masses of people without any basic financial knowledge becoming current account and bank card holders. Many did not even understand what a current account was for, how to use a debit card, how to reduce bank charges and so on. But then there was the issue of share subscriptions, where investors were camped out

at the bank's gates days before the opportunity to subscribe for shares, but many of them did not even know what shares were worth, let alone the risks involved. And I could go on about the insurance of deposits or the risk of loans. It is perhaps not surprising, then, that the financial crisis that erupted in 2008 has caused so much damage, both to individual families and to society.

A number of articles and analyses have been published on the 2008 financial crisis, which, in addition to the negative effects of the crisis, point to the positive aspects of the worldwide focus on the financial culture of the population. Studies have already shown that the low level of financial literacy and the lack of financial knowledge contributed to a large extent to the depth and severity of the crisis. We have seen the high price paid by some families and, through them, by society as a whole for financial ignorance. That is why economic and financial literacy and awareness must now be part of general education. We have a huge responsibility to ensure that the next generation is able to navigate and make the right financial decisions. Recognising this, we have witnessed a number of initiatives in the aftermath of the crisis. Financial businesses, banks, NGOs and foundations in particular have done and are doing a great deal to develop the financial culture of the population and to help the next generation to better understand the financial world and to find their place and role in it. Among other things, educational films and publications are being produced in an attempt to increase the financial literacy of the population.

The focus of our research was on the financial awareness of car mechanic students, which we investigated within the framework of primary research. Based on these results, we developed our model and drew conclusions.

2. Literature review

As already indicated in the introduction, the financial crisis has put the financial culture of the population in the spotlight. A number of institutions, financial institutions and research groups have started to study and develop financial literacy, and several programmes and initiatives have been launched to improve the financial literacy of the population.(Viktor et al.,2022) However, in order for these studies and programmes to be effective, it is important to define precisely what is meant by financial literacy.(Sarla,2019)

The term 'financial literacy' was first used in the early 1900s, although the phenomenon existed before then. Research in the early twentieth century focused on ways of getting financial products to consumers and on how to create and expand markets for financial products. Later, as financial markets developed and financial products innovated, the idea of financial culture changed, and so did the concept of financial culture.(Goldberg et al., 2021) As a result of this change and evolution, many definitions of financial culture have emerged over time. Much of the research on financial culture prior to the 2008 financial crisis was largely concentrated in the Anglo-Saxon countries. Since the crisis, however, a number of studies have been launched in other countries around the world and in our country (BÉRES and HUZDIK, 2012).

Although the concept is apparently not new, there is still no single, universally accepted definition. Research on the measurement of financial literacy has generally defined what is actually considered to be financial literacy according to the purpose of the research, the target group.(Fodor & Csiszárik,2018) Research at both national and international level has invested a great deal of effort in measuring and defining financial culture and in exploring the factors that

can be associated with financial culture. (Olarewaju& Msomi,2021) Due to the large number of research studies, there are many approaches to financial culture (BÁRCZI and ZÉMAN, 2015).

"Hung et al. identified nine types of approaches from the studies they processed. These are: (Duttagupta et al., 2021)

1. financial knowledge;
2. understanding financial processes;
3. the ability to apply financial knowledge and experience gained;
4. knowledge of financial contexts and definitions;
5. the ability to make informed financial decisions;
6. knowledge of the most basic financial concepts;
7. the ability to make simple (basic) financial decisions;
8. the ability to make informed and conscious decisions; and
9. knowledge of simple financial concepts." (HUNG et al. 2009, cited in BÉRES,2013.)

Elements of the above concepts are also reflected in the definition of financial literacy formulated by the Magyar Nemzeti Bank (MNB), our central bank was the first in Hungary to develop a comprehensive concept of financial literacy:

A level of financial knowledge and skills that enables individuals to identify the basic financial information necessary to make informed and prudent decisions, and once acquired, to interpret and make decisions based on that information, assessing the potential future financial and other consequences of their decisions. (Hungarian National Bank, 2008, quoted in BÉRES and HUZDIK, 2012, p.323)

In their study, Dániel Béres and Katalin Huzdik relate it to the concept of financial culture:

- financial knowledge (financial literacy),
- financial knowledge (financial literacy), financial knowledge (financial literacy) and financial experience,
- financial skills and finally
- financial awareness,

which together determine how individuals and organisations make financial decisions (BÉRES and HUZDIK, 2012)(AlRajhi& Tayachi, 2021).

