The Macrotheme Review

a multidisciplinary journal of global macro trends

The Macrotheme Review (ISSN 2379-9765 print) is a peer-reviewed multidisciplinary journal publishing articles on global macro trends in business, economics, finance, technology, demography, geopolitics, energy, the environment, and other. The common theme among these different disciplines is the implications for investors. We believe that the investment strategy is a multidisciplinary science; thus, this journal provides a common venue where authors can present their comments, arguments, and evidence about the global macro trends affecting the financial markets.

Volume 14 Issue 1 2026

Note: The Macrotheme Review is print-only journal. The archived online issues can be found here: https://macrojournals.com/journals/the_macrotheme_review

Table of Contents

The role of educational attainment in the development of environmental responsibility and self-assessment of sustainability

Prof. Dr. Ágnes Csiszárik-Kocsir
Full-Professor, Obuda University Keleti Károly Faculty of Business and Management, kocsir.agnes@uni-obuda.hu

Dr. habil. János Varga
Associate Professor, Obuda University Keleti Károly Faculty of Business and Management, varga.janos@uni-obuda.hu

Environmental awareness and sustainability are among the most important and pressing socio-economic issues of our time. Prolonged, excessive economic growth has caused such severe environmental damage that its consequences are now tangibly evident in our daily lives. The effects of the destruction of the natural environment, sacrificed in the name of prosperity, are no longer perceived as a distant, future threat, but as a present-day challenge that undermines our quality of life: extreme weather events, global warming and the damage to ecosystems have become part of our daily experience. However, when it comes to taking responsibility, there remains a strong tendency to shift blame: the general public and households often hold companies responsible for environmental problems, whilst the business sector points to individuals' consumption patterns as the primary driver of environmental pressure. This study examines how educational attainment relates to individuals' sense of responsibility for environmental degradation, as well as their subjective assessment of the sustainability of their own lifestyles. Our aim is to demonstrate the extent to which educational attainment determines environmental awareness, with a view to inducing targeted messages and genuine action.

Keywords: sustainability, environmental awareness, responsibility, educational attainment

Introduction

The global socio-economic environment is increasingly defined by a growing population, the depletion of finite resources and mounting environmental risks, with phenomena such as the loss of biodiversity and global warming. In this context, attention naturally turns towards promising solutions: focusing on strengthening environmental awareness and responsibility, and on the rise of circular economy business models. These solutions must be applicable on both the consumer and the producer-service provider sides (Harangozó et al., 2018). All this requires resources (money), expertise (specialists, knowledge), innovation and leadership commitment. On the other hand, it is consumers who make the purchasing decisions that, taken together, determine the level of our environmental impact (Garai-Fodor – Popovics, 2022). In this dual sphere – encompassing both producers and consumers – decisions prioritising the preservation of environmental values are therefore required; encouraging signs of this are already emerging in certain consumer reactions (Garai-Fodor – Popovics, 2021). A natural extension of this line of thought is that awareness can also be interpreted and measured in environmental terms through the accountability of economic actors.

Literature review

According to the literature, environmental awareness is primarily evident in the willingness of individuals (Csutora et al., 2022) and businesses to adopt environmentally friendly behaviour (Zelezny – Schultz, 2000). Although the two poles – consumer and corporate – are interlinked, they cannot be treated as homogeneous; differing motivations and constraints shape the decision-making environment (Lin – Chang, 2012). The three-pillar model of environmental awareness – attitude, intention, behaviour – is a widely accepted framework for understanding the phenomenon (Mataraci – Kurtulus, 2020; Szeberényi, 2024). , the internal resource driving action – a commitment to environmental values – is of central importance in enabling individuals and companies to make responsible, conscious choices (Laheri et al., 2024).

Meanwhile, intensifying competition and the explosive growth of market information have led to an increase in consumer power and greater consumer awareness (Leaniz et al., 2017). All this is pushing expectations on the supply side towards high-quality, less environmentally harmful products, to which businesses must adapt (Lin – Chang, 2012). Environmentally conscious behaviour thus aims simultaneously to raise awareness of the problem and to lay the foundations for a commitment to action, whether in terms of individuals' everyday decisions or corporate strategies (Huang et al., 2022). Sustainability is at the heart of human consciousness; therefore, awareness alone is insufficient, and without a willingness to act, the desired change will not materialise (Bonnett, 2017). Where commitment takes the form of actual action – from the redesign of corporate processes to household consumption practices – higher levels of environmental awareness can be measured (Mishal et al., 2017). Negative environmental impacts – pollution, waste accumulation, biodiversity loss, and deteriorating air quality – are predominantly the consequences of human activity, which also justifies the urgency of the response (Bozsik et al., 2023).

It is inconceivable to lay the foundations for strategies for a sustainable future without exploring generational differences (Gonda – Rátz, 2023). Naturally, research should be encouraged that captures the characteristics of different generations at the intersection of environmental awareness, consumer habits and travel practices, as these are the keys to long-term sustainability (Seyfi et al., 2025).

However, generational environmental awareness requires further empirical validation, particularly in terms of practical application and actual ecological footprint reduction – for example, in the choice of low-carbon transport and accommodation options (Ma et al., 2024). Generation Z is characterised by high environmental awareness and openness to technology, which may also influence their tourism decisions (Konieczna – Trybuś-Borowiecka, 2025). Environmental issues feature prominently in this age group's priorities; they favour sustainability guidelines that focus on environmental protection, resource conservation, employee well-being and community engagement (Schönherr – Pikkemaat, 2023). The picture is, however, complex: Generation Z is not only sensitive to environmental issues, but also regards poverty, inequality, unemployment and economic issues – in the light of their own life experiences – as equally important topics (Pinho – Gomes, 2023).

Intergenerational differences in environmentally conscious behaviour are not merely interesting descriptive statistics, but also highlight the problem of the collective psychological burden (Garai-Fodor & Huszák, 2024). Climate anxiety – as a multidimensional phenomenon – is particularly relevant to the mental well-being of younger generations, who often experience the future not as a promise but as a threat, aware of the consequences of climate change (Szeberényi, 2025). Consequently, a comprehensive examination of explanatory theories of environmental consciousness – integrating structural, institutional and individual perspectives – is essential for understanding generational differences (Muth, 2022). Historically, the intergenerational dilemma has often been framed as a question of the temporal distribution of the costs and benefits of emissions reduction: the older generations' lower motivation for immediate action can be explained by the fact that the positive benefits would mainly accrue to future generations (Muth, 2022). However, the age-related correlations between pro-environmental behaviours and eco-emotions are complex and do not show linear age patterns for all types of behaviour (Ágoston et al., 2024). All this points to the need for intergenerational psychological support and targeted interventions that take gender and generational differences into account, thereby promoting the wider adoption of environmental responsibility and sustainable lifestyles (Szeberényi, 2025).

Generation Z highlights the gap between environmental attitudes and behavioural implementation, demonstrating a high level of sensitivity and openness to sustainability practices, which is shaped partly by social media and sustained partly by an inner sense of responsibility (Ribeiro et al., 2023). , the integration of environmental values and practical needs may be key to widespread social engagement (Nguyễn et al., 2024). Educational attainment and technological openness favour the uptake of environmental knowledge and proactive learning patterns, which may also be reflected in Generation Z's tourism decisions (Konieczna & Trybuś-Borowiecka, 2025). However, alongside environmental responsibility, dimensions of social justice – poverty, inequality, work, the economy – occupy an equal place in their value system (Pinho & Gomes, 2023), which complicates the design of offerings based purely on 'green preferences'.

Material and methods

The research findings presented in this study are based on a questionnaire survey conducted in the spring of 2024. The research instrument was a pre-tested, standardised questionnaire containing closed-ended questions, designed to ensure the evaluability of the sample and comparability of results. During the study, we explored various dimensions of sustainability and awareness in a comprehensive manner, with particular attention to how respondents with different levels of educational attainment relate to environmental degradation and sustainable lifestyles.

A total of 4,830 people completed the questionnaire online. Respondents were recruited using the snowball method, anonymously. The breakdown of respondents by educational attainment was as follows:

Primary education: 451 people (9.34%)

Secondary education: 2,525 people (52.28%)

Higher education – BSc level: 1,220 people (25.26%)

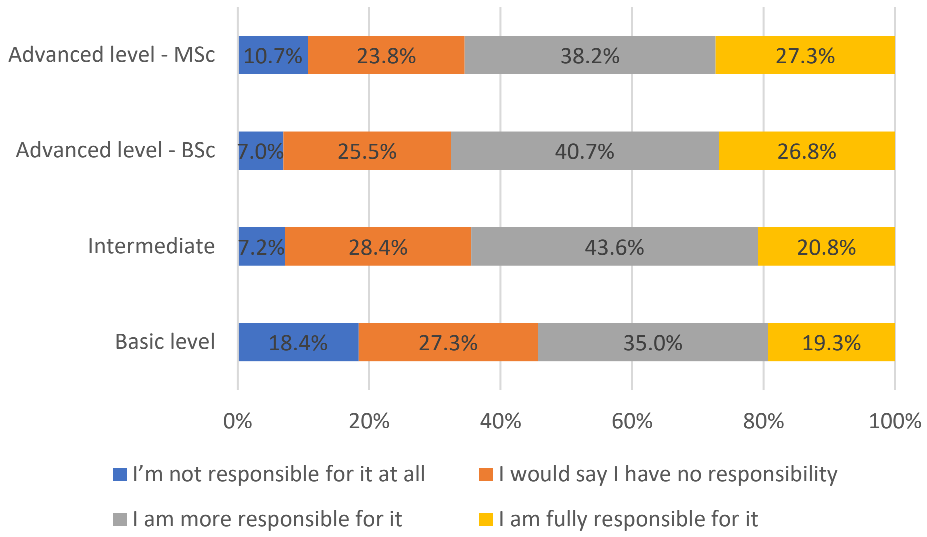
Higher education – MSc level: 634 people (13.13%)

In this study, we examine, broken down by educational background, the issues that reveal differences in perceptions of environmental damage and attitudes towards sustainable lifestyles. In our analysis, we present cross-tabulation analyses, but we emphasise that the topic is also suitable for further, more in-depth statistical investigations. The aim of our research at this stage is to identify those educational attainment groups that approach the issues of sustainability and environmental protection with the greatest awareness. These groups can serve as examples for other educational categories, with particular regard to the possibilities for educational approaches and targeted awareness-raising.

Results

The research examines how groups with different levels of educational attainment perceive the role of individual responsibility in environmental degradation. As previous studies have shown, a sense of individual responsibility generally increases in line with rising levels of educational attainment, a finding that has been confirmed in our study as well. Among those with a basic level of education, the sense of individual responsibility is typically weaker. One reason for this is more limited access to information, and another is that, for them, environmental problems often do not appear as immediate challenges in their daily lives. They tend to attribute responsibility to external actors, such as the government or large corporations, to a greater extent. Among those with secondary education, the sense of responsibility is more balanced: they generally acknowledge the importance of the individual's role, whilst placing greater emphasis on the influence of government measures and corporate operations. For them, environmental problems often appear to be systemic issues – economic, technological or regulatory – whose resolution goes beyond individual action. Those with higher education qualifications typically feel to a greater extent that their personal decisions – such as their consumption habits, transport choices or energy use – directly contribute to the state of the environment. This is underpinned by a higher level of environmental knowledge, a stronger sense of social responsibility and more frequent exposure to sustainability considerations.

Figure 1: Respondents' sense of personal responsibility for environmental degradation and destruction, by educational attainment



Source: own research, 2024, N = 4830

Based on the residuals, those with primary education were strongly over-represented in the 'I bear no responsibility at all' response (+7.7), whilst they were under-represented in all categories where responsibility was accepted (–2.9; –2.0). This suggests that the rejection of responsibility is particularly common among them. In the secondary education group, the responses "Rather not" (+2.3) and "I am rather responsible" (+3.3) are more common than expected, whilst the extreme positions (–3.7; –3.8) are much rarer — in other words, this group favours the middle ground. Among those with a BSc, "I am fully responsible" is significantly over-represented (+3.6), which suggests a strong sense of personal responsibility. The same can be observed in the MSc group (+2.7), meaning that higher educational attainment is clearly associated with a greater sense of responsibility.

Table 1: Respondents' individual responsibility for environmental degradation and destruction, based on adjusted standardised residuals, by educational attainment

	Basic level	Intermediate	Higher education – BSc	Higher education – MSc
I have absolutely no responsibility	7.7	-3.7	-2.4	2.0
I don't really have any responsibility	0.2	2.3	-1.3	-1.9
I am more responsible for it	-2.9	3.3	-0.5	-1.8
I am entirely responsible for it	-2.0	-3.8	3.6	2.7

Source: own research, 2024, N = 4830

The result of the chi-square test ($\chi^2 = 97.603$; $p = 0.000$) clearly shows that there is a statistically significant relationship between educational attainment and the sense of individual responsibility. However, the strength of the relationship is weak, as indicated by Cramer's V = 0.082. Gamma = 0.098 also indicates a weak but positive correlation, suggesting that as educational attainment increases, the likelihood of taking responsibility increases slightly. Based on Lambda = 0.000, knowledge of one variable does not substantially improve the prediction of the categories of the other.

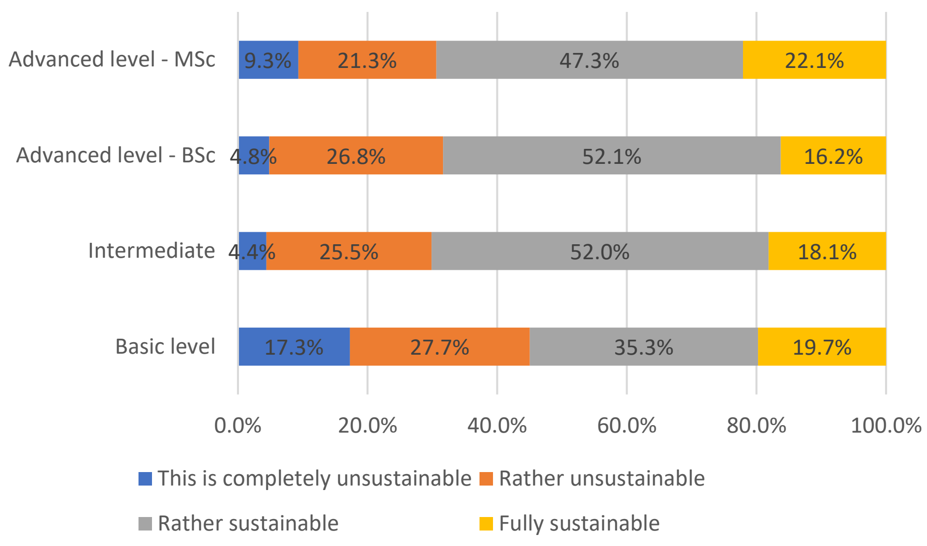
Table 2: The relationship between a sense of personal responsibility and educational attainment

	Value	Sig
Pearson Chi-Square	97.603	0.000
Cramer's V	0.082	0.000
Gamma	0.098	0.000
Lambda	0.000	-

Source: own research, 2024, N = 4,830

Figure 2 presents respondents' subjective views on the sustainability of their own lifestyles, compared across groups based on educational attainment. Among those with primary education, the subjective assessment of the sustainability of their own lifestyle is generally lower. This may be due to a more limited level of environmental knowledge, or to the fact that factors determining lifestyle – such as consumption opportunities or the characteristics of the living environment – make sustainable decisions less feasible. Among those with secondary education, perceptions are typically highly varied: whilst they often acknowledge the importance of sustainability, they tend to rate their lifestyles as moderately sustainable, suggesting that environmentally conscious behaviour is present to some extent but faces numerous obstacles (e.g. financial constraints, lack of infrastructure). Groups with higher levels of education – particularly those with BSc and MSc degrees – generally view the sustainability of their lifestyles more positively. There are several factors behind this: on the one hand, a higher level of environmental awareness and knowledge; on the other hand, lifestyle preferences that place greater emphasis on environmental responsibility (e.g. conscious consumption, selective waste collection, alternative transport).

Figure 2: Respondents' subjective assessment of their lifestyle in terms of sustainability, by educational attainment



Source: own research, 2024, N = 4830

Based on the residuals, those with primary education were again significantly over-represented in the 'Not at all sustainable' category (+10.0), indicating that negative self-assessment is exceptionally common among them. At the same time, they are strongly under-represented in the "Somewhat sustainable" category (–6.5), which is a further sign of a lower level of sustainability awareness. The secondary education group exceeds expectations in "Somewhat sustainable" responses (+3.1), whilst falling short in the extreme "unsustainable" categories. BSc graduates show a slight over-representation in both of the more sustainable categories, whilst MSc graduates are significantly over-represented in the 'Fully sustainable' category (+2.6). The pattern clearly reflects that higher educational attainment favours a positive self-assessment of sustainability.

Table 3: Respondents' subjective assessment of their lifestyle in terms of sustainability, based on adjusted standardised residuals, by educational attainment

	Basic level	Intermediate	Higher education – BSc	Higher education – MSc
Not at all sustainable	10.0	-5.8	-2.5	3.3
Rather unsustainable	1.2	0.0	1.2	-2.6
Rather sustainable	-6.5	3.1	1.8	-1.4
Fully sustainable	0.8	-0.3	-2.2	2.6

Source: own research, 2024, N = 4830

The result of the chi-square test ($\chi^2 = 151.411$; $p = 0.000$) shows a clearly significant relationship between educational attainment and the subjective assessment of a sustainable lifestyle. Cramer's V = 0.177 indicates that the relationship is of weak to moderate strength, meaning that educational attainment influences self-assessment but does not determine it. Gamma = 0.102 indicates a weak, positive correlation, suggesting that higher educational attainment is associated with a slightly higher self-assessment of sustainability. Lambda = 0.000 means that, from a predictive perspective, knowledge of educational attainment only minimally improves the forecast.

Table 4: The relationship between sustainable lifestyles and educational attainment

	Value	Sig
Pearson Chi-Square	151.411	0.000
Cramer's V	0.177	0.000
Gamma	0.102	0.000
Lambda	0.000	

Source: own research, 2024, N = 4830

Conclusions

Educational attainment plays a significant role in how individuals perceive their own responsibility for the emergence of environmental problems, and in how sustainable they consider their everyday lifestyles to be. Understanding environmental phenomena and recognising sustainability challenges are, to a certain extent, processes that require knowledge and information; it is therefore not surprising that the level of education is closely linked to the development of a sense of personal responsibility. Higher levels of education generally provide a broader knowledge base, greater social awareness and more opportunities to engage with environmental issues, which facilitates more informed decision-making. In contrast, those with lower levels of education often have access to less information or perceive the impact of environmental problems as less immediate, which can lead to a rejection of responsibility. All this suggests that a sense of environmental responsibility and self-assessment of sustainability are shaped along social stratification lines, with education being one of the strongest influencing factors.

The research findings clearly confirm that educational attainment is an important, though not the sole, factor in the development of individual responsibility and self-assessment regarding sustainability. Groups with the lowest levels of education consistently demonstrate a lower sense of responsibility, which stems partly from limited access to information and partly from the perceived remoteness of environmental issues. In contrast, those with higher levels of education, particularly those holding BSc and MSc degrees, are significantly more likely to consider themselves responsible and to view the impact of their decisions as more significant. The patterns of the ‘ ’ residuals confirm this trend: the primary education group is over-represented, whilst the higher education group is under-represented in the rejection of responsibility; at the same time, the assumption of full responsibility is particularly prominent among those with higher qualifications. The research highlights that environmental responsibility and awareness of sustainable lifestyles are socially stratified, and that education plays a key role in reinforcing conscious environmental behaviour

References

1. Ágoston, C., Balázs, B., Mónus, F., & Varga, A. (2024). Age differences and profiles in pro-environmental behavior and eco-emotions. *International Journal of Behavioral Development*, *48*(2), 132-144. https://doi.org/10.1177/01650254231222436

2. Bozsik, N., Szeberényi, A., & Bozsik, N. (2023). Examination of the Hungarian Electricity Industry Structure with Special Regard to Renewables. *Energies*, *16*(9), 3826. https://doi.org/10.3390/en16093826

3. Csutora, M., Harangozo, G., & Szigeti, C. (2022). Factors behind the Consumer Acceptance of Sustainable Business Models in Pandemic Times. *Sustainability*, *14*(15), 9450. https://doi.org/10.3390/su14159450

4. Garai-Fodor, M., & Huszák, N. (2024). Consumer Awareness: Environmental Consciousness and Conscious Lifestyles among Generation Z based on Primary Data. *Acta Polytechnica Hungarica,* *21*(12), 73-87. https://doi.org/10.12700/aph.21.12.2024.12.5

5. Garai-Fodor, M., & Popovics, A. (2021). Hungarian Food Consumers’ Preferences, from the Aspect of Ethnocentrism. *Acta Polytechnica Hungarica, 18*(8), 105–121.

6. Garai-Fodor, M., & Popovics, A. (2022). Changes in Food Consumption Patterns in Hungary, with Special Regard to Hungarian Food. *Acta Polytechnica Hungarica, 19*(8), 187–204.

7. Gonda, T., & Rátz, T. (2023). Attitudes and Actions in Responsible Tourism – An Analysis of Generational Differences. *GeoJournal of Tourism and Geosites, 46*(1), 234-242. https://doi.org/10.30892/gtg.46126-1020

8. Harangozó, G., Csutora, M., & Kocsis, T. (2018). How big is big enough? Toward a sustainable future by examining alternatives to the conventional economic growth paradigm. *Sustainable Development, 26*(2), 172–181. DOI:10.1002/sd.1728

9. Huang, C.-L., Kung, F.-H., & Cheng, C.-L. (2022). The Effect of Environmental Consciousness on Environmental Management. *Sustainability*, *14*(21), 14587. https://doi.org/10.3390/su142114587

10. Konieczna, P., & Trybuś-Borowiecka, K. (2025). Touristic Behaviors of Generation Z: Reasons Behind the Reduction in Travel Among Young People. *Sustainability*, *17*(17), 7919. https://doi.org/10.3390/su17177919

11. Laheri, V. K., Lim, W. M., Arya, P. K., & Kumar, S. (2024). A multidimensional lens of environmental consciousness: Towards an environmentally conscious theory of planned behavior. *Journal of Consumer Marketing, 41*(3), 281–297. https://doi.org/10.1108/JCM-03-2023-5875
12. Martínez García de Leaniz, P., Herrero Crespo, Á., & Gómez López, R. (2018). Customer responses to environmentally certified hotels: the moderating effect of environmental consciousness on the formation of behavioral intentions. *Journal of Sustainable Tourism*, *26*(7), 1160–1177. https://doi.org/10.1080/09669582.2017.1349775
13. Lin, Y.-C., & Chang, C. A. (2012). Double Standard: The Role of Environmental Consciousness in Green Product Usage. *Journal of Marketing*, *76*(5), 125-134. https://doi.org/10.1509/jm.11.0264
14. Ma, Y., Li, Y., & Han, F. (2024). Interconnected Eco-Consciousness: Gen Z Travelers' Intentions toward Low-Carbon Transportation and Hotels. *Sustainability*, *16*(15), 6559. https://doi.org/10.3390/su16156559
15. Mataracı, P., & Kurtuluş, S. (2020). Sustainable marketing: The effects of environmental consciousness, lifestyle and involvement degree on environmentally friendly purchasing behavior. *Journal of Global Scholars of Marketing Science*, *30*(3), 304–318. https://doi.org/10.1080/21639159.2020.1766988
16. Mishal, A., Dubey, R., Gupta, O. K., & Luo, Z. (2017). Dynamics of environmental consciousness and green purchase behaviour: An empirical study. *International Journal of Climate Change Strategies and Management, 9*(5), 682–706. https://doi.org/10.1108/IJCCSM-11-2016-0168
17. Muth, D. (2022). Theories on climate awareness: structural, institutional and individual approaches. *Tér és Társadalom*, *36*(4), 86–107. https://doi.org/10.17649/TET.36.4.3426
18. Nguyễn, T. V. H., Nguyễn, T. T. H., & Tai, L. K. (2024). Sustainable Tourism and the Intention of Generation Z to Choose Sustainable Tourism. *International Journal of Scientific Research and Management, 12*(6), 1871-1880. https://doi.org/10.18535/ijsrm/v12i06.sh03
19. Pinho, M., & Gomes, S. (2024). Generation Z as a critical question mark for sustainable tourism – An exploratory study in Portugal. *Journal of Tourism Futures*. *10*(3), 486–503. https://doi.org/10.1108/jtf-07-2022-0171
20. Ribeiro, M. A., Seyfi, S., Elhoushy, S., Woosnam, K. M., & Patwardhan, V. (2025). Determinants of generation Z pro-environmental travel behaviour: the moderating role of green consumption values. *Journal of Sustainable Tourism*, *33*(6), 1079–1099. https://doi.org/10.1080/09669582.2023.2230389
21. Schönherr, S., & Pikkemaat, B. (2024). Young people's environmentally sustainable tourism attitude and responsible behavioural intention. *Tourism Review, 79*(4), 939-952. https://doi.org/10.1108/tr-01-2023-0022
22. Seyfi, S., Michael Hall, C., & Strzelecka, M. (2025). Gen Z – pioneers or paradox in sustainable tourism? *Journal of Sustainable Tourism*, *33*(6), 987–1015. https://doi.org/10.1080/09669582.2025.2491702

23. Szeberényi, A. (2024). Klímaszorongás jelenléte az X, Y és Z generáció életében. In Obádovics, Cs., Resperger, R., Széles, Zs., & Tóth, B. I. (eds.), *Fenntarthatósági átmenet: Kihívások és innovatív megoldások – Nemzetközi tudományos konferencia a Magyar Tudomány Ünnepe alkalmából* (pp. 128–146). Soproni Egyetem Kiadó.