Boglárka Zsótér and Péter Nagy complemented the previous four and in their study they also examined the role of attitudes towards money and material orientation in the development of financial literacy (NAGY and ZSÓTÉR, 2012).

Czakó and colleagues emphasise that, in addition to information, the role of different social backgrounds and cultural factors behind financial decisions should be taken into account. (Viktor& Karpati,2020) In relation to the latter, they highlight characteristics such as the degree of individualism, uncertainty avoidance, or short-term orientation (CZAKÓ, HUSZ, and SZÁNTÓ, 2011.)

Judit Bárczi and Zoltán Zéman also confirm in their study that attitudes and preferences are important elements of financial culture.(Viktor et al., 2021) They point out that if a person does not have a preference for saving for the future, it is very unlikely that we will see this in their

behaviour, and we will not see long-term financial plans among those who prioritise short-term needs. The authors also point out that various economic influences affect our behaviour, influencing our purchases and savings, among other things. Consequently, in addition to the above, behaviour can be seen as a fundamental element of financial culture. (Viktor& Szeghegyi,2022) They also analyse the relationship between behaviour and knowledge, and show that as financial knowledge improves, so does behaviour, and that the relationship is positive, although the causal link is not entirely clear. (Tuffour,2021) ,The authors also note the growing psychological importance of money as a tool in the development of financial culture. People's attitudes towards money are influenced by a number of factors, such as demographic characteristics, social expectations, economic characteristics and education. It is therefore proposed to extend the measurement of financial culture to the assessment of financial decision making skills and to define a methodological framework for comparative research that takes into account the typifiable forms of national culture and the level of knowledge in the relevant domain.(Msomi,2021)(Csercsa et al., 2021) As a result, i.e. by combining the indicators, the general level of financial culture for a given nation or society can be accurately determined (BÁRCZI and ZÉMAN, 2015).

Based on the above definitions, it is clear that the understanding of financial culture goes beyond financial knowledge, it also includes skills, abilities and behaviours. (Umar,2021) Financial culture is therefore a complex phenomenon, for which there is no single definition, but all the definitions have in common that they are related to the use of money and financial products, and the acquisition and use of information and financial decisions. (Kanungo,2022) (Sunderaraman et al., 2022) Financial literacy is therefore a combination of knowledge, attitudes and numeracy. Research on financial literacy therefore needs to look at the target group's sources of information (where they get their information, whose advice they seek when making financial decisions), preferences (e.g. how they relate to savings), numeracy, financial attitudes and financial knowledge in relation to knowledge of specific products and topics (ECONVENTION BOARD ASSOCIATION, 2011.)

3. Material and Methods

Our research was conducted among students studying to become car mechanics in Budapest, using an online questionnaire. 317 students responded. The questions were asked on a 5-point Likert scale.

In the attitude survey I try to find out the attitude of the surveyed students towards finance and the world of money. The questions examine how important respondents consider it to be to be informed about finance and how informed they consider themselves to be. I also ask about their attitudes towards financial planning, savings and credit, and how they manage their finances, and who they would go to for information on financial matters.

A significant majority of both groups consider financial literacy to be important for their success in life. However, while all but two of the respondents in Group 1 (95.8%) said yes to the importance of information and knowledge about financial products and services, this proportion was only 80% in Group 2. The next question asked about students' interest in financial information. Almost 80% of respondents from Group 1 are those who are interested and generally follow the events in the financial world, information about financial products and services. In Group 2, the proportion is 62% and more than a third are not interested in such information. In

Group 1, more than two thirds (70.8%) of the students surveyed feel generally informed about finance, and just under 30% say they are not informed. In group 2, this proportion is reversed, with more people saying they are uninformed (58%) than informed (42%).