24. Szeberényi, A. (2025). An investigation of the symptoms of climate anxiety among teenagers and young adults in Budapest. *Statisztikai Szemle, 103*(8), 787-804. https://doi.org/10.20311/stat2025.08.hu0787

25. Zelezny, L. C., & Schultz, P. W. (2000). Psychology of Promoting Environmentalism: Promoting Environmentalism. *Journal of Social Issues, 56*, 365-371. https://doi.org/10.1111/0022-4537.00172

The USD exchange rate as a foreign policy tool for waging trade wars with China: an expansive overview of the US-China trade relationship

Henrik Csuzi
Msc Student Óbuda University, Faculty of Business and Economics

Abstract: In the context of increasing global economic integration, national sovereignty, local cultures, and social stability face challenges, particularly from the influence of Western developed nations. These countries, led by the United States, often leverage economic integration to advance their global political and economic agendas. The U.S., as a leader in this process, exerts significant influence through the use of a basket currency system, with fluctuations in the U.S. dollar exchange rate profoundly impacting economies worldwide. This strategy enables the U.S. to strengthen its dominance over the global economy. Given the U.S. dollar's central role in the global economy, governments and organizations recognize the significant economic opportunities arising from its exchange rate fluctuations. Many governments rely on foreign capital to mitigate the dollar's impact and emphasize the importance of capital account convertibility, while also pushing for financial reforms to the international monetary system. China, as a key driver of global economic growth, is particularly sensitive to changes in the U.S. dollar's value. The U.S. dollar's depreciation can have serious repercussions on China's economy, affecting its trade, inflation, and employment levels. Despite China's efforts to shift towards a basket currency system for the yuan (RMB), the U.S. dollar remains disproportionately influential. This paper explores the evolution and historical significance of the U.S. dollar, reviewing its impacts on China's economy through a combination of literature review and statistical analysis. It examines the broader economic and political effects of U.S. dollar fluctuations on China, focusing on trade relations between the two countries. Finally, recommendations are proposed for China to adjust its development strategy, promote industrial upgrading, and enhance regional monetary cooperation in East Asia to mitigate the negative effects of U.S. dollar volatility.

Keywords: Basket currency, China, Economic integration, RMB (Yuan), U.S. dollar exchange rate, United States

1. Introduction

The US dollar is still one of the most essential currencies in the global economy although it lost the character as the exclusive international currency, accompanying the rising of euro, yen and other strong currencies. Until the sub-prime crisis broke out in 2007, the US dollar's share of the international reserve system was still as high as 63.8% (Eichengreen, 1999). The "Griffin" dilemma still exists in the Jamaican system, where the US dollar is unshackled from gold and is more freely issued by the federal reserve (Pei, 2006).

The United States flows out of the US dollar through its current account deficit and into the US dollar through its capital account overproduction. Whereas, within the BRETTON ystem, the operating mode is that the US dollar flows out of the US dollar through the capital account deficit and flows back into the US dollar through the current account surplus. In addition, the US dollar is not restricted by issuance. The issuance of the US dollar was also constrained by the amount of American gold. In other words, the US dollar exports are provided by the US dollar that it flows back through commodity exports. During the recent years, the exchange rate of US dollar maintained a quite high level, especially after the US election and Trump became the US President (Sides, 2017). The question, however, is whether a strong dollar is beneficial for America, and even for the world. Indeed, much of the world is increasingly hostile to America's abuse of US dollar privileges. Because two-thirds of the US dollar in circulation is held by institutions outside the United States, all inter-bank US dollar settlement must go through the United States computer system. America recently fined European Banks billions of dollars for various reasons, citing its own financial regulations. The US fined BNP Paribas $9 billion in 2014 (Jaeger, 2014). Other geopolitical factors, such as sanctions against Russia, have also pushed Moscow to settle in RMB. This is accelerating the process of Eurovision. As the US dollar itself becomes a problem and is increasingly recognized around the world, this will affect the credibility of the US dollar. But for now, the US dollar's position remains unassailable.

2. Literature review

China has abundant labor resources and huge economic growth potential. The United States is the most powerful capitalist developed country in the world. Its strength in economy, politics, innovation, science and technology, culture and other aspects is in the first or leading position in the world. Therefore, even a minor change in the relationship between the United States and China has a significant influence on the situation of global economy. Both the United States and China cannot develop without CN-US relations. China should stand at a historical height, rationally analyze the current international new situation, and build a new CN-US relation with a long-term vision in the future, gradually achieving the goal of "harmonious world" in China's diplomacy.

2.1 The Bretton Woods system

Before the 18th century, precious metals like gold and silver were mainly used as currencies among many areas (Mundell, 1968). The monetary systems of western countries have experienced a transition period from the silver standard to the gold and silver complex standard. Generally, the gold standard system refers to the gold coin standard system. Historically, the gold bullion standard and the gold exchange standard system have appeared. Under the gold exchange standard system, due to the consideration of their own interests, countries have devalued their currencies and caused confusion in the international economic order. From 1929 to 1933, the world economy experienced a Great Depression accompanied by deflation and overcapacity, which destroyed the gold bullion and gold exchange standards in western countries (Bullion, 2009). With the widespread implementation of the currency circulation system in western countries, the crisis of the currency credit system has continued to deepen, and a unified international currency system cannot be established, and currency groups have been successively established (Schlesinger, 2014). A currency group is centered on the currency of a major country and uses this currency as its internal reserve currency for liquidation. Intra-group foreign exchange payments and free capital flow, but strict control on the receipt and payment and settlement outside the group, gold as an international settlement means, to play its world currency functions. In 1933, the United States established the dollar group, and in 1939 it developed into a dollar zone. The national currencies in the US dollar zone are pegged to the US dollar, and a fixed exchange rate system is implemented. Foreign exchange control is not implemented in the region, and the foreign exchange and US dollars of member countries are basically in the United States. The British Pound District was also established in the same year, mainly including the United Kingdom and the Commonwealth. The objective environment at that time created a lack of a unified currency system in the international community.

After World War II, Britain and the United States gradually became advocates for the reconstruction of the post-war international order. But at this time, Britain's economic strength had been greatly reduced because of the war, while the United States achieved sky-high economic strength. In 1944, the United States had become the world's largest economy and the largest gold reserve country, with GDP accounting for 50% of the world's total and gold reserves reaching 63%. In 1948, the United States became the world's largest creditor nation (Gilbert, 2010). In order to help countries such as Europe and Japan obtain the US dollar, the United States has launched the Marshall Plan for Europe and the Dodge Plan for Japan (Frieden, 1994). The United States has gradually replaced the United Kingdom as the leader of the global monetary and financial system.

The Bretton Woods system in the early stage played an positive role in promoting global economic integration and coordinating asset prices. The US dollar has gradually developed into the core of the international monetary system. However, inherent flaws are gradually exposed in the process. In addition, if the United States is to fulfill its obligation to convert gold, it must have sufficient gold reserves. Beginning in the 1950s, the US economy began to deteriorate. With the two US dollar crises and the long-term deficit, the US trade deficit expanded rapidly and the US gold stocks quickly drained. In 1969, at the suggestion of Professor Triffin, the International Monetary Fund introduced special drawing rights to join the international reserve system, but for many years the special drawing rights did not play the intended role.

The Nixon Administration abandoned the official exchange rate in August 1971, and suspending the obligation of foreign governments or central banks to use the US dollar to exchange gold with the United States, unilaterally torturing this agreement reached by the United States government with countries around the world in 1944 An agreement. Many western developed countries and Japan implementation of a floating exchange rate mechanism. In 1973, with the collapse of the fixed exchange rate mechanism, the system eventually disintegrated.

The Jamaican system is the product of the collapse of the Bretton Wood system, so it cannot be said that it is more advanced or more advanced than the Bretton Woods system. Just like the collapse of the international gold standard, the gold bullion and gold exchange standards entered into the stage are actually transitional stages. As a transitional stage system, it is always a choice and has many shortcomings.

The main elements of the Jamaican system: Gold is non-monetized, international reserve assets are diversified, exchange rates are freely chosen (there are no institutional arrangements), and the use of SDR is expanded.

The below table provides a summary of similarities and differences between the US monetary system and the Jamaican Monetary system.

Table 1.: Summary of the aspects of Jamaican and US monetary systems.

Aspect	Jamaican Monetary System	U.S. Monetary System
Currency	Jamaican Dollar (JMD)	U.S. Dollar (USD)
Exchange Rate Regime	Floating exchange rate system, influenced by supply and demand	Floating exchange rate system, mostly determined by market forces
Exchange Rate Pegging	Not pegged, but influenced by foreign reserves and market interventions	No pegging, purely free-floating currency
Interest Rate Determination	Set by the Bank of Jamaica based on inflation targeting and economic goals	Set by the Federal Reserve through the Federal Funds Rate and monetary policy tools
Central Bank	Bank of Jamaica (BoJ)	Federal Reserve (Fed)
Monetary Policy Goals	Inflation targeting, exchange rate stability, economic growth	Dual mandate: stable prices (inflation control) and maximum employment
Inflation Targeting	Yes, with a target inflation range (around 4%–6%)	Yes, with a target inflation rate of about 2%
Capital Controls	Limited controls; foreign exchange market is relatively open	No capital controls; free movement of capital
Currency Reserve	Holds foreign currency reserves, largely in USD	No need for foreign currency reserves, as the USD is a global reserve currency
Foreign Exchange Intervention	The BoJ may intervene to stabilize the JMD	Rare; the Federal Reserve generally does not intervene in FX markets

Source: Own compilation, (Schesinger, 2014)

2.2 The beginning of US-China economic relationship

As early as in the colonial era of the thirteen states of North America, Chinese tea, raw silk, etc. were exported to Boston, New York and other ports of North America through the British East India Company (Abel, 2001). In order to get through the channels of direct trade with China, American businessmen drove the "Empress of China" merchant ship, carrying American ginseng, fur, cotton and pepper, arrived Guangdong Province in August 1784, and purchased from China the next year After tea, silk, porcelain, lacquer ware and so on returned to the treaty, the direct trade between the United States and China began (Colonial, 2014). The volume of trade reached 6.7 million US dollars in 1816 and increased to 19 million US dollars in 1819 between the two countries. In the early stage of CN-US trade, usually the United States exported cotton to China and imported textiles from China (Journals of…, 2014). In the 1850s, China got to be one of the important markets for American textile export. In 1866, the proportion of the United States could share about 5% of China's trade volume. From late 19th century to the 1920s, the United States was often in a deficit in CN-US trade. From 1919 to 1929, the annual bilateral trade volume reached 200-300 million US dollars. After the 1930s, Japan attempted to monopolize the Chinese market, and the total amount of trade volume between the United States and China fell rapidly. In 1932, the total trade volume reached 82 million US dollars, which has been at a very low level since then. In 1945, when Japan surrendered, CN US trade began to grow again (European…, 2008).

In 1946, the Kuomintang government signed the Treaty on friendly trade and navigation between the United States and China, which provided convenient conditions for American goods to enter the Chinese market. In 1950, the Korean War broke out, and the US Department of Commerce banned all exports to China. In 1951, the United States manipulated the United Nations to pass the resolution of "embargo" on China. In September 1952, the United States manipulated the establishment of the "China Committee" within the Paris Coordinating Committee, in an attempt to block the economic development of new China by blocking the embargo (Fung, 2008). Under such circumstances, CN US trade has basically ceased. In 1949, the "White Paper on CN-US Relations" written by Dean Acheson who serving as Secretary of State, indicated a shift in US attitudes toward China. According to Michener (2010), as one of the most important designers of the Cold War, the Marshall Plan and NATO, he still hoped that Japan would continue to maintain normal trade with China's new regime before leaving office in 1953, thereby preventing China from accelerating closer to the Soviet Union due to trade issues and strengthening its strength. This idea also reflects the Cold War originator George Kenan's consideration. However, after the Korean War, the new US government changed its attitude on this issue, preventing China from becoming mainstream from the perspective of economy and trade. Meanwhile, the United States' attitude towards Japan has also changed, and the United States regarded Japan as bridgehead in Asia (Feldstein, 2008). The former, the controlling shareholder who has absolute right to speak in many international organizations, despite the opposition of allies such as the United Kingdom, pushed hard for Japan to join the International Monetary Fund, leading it into the General Agreement on Tariffs and Trade (GATT), although Japan does not meet the entry requirements for these organizations (Frieden, 1994). One requirement for the United States to bring Japan is to end its trade with China. History has begun a new process.

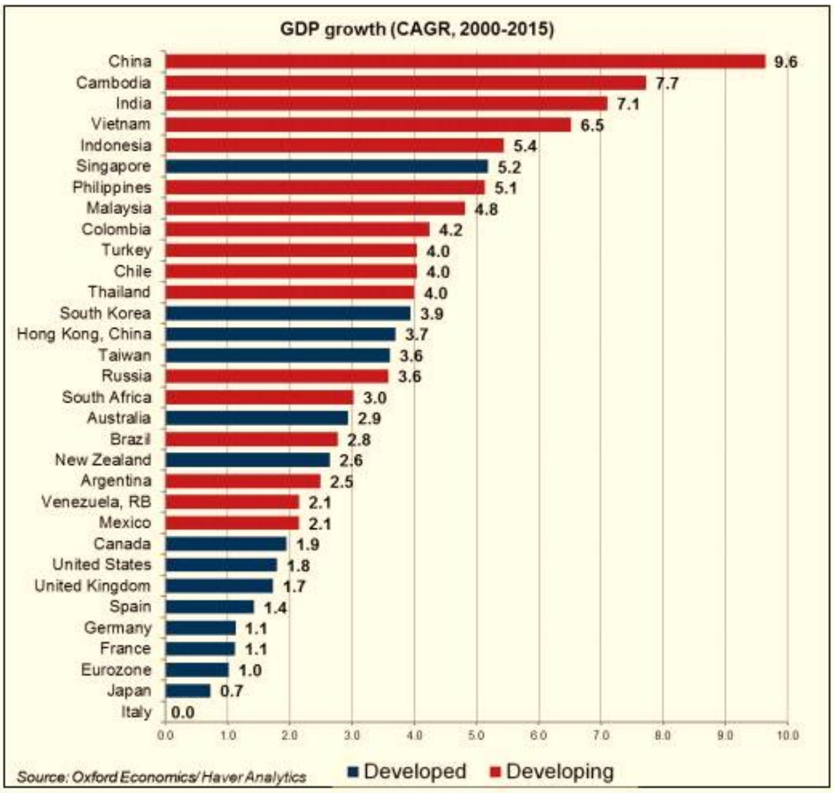
2.3 US- China economic relationship in the XXI. Century

In 1996, the soft landing of China's economy coincided with the subsequent Asian financial crisis and natural disasters that had not been encountered for many years (Fung, 2008). Before that, policy makers who had to deal with inflation encountered the problem of deflation, and the development and utilization of international markets was imminent. Under the pressure, then Prime Minister Zhu Rongji pushed China to become a member of the WTO. When he visited Washington before joining the WTO, he said:

> *"China must conform to its rules of the game if it wants to join the WTO and be able to integrate into the international community. Therefore, we will not make concessions."*

At the time, US President Clinton tried to persuade its members agreeing to China's accession to the WTO also gives his reasons: China will reduce tariffs, open markets, import more American goods, solve more American jobs, attract more American investment, and other benefits valued by American politics and business according to Figure 1.

Figure 1.: GDP Growth of developed and developing countries.



Source: (Sergi, et al., 2019)

In December 2002, then Deputy Secretary of the Ministry of Finance of Japan, Mr. Toshihiko Kuroda, wrote in the Financial Times that "China exports deflation to the world by promoting exports, pegging the yuan to the dollar, and domestic deflation." He therefore suggested that the yuan should appreciate. According to Lowery, (2012) this was the first time Western officials have publicly expressed their opinions on the RMB exchange rate and China's export policy after China's accession to the WTO. Later US officials and research institutions also questioned the exchange rate of RMB. China regarded these voices as a conspiracy similar to the Square Agreement. According to Wang, (2021) from 2004 to 2005, US President Bush and Treasury Secretary Snow promptly suggested that the exchange rate of RMB should appreciate. Hereafter, the People's Bank of China announced: Since July 21, 2005, China has implemented a controllable floating exchange rate mechanism according to the market supply and demand and adjusted with reference to a basket of currencies. Since then, the exchange rate between the RMB and the US dollar has steadily and orderly appreciated. Except for a limited number of years changed by the global financial crisis, China's external exports and surplus, especially exports to the United States, have steadily increased, and foreign exchange reserves have enhanced annually until 2014.

After Obama's election and re-election, he has repeatedly stated publicly that the the exchange rate between the RMB and the US dollar should appreciate and has repeatedly urged China to open its domestic market. When Trump was running for president, he clearly stated that he would increase taxes on Chinese exports to the United States and ask the yuan to appreciate. In last year, the trade war broke out between the United States and China, and the two countries imposed mutual tariffs on some commodities.

3. Methodology

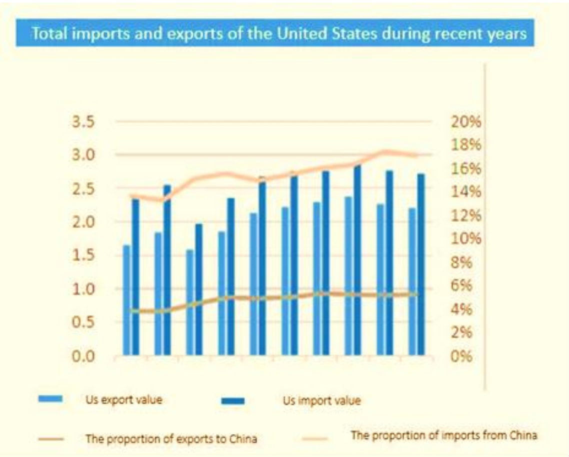
This study adopts a mixed-methods approach to analyze the trade imbalance between the United States and China, focusing on discrepancies in trade statistics, the impact of economic policies, and underlying economic theories. By combining quantitative data analysis with qualitative insights, this research aims to provide a comprehensive understanding of the trade dynamics between these two major economies.

Data collection will involve both quantitative and qualitative methods. For the quantitative aspect, annual trade data will be gathered from reliable sources, including the U.S. Census Bureau, the Chinese Customs Administration, and databases from the World Bank and International Monetary Fund. Key variables will include total trade volumes, trade deficits for specific years (notably 2002, 2016, and 2017), and statistics related to re-exports through Hong Kong. This quantitative analysis will facilitate a detailed examination of the trends and patterns in trade figures over time. On the qualitative side, a thorough review of legislative documents, policy reports, and relevant academic literature will be conducted to analyze the historical context of U.S.-China trade relations. This review will encompass tariff policies, monetary policies, interest rates, and trade agreements that have shaped the current trade landscape. Additionally, semi-structured interviews will be conducted with trade economists, policymakers, and industry experts to gain nuanced insights into the implications of statistical discrepancies and policy decisions on trade dynamics.

The data analysis will be conducted in two main stages. First, descriptive statistics will be used to summarize the trade figures, allowing for the identification of trends and patterns over the selected years. A comparative analysis will follow, focusing on the methodological differences in how the United States and China count re-exports and the resulting discrepancies in reported figures. Regression analysis will be employed to calculate the real income elasticity of U.S. trade with China, thereby elucidating the relationship between GDP growth and the expansion of the trade deficit. Since China became a member of WTO, the trade deficit of the United States with China has gradually increased from 20.2% in 2001 to nearly 50%. However, the fact is that the deficit is overestimated under the US statistical method because of the statistical differences between the United States and China. China uses raw materials from European and American countries to process and assemble products, and then sells them to European and American countries. But the United States neglected this point when calculating the trade balance, which led to such a huge trade deficit between The United States and China. Therefore, although the trade surplus between the United States and China is in China, the interest surplus is in the United States. To sum up, it seems untenable to wage a trade war based on trade deficit alone. Moreover, Trump has a commercial background and cannot fail to understand the importance of it. Historical experience has proved that the contest between major powers, especially between the first and second powers, is not more an economic performance, but an international political act.

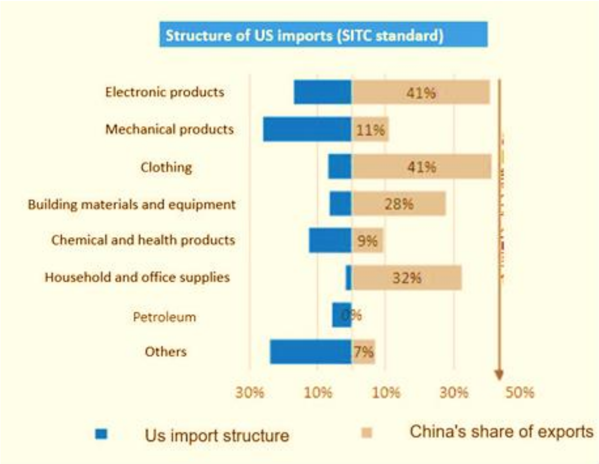
As is shown in the Figure 2b, the types of goods imported by the United States from all over the world are relatively average. The top three types of goods imported by the United States are mechanical, electronic and chemical and health products. Chinese goods make up 11%, 41% and 9% of the total imports of these three types of goods respectively. In addition, China's clothing and living and office supplies account for 41% and 32% of America's imports, respectively. Therefore, electronics, clothing and living and office supplies are the most important three types of China's exports in the CN American trade structure.

Figure 2a.: Total imports and exports of the US during recent years.



Source: (Goth, et al, 2020)

Figure 2b. Structure of US imports.



Source: (Alfaro, et al., 2023)

For the qualitative analysis, thematic analysis will be applied to the interview transcripts to identify recurring themes related to the impact of re-export statistics and economic policies influencing trade. Furthermore, content analysis of policy documents will be conducted to highlight key trends and shifts in trade strategy over time. To ensure the robustness of findings, a cross-validation process will be implemented to integrate quantitative and qualitative results. This integration will draw connections between statistical discrepancies and economic theories, developing a framework that illustrates the interactions between trade statistics, economic policies, and their effects on the trade imbalance. Acknowledging the limitations of this study is crucial. Potential challenges include the availability and reliability of data from different sources, potential bias in self-reported interview responses, and the difficulty of isolating the impact of specific policies on trade dynamics. Ethical considerations will also be taken into account, ensuring that all interview participants provide informed consent and that their confidentiality is maintained throughout the research process. Proper citation of all data sources will be upheld to maintain transparency and integrity.

4. The effects of the USD exchange rate on China's trade

While the trade war brings challenges to China's economy, it also provides opportunities for China's industrial upgrading and optimization. First of all, China implements an innovation-driven development strategy, promotes the optimization and upgrading of the manufacturing industry, and accelerates the deep integration of it application with industrialization. Since the beginning of reform and opening, China's manufacturing industry has maintained rapid growth and established an independent and integrated industrial system covering a wide range of sectors. At the same time, it has promoted industrialization and modernization and significantly enhanced China's overall national strength. There are obvious gaps in the capacity of independent innovation, efficiency of resource utilization, level of industrial structure, degree of informatization, quality and efficiency, environmental protection and other aspects. China's task of transformation, upgrading and leapfrog development is still urgent and arduous. Premier of China government said on the 2016 Asian BBS that the focus of the made in China 2025 breakthrough should be mainly on the integrated development with the Internet and accelerating the development of China's industry. The core of made in China 2025 is to realize intelligent upgrading of manufacturing. The combination of the Internet, mass entrepreneurship and innovation, and made in China 2025 will lead to a new industrial revolution.

Table 2 summarizes the strategies implemented by the two countries.

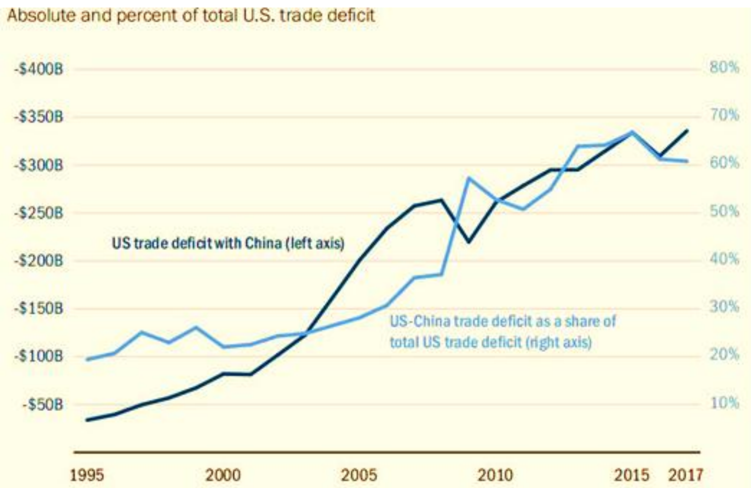
Table 2.: US trade war versus China trade war strategies.

Year	U.S. Trade War Strategy	China Trade War Strategy
2005	Increased imports of textiles and consumer goods, leveraging improved domestic economic conditions.	Focused on export growth with rising dependence on international trade, leading to significant job creation.
2005	Monitoring and responding to fluctuations in the U.S. dollar to assess impacts on trade balance.	Emphasized adaptation to currency fluctuations, enhancing competitiveness through domestic production.
2015-2017	Shifted focus toward domestic consumption, reducing reliance on exports.	Accelerated urbanization and market development, fostering new industries and consumer demand.
2015-2017	Development of advanced industries and innovative business models to sustain economic growth.	Transformation of traditional manufacturing and enhancement of technological capabilities for global competitiveness.

Source: Own compulation, (Eichengreen, 2011)

The reason why US launched the trade war is that there is a trade deficit of 200 billion US dollars between the two countries. How did the $200 billion trade deficit come about? Is it really scientific and objective for the United States to calculate this trade deficit unilaterally? Back in the 1960s, the United States also launched a trade war against Japan on the basis of its trade deficit. During the 30 years from 1960 to 1990, the United States and Japan had played seven rounds of games on textiles, color TV, steel, automobiles, exchange rates, semiconductors and structural trade, which led to a 20-year downturn in Japan's economy. At the same time, there is another factor that cannot be ignored, namely, the impending mid-term elections in the United States. Looking back on history, we can easily find that almost all presidential candidates have attacked China in the campaign since China's rise. For example, during his presidential campaign, Trump made a lot of comments complaining about the US trade deficit against China, accusing China of manipulating its exchange rate, and even threatening to impose a 45% tariff on Chinese imports. In the face of the mid-term elections, it is not difficult to understand Trump's initiation of a trade war with China. Although campaign slogans do not imply a real policy toward China after election, they are a campaign strategy for candidates. Therefore, the CN-US trade war is not a sudden occurrence, more is the deep concern of the United States about China's rise.

Figure 3.: Absolute and percent of total US trade deficit from 1995-2017.



Source: (Tu, 2019)

According to Figure 3, the US trade deficit with China in 2016 reached 347 billion US dollars, nearly 47.3% of the total US trade deficit in goods. Japan and Germany are the second largest countries with 9.4 percent and 8.9 percent, respectively.

The exchange rate between the U.S. dollar (USD) and the Chinese yuan (CNY) is a critical determinant of China's trade dynamics, influencing both its export competitiveness and import costs. As one of the world's largest exporters, China's economy is significantly affected by fluctuations in the USD, which can lead to various economic implications. A strong USD typically enhances the affordability of Chinese goods for foreign consumers, thereby increasing export volumes. When the dollar appreciates, Chinese products become relatively cheaper for U.S. consumers, which can stimulate demand and boost export growth. Conversely, a weaker dollar may diminish the appeal of Chinese exports, potentially leading to reduced trade volumes. Historical data shows that significant fluctuations in the USD often correspond with shifts in China's trade performance, underscoring the sensitivity of its export sector to currency valuations. The impact of the USD exchange rate extends beyond exports to also influence China's import costs. An appreciating dollar raises the price of imports denominated in USD, which can pose challenges for domestic industries that rely on foreign raw materials and commodities. This scenario can compel Chinese manufacturers to adjust their pricing strategies or seek alternative suppliers, ultimately affecting production costs and profit margins.Moreover, the volatility of the USD has implications for foreign direct investment (FDI) flows into China. A stronger dollar may lead investors to favor markets with more stable currencies, thus altering the patterns of investment. Additionally, fluctuations in the exchange rate can impact the operational costs for export-oriented Chinese firms, particularly when the yuan depreciates against the dollar, potentially leading to increased costs and decreased competitiveness. In response to these challenges, China has actively sought to diversify its trade partnerships and reduce its reliance on the U.S. market. Initiatives aimed at promoting domestic consumption, enhancing technological innovation, and developing alternative export markets have become central to China’s economic strategy.

In conclusion, the effects of the USD exchange rate on China’s trade are complex and multifaceted, influencing not only export competitiveness and import costs but also broader economic stability. As the global economy continues to evolve, understanding these dynamics is essential for policymakers and businesses navigating the intricacies of international trade. Future research should delve into the long-term implications of exchange rate policies and their potential effects on global trade patterns.

4.1 Active strategic implementation of trade by China: a proposal

China is increasingly dependent on international trade for labor employment, imports and exports, and the transfer of excess capacity. The dependence on foreign trade increased from 44% in 2001 to 60% in 2003 and over 70% in 2004. In the 9.5% GDP growth in 2005, the contribution rate of net export reached 3.6%. Exports directly created more than 100 million jobs. The textile trade directly employed about 20 million people and indirectly employed about 100 million people. 90% of domestic DVD production and 60% of mobile phone production are exported. In 2004, China produced 5.9 billion pairs of shoes and 130 million DVDS, it is accounting for more than 60 percent and 50 percent of world sales respectively. China has become heavily dependent on international sales. According to incomplete statistics, 110 million households, including more than 34.7 million enterprises, indicate that China has the largest consumer market for various production and a huge consumer market for means of living.

- First, the development of advanced industries, innovative formats and optimized business models is a very fast-growing market. The statistical data from 2015 to 2017 show that the average annual growth rate of the new kinetic energy index for economic development has reached 28%, and the added value of the new industries, new formats, and new business models has reached 15.7% of GDP.
- Second, the transformation and upgrading of traditional industries, especially traditional manufacturing, is a market with huge potential. At present, the total assets of industrial

enterprises above designated size exceed 110 trillion yuan. According to normal equipment upgrades and upgrades, it is a very large market in itself. Information technology, as the driving force of modern economic and social development, has profoundly affected China's economic and social development. At present, whether we can seize the historic opportunities brought by the development of informatization and take advantage of the situation to accelerate the transformation and upgrading of China's industrial structure is a key issue related to China's move towards a world economic power.

- Third, China's new urbanization is accelerating. There are now more than 600 cities nationwide, more than 100 are cities with more than 1 million population. Last year, the urbanization rate of the resident population reached 59.58%. For one percentage point increase in the urbanization rate, nearly 14 million people have transferred from rural to urban areas. This not only increases the investment in urban public service facilities, but also releases huge consumer demand for clothing, food, shelter, and transportation. Complementing the shortcomings of development, speeding up the transformation of shantytowns, speeding up the transformation of old urban areas, etc., will further unlock huge potential markets.

As an additional proposal, *fourth*, the consumption level, consumption capacity, and consumption awareness of urban and rural residents are constantly increasing. For example, old-age care is a service industry to be vigorously promoted in the next step, and child care is also a very large industry with a very large demand. Currently, there are more than 200 million private cars, and hundreds of millions of refrigerators, TVs, washing machines, etc., and there is a huge market for updating and popularizing them every year. New technologies such as household appliances and automobiles are now developing rapidly, new products are being continuously launched, and the rate of updates will accelerate.

5. Conclusions and summary

As one vital driving momentums of global economic improvement, the benefits brought to the United States by the regular small fluctuation of the exchange rate are undoubtedly advantageous to the global economic mushrooming. However, if the exchange rates of the US dollar and other major currencies fluctuate sharply, the world economy would be serious impacted accordingly. Owing to the dollar plays two important roles: international reserve currency and international trade settlement currency, its appreciation and depreciation affects the nerves of most countries. In order to avoid the disadvantageous effects of the US dollar on the world economy, while actively seeking the short-term policy of decoupling the US dollar, countries have been calling for the reform of the US dollar as an independent international monetary system in the long term.

Starting from the CN-US trade war, this thesis analyzes the impact of the change of US dollar exchange rate on China's economy and economic and political countermeasures, including the CN-US trade imbalance and the impact on China's import and export trade. The sharp depreciation of the US dollar has enhanced the competitiveness of US exports and improved the current account balance of the US dollar. However, for other countries with the US as their export market, it will significantly degenerate the terms of trade. All in all, the impact of US dollar fluctuations on China is comprehensive, far-reaching and lasting. China can't control the stability of US dollar exchange rate, but it can reduce the impact of US dollar fluctuation on China by adjusting its own system. China should establishing statistical coordination mechanism, strengthen the construction of domestic finance and financial system, and strengthen the mechanism of exchange rate flexibility to reduce the impact on the outside world; accelerate industrial upgrading, choose high value-added or high-tech industries and abandon those industries with high pollution and high energy consumption; actively negotiate with the US to ease export controls to China, the United States and China should make every effort to ensure that bilateral relations develop along the right track; stimulate domestic industry potential, gradually reduce its dependence on foreign investment and form its own core competitiveness and technological innovation.

Fundamentally speaking, what China needs is a stable and competitive foreign exchange rate policy, that is, a moderately undervalued, steadily declining and fixed exchange rate system based on the US dollar exchange rate standard. With this environment, China could realize the internal adjustment of China's industrial structure, introduction of advanced technology, cultivation of corresponding technical talents, increase of human capital supply, promotion of China's industrial upgrading, and fundamentally increase of domestic demand to realize the sustainable development of economy. In the future, the relationship between The United States and China will affect the developing direction of the world. People wish that The United States and China can become sound and lasting strategic partners and maintain at least a stable cooperative relationship. Generally speaking, it is the coexistence of confrontation and cooperation in this relationship. In the future, China-US relations should find a balance point in the two trends of confrontation and cooperation, so that the two countries can achieve equality and mutual benefit, peaceful coexistence and common development, deepen and strengthen cooperation between the two countries in various fields, so that both countries can realize their dreams and make the world develop peacefully.

References

26. Abel, A.& Bernanke, B. Macroeconomics Fourth Edition. USA: Addison Wesley Longma n. 2001.
27. Amadeo, K. About US economy: Value of the US Dollar. 2014. (http://useconomy.a bout .com/od/tradepolicy/p/Dollar_Value.htm)
28. Ballantyne, A., Megan G., and Michelle W., Developments in Renminbi Internationalizati on. Reserve Bank of Australia Bulletin, June 2013.
29. Bullion V., All the Money in the World. 2009.(http://goldnews.bullionvault.com/all_the_m oney_in_the_world_102720093)
30. Burke : On Assar Burke's Comment on Our Economic and Social Development Strategy. 2006.
31. Cavusgil, T., Knight, G.& Riesenberger, J. International Business. The new realities. Sec ond Edition. New Jersey: Pearson. 2012.
32. China Daily Online, China to increase flexibility of RMB exchange rate. (http://www.chi nadaily.com.cn/china/2011npc/2011-03/14/content_12167460.htm)
33. Colonial and Revolutionary Families Of Pennsylvania, Laws of New Hampshire: First co nstitutional period, 1784–1792, retrieved April 29, 2014
34. Colonial and Revolutionary Families Of Pennsylvania, Laws of New Hampshire: First co nstitutional period, 1784–1792, retrieved April 29, 2014
35. Deason, L. and M. Ferrantino (2011), “Determinants of Diffusion and Downstreaming of Technology-Intensive Products in International Trade”, in Globalisation, Comparative Adv antage and the Changing Dynamics of Trade, OECD Publishing.
36. Economic Report of the President. US Congress. (http://www.gpo.gov/fdsys/pkg/ERP-2007 /pdf/ERP-2007.pdf)
37. Economic Research Working. pp. 7418 (1999).
38. Eichengreen, B., Ricardo H., Exchange Rates and Financial Fragility. National Bureau of
39. Eichengreen, B., D. Park and K. Shin (2011), “When Fast Growing Economies Slow Do wn: International Evidence and Implications for China”, NBER Working Paper No. 1691 9.
40. European Chamber of Commerce in China (2011), European Chamber Business Confi de nce Survey 2011, Beijing.
41. European Commission: Economic and financial affairs. The euro. 2014. (Http://ec.europa. eu/economy_finance/euro/index_en.htm)

42. Alfaro, L., & Chor, D. (2023). *Global supply chains: The looming "great reallocation"* (No. w31661). National Bureau of Economic Research.
43. Feldstein, M. Resolving the Global Imbalance: The Dollar and the US Saving Rate. The National Bureau of Economic Research. 2008. (http://www.nber.org/papers/w13952)
44. Ferri, G. and Li-Gang Liu (2010), "Honor Thy Creditors Beforean Thy Shareholders: Ar e the Profi ts of Chinese StateOwned Enterprises Real?", Asian Economic Papers, Vol. 9, No. 3.
45. Frieden, Jeffry A. Exchange rate politics: contemporary lessons from American history, i n Review of International Political Economy, pp. 81-1031:1 Spring 1994.
46. Fung K. C. L. The China-United States balance: How big is it really. 2008.
47. Geloso-Grosso, M., E. Pinali and H.K. Nordäs (2007), "Logistics and Time as a Trade Barrier", OECD Trade Policy Working Papers, No 35.
48. Gilbert, J. (2012), "Employment and Structural Changes in Asia in Times of Rebalancin g and Adjustment", Asian Development Bank Working Papers, forthcoming.
49. Goh, S. K., Tang, T. C., & Sam, C. Y. (2020). Are major US trading partners' exports and imports cointegrated? Evidence from bootstrap ARDL. *Margin: The Journal of Applied Economic Research*, *14*(1), 7-27.
50. Goldberg, L. What is the Status of the International Roles of the Dollar, Vox EU. 2010 (http://www.voxeu.org/index.php?q=node/4819)
51. Goodfriend, M.& Prasad, E. A Framework for Independent Monetary Policy in China. In ternational Monetary Fund. (http://www.imf.org/external/pubs/ft/wp/2006/wp06111.pdf)
52. Greco, Thomas H. Money: Understanding and Creating Alternatives to Legal Tender, White River Junction, Vermont: Chelsea Green Publishing Company. 2001.
53. Gulfnews, US trade imbalance stems from huge savings crisis. October 31, 2011. (http:// gulfnews.com/business/opinion/us-trade-imbalance-stems-from-huge-savings-crisis-1.920921)
54. Harjani, A. Currencies. Yuan to supersede dollar as top reserve currency: Survey. (Http:// www.cnbc.com/id/101450365)
55. Humpage, O. Government Intervention in the Foreign Exchange Market. Federal Reserve Bank of Cleveland. (http://www.clevelandfed.org/research/workpaper/2003/wp03-15.pdf)
56. Humphreys, D. (2009), "The Great Metals Boom: A Retrospective", Resources Policy, V ol. 35, No. 1.
57. Intelligence Financier Global, Jim Rickards: China is importing gold secretly using milita ry channels. 2014. (http://inteligenciafinancieraglobal.blogspot.mx/2014/03/jim-rickards-china -is importing-gold.html)
58. Jacks, D.S., C.M. Meissner and D. Novy, "Trade Booms, Trade Busts and Trade Costs", Journal of International Economics, Vol. 83, pp. 185-201, 2011.
59. Jaeger, J. (2014). BNP Paribas debacle offers lessons in compliance. *Compliance Week*, *11*(128), 22-25.
60. Jane P., After Xi Leaves US, Chinese Media Assail Strike on Syria, The New YorkTim es, (https://www.nytimes.com/2017/04/08/world/asia/china-xi-jinping-president-trump- xinhua .html)
61. Japanese Chamber of Commerce and Industry in China, 2011 White Paper on the Chine se Economy and Japanese Companies, Beijing, 2011.
62. Journals of the Continental Congress, 1774–1789, Volume 11, Government Printing Offic e, retrieved April 29, 2014
63. Lappeenranta University of Technology. (http://www.lut.fi/)

64. Lowery, A. A Tightrope on China's Currency. The New York Times. (http://www.nytime s.com/2012/10/23/us/politics/romney-pledge-to-call-china-acurrency-manipulator-poses-risks-e xperts-say.html?r=0)
65. Michener, "Money in the American Colonies" Archived 2010-06-11 at the Wayback Machi ne.
66. Mundell, R. Barter Theory and the Monetary Mechanism of Adjustment. International Ec onomics. (pp. 130-133). New York: Macmillan. 1968
67. New York Times, Geithner Hints at Harder Line on China Trade. January 22, 2009. (htt p://www.nytimes.com/2009/01/23/business/worldbusiness/23treasury.html?pagewante d=all)
68. Pei, P. International Finance, Nanjing university press. 2006.
69. Schlesinger, R. The 2014 US and World Populations. 2014. (http://www.usnews.com/opini on/blogs/robert-schlesinger/2013/12/31/uspopulation-2014-317-million-and-71-billion-in-the-w orld)
70. Sergi, B. S., Popkova, E. G., Bogoviz, A. V., & Ragulina, J. V. (2019). Entrepreneurship and economic growth: the experience of developed and developing countries. In *Entrepreneurship and Development in the 21st Century* (pp. 3-32). Emerald publishing limited.
71. Sides, J., Tesler, M., & Vavreck, L. (2017). The 2016 US election: How Trump lost and won. *Journal of Democracy*, *28*(2), 34-44.
72. SIPRI Military Expenditure Database. (https://www.sipri.org/databases/milex)
73. Taikun Ji, The US-China Exchange Rate Dispute in a Global Context. 2004.
74. The Balassa-Samuelson Relationship and the Renminbi. (http://www.hks.harvard.edu/fs/jfra nkel/BalassaSamuelsonandChinaRMB.pdf)
75. Tu, X., & Zhang, K. H. (2019). International monetary systems and US trade deficits with China. *The Chinese Economy*, *52*(5), 377-386.
76. Wang, Z., & Wang, Z. (2021). The RMB Depeg from the US Dollar, 2003–2005. *The International Political Economy of China's Exchange Rate Policy Making*, 63-80.

The relation between environmental awareness, sustainability and conscious living among consumers

Mónika Garai-Fodor Prof. Dr.
Full Professor, Dean, Obuda University Keleti Károly Faculty of Business and Management, fodor.monika@kgk.uni-obuda.hu

Nikolett Huszák
PhD Student, Obuda University Keleti Károly Faculty of Business and Management, huszak.nikolett@uni-obuda.hu

Abstract: In this paper we focus on the results of the quantitative research phase. Based on the results, it was found that environmentally conscious, sustainability-seeking consumer attitudes function as a segmentation criterion, three distinct consumer segments could be characterised: 'conscious, sustainability-seeking consumers', 'hesitant consumers' and 'risk-aware, empowered consumers'. For all three groups of consumers, we found a statistically significant relationship between the perception of the importance of self-awareness and self-development, which clearly indicated the extent to which these competences play a decisive role in the development of conscious and sustainability-seeking behaviour. Given the finding of this correlation, the study made concrete suggestions for the adequate development of self-development and self-awareness in relation to enhancing environmentally conscious and sustainable consumer behaviour.

Keywords: sustainability, awareness, self-development

Introduction

The importance of self-awareness and self-development is nowadays increasingly valued and highlighted in the context of sustainability and conscious living. Self-awareness refers to our awareness of ourselves - our belief systems, assumptions, values - and the impact of our actions on the environment. As a recent review study puts it, self-awareness, or 'how we see ourselves and how we affect our environment', fundamentally influences our behaviour and the kind of person we want to become. (Carden et al., 2022; London et al., 2023) Self-development is the process of making a conscious effort to develop our own skills, character and attitudes in order to become a better version of ourselves. (Villido, 2018) These two factors are closely linked to conscious living, which involves conscious decision-making, value-based action and consideration of long-term consequences in everyday life. (Ardelt & Grunwald, 2018; Cook, 1999)

Sustainability - whether environmental, social or economic - cannot be achieved through technological innovation or regulation alone; it also requires a change in the way individuals think (Varga & Csiszárik-Kocsir, 2024; 2025). Research shows that internal qualities that facilitate personal transformation, such as self-awareness (self-reflection), insight, purposefulness and agency, are essential contributors to sustainable behaviour. (Jansen et al., 2024) . In other words, in order to make sustainable and conscious choices in everyday life (e.g. waste fewer resources, consume more ethically, care for one's own well-being and that of the environment), a certain level of self-awareness and personal development based on this is essential. (Halicka et al., 2025; Jansen et al., 2024; Jansson-Boyd & Cloherty, 2014; Villido, 2018) .

This requires an interdisciplinary approach (Christensen et al., 2021; M. T. Lee et al., 2021; Toh & Tambyah, 2022; Žalėnienė & Pereira, 2021) . From a psychological perspective, it is important to understand how the development of an individual's inner world, self-awareness, and values influences their behaviour and decisions in the area of sustainability (Yılmaz, 2022) . From an educational perspective, it raises the question of how to integrate the promotion of self-awareness and self-development into education in order to educate conscious and responsible citizens. (Sevilla-Liu, 2021; Wahyuno, E., Sunandar, A., Ediyanto, E., Ramadhani, R. S., & Fitrasari, B. D., 2021) . On the economic side, the impact of a self-aware, value-oriented society on consumption patterns, the labour market and, in the longer term, economic growth, and how this interacts with sustainability goals, should be examined. (Grigorescu, A. et al, 2021; Usama Awan et al., 2021) Generation Z deserves special attention as they are the decision-makers, consumers and opinion leaders of the future. In their case, amid the information flows and challenges of the digital age, the need for guidance and self-awareness to develop a value-based, sustainable lifestyle is even more pronounced (Garai-Fodor & Huszák, 2025a; McCrindle_Trends-of-2025_Infographic.pdf, n.d.; McKinsey, 2024a)

The above ideas and considerations form the basis for the achievement of the SDGs, which are principles that address both environmental, economic and social aspects (Manning & Aguiar, 2020) . However, the achievement of the SDGs also requires a change in the mindset, behaviour and transformative capacity of the individual, which can be achieved by following the definition and methodology of the SDGs. (Ankrah et al., 2023a; Mubtaker, 2024; Syrgiannis et al., 2019)

Literature review

In our research, we explored several themes, such as the relationship between sustainability and awareness, the importance of environmental impacts and climate change, the importance of self-awareness and self-improvement, and the relationship of with sustainability. We also looked at how personal and social responsibility are linked to the issue. Following the literature review, a number of studies have already addressed the topic, thus supporting the findings from several aspects. In this research, we focused on Generation Z, the only age group studied.