Table 1: Distribution by importance - interest – knowledge Source: compiled by author

	Answers	distribution of respondents	
		Group 1	Group 2
Importance	I think it is important to have a financial financial literacy	**95,8**	**80**
	I do not consider financial literacy important financial literacy		
	Total:	**100**	**100**
Enquiry	I am interested, I generally follow financial information		
	Not interested, I do not follow financial information		
	Total:	**100**	**100**
Awareness Importance	I consider myself generally informed about financially informed		
	I am not well informed about finance		
	Total:	**100**	**100**

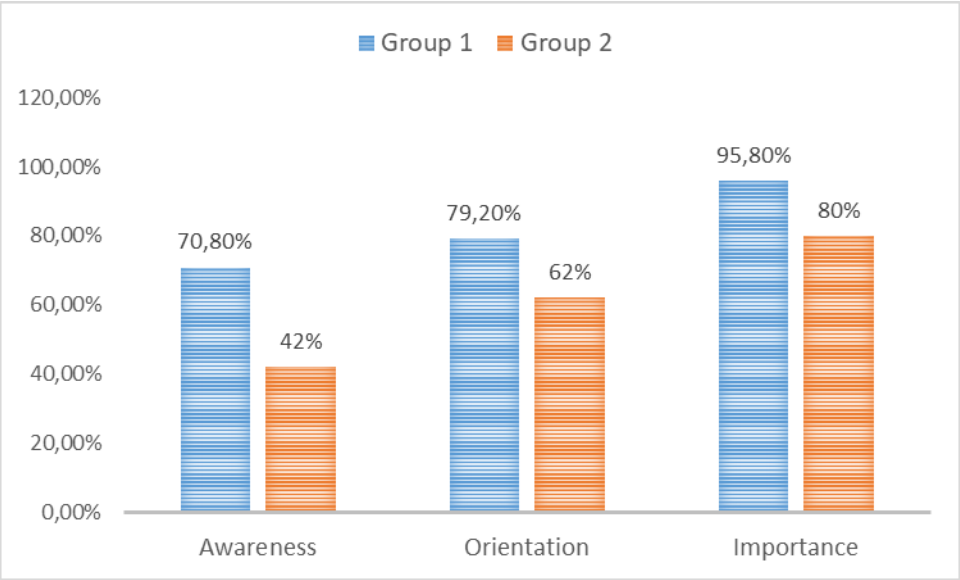

Figure 1 Financial literacy, awareness, importance of responses in proportion of two groups of respondents Source compiled by author

Based on the above responses, it can be concluded that the proportion of respondents who think that financial information is important is the highest for both groups, i.e. young people basically consider the ability to navigate in the financial world important for their life. At the same time, the proportion of those who are constantly informed and keep up to date with what is happening in the financial world is lower in both groups. When looking at the proportion who consider themselves to be informed, the proportion is even lower among respondents. This decrease is particularly striking in Group 2, where 80% of respondents consider financial awareness important, but only 60% actually monitor events and information, and only half of those who consider it important (40%) consider themselves generally informed about finance. The same proportions are much higher in Group 1, but the decreasing proportions are also noticeable here.

Attitudes to finance are also reflected in the importance of financial planning and financial balance sheets in the life of the individual or family, and this was also asked about in the questionnaire. It shows the distribution of responses. The data clearly shows that more than 90% of the respondents in group 1 consider financial planning important, while in group 2 just over half of the respondents consider it important. A quarter of Group 2 say that it is possible to manage finances without planning or preparing a balance sheet, compared to only 4.2% of Group 1 respondents. Another important factor in financial attitudes is their attitude to the issue of savings, whether they consider it necessary to save for financial security and to finance unexpected expenses (Table 2).

Table 2: The importance of financial planning Source: compiled by author

You consider financial planning, financial management and financial in the life of the individual or family?	Distribution of respondents in %	
	1. Group	2. Group
Yes, because it accurately shows income, expenditure and their balances	91,6	56
It is important because if I have one, the bank can more easily to give credit	4,2	20
Not important, I can manage my finances well without it	4,2	24
Total	100	100

The overwhelming majority of students in Group 1 (83.3%) feel it is important to save, compared to only 60% in Group 2. However, only a few of the students surveyed agree with the principle that there is no point in saving, none in Group 1 and 2% in Group 2. If they have money left over at the end of the month, they would make use of savings

38% of students in Group 2 would use the option to save at the end of the month, compared to less than half of Group 1 (16.7%).