Generation Z, based on McCrindle's research, are young people born between 1995 and 2010, who are a particularly interesting group to study the relationship between self-awareness and sustainability. (McCrindle & Fell, 2019) . They are the ones who have grown into a climate-conscious discourse, while their personalities are being shaped by digitalisation and information overload. (McKinsey, 2024b) . Several surveys and research suggest that Generation Z is particularly receptive to sustainability issues. (Insight, 2022; The Sustainability Generation, 2023) . A World Economic Forum article from three years ago also supports the finding that three quarters of Generation Z youth surveyed prefer a sustainable product over a brand name (Gen Z Cares about Sustainability More than Anyone Else - and Is Starting to Make Others Feel the Same Way ., 2022)

75% of Gen Zs think sustainable purchases are more important than brand names.

According to some international studies, this age group shows the strongest concern for the future of the planet and is also willing to influence its environment in order to help others make more sustainable choices ("How Gen Z Consumer Behavior Is Reshaping Retail", 2024; Salguero et al., 2024) . However, it is important to underline that Generation Z is not a homogeneous group: their behaviour and choices are significantly influenced by their social and cultural context. A comparative study has shown that although Generation Z's sustainability orientation is generally strong, its manifestation may differ between, for example, the US and India, partly due to different subjective norms and environmental conditions (Seemiller & Grace, 2024; D. Sengupta et al., 2024) . This also means that their positive attitudes towards sustainability do not always automatically translate into concrete actions or decisions in all life situations. Generation Z's values emphasise authenticity, self-actualisation and mental health, as well as their awareness of sustainability and individual responsibility (Kara & Min, 2023) .

Many young people say that self-development is important to them - whether it's career goals, lifestyle changes or even achieving spiritual well-being. These aspirations can provide a positive basis for a commitment to sustainability, as part of conscious self-development can be the recognition that personal well-being is closely linked to the state of the environment (Henderson & Loreau, 2023; R. Sengupta, 2002) . The idea of conscious living, which means taking care of one's health, relationships and environment, is also spreading among Generation Z. According to the results of a previous research, young people indeed believe that good self-awareness is the basis of conscious living and see healthy habits as the embodiment of this (Garai-Fodor & Huszák, 2025b) . Developing self-awareness and raising awareness of sustainability values is a key issue, as it is through self-awareness that needs are clarified, decisions become a considered, conscious choice in purchasing and choice making, and are shaped into conscious consumer behaviour. This strongly reflects a value-driven mindset and environmental awareness as a preference (Hanel & Basil, 2023; S.-H. Lee & Workman, 2020) . To get a more complete picture of Generation Z's more conscious consumption habits, it is necessary to look around the dimensions of consciousness. Previous research has looked at the consumer preferences of this generation from the perspective of marketing strategy and how to develop a sustainable relationship with them. In this study, social values, environmental issues, sustainability, as well as the impact of social media and personalised experiences were also identified as preferences (Salam et al., 2024) .

Awareness and its dimensions, the importance of self-love and self-development and its relation to conscious consumption, aspects of responsibility and sustainability can all be linked to specific themes of the SDGs, which are closely related to economic growth and economic sustainability (Ankrah et al, 2023b; Delova-Jolevska, et al, 2025; esgthereport, 2024; Hamadeh, 2022; Innovative Development of Modern Organizations, New Economy and ESG Transformation | SpringerLink, n.d.; THE 17 GOALS | Sustainable Development, n.d.) .

We have made the context of our research more transparent and meaningful by creating the following three plus one dimensional model of how we see each sustainability framework related to Generation Z's awareness, self-development and consumption habits. The model illustrates how everything inside the human factor enables change inside and then outside, affecting the environment, people and choices.

Material and method

A two-stage research project was applied in the autumn of 2024 as a primary research. A two-stage research project was applied in the autumn of 2024 as a primary research. The first phase was a qualitative research, in September 2024, during which mini-focus group interviews were carried out using a semi-structured interview schedule. The second phase of quantitative data collection was a pre-tested standardised questionnaire online survey.

In both qualitative and quantitative research, a non-random sampling procedure, including a heterogeneous snowball sampling method with seeds, was used. Sampling started with the identification of seeds, which were reported by students of the Keleti Károly Faculty of Economics at Óbuda University. They were approached and asked to recommend selected subjects (seeds from each generation included in the study) to participate in the study and, in addition to their own participation, to recommend other individuals from their social network who also met the research criteria (generational affiliation). This recommendation process formed the basis for expanding the sample size through subsequent waves of recruitment. The recommendation process continued iteratively, with each participant nominating others who recommended additional participants. This chain-like referral mechanism allowed for the recruitment of individuals who would not have been reached or would have been difficult to reach using traditional sampling methods (e.g. Generation Z and Alpha.) By leveraging existing social connections and networks using the heterogeneous snowball sampling with seed method, 40 subjects - i.e. 10 mini-focus group participants - were recruited in the qualitative research, and 2033 evaluable questionnaires were obtained in the quantitative research.

In the first qualitative research, we set up heterogeneous mini-focus groups, taking care to select participants from different generations in each group to allow for a clash of views. Each group consists of 4 participants. The main topics of the semi-structured interview schedule are: awareness and its dimensions, the importance of self-awareness and self-development and its relation to conscious behaviour, the role of self-development and self-awareness and its development in education.

The main aim of the qualitative research was to ground the quantitative phase, finalise its research tool and outline the research hypotheses. The qualitative data were evaluated using a traditional content analysis method.

In the second step of the research process, quantitative data collection was carried out in October 2024, using the heterogeneous snowball seed sampling technique detailed earlier. The online survey resulted in an evaluable questionnaire in 2024? The sample was 40% male and 60% female respondents, all of whom were members of Generation Z. 37% live in the capital, 41% in cities and only 22% in villages. 37% of the respondents currently have a secondary education, the rest are still in secondary education.

The research tool was a pre-tested, standardised questionnaire, which covered the topics of the perception and practice of conscious living, the analysis of individual life goals and value orientation, the relationship between conscious living and self-awareness, and the possibilities of self-awareness and self-development in higher education. The questionnaire typically used closed questions, with three open questions in the form of free association. Among the closed questions, both nominal (single- and multiple-choice selective, ranking questions) and metric level questions (Likert and semantic differential scales) were used.

Scale questions were asked on a scale of 1 to 4. One reason for this is the individual scale preference of Hungarian respondents: due to the school grading system, our Hungarian respondents are most stable in interpreting a scale of up to five grades as opposed to scales of 1-7, 1-9 or 1-10. The even scale was chosen because the middle value (3) for the odd (1-5) scale is an escape route for respondents and the presence and possible overrepresentation of "indifferent" consumers choosing the middle value complicates the segmentation process from both a statistical and a professional point of view. Therefore, we opted for an even scale, which, by excluding the middle value, leads the respondent to take a more rigorous stance, thus contributing more to the successful conduct of the segmentation (Malhotra, Simon, 2017.)

Descriptive statistics, bivariate and multivariate analyses were used to process the quantitative results and test the hypotheses using SPSS 26.0 software. To examine the correlation of the results measured on the metric scale, the analysis of variance method was used, including the one-way ANOVA method for comparing multiple sample means. The mean of a metric dependent variable was compared between more than two groups. The post-hoc test was used to determine which pairs of groups were significantly different. In doing so, significance values were used to determine the existence of correlations (sig<= 0.05). Internal correlations were analysed along the comparison of group means using the F-statistic, i.e. the coefficient of variance of the means within samples [33] [34]. For the correlation tests described in this study, where the significance value according to the ANOVA table was below 0.05, the statistical relationship between the two variables was confirmed (Sajtos, Mitev, 2007).

Results

For the first time, we analysed respondents' perceptions of individual and social responsibility in relation to sustainability and environmental behaviour. (Espejo et al., 2025) . We used a list of statements resulting from our qualitative research phase to analyse this. Based on the mean scores obtained on a scale from 1 to 4, we found that the sample members considered individual responsibility as the most important, and that they feel the impact of climate change in their daily lives. The impact of climate change is also felt at the everyday level, i.e. environmental problems cannot be avoided or evaded, and therefore individual engagement is essential in finding solutions to these global challenges (Filip et al., 2025) .

Table 1.: Perception of aspects of sustainability and environmental awareness (average, where 1=strongly disagree, 4=strongly agree)

List of claims	Mean	Std. deviation
Economic growth is more important than sustainability	2,23	0,860
In my everyday shopping, I give preference to companies that offer sustainable products and services	2,72	0,899
I am willing to pay more for a more sustainable product	2,67	0,918
I feel that the domestic labour market does not support sustainable solutions enough	2,90	0,871
Business should play a bigger role in shaping a sustainable future	3,17	0,859
I am already experiencing the effects of climate change in my daily life	**3,10**	**0,929**
Environmental awareness is a feature of my consumption habits	2,68	0,863
I want to learn more about how I can reduce my ecological footprint	2,87	0,902
It is important for me to use environmentally friendly technologies	2,88	0,877
Individual responsibility is essential to solve environmental problems	**3,16**	**0,876**

Source: own research, N=2033

In the next phase of the research, we conducted a factor analysis on the list of statements using the varimax method to test our hypothesis. Based on the KMO value and the overall variance, as well as the professional explanatory power, we opted for a three-factor structure.

As a result, three factors were characterised:

The "Activity and Sustainability" factor group, which included factors related to individual behavioural elements such as the prevalence of environmental and sustainability considerations in purchasing decisions, product choice, and openness to learning about sustainability (Nguyen & Johnson, 2020) .

The "Responsibility, consequences" factor group includes factors that show the impact of climate change on our daily lives and highlight the need for individual and societal responsibility and engagement (Dragolea et al., 2023).

In the "Economic Growth" factor, for both the three, four and five factor solutions, a single factor was included, the priority of economic growth over sustainability. This factor was not a wandering element in any single factor test, it was consistently a single, separate factor for each structure (Jäckel & Garai-Fodor, 2025).

Table 2.: Factor groups for sustainability, environmentally conscious behaviour

List of claims	Component		
	Activity and sustainability	Liability, consequences	Economic growth
I am willing to pay more for a more sustainable product	**0.755**	0.098	0.120
In my everyday shopping, I give preference to companies that offer sustainable products and services	**0.748**	0.117	0.166
Environmental awareness is a feature of my consumption habits	**0.726**	0.199	0.055
It is important for me to use environmentally friendly technologies	**0.647**	0.116	-0.103
I want to learn more about how I can reduce my ecological footprint	**0.576**	0.180	-0.126
I feel that the domestic labour market does not support sustainable solutions enough	0.011	**0.729**	0.280
I am already experiencing the effects of climate change in my daily life	0.178	**0.708**	-0.042
Business should play a bigger role in shaping a sustainable future	0.237	**0.684**	-0.034
Individual responsibility is essential to solve environmental problems	0.310	**0.680**	-0.086
Economic growth is more important than sustainability.	0.148	0.006	**0.933**

Source: Own research, N=2033. Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. total variance=60.474%; KMO=0.881

In the next step, we implemented a K-means clustering procedure for the factor weights in order to demonstrate that the perception of sustainability, the aspects of environmentally conscious behaviour, can function as a segmentation criterion.

The procedure resulted in three significantly distinct clusters:

The "Uncertain" segment (N=655) is made up of those who do not really know how to judge the aspects of sustainability and environmental awareness. Those who do not take a position, either due to lack of information or negative attitudes towards the issue, did not rate any of the factors as important or decisive above average.

"Conscious, sustainability-minded" (N=800), who rated the activity and sustainability factor above average. They are consumers who claim to strive to make environmentally friendly choices in their everyday purchasing decisions, preferring environmentally friendly solutions in their product selection, even if this involves a higher financial risk. They are the ones who seek and listen to information and instructions that help them to leave a smaller ecological footprint.

"Risk Aware, Empowered" (N=578) are consumers who believe that individuals and society, including companies and economic actors, should play a greater role in addressing environmental problems. Those who perceive the problems and changes caused by climate change in their daily lives and consider their individual responsibility in providing adequate solutions to these problems to be strong.

In further analysis of the clusters, we found that there was no statistically verifiable correlation between cluster membership and the socio-demographic element under investigation, neither in terms of age nor gender (sig>0.05). Therefore, we analysed further possible relationships and correlations along the descriptive variables. The results show that the perception of the importance and role of self-awareness and self-development is differentiated between clusters. The association between the two variables was statistically confirmed (analysis of variance, sig=0.05).

According to the results, "Conscious sustainability strivers" see self-awareness as a key factor for sustainable living, and they themselves pay a lot of attention to self-development. As a result, their self-esteem has reportedly changed in a positive direction in recent years and their self-image is in line with what others think of them.

In the case of "risk-aware, empowered" people, it seems that they are the least likely to perceive and understand the importance and role of self-development and self-awareness. They do not put emphasis on self-development, they do not perceive it as a defining dimension of sustainable living. In our view, the fear of environmental risks and the reliance on others - companies, market players, employers - to overcome them may be linked to a lack of self-awareness and self-belief, which we believe can be usefully and usefully addressed through education.

The "Uncertain" did not show such a lack of self-awareness. Self-awareness was also seen as an important and crucial factor for a successful and sustainable life. However, their self-concept and self-image need improvement. In our view, we cannot speak of negative attitudes or passivity towards sustainability and environmental awareness among the "Uncertain", but rather of a lack of education as a barrier. We believe that these consumers can be persuaded and educated to become active citizens through the transfer of appropriate knowledge and the development of appropriate competences.

We also found a correlation between the descriptive variable and cluster membership for other behavioural items:

Among the "Conscious, sustainability-minded", it is true that they also pay attention to how much they spend on what they buy, i.e. they are conscious in this respect. As well as being informed before they buy, which is also one of the characteristics of conscious behaviour, they do not make decisions on impulse but more carefully and informedly.

Volunteering and giving are also above average, which is also true for the "Risk Aware, Expecting to Play a Role" group. They were the ones who, alongside companies and labour market players, also stressed the importance of their own individual responsibility in building a more sustainable future. The importance of individual empowerment seems to be reflected not only in their preferences but also in their actions.

Conclusion

Together, the interdisciplinary literature and our research findings presented here suggest that self-awareness and self-development play a central role in the development of sustainable and conscious lifestyles. At the psychological level, individuals' intrinsic values and awareness determine their ability to make responsible choices; at the educational level, the development of self-awareness as part of education lays the foundation for future generations' sustainability competences; and at the economic level, a community of conscious people transforms markets and growth patterns for a more livable future. In the case of Generation Z in particular, we can see how the intertwining of personal development and the desire for sustainability can have a major impact on future socio-economic processes. The complex challenges of sustainability therefore require both external systemic change and internal, individual-level development. The consistent message from the literature is that better understanding and development of ourselves is not only a key to our personal well-being, but also a key to building a conscious, sustainable future.

References

1. Ankrah, D., Bristow, J., Hires, D., & Artem Henriksson, J. (2023a) Inner Development Goals: from inner growth to outer change. *Field Actions Science Reports. The Journal of Field Actions*, *Special Issue 25*, Article Special Issue 25.

2. Ankrah, D., Bristow, J., Hires, D., & Artem Henriksson, J. (2023b). Inner Development Goals: From inner growth to outer change. *Field Actions Science Reports. The Journal of Field Actions*, *Special Issue 25*, Article Special Issue 25.

3. Ardelt, M., & Grunwald, S. (2018) The Importance of Self-Reflection and Awareness for Human Development in Hard Times. *Research in Human Development*,*15* (3-4), 187-199. https://doi.org/10.1080/15427609.2018.1489098

4. Carden, J., Jones, R. J., & Passmore, J. (2022). Defining Self-Awareness in the Context of Adult Development: A Systematic Literature Review. *Journal of Management Education*,*46* (1), 140-177. https://doi.org/10.1177/1052562921990065

5. Christensen, J., Ekelund, N., Melin, M., & Widén, P. (2021). The Beautiful Risk of Collaborative and Interdisciplinary Research: A Challenging Collaborative and Critical Approach towards Sustainable Learning Processes in Academic Profession. *Sustainability*,*13* (9), Article 9. https://doi.org/10.3390/su13094723

6. Cook, S. H. (1999). the self in self-awareness. *journal of advanced nursing*,*29* (6), 1292-1299. https://doi.org/10.1046/j.1365-2648.1999.01014.x

7. Delova-Jolevska, E., Ilievski, A., Jolevski, L., Csiszárik-Kocsir, Á., & Varga, J. (2024). The impact of ESG risks on the economic growth in the Western Balkan countries. *Sustainability*, 16(19), 1–13. https://doi.org/10.3390/su16198487

8. Dragolea, L.-L., Butnaru, G. I., Kot, S., Zamfir, C. G., Nuţă, A.-C., Nuţă, F.-M., Cristea, D. S., & Ştefănică, M. (2023). Determining factors in shaping the sustainable behaviour of the generation Z consumer. *Frontiers in Environmental Science*,*11* . https://doi.org/10.3389/fenvs.2023.1096183

9. esgthereport. (2024, December 30). What is SDG and ESG? *ESG | The Report.* https://esgthereport.com/what-is-sdg-and-esg/

10. Espejo, L., Perez, N., Mendoza, C., & Gagarín, Y. (2025). A Systematic Review on Unique Characteristics of Generation Z and Their Impact on Purchasing Decisions. *Journal of Ecohumanism*,*4* (1), Article 1. https://doi.org/10.62754/joe.v4i1.4079

11. Filip, A., Stancu, A., Onișor, L.-F., Mogoș, O. C., Catană, Ștefan-A., & Goldbach, D. (2025). Drivers of Purchase Intentions of Generation Z on Eco-Products. *Sustainability*,*17* (2), Article 2. https://doi.org/10.3390/su17020629

12. Garai-Fodor, M., & Huszák, N. (2025a). The potential of integrating conscious living into education for generation Z in the light of primary data. *Frontiers in Education*,*9* . https://doi.org/10.3389/feduc.2024.1477879

13. Garai-Fodor, M., & Huszák, N. (2025b). The potential of integrating conscious living into education for generation Z in the light of primary data. *Frontiers in Education*,*9* . https://doi.org/10.3389/feduc.2024.1477879

14. *Gen Z cares about sustainability more than anyone else - and is starting to make others feel the same way*. (2022, March 18). World Economic Forum. https://www.weforum.org/stories/2022/03/generation-z-sustainability-lifestyle-buying-decisions/

15. Grigorescu, A., Pelinescu, E, Dutcas, M. F., & Ion, A. E. (2021). *Human Capital in Digital Economy: An Empirical Analysis of Central and Eastern European Countries from the European Union.* Sustainability. https://www.mdpi.com/2071-1050/13/4/2020

16. Halicka, E., Kaczorowska, J., Rejman, K., & Plichta, M. (2025). Investigating the Consumer Choices of Gen Z: A Sustainable Food System Perspective. *Nutrients*,*17* (3), Article 3. https://doi.org/10.3390/nu17030591

17. Hamadeh, S. A. (2022). How gen Z can improve community literacy about the 17 SDGs? A realist approach to construct a futuristic change-maker paradigm. *Green Technology, Resilience, and Sustainability*,*2* (1), 2. https://doi.org/10.1007/s44173-022-00002-2

18. Hanel, V., & Basil, D. Z. (2023). socially conscious consumer behavior: the role of ethical self-identity and priming. *International Review on Public and Nonprofit Marketing*,*20* (2), 427-445. https://doi.org/10.1007/s12208-022-00348-0

19. Henderson, K., & Loreau, M. (2023). A model of Sustainable Development Goals: challenges and opportunities in promoting human well-being and environmental

sustainability. *Ecological Modelling*,*475* , 110164. https://doi.org/10.1016/j.ecolmodel.2022.110164

20. How Gen Z Consumer Behavior is Reshaping Retail. (2024, July 29). NIQ. https://nielseniq.com/global/en/insights/analysis/2024/how-gen-z-consumer-behavior-is-reshaping-retail/
21. *Innovative Development of Modern Organizations, New Economy and ESG Transformation | SpringerLink*. Accessed March 19, 2025, from https://link.springer.com/chapter/10.1007/978-3-031-49711-7_11
22. Insight, F. (2022) *The State of Consumer Spending: Gen Z Shoppers Demand Sustainable Retail.* https://www.firstinsight.com/white-papers-posts/gen-z-shoppers-demand-sustainability
23. Jäckel, K., & Garai-Fodor, M. (2025). How Generation Z Economics Students Think About Sustainability and the Environment. *2025 IEEE 23rd World Symposium on Applied Machine Intelligence and Informatics (SAMI)*, 000101-000106. https://doi.org/10.1109/SAMI63904.2025.10883159
24. Jansen, P., Hoja, S., & Rahe, M. (2024). The relationship between the aspects of connectedness and sustainable consumption. *Frontiers in Psychology*,*14* , 1216944. https://doi.org/10.3389/fpsyg.2023.1216944
25. Jansson-Boyd, C., & Cloherty, R. (2014). *Using Self-Awareness as a Means to Reduce Energy Consumption.* https://doi.org/10.3390/wsf-4-e007
26. Kara, A., & Min, M. K. (2023). Gen Z consumers' sustainable consumption behaviors: influencers and moderators. *International Journal of Sustainability in Higher Education*,*25* (1), 124-142. https://doi.org/10.1108/IJSHE-08-2022-0263
27. Lee, M. T., Kubzansky, L. D., & VanderWeele, T. J. (2021) *Measuring Well-Being: Interdisciplinary Perspectives from the Social Sciences and the Humanities*, Oxford University Press.
28. Lee, S.-H., & Workman, J. (2020). How Do Face Consciousness and Public Self-Consciousness Affect Consumer Decision-Making? *Journal of Open Innovation: Technology, Market, and Complexity*,*6* , 144. https://doi.org/10.3390/joitmc6040144
29. London, M., Sessa, V. I., & Shelley, L. A. (2023). Developing Self-Awareness: Learning Processes for Self- and Interpersonal Growth, *Annual Review of Organizational Psychology and Organizational Behavior*,*10* (Volume 10, 2023), 261-288. https://doi.org/10.1146/annurev-orgpsych-120920-044531
30. Manning, L., & Aguiar, L. K. de. (2020). Embedding Sustainable Development in the Curricula: Learning about Sustainable Development as a Means to Develop Self-Awareness, in *Integrating Sustainable Development into the Curriculum* (world; Vol. 18, pp. 25-39). Emerald Publishing Limited. https://doi.org/10.1108/S2055-364120200000018020
31. McCrindle, M., & Fell, A. (2019) *Understanding Generation Z: Recruiting, Training and Leading the Next Generation*.

32. *McCrindle_Trends-of-2025_Infographic.pdf*. (n.d.). Accessed 9 December 2024, from https://mccrindle.com.au/app/uploads/2024/11/McCrindle_Trends-of-2025_Infographic.pdf

33. McKinsey (2024a). *What is Gen Z? | McKinsey.* https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-gen-z

34. McKinsey (2024b). *What is Gen Z? | McKinsey.* https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-gen-z. https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-gen-z

35. Mubtaker, Y. (2024) *Inner Development Goals: Transformational Skills for Sustainable Development*. Yama Mubtaker.

36. Nguyen, N., & Johnson, L. W. (2020). Consumer behaviour and environmental sustainability. *Journal of Consumer Behaviour*,*19* (6), 539-541. https://doi.org/10.1002/cb.1892

37. Salam, K. N., Singkeruang, A. W. T. F., Husni, M. F., Baharuddin, B., & A.r, D. P. (2024). Gen-Z Marketing Strategies: Understanding Consumer Preferences and Building Sustainable Relationships. *Golden Ratio of Mapping Idea and Literature Format*,*4* (1), Article 1. https://doi.org/10.52970/grmilf.v4i1.351

38. Salguero, R. B., Bogueva, D., & Marinova, D. (2024). Australia's university Generation Z and its concerns about climate change. *Sustainable Earth Reviews*,*7* (1), 8. https://doi.org/10.1186/s42055-024-00075-w

39. Seemiller, C., & Grace, M. (Eds.). (2024). Prelims. In *Gen Z Around the World* (pp. i-xxvi). Emerald Publishing Limited. https://doi.org/10.1108/978-1-83797-092-620241017

40. Sengupta, D., Mathews, M., Bridges, L., D'Costa, R., & Bastian, B. L. (2024). Sustainability Orientation of Generation Z and Its Role in Their Choice of Employer-A Comparative Qualitative Inquiry of India and United States. *Administrative Sciences*,*14* (10), Article 10. https://doi.org/10.3390/admsci14100249

41. Sengupta, R. (2002). Human Well-Being and Sustainable Development. *Economic and Political Weekly*, *37*(42), 4289–4294.

42. Seville-Liu, A. (2021). Mori Akira's Education for Self-Awareness: Lessons from the Kyoto School for Mindful Education. *Journal of Philosophy of Education*,*55* (1), 243-262. https://doi.org/10.1111/1467-9752.12546

43. Syrgiannis, C., Zabaniotou, A., & Fazenda, I. (2019). Inner Processes of Creation towards awareness of own worth for sustainable proposals. *Journal of Cleaner Production*,*230* , 767-774. https://doi.org/10.1016/j.jclepro.2019.05.150

44. *THE 17 GOALS | Sustainable Development*. Accessed 19 March 2025, source https://sdgs.un.org/goals

45. *The sustainability generation: why do Generation Z care about this planet?* (2023, July 28). https://www.ulster.ac.uk/faculties/ulster-university-business-

school/updates/other/the-sustainability-generation-why-do-generation-z-care-about-this-planet

46. Toh, T. C., & Tambyah, S. K. (2022) Opportunities and Challenges in Developing Interdisciplinary Thinking in Undergraduate Education, in *Student Growth and Development in New Higher Education Learning Spaces*, Routledge.
47. Usama Awan, Robert Sroufe, & Muhammad Shahbaz. (2021). *Industry 4.0 and the circular economy: A literature review and recommendations for future research.* https://onlinelibrary.wiley.com/doi/full/10.1002/bse.2731?casa_token=g1VD6Bg-q4gAAAAA%3AN7DaxL-_9wPQk2oBY-z7WCqsWqsSqrGYabG69DmNHGeDd2_wxdmxOapH00OSoK-Iso5fLz9DYV0J4A
48. Varga, J., & Csiszárik-Kocsir, Á. (2024). The impact of human activity on environmental elements based on the results of a primary research. *Acta Polytechnica Hungarica*, 21(12), 147–168.
49. Varga, J., & Csiszárik-Kocsir, Á. (2025). Responsibility for environmental degradation – Analysis of sectoral perceptions. *Acta Polytechnica Hungarica,* 22(7), 323–339.
50. Villido, I. (2018). awareness as the new paradigm for personal sustainability: a practitioner's perspective on the sustainability transition. in *Personal Sustainability*. Routledge.
51. Wahyuno, E., Sunandar, A., Ediyanto, E., Ramadhani, R. S., & Fitrasari, B. D. (2021). *Management of Inclusive Education Services in School Through Self Awareness, Motivation, and Self Efficiency. Journal of Disruptive Learning Innovation (JODLI), 3(1), 55-67.* Journal of Disruptive Learning Innovation (JODLI), 3(1), 55-67.
52. Yılmaz, H. A. (2022). self-awareness and self-consciousness: a review from a social psychology perspective. *psikiyatride GüNcel Yaklaşımlar*, *14*(4), 437–445.
53. Žalėnienė, I., & Pereira, P. (2021). Higher Education For Sustainability: A Global Perspective. *Geography and Sustainability*,*2* (2), 99-106. https://doi.org/10.1016/j.geosus.2021.05.001

Graph-based analysis of decentralized financial ecosystems

Kristóf Zsolt Makó
Student, Obuda University Keleti Károly Faculty of Business and Management, mako.kristof19@stud.uni-obuda.hu

Ádám Mészáros
Assistant Lecturer, Obuda University Keleti Károly Faculty of Business and Management, meszaros.adam@uni-obuda.hu

Abstract: The research examines the network structure of the decentralized finance (DeFi) ecosystem by analyzing more than 5,400 protocols and 2 million connections based on data from the DefiLlama API. By modeling the protocols as a graph—where nodes represent the protocols and edges represent financial connections—key players in the network and sources of systemic risks were identified using centrality and correlation metrics. The results show that the DeFi network is characterized by strong positive internal correlations, meaning that diversification is more effective across different blockchains than within a single chain. A significant amount of capital—over 25 billion USD—concentrated in high-risk protocols (e.g., WBTC, EigenLayer) indicates systemic vulnerabilities. Particularly exposed categories include Ponzi schemes, options wallets, NFT lending, and algorithmic stablecoins. The analysis confirms that traditional indicators such as TVL size alone are insufficient for accurate risk assessment. To build a more stable DeFi ecosystem, it is essential to apply network analysis methods, advanced risk assessment, and cross-chain diversification, which together can reduce systemic risks and enhance financial resilience.

Keywords: decentralized finance, DeFi, graph, blockchain

Introduction

Decentralized finance (DeFi) is a new way of managing money based on blockchain technology (the same system behind cryptocurrencies like Bitcoin). DeFi allows anyone with internet access to earn up to 10x higher interest compared to banks, get a loan within seconds, or trade assets globally. Understanding these networks helps users make safer decisions. Banks and regulators find it difficult to control this borderless system. This paper provides them with a "map" that highlights which parts of DeFi are the most vulnerable. This research shows the connections between decentralized financial platforms/protocols, blockchains, and network metrics. The result is a risk table where each protocol is assigned a number between 0 and 1. These values can be compared with each other. The table helps identify what to pay attention to when expanding or diversifying a portfolio (but as they say, this does not constitute financial advice). For the research, Python code was used to model the network with 5,457 protocols and more than 2 million edges. To calculate risk, the graph was analyzed from different perspectives, and based on the weighted values of these factors, the final risk scores were determined.

Literature review

Decentralized finance (DeFi) is a blockchain-based financial system that operates through smart contracts without intermediaries such as banks. Users can carry out transactions directly on a public network using automated programs (Born et al., 2022). DeFi does not create entirely new financial products but offers existing ones in a decentralized way through crypto assets. This includes lending, borrowing, trading, and asset management, all executed through automated systems (Auer et al., 2023). DeFi has grown rapidly: the total value locked (TVL) increased from 18 billion euros in 2021 to more than 240 billion. This dynamic growth has attracted the attention of researchers and regulators, as the lack of central oversight creates new challenges in supervision and risk management (Born et al., 2022). One of the key features of DeFi is that it operates in a non-custodial way: users control their own assets, and trust is provided by the predefined rules of smart contracts (Born et al., 2022). Transactions take place automatically without human intervention, and overcollateralization is common. DeFi applications are open source, making them easy to combine, which leads to rapid innovation but also results in complex and interconnected networks (Born et al., 2022). This flexibility is both one of the system's greatest strengths and its weaknesses. Graph-theoretical modeling of DeFi systems makes it possible to represent protocols as nodes and the relationships between them as edges (Kitzler et al., 2023). Research shows that the network is highly centralized: a few protocols—such as UniSwap and Aave—have exceptionally high connectivity and play a central role in the ecosystem. Decentralized exchanges and lending protocols show particularly high connectivity, which means more advanced network analysis methods are required to accurately uncover community structures (Kitzler et al., 2022). Graph analysis is an effective tool for identifying systemic risks in financial networks, including DeFi (Da et al., 2024). Studies indicate that blockchain-based connections increase the speed of risk propagation and contribute to amplifying market volatility. Network analysis helps identify the nodes where failures or attacks could trigger chain reactions. Research highlights that centrality alone is not a direct risk factor but amplifies other types of vulnerabilities (Asgharian et al., 2021). The purpose of economic audits and risk maps is to identify these weak points and strengthen the system's overall resilience (Gate.io, 2025). Traditional stock market indices can predict economic growth, which offers an analogy to the world of decentralized finance, where the activity of tokens and DeFi protocols can also be interpreted as economic indicators. The Granger causality methodology can also be applied to blockchain-based financial systems, creating opportunities for forecasting and gaining a deeper understanding of the decentralized economy (Molnár – Csiszárik-Kocsir, 2022; 2023).

Material and method

The aim of this research is to analyze the risks of DeFi systems using network analysis methods and simulation techniques. The data used for the research was obtained through the DefiLlama (2025) API, which was managed by a Python package called dfllama. This platform provides access to real-time or historical data on DeFi protocols, DEXs, and cross-chain bridges. It also offers critical metrics such as total value locked (TVL), protocol categories, supported chains, and trading volumes. To gain more accurate insights into how these protocols relate to one another and what risks are posed by their interdependence, a graph was built from the data using NetworkX. In this graph, the nodes represent individual DeFi protocols, and the edges represent the correlation between them based on historical financial data. The network was constructed using both strongly positive and strongly negative correlations.

To calculate the risks, the graph is analyzed from different perspectives. The categories considered are: centrality (C), correlation (K), TVL-based (T), community-based (Co), category-based (Ca), volatility (V), and blockchain-based (Ch) risks. According to the literature, centrality values do not inherently represent risk but act as an amplifying factor (Asgharian et al., 2021). In the case of TVL-based risk, the larger the protocol, the less likely it is to disappear or fail, meaning the risk is inversely proportional to its size. Blockchain-based risk is also inversely proportional: the more blockchains a protocol spans, the less exposed it is to potential technical risks. The remaining risk factors are aggregated and then amplified using the centrality value. In addition, they are weighted with a high-risk factor (H). From this, the final risk values (R) are obtained for each protocol p. The code is publicly available on GitHub (Makó, 2025).

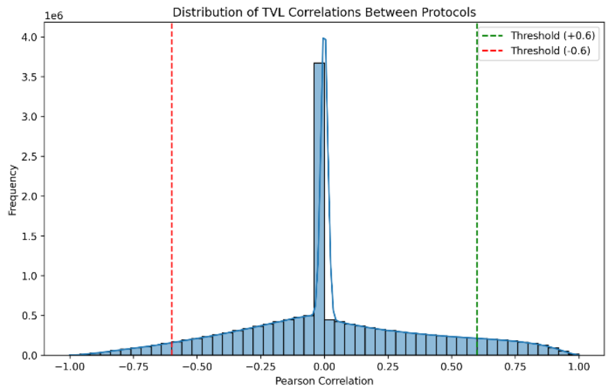
$$R_p = \left((\mathrm{K_p} + \mathrm{T_p} + \mathrm{Co_p} + \mathrm{Ca_p} + \mathrm{V_p} + \mathrm{Ch}_p) * (1 + C_p)\right) * H_p$$

Formula 1: Own formula for calculating the final risk value

Results

Based on the historical data table, we can calculate the correlation between protocols according to their TVL movements. Using this, we created the correlation-based network.

Figure 1: Distribution of DeFi TVL correlations, with strong correlations falling outside the two lines



Source: Own calculations and editing based on DefiLlama data (2025). Available at: https://defillama.com/docs/

The histogram (Figure 1) shows a bell-shaped distribution peaking around zero. The values of -0.6 and +0.6 serve as thresholds for identifying strong correlations. In the network, positive correlations (40.1%) are slightly more common than negative ones (38.5%). Notably, the number of strong positive correlations (>0.6) is 1,361,066—almost double the number of strong negative correlations (<-0.6), which is 684,672. This indicates that protocol TVLs are more likely to move in the same direction than in opposite directions. We examined correlations between categories and ranked them by the magnitude of their average correlations. The Liquidity Automation category ranked highest, indicating that it has the strongest absolute correlation with other categories. It is followed by Bug Bounty, DOR, Treasury Manager, and OTC Marketplace—although these categories contain fewer protocols, they exhibit strong correlation patterns. NFT Lending shows strong positive correlations with the Insurance and Ponzi categories (in the 0.6–0.7 range). Restaked BTC closely correlates with Token Locker and Anchor BTC categories. Bug Bounty has a significant positive correlation with DOR. Liquidity Automation shows strong negative correlations with several other categories. NFT Lending is negatively correlated with DEX and Lending protocols. The Restaking category shows negative correlations with CEX (centralized exchanges). A cluster was observed around token-focused categories (Token Locker, Restaked BTC, Anchor BTC). Another cluster consists of NFT-focused categories (NFT Lending, NFT Marketplace). Yield-focused categories (Yield, Yield Aggregator, Yield Lottery) also form a distinct group. Based on weighting by the number of protocols and average correlation magnitude, the top 40 categories were analyzed. The DEX, Lending, and Derivatives categories stand out: they are both large and show significant correlation patterns with other categories. The arrangement also revealed thematic clusters, such as yield-oriented protocols (Yield, Yield Aggregator, Yield Lottery) located close to each other.

The analysis of within-chain correlations shows that Bitcoin protocols have the strongest average correlation (0.4274), followed by Blast (0.4107) and Solana (0.3880). This indicates that in these ecosystems, the TVL of protocols tends to move together more closely than in Ethereum (0.2883) or Polygon (0.2857), where there is greater diversity. The strong correlation within Bitcoin is likely due to the fact that DeFi applications on this chain are concentrated in narrower areas.

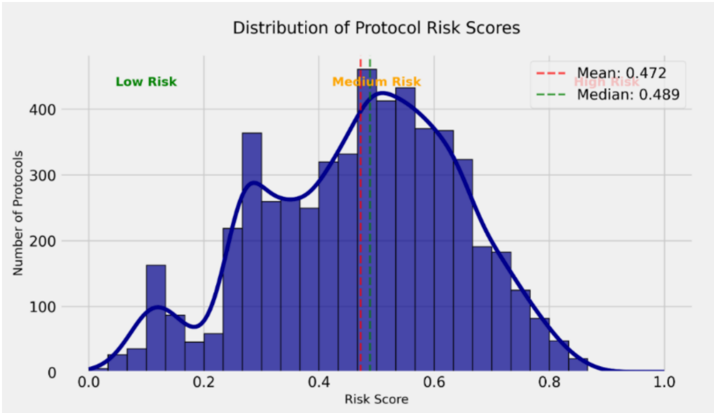
The analysis of cross-chain correlations reveals strong economic connections between certain blockchains. The strongest relationships are found between Solana and Linea (0.4075), Solana and Blast (0.4063), and Scroll and Bitcoin (0.4054). This indicates significant capital flows and economic activity between these ecosystems, despite their technological differences. Among the other values, no particularly strong outliers were observed—they generally move together.

The cross-chain correlation affinity indicator measures how strongly the protocols within a blockchain are connected to each other compared to external protocols. Bitcoin shows the strongest internal cohesion (1.26x), followed by Blast (1.22x) and Kava (1.14x). This means that in these ecosystems, protocols tend to move more closely with each other than with protocols from other chains.

In contrast, Polygon (0.86x), Ethereum (0.92x), and Arbitrum (0.95x) show weaker internal connections, suggesting that these chains play more of a bridging role within the overall DeFi network rather than functioning as isolated ecosystems.

There are currently 5,457 protocols operating in the DeFi ecosystem, each with varying levels of risk. The distribution of risk values is approximately normal, slightly left-skewed, with an average risk value of 0.472 and a median of 0.489. This indicates that most protocols fall into the medium-risk category. A total of 42.7% of protocols have risk values between 0.4 and 0.6—this group represents the core mass of the DeFi ecosystem.

Figure 2: Risk distribution by number of protocols. Source: Own calculations and editing based on DefiLlama data (2025)



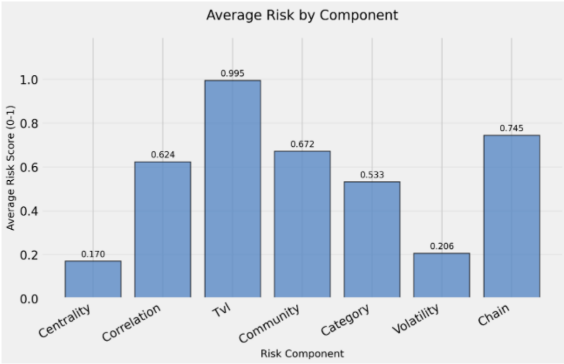
Source: https://defillama.com/docs/

- 6.7% operate with very low risk (0.0–0.2).
- 26.0% have lower risk levels (0.2–0.4).
- 23.3% fall into the higher medium-risk range (0.6–0.8).
- Only 1.3% (72 protocols) are classified as very high risk (0.8–1.0).

The ecosystem has matured, but there are still a number of high-risk protocols that warrant special attention.

An interesting observation is that there is almost no relationship between protocol size (TVL) and risk level, the correlation coefficient is only -0.0140. This is surprising, as many assume that larger protocols are safer, but the data does not support this assumption. The scatter plot also shows that protocols of any size can have any level of risk. The situation is made more concerning by the fact that a significant amount of capital is locked in high-risk protocols. A total of 462 high-risk protocols (risk value >0.7) manage $25.05 billion in TVL, representing 5.7% of the total value of the entire DeFi ecosystem. This concentration increases the overall vulnerability of the system. Two protocols stand out in particular for their high level of both risk and capital concentration: WBTC and EigenLayer. WBTC has a perfect risk score of 1.0 and manages nearly $10 billion in TVL, while EigenLayer has a risk score of 0.942 and holds $6.86 billion in TVL. Together, these two account for 67.6% of all value locked in high-risk protocols, which represents a significant concentration risk. This means that if either of them were to become compromised, the impact on the entire DeFi ecosystem could be disproportionately large. In contrast, other high-risk protocols have much lower TVL: for example, FireDAO (risk: 0.8768) manages only $2,337.42. A similar pattern can be observed with Arrow (risk: 0.8644, TVL: $66,513.53) and Mars Poolin (risk: 0.8638, TVL: $144,308.28).

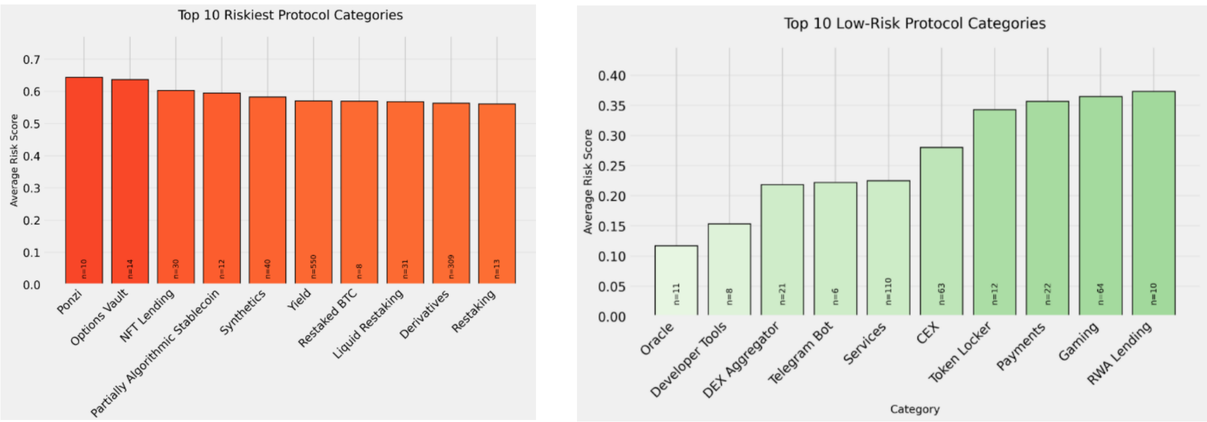
Figure 3: Average risk by risk factors. Source: Own calculations and editing based on DefiLlama data (2025)



Source: https://defillama.com/docs/

The measurements (Figure 3) show that TVL-based risk carries the greatest weight on average in determining overall risk scores, with an average value of 0.9955. As we already stated above, this alone is not sufficient to create a meaningful correlation between TVL and total risk. This is further supported by the correlation between the final score and the TVL risk component in the bottom row of Figure 5. The second most important factor is chain-based risk, calculated based on the number of chains a protocol operates on, with a value of 0.745. Network communities are also a significant source of risk at 0.672, and correlation-based risk follows closely at 0.624. Centrality, derived from the network structure, has the smallest weight of all components. As mentioned earlier, centrality itself does not represent risk—it acts as an amplifying factor for other risk components.

Figure 4: Top 10 categories with the highest (left) and lowest (right) average risk



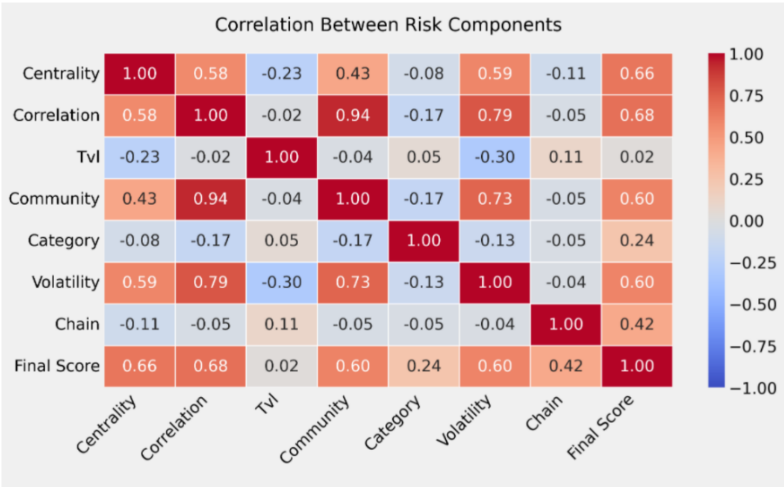
Source: Own calculations and editing based on DefiLlama data (2025). Available at: https://defillama.com/docs/

Unsurprisingly, Ponzi schemes fall into the highest-risk category, with an average risk score of 0.6445 based on 10 protocols (Figure 4, left) - although they handle only $10,700 in total value locked (TVL). This classification likely stems from unsustainable reward mechanisms or problematic token models. They are closely followed by Options Vault protocols, with an average risk score of 0.6371 across 14 protocols, managing a total of $16.5 million in TVL. NFT lending protocols also raise concerns: 30 such protocols received an average risk score of 0.6032 and hold $45.2 million in TVL. The higher risk in this segment is mainly due to valuation, liquidity, and collateralization issues related to NFTs. Partially algorithmic stablecoins also stand out as a high-risk category, with an average risk score of 0.5953 across 12 protocols managing a total of $138.5 million in TVL. This elevated risk reflects the historical volatility and failures of algorithmic stablecoins. Other high-risk categories include Synthetics (synthetic assets), Yield products, Restaked ETH, Liquid Restaking, Derivatives, and Recurring (protocols based on recurring processes). All of these categories have average risk scores above 0.55.

Figure 4 (right) highlights categories with average risk scores between only 0.12 and 0.38—well below the ecosystem average of 0.472. Oracle protocols show the lowest risk, with an average score of around 0.12 across 11 protocols. This is notable because oracle manipulation is often considered one of the biggest risks in DeFi. The low risk of oracle protocols can be explained by the fact that many major providers use strong decentralization measures to avoid single points of failure. For example, Chainlink operates multiple independent decentralized networks, reducing systemic vulnerability. Developer Tools represent the second-safest category, with an average risk score of about 0.15 across 8 protocols. Their low risk is mainly because they serve infrastructural functions rather than handling direct financial transactions: these tools typically do not store significant user funds, making them less attractive targets for attackers. They support development rather than executing financial operations, so they are less exposed to market fluctuations or liquidation risks.