4. Conclusions

Regarding the financial attitudes of the secondary school students surveyed, the analyses carried out show that there are significant differences between the two groups of students in terms of financial attitudes and attitudes towards finance. A much higher proportion of those in the first group, i.e. those who participated in the Financial Education Programme, believe that financial knowledge is necessary for life, and therefore more of them follow the financial world, and a much higher proportion of those who consider themselves to be generally well informed than those in group 2, who did not participate in the programme. This demonstrates that the Financial Education Programme has succeeded in making students understand the importance of finance, that they are interested in what is happening in the financial world and that they do not feel lost in the financial world, most of them consider themselves to be well informed.

There are also significant differences in their attitudes towards financial planning, balance sheets, savings and loans. Participants in the Financial Education Programme attach much greater importance to financial planning and savings, and are also more prudent about taking out loans. In terms of financial literacy, similar results to the national surveys were found, with a large proportion of students seeking information from parents and friends as their primary source of information before making financial decisions. It is surprising to me that only 15% of Group 1 students would seek information on the internet, even though we have familiarised ourselves with and frequently visited sites on the internet that help us make optimal decisions during the Financial Education Programme. I think, however, that if there had been more response options,

or a ranking of sources of information, it is likely that a significant majority of students in the programme would have selected the internet after parents and friends.

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Generation-specific consumer perception of self-driving cars

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Abstract

Self-driving vehicles are a new field of engineering Like the automobile in its infancy, it has not yet been accepted worldwide, or in Hungary. There are those who support it, those who oppose it and those who are neutral towards self-driving. Within the framework of our research, the acceptance of self-driving is generation-specific. Within which framework we used a deeper statistical analysis to examine the results obtained. a The number of interviewed sample items was 511. The sampling procedure was carried out using a snowball method. The aim of the survey was to exclude generation-specific refusal. The research is a side study of the economic aspect of self-driving systems. The results obtained from this research will serve as a basis for our research on generation-specific self-driving.

Keywords: Self-drive system, generation, cars, drive, high tech

1. Introduction

Self-driving technology is a very intensively developing industry. More and more people in Hungary are starting to get involved in it. Such generation-specific studies in this field are very rare. They are based on the combination of two disciplines and require a broad knowledge core. A technical and an economic approach to self-direction are needed. Different generational changes and perceptions have a major impact on this topic. This approach also harmonises the link between consumer and producer. In the light of these considerations, the topic was chosen and the conclusions were drawn in a secondary research framework and then in a primary research framework.
The following hypotheses were formulated.
H1: The adoption of self-management has generation-specific elements.
H1/a: Generation X prefers simple treatment.
H1/b: Generation Z prefers high technology.

2. Literature review

The automotive industry has become so important at global level that it can show the standard of living of a country thanks to the digitalization (Garai-Fodor et al, 2022; Garai-Fodor, 2023; Csiszárik-Kocsir, 2023; Varga et al, 2022; Varga – Csiszárik-Kocsir, 2023; Csiszárik-Kocsir – Varga, 2023). A number of studies and statistics are produced that look at the number of cars per

capita in a country. (Viktor & Szeghegyi, 2022) There is a strong correlation between the standard of living in a country and the number of people in that country who have a car.(Viktor et al.,2022) Countries where people can afford to use a car are likely to have a much better standard of living than countries where far fewer people own a car.(Gupta et al., 2021) The automotive industry itself is also a major determinant of the economy because it employs a very large workforce and drives many other industries. (Liu et al., 2021) The automotive industry is a very large consumer of raw materials that are already in short supply around the world.(Yin et al., 2021) All countries are wary of their reserves and are trying to switch to ways of avoiding their use.(Wang et al., 2021) The three countries with the largest oil reserves are Venezuela (300.9 billion), Saudi Arabia and Canada. (Fernandes et al.,2021) The world uses an average of 99.3 million barrels of oil per day, measured in 2018. This has unfortunately increased and is now over 100million. Which is bad, because it should be falling. The automotive industry is therefore trying to switch to self-driving and hybrid cars to reduce consumption. (Badue et al., 2021) Automotive news has published a list of automotive suppliers ranking. The top countries are Germany, Japan, Canada, America, Korea, France. The top spot on the list is still held by Bosch, which has a particular interest in Hungary (Abdel-Latif et al.,2021). Last year it had revenues of 1565 billion ft, nine sites and employs 15300 people. Within the automotive industry, it is a leader in the development, repair and replacement of software and hardware, as well as in the development of self-driving mobility (Luo et al., 2021). They are followed on the list by Continental, another German company.