DEX aggregators have an average risk score of about 0.22 (based on 21 protocols). These platforms act as transaction routers rather than custodians, which contributes to their lower risk profile.

Figure 5: Correlation between risk factors (including the final risk value)



Source: Own calculations and editing based on DefiLlama data (2025). Source: https://defillama.com/docs/

Based on Figure 5, the strongest relationship is between correlation-based risk and network community risk, with a value of 0.94. This stems from the fact that there is little variation between the average correlation within a community and the weighted connection values of each protocol's direct neighbors. Interestingly, TVL (total value locked) is negatively correlated with several factors, especially volatility (-0.30). This suggests that protocols with larger TVL tend to be more stable on average, meaning they fluctuate less. Chain-based risk does not show significant correlation with any other risk factor. In the bottom row of the matrix, we can also see how strongly the final risk score correlates with the individual risk components.

Summary, conclusion

The research focuses on modeling DeFi protocols as a graph, where protocols are represented as nodes and the financial relationships between them as edges. Using centrality metrics, key protocols that determine the functioning of the network were identified. By building a network based on historical data and applying community detection algorithms, the temporal evolution of the network and the interconnections between protocols were also analyzed. A graph of more than 5,400 DeFi protocols and 2 million edges was constructed using the DefiLlama API. The analysis showed that most protocols fall into the medium-risk category. Correlations between protocols revealed that the TVL of the largest protocols often moves together, which can lead to systemic vulnerabilities. According to the results, the categories with the highest TVL are lending protocols, cross-chain bridges, liquid staking, chain-specific protocols, DEXs, restaking, and RWA tokenization. The highest-risk categories include Ponzi schemes, options vaults, NFT lending, and algorithmic stablecoins, while the least risky categories are oracle protocols, developer tools, and DEX aggregators. The findings indicate that, due to the network structure of the DeFi ecosystem, diversification is more effective across different blockchains—except for specific blockchains whose correlation affinity is less than 1. When building a portfolio, it is crucial to consider correlations between protocols, as the concentration of capital in high-risk protocols can create systemic risks. Traditional indicators, such as TVL size, do not necessarily imply low risk. Achieving a more stable DeFi ecosystem requires advanced risk assessment, diversification, and the application of network analysis methods. There are several possibilities for further research in this area. Correlation analysis could be conducted based on user base overlaps between protocols, which may reveal new types of risks. Additionally, recent attack data could be used to assign risk levels to protocols more accurately.

The structure of the network offers important insights for DeFi risk management and portfolio construction. The strong internal correlations indicate that it is more effective to diversify across different blockchains rather than between multiple protocols on the same chain. It was also found that positive correlations are more common than negative ones, meaning the DeFi ecosystem may be prone to systemic risks—for example, during a market downturn, the TVL of many protocols may fall simultaneously. This reinforces previous research findings suggesting that complex DeFi networks can amplify the impact of external shocks. The correlation analysis between categories revealed that platform diversification does not necessarily reduce risk. It is important to distribute investments across categories that are not strongly positively correlated. The internal and external blockchain-based correlation analysis showed that investing in Bitcoin carries higher risk because all Bitcoin-based protocols move closely together, whereas less correlated chains such as Polygon, Avalanche, and Ethereum are less exposed to this vulnerability. The current DeFi ecosystem presents a nuanced risk landscape characterized by moderate average risk but a significant concentration of capital in a few large, high-risk, high-TVL protocols. The most concerning factor is that a total of $25.05 billion is locked in 462 high-risk protocols, with more than 67% concentrated in just two protocols—WBTC and EigenLayer. According to the risk analysis, TVL-related factors, community structures, and protocol correlations contribute the most to overall risk. Particularly vulnerable categories include Ponzi schemes, Options Vaults, NFT lending, and, to some extent, algorithmic stablecoins. The analysis confirms issues highlighted in the literature: comprehensive risk assessment is essential for DeFi investments, as traditional indicators—such as TVL size—do not inherently reflect lower risk. The large concentration of capital in high-risk protocols suggests that enhancing diversification and implementing effective risk management practices are critical for improving the ecosystem's stability and resilience.

References

77. Asgharian, H., Krygier, D., & Vilhelmsson, A. (2021). *Systemic risk and centrality: The role of interactions*. [Online]. https://doi.org/10.1111/eufm.12340 (Accessed: October 12, 2025).

78. Auer, R., Haslhofer, B., Kitzler, S., Saggese, P., & Victor, F. (2023). *The technology of decentralized finance (DeFi)*. [Online]. https://www.bis.org/publ/work1066.htm (Accessed: October 12, 2025).

79. Born, A., Gschossmann, I., Hodbod, A., Lambert, C., & Pellicani, A. (2022). *Decentralised finance – a new unregulated non-bank system?* [Online]. https://www.ecb.europa.eu/press/financial-stability-publications/macroprudential-bulletin/focus/2022/html/ecb.mpbu202207_focus1.en.html (Accessed: October 12, 2025).

80. Da, H., John, K., & Oyima-Antseleve, N. (2024). *Crypto risk in the financial system*. [Online]. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5091107 (Accessed: October 12, 2025).

81. DeFiLlama. (2025). *DeFiLlama documentation*. [Online]. https://defillama.com/docs/api (Accessed: October 12, 2025).

82. Gate.io. (2025). *Beyond code flaws: Economic audits and DeFi protocol security*. [Online]. https://www.gate.io/learn/articles/beyond-code-flaws-economic-audits-and-de-fi-protocol-security/4851 (Accessed: October 12, 2025).

83. Kitzler, S., Victor, F., Saggese, P., & Haslhofer, B. (2022). *Disentangling decentralized finance (DeFi) compositions*. [Online]. https://csh.ac.at/publication/disentangling-decentralized-finance-defi-compositions/ (Accessed: October 12, 2025).

84. Kitzler, S., Victor, F., Saggese, P., & Haslhofer, B. (2023). *Unraveling the structure of nested decentralized finance (DeFi) protocols*. [Online]. https://www.suerf.org/publications/suerf-policy-notes-and-briefs/unraveling-the-structure-of-nested-decentralized-finance-defi-protocols/ (Accessed: October 12, 2025).

85. Makó, K. Z. (2025). *DeFi risk analysis*. [Online]. https://github.com/Kristof-Mako/defi-risk-analysis (Accessed: October 12, 2025).

86. Molnár, A., & Csiszárik-Kocsir, Á. (2022). *Forecasting economic growth with the Hungarian composite stock market index – A Granger causality test,* Acta Polytechnica Hungarica, vol. 19, no. 8, 205-227. https://doi.org/10.12700/APH.19.8.2022.8.12 (Accessed: October 13, 2025).

87. Molnár, A., & Csiszárik-Kocsir, Á. (2023). *Forecasting economic growth with V4 countries' composite stock market indexes – A Granger causality test,* Acta Polytechnica Hungarica, vol. 20, no. 3, 135-154. https://doi.org/10.12700/APH.20.3.2023.3.9 (Accessed: October 13, 2025).

Marketing challenges in pulmonology in the light of qualitative research findings

Andalics Nóra Virág
Óbuda University, Budapest, Hungary, Keleti Károly Faculty of Business and Management, andalicsnori@gmail.com

Réka Saáry
Óbuda University, Budapest, Hungary, Keleti Károly Faculty of Business and Management saary.reka@kgk.uni-obuda.hu

ORCID: 0000-0001-5759-6341

Abstract: This paper examines the specificities of pharmaceutical marketing in the field of pulmonology, in particular in asthma and COPD The focus on these two diseases is due to the increasing number of cases worldwide Asthma is a reversible chronic inflammatory disease of the respiratory tract, which typically develops in childhood. This serious health condition is estimated to affect around 300 million people worldwide. COPD is the third most common cause of death in the world, with around half a million people suffering from it in Hungary.

The aim of the presented research is to identify trends in the field of the two diseases since the Covid 19 pandemic and to examine the responsibility of pharmaceutical companies and practitioners in terms of education and prevention. Further research objectives are to explore how individual stakeholders can contribute to more effective healthcare. The paper presents the results of primary research, following a literature review and an analysis of the market context.

Qualitative research with medical specialists revealed that, although Covid 19 has reduced the number of patients, the historical trends have not changed significantly, whereas the pandemic has increased the awareness and knowledge of affected patients about both risk factors and treatment procedures.

Keywords: pharmaceutical marketing, asthma, COPD, Covid 19 pandemic

1. Introduction

The theory of healthcare marketing was first developed in 1977, when the first healthcare marketing conference was held with the support of the American Hospital Association (AHA) and the first book on the subject was published (Cazacu-Oprescue, 2015). Although health insurence and pharmaceutical companies and healthcare suppliers had already been engaged in various marketing activities, healthcare service providers were reluctant to adopt a conscious marketing strategy. Hospitals and other healthcare organisations were not engaged in explicit 'marketing' activities, but certain practices such as public relations (PR), developing relationships with doctors, offering community services ultimately improved patient satisfaction (Thomas, 2005).

2. Marketing challenges in the healthcare sector

Healthcare marketing has a short history, but its development can be divided into several distinct phases. The main stages in the development of marketing in the Anglo-Saxon healthcare system since the 1950s have been summarised by Richard K. Thomas (2005, 2020) (Figure 1).

Figure 1.: The evolution of health marketing

1950s
- Free educational programmes and PR activities in some hospitals
- Marketing activities are inappropriate and unethical for healthcare providers

1960s
- The primary target audience of public relations are hospital staff and the general practitioners, not the patients

1970s
- Mass marketing in health services
- Use of public advertising (e.g. billboards), television and radio advertising

1980s
- The healthcare industry has been transformed from a seller's market to a buyer's market

1990s
- Healthcare marketing is becoming market-driven,
- Use of direct marketing tools, relationship marketing

2000-2010
- Emergence of social media in healthcare, increasing engagement, precise targeting

Source: authors' own contribution based on Thomas, R. K. (2005; 2020)

Health services refer to efforts to maintain or restore physical, mental or emotional well-being by trained and licensed professionals (Kay, 2007). Today, patients are increasingly involved in the choice of health care provider. This is the main reason why the marketing of health services has become essential for the financial survival of doctors and health care organisations. In an ever-changing market, practitioners can successfully apply the principles of service marketing to maintain competitiveness and gain patient satisfaction and loyalty (Cazacu-Oprescue, 2015). It is important to note that unlike most services where access to information and decision-making by the consumer is relatively simple and requires minimal professional knowledge, decisions about healthcare services are largely dependent on healthcare professionals (Anning-Dorson et al, 2019). At the same time, concepts such as quality of service, consumer satisfaction and tolerance levels, branding, patient involvement in the sales process can be of considerable value to any healthcare organisation in making their services attractive to patients. Despite the fact that today hospital marketing concept is widely accepted, the marketing activities used are still viewed with scepticism. When examining the barriers to healthcare marketing, it should be highlighted that a different approach to marketing is needed in the healthcare sector (Cazacu-Oprescue, 2015).

Healthcare marketing is a strategic, information and communication process that aims to attract healthcare consumers (patients), guide them through their journey and then maintain their relationship with the organisation. This type of marketing refers to the tools and practices that the healthcare sector uses to raise awareness of its services, attract patients and build relationships with them. Ranging from simple brochures, websites to email marketing, healthcare marketing encompasses a wide variety of different tools with the common goal of engaging consumers (www.mercuryhealthcare.com, 2022). The patient is at the centre of exchanges in healthcare when using a product or service, a medical activity. Organizations involved in the healthcare market need to take into account the specific needs and expectations of patients and actively and consciously shape the relationships between the actors in this field (Simon, 2016).

3. Description of the diseases studied, trends in the number of cases

The main focus of this research is to explore the potential of health marketing in the field of pulmonary medicine Due to the complexity of the topic, the study focuses specifically on two areas, asthma and COPD, which have a significant role in the field of pulmonology.

Pulmonary medicine, or pulmonology, is the field of medicine that deals with the treatment and diagnosis of diseases of the respiratory system (Berkő, 2020). The importance of this area has been growing since the middle of the last century. In the 1950s, chronic obstructive pulmonary disease (COPD) emerged in increasing numbers, a phenomenon that was driven by the spread of mass smoking. Regular smoking and pollution are also the reasons why lung cancer, once a rare disease, has become one of the most common cancers in Hungary (www.nnk.gov.hu, 2022)

Asthma (bronchial asthma) is a reversible breathing difficulty that most often develops in childhood. Chronic inflammation of the bronchial tubes plays a primary role in the development of the disease. In this case, the airways become narrowed due to swelling of the bronchial mucosa and spasmodic contraction of the bronchial smooth muscle (Szatmári, 2018). Furthermore, the inflammation is associated with airway hyperactivity, which is accompanied by recurrent wheezing, chest tightness and coughing. Symptoms usually appear at night or in the early morning and may worsen with physical activity. It is important to note that the disease can be reversible on its own or with medication (EMMI, 2018). The name of COPD (chronic obstructive pulmonary disease) refers to its main feature, which is incompletely reversible airflow. The flow is usually progressive and associated with pathological inflammation of the lungs, mainly triggered by toxic particles or gases such as tobacco smoke. The most characteristic symptom is cough, which initially occurs only with more vigorous physical activity and then also at the time of rest (Ábel, 2020). COPD is also a preventable and treatable disease with extrapulmonary manifestations that can increase the severity of the disease in individuals. It is characterised by a reduction in flow due to inhaled noxious substances, tissue-damaging gases and particles, a phenomenon that is not fully reversible and progressive (Gold, 2023).

According to the latest data published in the Korányi Bulletin of the National Institute of Pulmonology, the number of asthmatics registered by respiratory care providers in 2022 in Hungary was roughly 3% of the total population, with 324 594 people. By gender, 200 655 women and 123 939 men suffered from this disease (Csoma, 2023, pp. 14-18).

The number of COPD patients exceeds half a million, however, this estimate is two to three times higher than the number of people registered in pulmonary care, which was 185 226 in 2022. In terms of gender distribution, there is not as large a difference as for asthma, with 93 892 female and 91 334 male COPD patients in the registered population. Looking at the national data, the propensity to develop chronic obstructive pulmonary disease shows a renewed increase compared to 2021, approaching the pre-Covid 19 pandemic level (Antus, 2023, pp. 19-23). The number of people suffering from asthma and COPD is in line with the population in terms of county distribution, with a significant proportion of cases registered in Budapest and Pest counties (Csoma, 2023), (Antus, 2023).

Clinicians can easily distinguish between asthma and COPD nowadays. Asthma usually presents early, before the age of 20, has intermittent symptoms, responds well to inhaler therapy and is often associated with other allergic diseases. COPD is more common later, after the age of 40, with slow progression of symptoms and poor response to inhaled therapy. Patients can sometimes have symptoms of both diseases and this condition is known as asthma-COPD overlap syndrome (ACO) (Barnes, 2016). It is now established that this type of syndrome is not just an overlap but a co-existence of both diseases in the same patient. It is important to recognize whether a patient has ACO, because this determination can influence the clinical course, long-term outlook and response to therapy. According to several studies, there is general agreement that 10-20% of patients with COPD also have features of asthma. Patients with asthma have a higher prevalence of ACO because many of them smoke, about 5% have severe asthma and a higher rate of irreversible airway obstruction (Barnes, 2016)

4. Material and method

To explore the marketing opportunities for the prevention and treatment of these two diseases, qualitative primary research was conducted. The aim of the research is the analysis of the involvement and communication opportunities of those involved in the two diseases (specialists, patients), which were discussed in detail earlier. The aim is therefore to explore the experiences, knowledge and communication resources of practitioners. The study was carried out using a qualitative method, in the form of an in-depth interview with medical experts.

The objectives of the research can be summarised as follows:

RO1: To explore the trends in asthma and COPD incidence experienced by practitioners since Covid 19.
RO2: To identify the responsibilities of medical practitioners and pharmaceutical manufacturers in prevention and education related to the disease.
RO3: To identify the potential contribution of the above listed stakeholders to the improvement of healthcare services in this specific area.

The sample was based on pulmonologists who are active, full-time practitioners and have a patient base with asthma and COPD. Following the first interview with a pulmonologist, we reached the remaining interviewees using the snowball sampling methodology. The interview guide provided the appropriate structure for conducting the in-depth interviews. In-depth interviews took on average 25-30 minutes. The data collection took place between December 2022 - January 2023.

Table 1.: In-depth interview participants (*specialist, associate specialist)

Interviewees	Length of a physician's practice (years)	Job title	Hospital
P1	37	SAS*	Dorottya Hospital of Kanizsa Pulmonary Care, Nagykanizsa
P2	31	SAS	Siofok City Hospital Pulmonary Care Centre, Siofok
P3	25	SAS	Kaposi Mór Teaching Hospital of Somogy County, Kaposvár
P4	16	SAS	St Damján Greek Catholic Hospital, Kisvárda
P5	22	SAS	Honvédkórház, Budapest
P6	4	SAS	Kaposi Mór Teaching Hospital of Somogy County, Kaposvár

Source: authors' own contribution based on qualitative research, 2023 (n=6)

The professionals involved in the research can be classified into the following four categories based on treatment guidelines and patient relationships (based on research conducted by Inspira Research Ltd. in 2019), using segmentation indicated in a research delivered among professionals (Figure 2.).

*

Figure 2: Categories of professionals involved

Traditionalist (P3, P4)	Negative aversive (P6)	Innovator (P1, P3)	Involved follower (P2, P5)
• Tries to find the perfect preparation or therapy for each patient. • Seeks to work in close collaboration with the patient. • Patient education materials from pharmaceutical manufacturers are extremely important to him/her and carefully distributes them to patients	• Clearly blames patients as the cause of treatment failure. • Not open to proactive communication. • Often shares patient management tasks with the assistant.	• Keeps up to date with clinical trials and international recommendations • Assertive in his communication. • Clearly states his expectations of patients and asks for an account at the next check-up.	• Opens easily and communicates well with the patient. • Trust and adherence to prescribed recommendations are very important to him/her. • Experiences the possible failure or ineffectiveness of the therapy as a failure.

Source: authors' own contribution based on qualitative research, 2023 (n=6)

5. Results and discussion

5.1 Analysis of trends and awareness of the diseases

In terms of the trends of the diseases, three interviewees saw a significant difference between before and after the Covid 19 outbreak. According to their experience, the number of patients with both asthma and COPD increased steadily until March 2020, confirming the statistics that COPD is now the fourth, and in some statistics third, leading cause of death(www.medicalonline.hu, 2022). They believe that the number of patients has decreased since the epidemic, but is now slowly recovering to near pre-2020 levels. One practioner does not see a significant difference between before the epidemic and now, while two other pulmonologists spoke in general terms about the two diseases, without highlighting the impact of the pandemic. For the future, specialists believe that an increasing number of patients can be expected due to the various tobacco products that have been marketed in recent years, such as Iqos, Glo, electronic cigarettes, Elf Bar, etc., and the effects of increasing air pollution. However, it is also evident that the pandemic has changed the attitudes of many people, who are now more attentive to treatment, coming earlier to be tested, and thus the effectiveness of treatment is much better than it used to be.

In terms of awareness, the age group 18-40 is fairly well informed about the diseases and the possible consequences, thanks to the internet. The older age group is much more heterogeneous in this respect, with some older people learning to use the various internet platforms and thus gaining sufficient information about their condition, and others who only obtain information through POS materials, brochures and leaflets provided by doctors.

5.2 The motives and circumstances of the appointment with the physician

Regarding the severity of the disease, the majority of interviewees reported that COPD patients usually consult a specialist in a moderate to severe state, when the disease is flaring up, with ongoing fever and asphyxia: *'It's only when they've lost 1-2% of their lungs that they realise there's a problem. ... People who don't exercise don't seem to notice as much that there is a problem.' (P5).* One of interview subject's rarely encounters patients with COPD in severe condition anymore, because usually the disease is detected during the GP examination, in which case the patient is sent for further investigation. For asthma patients, the situation is completely different, with all respondents unanimously saying that they usually visit their GP during allergy season, when they develop a rudimentarysymptoms of choking or coughing Thus a mild to moderate condition can be detected in time. Of course, there is a small percentage of patients who end up in the emergency department, but this is not common.

A lot depends on the diagnostic process. The research has shown that even with a negative X-ray, a chest CT scan can still show a different result, which can make the difference to a patient's successful recovery. Generally speaking, very little time is spent on a patient during a given visit. During the first visit, a diagnosis will be made, the therapy will be tailored to the patient, the medication will be explained and the correct use of the device will be demonstrated. In terms of lifestyle counselling, there is always minimal intervention and for those who are receptive or want to know more, more time is allocated. Typical topics include smoking cessation, use of appliances, characteristics of the disease, therapy, and the importance of lifestyle changes. In all cases, patients are then called back for a follow-up visit, which reveals that the majority of patients are not complying with the recommendations made by their physicians.

Overall, it can be concluded that:

- 60% of medications are not dispensed, or only 4-5 boxes instead of, for example, 12 boxes per year,
- 80% of patients come back for a follow-up visit, while 20% disappear completely or appear years later,
- 50% of patients do not accept that they are ill,
- The device is not used properly and not at the right dose.

Patients with asthma are more disciplined in this respect. COPD patients tend to wait for their condition to worsen, abandon therapy or not change their prescribed medication. Control visits also serves the purpose of providing feedback to both patients and physicians. *'I like it when the patient gives feedback and we can correct the medication. I also change therapies because it's important that the patient is happy to use it.' (P5)*

a. Education, communication, relationship with patients

Based on the interviews, it can be stated that patient education takes place in several phases and that the different tools complement each other. First and foremost, it is the responsibility of the physician (be it a general practitioner or a pulmonologist) and the respiratory function assistant to provide the patient with detailed information about the therapy.

Patients do not typically ask for additional sources of information, but for those who are more interested, they are very welcome to use the resources listed below:

- Written leaflets produced by pharmaceutical manufacturers and online patient portals,
- Device user guides in print and online,
- Patient associations,
- Semmelweis University website (disease descriptions, symptoms, side effects, etc.),
- Korányi Pulmonology Institute website (e.g. breathing exercises, articles on smoking cessation, support),
- Lifestyle recommendations from dieticians,
- Free green number for smoking cessation,
- Fagerström nicotine addiction test, which shows how addicted a patient is, whether they need medication support and what they should do.

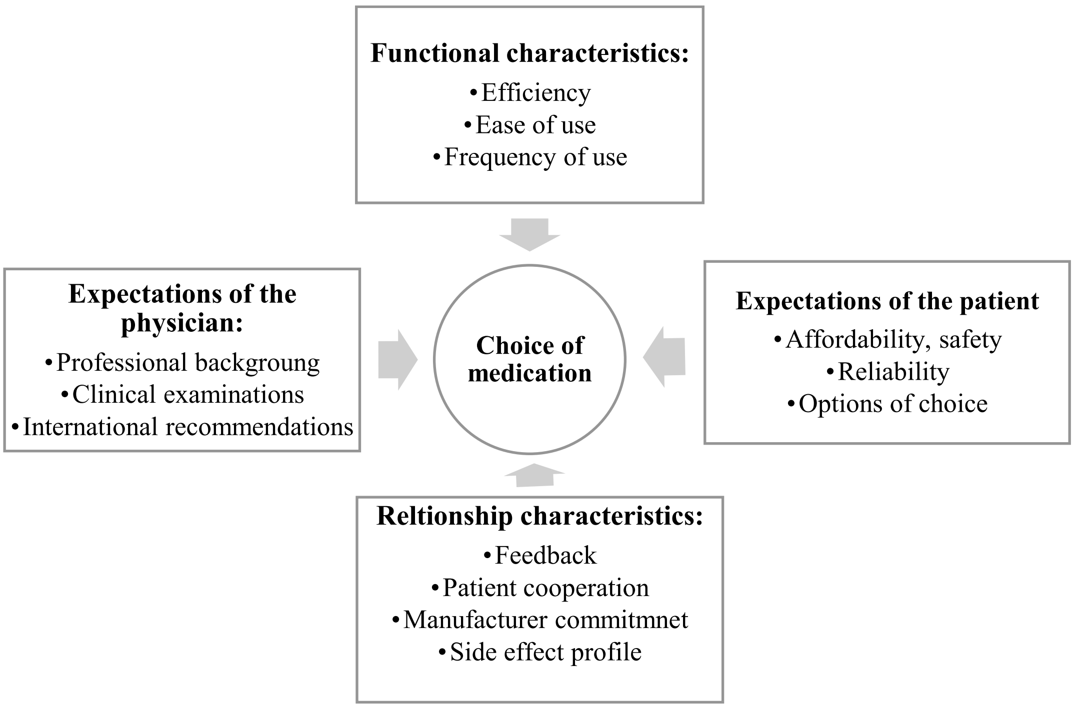
According to the practitioners, the government should launch anti-smoking campaigns by putting a strong emphasis on giving such lectures in schools. *'We need to find a marketing tool in education to reach the right age group.' (P3)*. Patient education material from pharmaceutical manufacturers is an important communication element, but pulmonologysts consider their own professional opinion, experience and knowledge as a credible source. *'I am confident that what we say shows our credibility.' (P1). 'What I say is always up-to-date, credible sources.' (P3)*

While there are a variety of credible sources available to patients, unreliable content has unfortunately also become more prevalent, especially on the internet. This includes self-diagnosis, various Facebook groups where patients share their own opinions and experiences, sometimes putting pressure on each other regarding a particular therapy or medication. *"Here people are diagnosing each other...because they write 'this was very good for me, why don't you use this' etc. and from there they come to me with up-to-date information like 'I need this medicine' and the patient tries to dictate." (P2)*

b. Experience with medications, pharmaceuticals and manufacturers

As regards the factors influencing the choice of the product to be used in a therapy, efficacy and frequency and ease of use are the most important, but other factors are also taken into account (Figure 3).

Figure 3: Categories of professionals involved



Source: authors' own contribution based on qualitative research, 2023 (n=6)

The research shows that pharmaceutical sales representatives, POS materials provided by manufacturers, conferences and webinars, which are becoming increasingly common due to the Covid-19 closures, play a key role in communication. Regarding the discount (reduced price medicine), the specialists also expressed a positive opinion. They said that they are well used, as physicians like to show patients how each device works when starting a therapy, so that patients can try the products. *'We really like the discounts ...' (P3).*

6. Conclusions

The aim of this study was to examine the trends in asthma and COPD and how they have changed since the Covid 19 outbreak. We focused on exploring the responsibilities of health care stakeholders in patient education and prevention and how they can contribute to more effective health care.

Based on the in-depth interviews with experts, the stakeholders can be identified as: government, central authorities, pharmaceutical companies, municipalities, professional/advocacy/civil society organisations, general practitioners, private practices, specialist care providers, hospitals, as well as specialists, specialist assistants, asthma nurses and patients themselves who are personally involved in treatment.

Primary research suggests that patient education is usually delivered in several phases and that each of the stakeholders is equally important. Table 2 illustrates who the main stakeholders are in the health sector and what their role is or should be in terms of education and prevention.

Table 2.: Tasks and stakeholders

Stakeholders	Tasks
Government	• Smoking cessation campaigns-, • Promotion of health prevention, promotion of annual check-ups • Toll-free telephone number
Pharmaceutical companies	• Providing short POS materials • Sending out disease-related newsletters • Organising scientific events for patients • Setting up health insurance and incentive programmes
Healthcare organisations	• Website of Semmelweis University (description of diseases, symptoms, side effects, etc.) • Website of Korányi Pulmonology Institute (e.g. breathing exercises, articles on smoking cessation, support)
Professional, advocacy and civil organisations, patient associations	• A reminder of the importance of early detection and self-examination, • Organising and promoting screening tests
General practioners	• Primary diagnosis and information • Specialist referral
SAS doctors	• Detailed diagnosis • Setting up therapy, prescribing medication • Full information • Provision of patient education materials • Identification of additional sources of information if required • Lifestyle counseling
Assistants, asthma nurses	• Providing further information • Demonstrate and check the use of the device • Providing weekly counselling to patients • Training of asthma nurses

Source: authors' own contribution based on qualitative research, 2023 (n=6)

The main task of the public administration is to run anti-smoking campaigns, targeting adolescents with facts to deter them. In order to promote health promotion and annual screening, pharmaceutical companies could be involved to further promote their health insurance and incentive programmes, such as the Richter Health City (https://www.egeszsegvaros.hu, 2023), Sanofi - Aventis, 2006), or Novartis' "Live below 140/90 mm Hg" education and patient collaboration programme (Dr Kiss, 2007). Central government agencies such as the National Public Health Centre's toll-free green number(https://www.nnk.gov.hu, 2023) have responded to many of the problems during the Covid 19 epidemic.

POS materials produced by pharmaceutical companies have also been highlighted. Here it is very important to produce short, to the point patient information leaflets and device use materials that are available to patients offline and online.

The most important actors in patient education and sources of direct information are general practitioners, specialists and assistants, asthma nurses. It seems that, due to the increasing number of patients and the lack of time, the time per patient has decreased significantly, sometimes only a few minutes, so it would be very useful to train more asthma nurses who, together with the physicians, could even give weekly consultations in the health facility. It would also be important to provide communication channels where patients could be contacted by e-mail or telephone with any questions they may have, thus easing the burden on the care system.

The more efficient operation of the health care system and the reduction of the workload of the care system can be achieved partly by reducing the number of patients, partly by more effective prevention and partly by more effective management of the patient journey. The present study explored these options in relation to asthma and COPD, two diseases with a high incidence in Hungary.

The research revealed that practitioners have observed some changes in the trends for these two diseases since the Covid 19 epidemic. During the pandemic there was a significant and noticeable drop in the number of patients, but statistics and experts also suggest that the pre-2020 situation will soon return. However, it is expected that the various tobacco products marketed in recent years and increasing air pollution will further increase the incidence of disease.

In terms of awareness, patients are generally much better informed, more cautious and more careful these days. It is clear from the expert opinions that all stakeholders have a key role to play in patient education and prevention. There was a consensus among doctors that for better healthcare, the government should put more emphasis on promoting anti-smoking campaigns, hospitals should introduce weekly advice sessions, pharmaceutical companies could use disease newsletters as an additional source of information, and scientific events for patients could be organised.

References

1. Ábel T. (2020): Klinikai dietetika és orvostudomány, Budapest, Akadémiai Kiadó
2. Anning-Dorson, T., Tackie, N. N., Nyamekye, M. (2019). Marketing in Healthcare Management. 10.4324/9780429400858-4.
3. Antus B. (2023): A pulmonológiai hálózat 2023. évi epidemiológiai adatai, 1. szám. 19-23. o.
4. A COPD lehet a harmadik leggyakoribb halálok 2030-ra, 2022.11.17, http://medicalonline.hu/gyogyitas/cikk/a_copd_lehet_a_harmadik_leggyakoribb_halalok_2030_ra (Last downloaded: 2024.03.20)
5. A lélegzet maga az élet, cselekedjük korábban, 2024.02.14 https://www.tudokozpont.hu/hirek/a-lelegzet-maga-az-elet-cselekedjunk-korabban (Last downloaded: 2024.03.20)
6. Barnes P. J. (2016): Asthma-COPD Overlap, American College of Chest Physicians, 7. o.
7. Berkő P. (2020): Betegeségek megelőzése és korai felismerés, Budapest, Akadémiai Kiadó
8. Cazacu L. – Oprescu A. (2015): Healthcare Marketing - A Relational Approach, Revista Economica 67:5
9. Csoma Zs. (2023): A pulmonológiai hálózat 2023. évi epidemiológiai adatai, 1. szám. 14-18. o.

10. COPD vagy asztma? Lehet mindkettő egyszerre!, 2023.05.09, https://www.tudokozpont.hu/hirek/copd-vagy-asztma-lehet-mindketto-egyszerre (Last downloaded: 2024.03.20)
11. Emberi Erőforrások Minisztériuma – Egészségügyért Felelős Államtitkár (2018): Egészségügyi szakmai irányelv – A krónikus obstruktív légúti betegség (chronic obstructive pulmonary disease, COPD) kezelésére rendelt gyógyszerkészítmények hatékony és biztonságos alkalmazására irányuló gyógyszerészi tanácsadásról
12. Global Initiative for Chronic Obstructive Lung Disease (GOLD) (2023): Global strategy for prevention, diagnosis and management of COPD: 2023 report
13. Kay, M. J. (2007). Healthcare marketing: What is salient?. International Journal of Pharmaceutical and Healthcare Marketing, 1(3), 247–263
14. Kiss I.: Éljen 140/90 alatti vérnyomással!, 2007.12.11, https://www.vg.hu/kozelet/2007/12/eljen-14090-alatti-vernyomassal (Last downloaded: 2024.03.05)
15. Mercury Healthcare: 10 Healthcare Marketing Strategies to Grow Your Health System, 2021.11.01, https://webmdignite.com/blog/healthcare-marketing-strategies-growth (Last downloaded: 2024.03.20)
16. MNSZA: EgészségVonat - a nők kétharmadánál súlyos hasi elhízás, 2006, http://www.mnsza.hu/hirek/taplalkozas/egeszseg_vonat.php (Last downloaded: 2024.03.05)
17. NNK: A védőoltások már bizonyították, 2023.03.24, https://www.nnk.gov.hu/index.php/nnk-projektek/rrf-8-0-0-2021-00011/12-kapcsolodo-oldalak/1064-a-vedooltasok-mar-bizonyitottak
18. Simon J. (2016): Marketing az egészségügyben Budapest, Akadémiai Kiadó
19. Szatmári Z. (2018): Sport, életmód, egészség, Budapest, Akadémiai Kiadó
20. Thomas, R.K. (2005), Marketing Health Services, Second Edition, Health Administration Press
21. Thomas, R.K. (2020), Marketing Health Services, Fourth Edition, AUPHA/HAP Book

Openness to the use of digital tools for organisational communication in Hungarian and Romanian enterprise in the light of the pandemic[1]

Ágnes Csiszárik-Kocsir habil. Ph.D.
Associate Professor, Óbuda University, Keleti Károly Faculty of Business and Management,, kocsir.agnes@kgk.uni-obuda.hu

Mónika Garai-Fodor habil. Ph.D.
Associate Professor, Óbuda University, Keleti Károly Faculty of Business and Management, fodor.monika@kgk.uni-obuda.hu

János Varga Dr.
Associate Professor, Óbuda University, Keleti Károly Faculty of Business and Management, janos.varga@kgk.uni-obuda.hu

Abstract: Digital transformation is one of the defining phenomena of our time, accelerated by the pandemic. For businesses, the use of digital tools has become key to stay competitive and increase efficiency. Both Hungary and Romania are witnessing this trend, although both countries are facing challenges in this area. The digitalisation of Hungarian businesses lags behind the EU average, especially in the use of ERP and CRM systems. In the case of Romania, progress has been made in the digitisation of SMEs, but the lack of basic digital skills remains a significant problem. There is growing openness to digital tools for organisational communication, as indicated by the increasing use of social media. However, digital transformation requires a long-term strategy, especially for SMEs. The aim of our study is to provide a picture of the role of digital tools in communication and openness to these tools in the light of the results of a questionnaire survey conducted in Hungary and Romania in 2023.

Keywords: digitalisation, pandemic, Hungary, Romania, primary research

1. Introduction

The use of digital tools in organisational communication has become a key factor in increasing the competitiveness and efficiency of companies, especially in the light of the challenges posed by the pandemic. For Hungarian and Romanian businesses, this issue has become even more prominent, as both countries are lagging significantly behind the EU average in terms of digital development. The compelling force of the pandemic has forced companies to adapt new digital solutions at a rapid pace in order to maintain remote working and effective communication. This sudden shift has highlighted the importance of openness to digital tools, but also revealed existing gaps. The DESI (Digital Economy and Society Index) indicators for Hungary and Romania show that both countries are lagging significantly behind the EU average in terms of digitisation of businesses, particularly in areas such as electronic information sharing, social media use and the use of advanced digital technologies. However, there are also positive trends. For example, in Hungary, the number of SMEs selling online increased by 5 percentage points during the first year of the pandemic. And in Romania, the level of digitisation of business processes is particularly high compared to the EU. For the future, it will be crucial for businesses in both countries to increase their openness to digital tools, especially for organisational communication. This is essential not only to increase competitiveness but also to prepare for crisis situations. Government support, targeted programmes and digital skills development are expected to play a central role in this process

1 National Research, Development and Innovation Office Hungary — PROJECT FINANCED FROM THE NRDI FUND

2. Literature review

Digitalisation has brought fundamental changes to corporate communication, which have been particularly pronounced in recent years. Technological developments have enabled companies to communicate more effectively and faster with both internal and external stakeholders. Technological developments have transformed not only communication channels but also companies' strategies and the way they interact with their customers. The integration of digital tools offers companies the opportunity to achieve their goals more effectively while improving the quality of internal and external communications. Digital transformation has a double impact on corporate communication. On the one hand, communication departments themselves are transforming, building a digital infrastructure to manage and execute communication processes. This includes the integration of new technologies that allow more effective and targeted communication with stakeholders, including customers. On the other hand, communication offices and units play a key role in the digital transformation of the whole organisation. This involves monitoring trends, communicating messages, stimulating dialogue and advising managers (Zerfass - Brockhaus, 2023). Digitalisation does not only mean technological innovation, but also requires a new way of thinking on the part of organisations.

Digital solutions are replacing traditional methods of communication with interactive and experiential ones. New technologies, such as social media and automated marketing tools, are helping companies to deliver personalised messages to their audiences. The study by Wang and Xia (2023) highlights that the widespread use of digital technologies such as cloud computing, big data, artificial intelligence and the internet is significantly changing business models and driving organisational transformation. The authors' research points out that the impact of digital transformation on business performance is still controversial and highlights that some studies have found a negative impact due to the high cost of investment, while others have found a positive correlation. The benefits of digital transformation include increased efficiency, reduced costs and stimulation of innovation. All these in turn can have a positive impact on customer relationships, including communication with customers.

Digital transformation has had a significant impact on business development and economic growth, especially since the COVID-19 pandemic (Wang, 2023). The COVID-19 pandemic has had a dramatic impact on corporate communications, and as a result, the practices of organisations have been significantly transformed. Firms were forced to adapt quickly to the new circumstances, leading to the widespread adoption of digital communication tools (Mata et.al, 2021). The authors' research highlights that during the pandemic, corporate communication shifted to a socially focused, CSR-based messaging rather than the promotional nature of previous communication. Companies focused on issues such as safety measures, new sales and delivery alternatives, and support for employees and vulnerable customers, all in the space provided by digitalisation. The study highlights that the use of digital channels has increased dramatically, especially on platforms such as Facebook, Twitter, Zoom and Microsoft Teams. This trend is expected to continue in the future, indicating that a rapid return to the "old normal" is unlikely. All of these statements take on a whole new meaning, especially in an AI-dominated world. The results of the research suggest that the application of CSR principles has become a key tool for companies to maintain customer relationships and increase brand equity in times of crisis. The authors emphasise that companies need to adapt to the new reality and the communications industry needs to respond to new demands, including managing digital channels, social media networks and communicating CSR practices.

Digital transformation has had a significant impact on business development and economic growth, especially since the COVID-19 pandemic (Wang, 2023). The COVID-19 pandemic has had a dramatic impact on corporate communications, and as a result, the practices of organisations have been significantly transformed. Firms were forced to adapt quickly to the new circumstances, leading to the widespread adoption of digital communication tools (Mata et.al, 2021). The authors' research highlights that during the pandemic, corporate communication shifted to a socially focused, CSR-based messaging rather than the promotional nature of previous communication. Companies focused on issues such as safety measures, new sales and delivery alternatives, and support for employees and vulnerable customers, all in the space provided by digitalisation. The study highlights that the use of digital channels

has increased dramatically, especially on platforms such as Facebook, Twitter, Zoom and Microsoft Teams. This trend is expected to continue in the future, indicating that a rapid return to the "old normal" is unlikely. All of these statements take on a whole new meaning, especially in an AI-dominated world. The results of the research suggest that the application of CSR principles has become a key tool for companies to maintain customer relationships and increase brand equity in times of crisis. The authors emphasise that companies need to adapt to the new reality and the communications industry needs to respond to new demands, including managing digital channels, social media networks and communicating CSR practices.

However, there is a "digital paradox" that creates a decision dilemma for managers (Abou-foul et.al, 2021). Digital technologies such as artificial intelligence, blockchain, IoT and big data analytics facilitate decision-making, improve customer relationships and create new competitive advantages (Yuan - Pan, 2023). Digital transformation requires significant investment in technology and employee training, which can negatively impact performance in the short term (Guo et.However, in the longer term, specialised digital technologies and a skilled workforce can provide a sustainable competitive advantage (Okorie et.al, 2023). It is also important to see that the integration of digital tools has not only led to efficiency gains, but also created new opportunities to improve customer relationships. For example, AI-based chatbots and automated customer service systems have significantly improved the customer experience (IndustryWired, 2024).

Digitalisation plays a vital role in modern business communication, in connecting with customers, and in informing and engaging consumers. While there are many benefits to be gained from using these solutions, freeing up significant human resources, it is also important to consider the challenges.

The study by Mutsunska et al (2022) examines the relationship between digital transformation and corporate strategic communication, with a particular focus on the impact of the COVID-19 epidemic. The research shows that digital technologies such as social media and online platforms have significantly transformed communication agencies and the corporate communication sector. This digital transformation has implications not only for productivity but also for economic sustainability, as companies are not investing sufficient resources in this process, resulting in low competitiveness among digital communication professionals.

Toledano and colleagues (2022) investigate the impact of the COVID-19 epidemic on the perceptions of corporate communication managers about the role and challenges of internal communication. In their study, they argue that perceptions of investment in internal communication improved during the epidemic, although it remains one of the most poorly rated aspects of the business environment. The biggest challenges remained the same: managing digital and media developments, linking communications to corporate strategy and strengthening the role of communications in decision-making. The majority of the respondents surveyed said that COVID-19 had had a positive impact on communication, demonstrating its importance in the way the company operates. However, in addition to the advance of digitalisation, it is also important to highlight that professionals' knowledge of AI is limited and they believe that AI will have a greater impact on the profession in general than on their own work. This could be a brake on digitalisation in the field of communication (Zerfass et.al, 2020). The lack of individual competences and the lack of clarity of organisational responsibilities were identified as key challenges, raising the need for communication managers and their teams to develop their AI skills and to treat the adoption of AI as a managerial responsibility. DeFilippis and colleagues (2022) also investigate the impact of the COVID-19 epidemic on digital communication patterns at work. The researchers found that the shift to teleworking has significantly changed communication patterns. They highlighted the most important changes in meeting length, number of participants, emailing habits, which represents an increase in digitalisation of communication. The study points out that these changes have the potential to have a negative impact on employees' well-being and productivity. Longer meetings and increased communication outside working hours can lead to a disruption of the work-life balance. The researchers stress that managers need to take these changes into account and develop strategies to mitigate the negative effects. They recommend optimising the number and length of meetings and limiting communication outside working hours.

3. Matherial and Methods

The results presented in this paper are the results of a quantitative survey of Hungarian and Romanian businesses, where we asked businesses to assess the impact of the pandemic on their own organisation through a series of complex questions. The same questionnaire was applied to the Hungarian and Romanian samples, using a pre-tested standardised research instrument. The survey itself was conducted online, and data collection, in both cases, was carried out using an arbitrary sampling technique in 2023. The Hungarian sample included 331 enterprises and the Romanian sample 127. The questionnaire contained only closed questions, bivariate, multivariate and scaled (Likert and semantic differential) questions were used in the research tool. In both countries, the population was defined as the registered enterprises in the country. Descriptive statistical tests and cross tabulation analysis were used to evaluate the primary results. Table 1 shows the composition of the sample of Hungarian and Romanian enterprises surveyed, grouped according to three main criteria: size, location and market presence.

Table 1: Composition of the sample

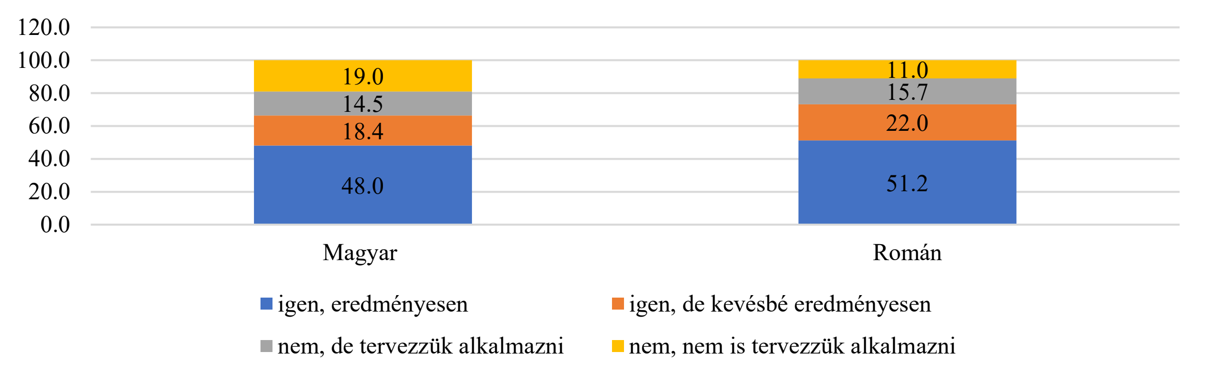
		Hungary	Romania
Headquarters	Village	12,1	21,3
	City	41,1	78,7
	Capital	46,8	0
Size	Micro-enterprise	62,2	81,1
	Small business	16,9	15,7
	Medium-sized enterprise	20,8	3,1
Operational experience	Less than 5 years	26,3	20,5
	5-15 years	36,6	53,5
	More than 15 years	37,2	26,0

Source: own research, 2023, N = 331 (Hungarian), N = 127 (Romanian)

4. Results

The figure below gives an idea of the use of digital tools in communication and the willingness to use them, comparing Hungary and Romania. In both countries, the majority of respondents use digital tools for communication effectively. In Romania, this proportion is slightly higher (51.2%) than in Hungary (48.0%), suggesting that the use of digital communication tools is more widespread and successful among Romanian respondents. Romania also leads in the "less effective use" category with 22.0%, compared to 18.4% in Hungary. This indicates that although there are challenges, Romanian users are more likely to try digital communication tools. As regards future plans, the situation is similar in both countries, with 14.5% in Hungary and 15.7% in Romania planning to introduce these tools. This suggests that there is potential for further expansion of digital communication in both countries. The most significant difference is the rejection of digital tools. In Hungary, the percentage of those who do not use or plan to use digital communication tools is significantly higher (19.0%), while in Romania it is only 11.0%. Overall, the data show that Romania is more open and successful in using digital communication tools. In Hungary, although also with a high take-up rate, there is greater resistance or reluctance to use these tools. This raises the need for Hungary to perhaps pay more attention to developing digital skills and demonstrating the benefits of digital communication tools.

Figure 1: Digital tools for corporate communication



Source: own research, 2023, N = 331 (Hungarian), N = 127 (Romanian)

Among Hungarian enterprises, the use of digital communication tools varies significantly by type of municipality. Enterprises in the capital show the highest success rate, with 52.9% of enterprises reporting that they use these tools effectively. The rate is slightly lower for urban enterprises at 42.6%, while 47.5% of enterprises in villages report successful digital communication. The proportion of businesses with less effective but active digital communication is highest in rural areas (25%), followed by cities (20.6%) and then the capital (14.8%). This suggests that businesses in rural areas face greater challenges in using digital tools effectively. It is noteworthy that the proportion of businesses that reject digital communication is higher in cities and the capital (20.6% and 19.4% respectively) than in rural areas (12.5%)

An interesting pattern is emerging in the Romanian corporate sector. Urban enterprises show the highest success rate, with 53% of successful digital communication. For rural businesses, the rate is 44.4%, which is also significant. The proportion of less successful but trying businesses in villages and towns is similar (25.9% and 21% respectively). The proportion of businesses that reject digital communication altogether is lower than the Hungarian average in both types of settlement, at around 11%. Interestingly, data for the Romanian capital are missing or not available, making a full comparison difficult.