Self-driving cars are increasingly attractive in a world where reducing carbon emissions and pollution is a growing concern for many people. Over their lifetime, they emit fewer greenhouse gases and air pollutants than a petrol or diesel car. This is even when the production of the vehicle and the electricity needed to fuel it are taken into account. With the rise in popularity of self-driving cars, there are many questions about their true environmental credentials. From the way electricity is generated to the technologies used in its manufacture, we will review some of the facts about self-driving cars and their environmental impact. (Gao et al., 2021) The main benefit of self-driving cars is that they contribute to improving air quality in cities. Without tailpipes, clean self-driving cars do not produce carbon dioxide while driving. This significantly reduces air pollution. Put simply, self-driving cars make cities a better place for pedestrians and cyclists by creating cleaner air. In one year of use, self-driving cars save 1.5 million grams of carbon dioxide. The production of self-driving cars requires more energy and generally produces higher emissions than conventional cars. This is because they produce lithium-ion batteries that are an essential part of the self-driving car. (Lodhi et al., 2020) More than a third of the CO2 emissions over the lifetime of a self-driving car come from the energy used to make the car. With advances in technology, this is changing for the better. More efficient manufacturing techniques will improve the emissions generated during the production of batteries. Battery reuse and recycling is also a growing market. New technologies are being explored to find ways to reuse used batteries, for example in electricity storage. One day we may all use batteries in our homes to store our own energy. Such possibilities will reduce the environmental impact of used batteries. Even after taking into account the negative impacts of battery production, self-driving cars are still the greenest option. This is due to the overall reduction in emissions over the lifetime of the cars. Even with electricity generation, the carbon emissions of a self-driving car are 17-30% lower than driving a petrol or diesel car. Using low carbon electricity also dramatically improves emissions from electricity generation.(Han et al., 2021)

Over the past few years, car manufacturers have developed a wealth of driver assistance systems that can now provide significant help in everyday life. There are a number of cameras and sensors that monitor dangerous situations, such as emergency brake assist, which applies the brakes when necessary to prevent or at least reduce the severity of a collision. Another aid is lane departure warning or lane-keeping assist. The former indicates when you are leaving your lane and failing to indicate or slowly 'sliding' into the other lane, while the latter keeps your car in its lane if the road surface is of good quality. Driver assistance systems, without exception, require the driver's active attention, as we have to hold the steering wheel, cannot sit back and do anything else, but they still make driving much easier.(Fodor & Popovics, 2021)

Plug-in hybrids: after fully self-driving cars, let's look at the products consumers can choose from in the plug-in range-extending self-driving (5N) and plug-in plug-in hybrid (5P) categories. Every fifth car in the mix is of this type. The Opel Ampera, also popular for its similarly long range, has not even managed to overtake it, with a share of less than 14%. Even the Toyota Prius PHEV outsells the Ampera. In fourth place (combined), BMW's i3 and i3s with electric power generator (REX) take 10.9% of the cake. A total of 1,400 of the purely self-driving and range-extended i3s are running in the country, so if the two variants were combined, it would finish second in both the purely self-driving and range-extended hybrid groups, and third in the overall list of green plate cars." (Tibor Antalóczy, 2020) Plug-in hybrid technology has made it possible for green plates to become more widespread. This is because self-driving cars are usually a second car for people, as they do not replace a full-fledged car due to the range and charging time. The plug-in is a solution to this problem, as it has all the advantages of a green number plate, but thanks to its internal combustion engine, it can operate as a full-fledged car. (Shirolkar et al.,2021)

The first, and perhaps the biggest threat among consumers, is pollution. Many believe the afterlife of batteries causes far more damage to the environment than we help by driving a zero-emission car. The general criticism is that although cars do not directly pollute, they do so indirectly, because the electricity to power them is still produced in a polluting way, so the bottom line is that self-driving cars do not pollute where they are driving, but elsewhere, for example where their 'fuel' is produced. (Sviatov et al., 2021)
Researchers do not deny this, at least not that self-driving cars pollute, since they do indeed need to produce their own electricity and the batteries also pollute, but after a lot of research they have mathematically and physically proven that, despite this pollution, they have a significantly lower environmental impact than conventional cars. (Fodor et al., 2021)

Self-driving cars are not the only benefit for companies, as many of them could face market losses in the future. This will mainly affect companies that sell the simpler, smaller parts needed for conventional cars. Given that there are about 60% fewer parts in a self-driving car, there will be significantly fewer firms producing small subcomponents in the future. Not to mention the fact that these processes are now well underway and automated, so there will be less need for human resources. Hungary could also be adversely affected by the rise of self-driving cars, as we are largely suppliers to German car manufacturers. If we do not succeed in transforming our companies and opening them up to electric cars, we will soon see the decline of one of the main drivers of our economy.(Pervez et al., 2021)

As a knowledge-intensive industry, the threat of new entrants is relatively low, because entry is only possible with high state support and a highly protected, large-scale back-market, as has been

the case in China over the past 20 years. Electric cars are at first sight simpler to build than their conventional explosion-engined counterparts, as they use about a tenth as many components as conventional cars, but some components, such as the battery or inverter, are more complex and expensive compared to most conventional car components, and development and production costs are higher for these components. In addition to the extremely high development costs, there are also huge costs in terms of getting the models known and accepted by consumers, because although electric cars are developing very rapidly, there are many questions and uncertainties in society. (Fodor & Popovics,2022)
This segment is likely to be characterised not by the threat of new entrants, but by the disappearance of existing players, for example because of a lack of responsiveness to changing market needs. Manufacturers who do not yet produce electric cars or who are not scheduled to enter the market in the next 1-2 years will start from a very long way behind and will not be able to meet the EU's target of reducing average emissions to 95 g/km by 2020 for all manufacturers on their own. Manufacturers will only be able to meet this target if they already have an electric model.Garai-Fodor et al., 2022)

The fact is that building an electric car is much simpler, but the cost of developing the technology and acquiring the knowledge base makes it very difficult for manufacturers who have not acted in time and started development. It was only in 2018 that Tesla was able to turn a profit and finally become profitable after entering the market in 2006. It was finally able to do this by producing a sufficient number of cars. (Fodor & Popovics, 2021)

3. Material and Methods

The focus of our research was the adoption of generationally specific self-management. Which we measured using a quantitative online questionnaire between February 2022 and September 2022. The questionnaire received 511 completions and was analysed using a pre-tested standardised questionnaire. The respondents were replicated using a snowball method. nominal measurement level and metric scales: Likert scale and semantic scale. Descriptive statistics and Anova methods were used to evaluate the results obtained in this way. SPSS version 24.0 was used. Significance was true for groups if less than or equal to 0.05.
Hypothesis one (H1) that self-direction adoption contains generation-specific elements is confirmed. Since Generation X is of paramount importance to them.

Table 3. Acceptance of self-driving by generation Source: compiled by author

How confident are you in self-driving?	**N**	**Mean***	**Std. Deviation**	**Sig**
X generation	196	3,27	0,959	
Y generation	52	3,13	1,162	
Z generation	237	**4,43**	0,896	0,01
Baby boom generation	40	3,11	0,944	
Total:	511	3,88	0,952	
1= strongly disagree, 5= strongly agree; analysis of variance; One Way Anova, Post Hoc Test				

The question H1/A that Generation X prefers simpler technology is not validated as no evidence was found for such a generation specific item. That any of the generations surveyed had such an element.

Table 2. Easy handling for self-driving vehicles Source: compiled by author

How much do you prefer a simpler treatment for self-driving	N	Mean*	Std. Deviation	Sig
X generation	196	2,44	0,729	0,04
Y generation	52	3.02	1,532	
Z generation	237	2.93	0,146	
Baby boom generation	40	3,11	0,514	
Total:	511	3,08	0,942	
1= strongly disagree, 5= strongly agree; analysis of variance; One Way Anova, Post Hoc Test				

Table 3. the importance of high equipmentSource: compiled by author

	How important is high equipment?		Total
	Yes	No	
Man	133	228	261
Woman	110	140	250
Total	243	368	511

Table 4. Chi-Square Tests Source: compiled by author

	Value	df	Asymp. Sig. (2- sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)
Pearson Chi-Square	6,485a	1	,011		
Continuity Correctionb	5,552	1	,018		
Likelihood Ratio	6,614	1	,010	,014	,009
Fisher's Exact Test					
Linear-by-Linear Association	6,429	1	,011		
N of Valid Cases	511				

Since my two samples differed by gender, as I wrote at the beginning of the analysis, I used Fisher's test to see whether there was a significant relationship between the two measures or not. Fisher's test can be used when analysing a 2x2 data table, i.e. when there are only two possible answers to both questions.

Women were 12% more likely to say that high amenities were important. I tested whether this really means that women are more likely to be highly equipped. This involved examining the Fisher's Exact Test value, and since this value is 0.14, which is greater than the 0.05 value, I found an independent relationship between the two variables. Hence, based on gender distribution, a similar proportion of respondents value high occupancy.

In my questionnaire, I asked Likert scale questions twice. In both cases, I asked respondents about important aspects when choosing a car. Once about conventional cars and the second time about electric cars. In my analysis, I wanted to find out to what extent these answers depended on the gender of the respondent, so I tested some aspects using Cramer's V coefficient.

In this case, I used the Cramer's V coefficient to test the closeness of the relationship between an ordinal and a nominal variable. Its value ranges from 0 to 1, where at 0 we have two variables that are completely independent, and at 1 we have two variables that are very strongly related.

I mentioned earlier how colour is not important according to my respondents. Now we can see what this shows in a more in-depth analysis. There is a weaker than medium but by no means negligible relationship between respondents' gender and their perception of the importance of colour. We can see that colour is less important for men but very important for women. As a lower percentage of women completed the questionnaire, this difference in gender identity is not apparent when the responses are considered in aggregate.

Table 5. the relationship between high occupancy and gender: compiled by author

		Gender?		Total
		Man	Woman	
High tech	Not important at all	93,3%	6,7%	100,0%
	Not important	81,2%	18,8%	100,0%
	Neutral	48,9%	51,1%	100,0%
	Important	41,9%	58,1%	100,0%
	Very important	44,4%	55,6%	100,0%
Total		56,9%	43,1%	100,0%

Table 6. Symmetric Measures -High tech Source: compiled by author

	Value	Approx. Sig.
Phi	,378	,002
Nominal by Nominal		
Cramer's V	,378	,002
N of Valid Cases	116	

However, if we look further and consider more aspects, we see that there is only a lower level of significance between the gender of the respondents and the order of importance of the aspects. Which will be the results of more studies to come.

Table 7. High technology preference by generation Source: compiled by author

High technology preference by generation	N	Mean*	Std. Deviation	szignifikancia
X generation	196	**4,55**	1,32	0,01
Y generation	52	1,97	1,21	
Z generation	237	2,11	0,76	
Baby boom generation	40	2,43	0,41	
Total:	511	3,24	0,871	
1= strongly disagree, 5= strongly agree; analysis of variance; One Way Anova, Post Hoc Test				

From the foregoing, it is not possible to determine the gender distribution of self-driving vehicles in terms of high occupancy. But broken down by generation, it can be reported that Generation Z prefers high equipment for self-driving. On this basis, my hypothesis H1/b is accepted.

4. Conclusion

We are facing a very exciting future, as more and more driver assistance systems appear in our cars as a precursor to self-driving, flying cars can be bought, robotics are becoming more widespread, space probes are being sent to other planets and genetically modified babies are being born. How are they connected? They are all achieved by us humans, because we have never stopped designing, perfecting and looking to the future. It is impossible to say what the distant future holds for motoring, but it is clear that there will be no shortage of innovation, clever solutions and creativity in the years to come. In our study, we looked at a generation-specific analysis of self-driving vehicles by adoption, usability and equipment. We formulated hypotheses which were proven or rejected in the course of our analysis. In the case of self-direction, Generation X was found to be more acceptable than other generations. Or that the younger generation, the Z's, prefer high specification. Which is misleading for the market as 87% of the respondents live in rented accommodation and 63% have savings of less than 1 million HUF. While a self-driving car with a similar system (level 2) starts from 3 million forints if you look at a manufacturer in a smaller category it starts from 5 million forints and it is perfectly clear that Z's are not a predictable market in terms of self-driving and the generation specific element of wanting and demanding much more is there.
I think that the online questionnaire I asked was very comprehensive and gave an insight into many aspects of self-driving cars. For example, we could see that younger generation (Z) has less access to high specification cars and therefore market assessment in this sector is more difficult.

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