Table 2: Digital tools used in corporate communication by location of organisation

	Hungary			Romania		
	Village	City	Capital	Village	City	Capital
yes, effectively	47,5%	42,6%	52,9%	44,4%	53,0%	0,0%
yes, but less effectively	25,0%	20,6%	14,8%	25,9%	21,0%	0,0%
no, but we plan to apply	15,0%	16,2%	12,9%	18,5%	15,0%	0,0%
no, we do not plan to apply	12,5%	20,6%	19,4%	11,1%	11,0%	0,0%

Source: own research, 2023, N = 331 (Hungarian), N = 127 (Romanian)

The use of digital communication tools in the Hungarian business sector is very positive. Among micro enterprises, the proportion of those who use digital communication tools effectively is particularly high, at 51%. A further 16% are using these tools, albeit less effectively, so that overall 67% of micro enterprises have already integrated digital communication tools into their operations. In the Hungarian small business sector, the percentage of effective users is slightly lower but still significant at 35.7%. The 21.4% share of less effective users shows that overall 57.1% of small businesses are already using digital communication tools. It is noteworthy that a further 25% plan to implement, indicating significant potential for improvement. Medium sized enterprises show the most balanced picture, with 49.3% using digital tools effectively and a further 23.2% using them less effectively. This gives an overall adoption rate of 72.5%, the highest of the three categories. Only 13% of those who do not plan to use it.
The Romanian corporate sector presents a markedly different picture. The share of successful employees among micro-enterprises is 49.5%, almost the same as in Hungary. The share of less effective users is higher at 23.3%, while 15.5% plan to introduce the tools. The rate of refusers is significantly lower, at only 11.7%. For Romanian small enterprises, an increase is observed, with the effectiveness rate rising

to 55%. The proportion of less effective users is 20%, and 15% plan to adopt. The rejection rate continues to decrease to 10%. The most significant difference is for medium-sized enterprises: Romanian medium-sized enterprises show an outstanding 75% success rate. Interestingly, they have no less effective users, but 25% are planning to adopt the tools and no company at all rejects digital communication.

Table 3: Digital tools used in corporate communications by size of organisation

	Hungary			Romania		
	Micro-enterprise	Small business	Medium enterprise	Micro-enterprise	Small business	Medium enterprise
yes, effectively	51,0%	35,7%	49,3%	49,5%	55,0%	75,0%
yes, but less effectively	16,0%	21,4%	23,2%	23,3%	20,0%	0,0%
no, but we plan to apply	11,7%	25,0%	14,5%	15,5%	15,0%	25,0%
no, we do not plan to apply	21,4%	17,9%	13,0%	11,7%	10,0%	0,0%

Source: own research, 2023, N = 331 (Hungarian), N = 127 (Romanian)

The use of digital communication tools by Hungarian companies varies significantly by the age of the organisation. For companies younger than five years old, the success rate is high at 47.1%, indicating that newly established companies are already building their operations around the use of modern technologies. A further 19.5% of these companies are using these tools less effectively, while 14.9% are planning to introduce them. The rejection rate in this age group is 18.4%, which is considered relatively high. For Hungarian companies aged 5-15 years, there is a slight decline, with the percentage of effective adopters falling to 44.6%. The share of less effective users decreases to 16.5%, while the share of those planning to adopt rises slightly to 15.7%. It is noteworthy that this age group has a significantly higher proportion of those who do not plan to use digital tools at all, at 23.1%. The Romanian corporate sector shows a different picture. The oldest companies, those with more than 15 years of experience, perform best with 52% successful adoption, suggesting that more experienced firms are more aware of the importance of digital transformation. However, it is notable that companies aged 5-15 years also show resistance, with 15.4% not planning to use these tools at all.

Among Romanian companies under five years old, the share of successful employees is particularly high at 52%, which is higher than the Hungarian indicator. The proportion of less successful users is 19.5%, while 13% plan to introduce the tools. The percentage of refusers in this age group is 15.4%, lower than the Hungarian counterpart. For Romanian companies aged 5-15, the effectiveness rate drops only slightly to 50%. Interestingly, in this age group, the share of less effective users increases to 23.5% and the share of those planning to adopt also rises to 16.2%. The percentage of refusers decreases significantly, to only 10.3%. For Romanian companies older than 15 years, another positive trend can be observed: the percentage of effective adopters is 51.5%, which shows an outstanding stability. The share of less effective users is 21.2%, while the share of those planning to implement continues to increase to 18.2%. The percentage of refusers is lowest in this age group, at only 9.1%.

Table 4: Digital tools used in corporate communications by market presence of the organisation

	Hungary			Romania		
	Less than 5 years	5-15 years	More than 15 years	Less than 5 years	5-15 years	More than 15 years
yes, effectively	47,1%	44,6%	52,0%	53,8%	50,0%	51,5%
yes, but less effectively	19,5%	16,5%	19,5%	19,2%	23,5%	21,2%
no, but we plan to apply	14,9%	15,7%	13,0%	11,5%	16,2%	18,2%
no, we do not plan to apply	18,4%	23,1%	15,4%	15,4%	10,3%	9,1%

Source: own research, 2023, N = 331 (Hungarian), N = 127 (Romanian)

5. Summary, conclusions

Comparing the two countries reveals several interesting differences. In Romania, urban companies are more effective in using digital tools than in Hungary (53% vs. 42.6%), while Hungarian companies in villages perform slightly better (47.5% vs. 44.4%). In terms of less effective use, villages show similar rates in both countries, while in cities the rate is slightly higher in Hungary. It is noteworthy that Hungary has a significantly higher rejection rate in both cities and the capital compared to Romanian cities. This may suggest that some Hungarian companies are more resistant to digital switchover. At the same time, the adoption planning rates are similar in the two countries, indicating that there is still potential for further digital take-up in both places. Overall, the data show that, while there are similarities, there are also significant differences in the adoption of digital tools between the two countries, particularly by type of municipality. Romanian urban enterprises appear to be the most open to digital tools, while the capital city leads in Hungary, but also has a higher rate of rejection.
In comparing the two countries, it is striking that while in the Hungarian corporate sector there is no clear change in the effectiveness of digital communication with increasing size, in Romania there is a strong positive correlation: the larger the company, the more likely it is to use digital tools effectively.Another advantage of Romanian companies is the lower rejection rate in all size categories, which indicates a more developed digital culture and greater openness. In the case of Hungarian companies, the surprisingly good performance of micro-enterprises is noteworthy, suggesting that smaller organisations are more flexible in adapting to the requirements of the digital switchover.
A comparison between the two countries also shows that Romanian companies have higher performance indicators in all age groups. The difference is particularly significant for companies aged 15 and over, where the performance of Romanian companies is 51.5% compared to 44.6% for Hungarian companies. A further advantage of the Romanian corporate sector is that negative attitudes are significantly lower, especially among older companies. While the rejection rate in Hungary ranges from 18.4% to 23.1%, in Romania it is steadily decreasing, and is down to 9.1% for the oldest companies. This suggests that Romanian corporate culture is more open to digital transformation and that older companies are adapting more successfully to modern technological requirements.

Acknowledgements

The project 2019-2.1.11-TÉT-2020-00170 was implemented with the support of the Ministry of Culture and Innovation from the National Research Development and Innovation Fund, funded by the 2019-2.1.11-TÉT call for proposals.

References

6. Abou-foul, M., Ruiz-Alba, J. L., & Soares, A. (2021). The impact of digitalization and servitization on the financial performance of a firm: an empirical analysis. Production Planning & Control, 32(12), 975-989.

7. Toledano, A.C., Segarra, M.S., & López-de-Ayala, M. C. (2022). The impact of the Covid-19 pandemic: The perception of communications executives in companies: the role and challenges of internal communication. Anàlisi: Quaderns de Comunicació i Cultura, 67, 27-43. https://doi.org/10.5565/rev/analisi.3559

8. DeFilippis, E., Impink, S. M., Singell, M., Polzer, J. T., & Sadun, R. (2022). the impact of COVID-19 on digital communication patterns. humanities and social sciences Communications, 9, Article 180.

9. Guo, X., Li, M., Wang, Y., & Mardani, A. (2023). Does digital transformation improve the firm's performance? from the perspective of digitalization paradox and managerial myopia. Journal of Business Research, 163. IndustryWired. (2024, January 18). Enhancing corporate communications with interactive digital solutions.

https://industrywired.com/enhancing-corporate-communications-with-interactive-digital-solutions/

10. Mata, P., Buil, T., & Gómez-Campillo, M. (2021). COVID-19 and the reorientation of communication towards CSR. Economic Research-Ekonomska Istraživanja, 35(1), 3168-3188. https://doi.org/10.1080/1331677X.2021.1986674

11. Mutsunska Palevska, V., Gjorgievski, M., & Stojchevski, T. (2022). The relationship between digital transformation and corporate strategic communications in Southern EU countries. UTMS Journal of Economics, 13(2), 191-203.

12. Okorie, O., Russell, J., Cherrington, R., Fisher, O., & Charnley, F. (2023). Digital transformation and the circular economy: creating a competitive advantage from the transition towards net zero manufacturing. Resources, Conservation and Recycling, 189, 106756.

13. Wang, D. (2023). The long-term impact of digital transformation on businesses: the lagging effect of digitalisation. Available at SSRN: https://ssrn.com/abstract=4591187 or http://dx.doi.org/10.2139/ssrn.4591187

14. Wang, D., & Xia, X. (2023) The impact of corporate digital transformation on firms' performance in the utilities sector. Heliyon, 10(1), e23362. https://doi.org/10.1016/j.heliyon.2023.e23362

15. Yuan, S., & Pan, X. (2023). the effects of digital technology application and supply chain management on corporate circular economy: a dynamic capability view. journal of environmental management, 341, 118082.

16. Zerfass, A., & Brockhaus, J. (2023). Digital corporate communication and digital transformation of communication functions and organizations. In V. Luoma-aho & M. Badham (Eds.), Handbook on Digital Corporate Communication (pp. 1-20). Edward Elgar Publishing.

17. Zerfass, A., Hagelstein, J., & Tench, R. (2020). Artificial intelligence in communication management: a cross-national study on adoption and knowledge, impact, challenges and risks. Journal of Communication Management, 24(4), 377-389. https://doi.org/10.1108/JCOM-10-2019-0137

Understanding skincare choices through generational lenses

Rita Anita Kodák
Student, Obuda University Keleti Károly Faculty of Business and Management, kodak.rita@stud.uni-obuda.hu

Ádám Mészáros
Assistant Lecturer, Obuda University Keleti Károly Faculty of Business and Management, meszaros.adam@uni-obuda.hu

Abstract: Appearance plays a crucial role in how individuals present themselves to the world and how they are perceived by others. First impressions are often based on external features such as facial expressions, clothing, and posture. In recent years, awareness and mindfulness have become increasingly important—not only in nutrition and lifestyle but also in skincare. The skin, being the body's largest sensory organ, often reflects internal health issues, and learning to interpret these signals is essential. Conscious skincare goes beyond addressing external symptoms; it also involves maintaining the overall health of the body and internal systems. This study explores various aspects of conscious skincare behavior. Habits, interests, and methods differ across generations, and this research aims to uncover generational differences in skincare knowledge and information-seeking behavior. The findings may offer valuable insights for businesses looking to tailor their marketing strategies to different age groups.

Keywords: skincare, awareness, generations, consumer decision

Introduction

The global skincare market is one of the most dynamic and influential segments of the beauty and personal care industry. As individuals place increasing importance on skin health and overall well-being, the demand for skincare products continues to grow. This sector generates billions of dollars in revenue annually. Both well-established brands and innovative newcomers compete to meet the diverse needs and preferences of consumers around the world (Shaks, Breton Way, 2023). The COVID-19 pandemic, which emerged in 2019, marked a significant turning point, as interest in conscious skincare surged. People began to focus more on building and optimizing their personal skincare routines. With beauty salons closed, skincare became an activity primarily carried out at home. These habits persisted even after the pandemic, further accelerating the market's growth. Alongside women, men have also increasingly integrated skincare products into their daily routines, contributing to the expansion of this product category. This lifestyle shift supports the global growth of the cosmetics sector. Consumers of all age groups regularly use moisturizers, toners, serums, sunscreens, body lotions, and oils to prevent premature aging, acne, and dark spots—enhancing the overall appearance and health of their skin (Deshmukh, Allied Market Research, 2023).

Literature review

In 2024, the beauty industry continues to place strong emphasis on environmental consciousness and natural ingredients—trends largely influenced by innovations from South Korea. This direction is shaping a market landscape in which beauty products are not only about aesthetics, but also about caring for the planet and our skin (Trends, 2023). The rise of "clean beauty" products has introduced a new ethical standard to the industry. This movement remains a key factor influencing consumer behavior. "Clean beauty" has become synonymous with toxin-free skincare, referring to cosmetic and skincare products that do not contain harmful chemical substances (Online, 2024). Another major driver is the growing environmental awareness and concern among consumers, which increasingly highlights the importance of sustainability in skincare. Ethical sourcing and responsible manufacturing processes are now essential for building consumer trust and loyalty. One of the transformative trends redefining the organic skincare sector is the shift toward sustainable packaging solutions (Gaksteyn, Organic Skincare, 2024).

Consumer preferences and purchasing behaviors have evolved due to various factors, including technological advancements, increased access to information, and global cultural exchange. One of the most significant shifts in consumer behavior is the rise of the informed customer. With the proliferation of the internet and social media, beauty enthusiasts now have access to an unprecedented volume of information. Product reviews, ingredient breakdowns, and user feedback have raised expectations regarding the effectiveness and transparency of skincare products. Another major trend is the growing demand for personalized skincare. Today's consumers are no longer satisfied with one-size-fits-all solutions—they seek products tailored to their individual skin types, tones, and specific concerns. Inclusivity and diversity have become core values within the beauty industry. Consumers expect brands to offer products that cater to a broad spectrum of skin tones and types (Shanker, L-factor Cosmetics, 2024).

Consumers are exposed to thousands of advertisements every day. Even during a typical morning commute to work or school, they encounter countless ads, billboards, and promotional messages. As a result, people have become increasingly immune to brand communication—this is not a new phenomenon. Reports from as early as the 2000s indicated that consumers were growing unresponsive to traditional advertising, even before digital fatigue became widespread among marketers and businesses. When we add the decreasing attention span to this, it becomes clear just how indifferent many consumers are today toward marketing efforts (Sandel, Aventive Studio, 2022). To stand out, a brand must make its customers feel seen and valued, recognizing the uniqueness of their skin. The goal is to help consumers find the most suitable products for their individual skin types—products that enhance the skin's natural health and radiance (Mishra, Bo International, 2024).

In target market segmentation, the market is divided into homogeneous groups that can be reached with tailored marketing messages. Companies aim to better understand their existing consumers, categorize them, and approach individuals with personalized campaigns. Segmentation also includes tracking who buys what, when, and how they arrived at the company's website or sales representatives—such as through recommendations. Potential customers who receive timely, personalized marketing messages via digital channels are more likely to convert than those exposed to generic content designed for a broad audience (László, 2023). Segmenting the market by demographic characteristics is a fundamental step in defining target audiences. It allows companies to better understand and serve their customers, particularly by considering factors like age, gender, income level, occupation, and marital status (Copymate, Copymate, 2024). Consumer needs and buying behaviors vary significantly across age groups. Dividing the customer base by age helps businesses offer products that meet the expectations of each segment. For instance, younger consumers may prefer sunscreens and facial cleansers that support long-term skin health and protection, while older consumers are more likely to seek regenerative, anti-wrinkle creams and serums (Mishra, Bo International, 2024).

Material and method

Skincare has always played a significant role in people's lives. Facial care is one of the oldest rituals practiced throughout human history. Modern skincare, as we know it today, began to take shape in the early 1900s (Mirage, Mirage Magazin, 2024). Despite the wide variety of facial care products available today, many individuals still lack a clear understanding of their actual effects. This is especially relevant in our fast-paced world, where the overwhelming flow of information makes it difficult for consumers to distinguish between reliable facts and misinformation. In response to these challenges, a questionnaire was developed to examine the factors influencing consumer decision-making from multiple perspectives. The research aims to assess how knowledge, perception, and information sources affect skincare-related choices. The study also explores generational differences, particularly focusing on Generation Z, which appears to be significantly more conscious and informed about skincare compared to older age groups. This increased awareness contributes to more deliberate and mindful purchasing behavior among younger consumers.

Data collection was conducted using Google Forms, a freely accessible platform available to anyone with a Google account. The survey was distributed across multiple channels: it was shared on the researcher's personal Facebook and Instagram pages, in various Facebook groups, among acquaintances, and also featured by two influencers in their Instagram content, increasing visibility and reach. The questionnaire was designed with multiple perspectives in mind, aiming to examine consumer behavior from different angles. At the same time, attention was paid to the respondents' tolerance for monotony—since an overly long survey may have led to careless or inaccurate responses. Therefore, the questions were formulated to be simple, clear, and easy to answer. Considering the generational focus of the study, participants were asked to provide their year of birth. This allowed for the exclusion of responses from individuals outside the target generational cohorts, ensuring that the dataset remained accurate and representative.

Results

In addition to online information gathering, the research included a questionnaire designed to analyze skincare-related purchasing habits from multiple perspectives. A total of 501 individuals completed the survey, including 445 women and 56 men. Among the respondents, multiple generations were represented, with the majority being in their twenties—belonging to Generation Z. Although members of both the Alpha and Baby Boomer generations also participated, only nine individuals from these groups were included in the sample. Due to their low representation, their responses are not analyzed in detail. Therefore, the focus of the study is on the responses from members of Generations X, Y (Millennials), and Z.

The primary research focus was to measure generational differences in skincare awareness and identify factors influencing purchasing decisions. The table below shows the average responses to questions related to skincare awareness, broken down by generation. Perceptions of self-awareness vary by generation. Respondents from Generations Y and Z rated themselves an average of 3.7 on a 1–4 scale when asked how conscious they consider themselves in skincare matters, while Generation X members rated themselves lower, at an average of 2.94. However, this self-assessment does not necessarily reflect actual knowledge—such as familiarity with active ingredients or a preference for brands beyond typical drugstore options. When asked specifically about their knowledge of skincare ingredients, the average responses dropped to between 2.5 and 2.8 across all groups. This indicates that while respondents perceive themselves as conscious consumers, they do not consider themselves fully informed about the ingredients used in skincare products.

The following table compares the average familiarity with the two most well-known and the two least recognized skincare ingredients by generation. The first column lists the generation names along with their average self-assessment score (based on the question: "How conscious do you consider yourself regarding skincare?" on a scale of 1 to 4). The ingredient names appear in the top row, and the values below represent the average knowledge scores for each ingredient.

Table 1: Knowledge of Active Ingredients by Generation and Self-Reported Awareness

	C-vitamin	Hialuronsav	Zöld tea kivonat	Cink-oxid
Z-generáció	3,62	3,41	2,49	2,20
1	3,31	2,94	2,56	2,06
2	3,42	2,67	2,30	1,82
3	3,55	3,31	2,36	2,07
4	3,79	3,77	2,69	2,48
Y-generáció	3,65	3,51	2,72	2,46
1	3,17	2,25	2,33	1,25
2	3,00	2,50	1,50	2,25
3	3,59	3,48	2,55	2,29
4	3,84	3,84	3,02	2,86
X-generáció	3,74	3,57	2,63	2,40
1	3,50	2,75	2,50	1,50
2	3,80	3,20	2,80	2,00
3	3,80	3,73	2,53	2,40
4	3,73	3,82	2,73	2,91
Végösszeg	3,64	3,45	2,57	2,29
Végösszeg szórása	0,63	0,86	1,14	1,16

Source: Own research, N=492, Q4 2024

It is possible to identify how respondents who rated themselves as "4" (i.e., fully conscious skincare users) actually perform in terms of their knowledge of specific active ingredients. When comparing Generation Z and Generation X, the data reveals that those who consider themselves highly conscious are no more familiar with lesser-known ingredients than those who rated themselves a "1" on the awareness scale. This suggests that both of these generations tend to overestimate their level of skincare awareness. In contrast, the results for Generation Y indicate a different pattern. Among this group, those who rated themselves as highly conscious (a score of 4) do, in fact, demonstrate stronger knowledge of lesser-known active ingredients. For example, the average familiarity score for green tea extract and zinc oxide among these highly self-rated individuals in Generation Y was 3.02 and 2.86, respectively. For comparison, the same scores within Generation Z were lower—2.69 for green tea extract and 2.48 for zinc oxide. These findings suggest that while Generations X and Z tend to perceive themselves as more aware than they actually are, Generation Y's self-assessments are more aligned with their actual knowledge.

Summary, conclusion

The collected dataset is well-structured and suitable for further statistical analysis, which could reveal deeper relationships, trends, and differences between variables. Various statistical methods can be applied for extended evaluation. Analysis of variance (ANOVA) is useful for examining differences between the means of multiple groups, while t-tests allow for testing the significance of differences between two groups. Crosstabulation analysis helps uncover relationships between categorical variables, which is especially valuable when analyzing qualitative data, as it allows for comparing category frequencies. Correlation analysis can measure the strength and direction of linear relationships between variables, potentially identifying causal links.

Based on the findings, although the hypothesis suggested that Generation Z would be the most conscious and informed when it comes to skincare, the data shows that Generation Y actually demonstrates greater knowledge in this area. Since both age groups primarily gather information through social media, companies are advised to focus their marketing efforts and campaigns on these platforms. Special attention should be given to the role of influencers, as their content is part of the consumers' daily media consumption.

Generation X, on the other hand, shows a strong intent toward becoming more conscious and seeks information from a wider range of sources. For them, it is important to access content through blogs and articles on current skincare trends and innovations. It is also crucial to recognize that this age group values expert opinions. Therefore, marketing content targeting them should include expert interviews and professional endorsements to strengthen the credibility and perceived necessity of the promoted products.

References

18. Art, E. C. (2023, December 15). WholEmollient. The Natural Beauty Revolution Starts Here. Retrieved June 5, 2025, from https://www.wholemollient.com/pages/embrace-the-gift-of-nature-with-wholemollient%C2%AE-by-ekk-candle-art
19. Copymate. (2024, February 27). Fogyasztói típusok: Hogyan szegmentáljuk a piacot a vevők tipológiája szerint? Retrieved June 3, 2025, from https://copymate.app/hu/blog/multi/fogyasztoi-tipusok-hogyan-szegmentaljuk-a-piacot-a-vevok-tipologiaja-szerint/
20. Copymate. (2024, February 27). Psychográfia – A pszichográfia alkalmazása a piacszegmentációban. Retrieved June 5, 2025, from https://copymate.app/hu/blog/multi/psychografia-a-pszichografia-alkalmazasa-a-piacszegmentacioban/
21. Deshmukh, R. (2023, April). Skin care products market size, share, competitive landscape and trend analysis report, by type, by end user, by price point, by distribution channel: Global opportunity analysis and industry forecast, 2022–2031. Allied Market Research. Retrieved June 3, 2025, from https://www.alliedmarketresearch.com/skin-care-products-market
22. Gaksteyn, C. (2024, February 24). Organic skin care industry outlook 2024 | Trends and predictions. Organic Skincare. Retrieved June 5, 2025, from https://organicskincare.com/organic-skin-care-2023-trends-and-predictions-on-products-and-organic-ingredients-for-skin-care/
23. László, N. (2023, October 6). Marketing mix a gyakorlatban – 4P – 7P. 360-Marketing. Retrieved June 3, 2025, from https://360-marketing.hu/blog/marketing-mix/
24. Mirage. (2024, July 23). A savanyú tejtől a csúcstechnológiáig – Rövid arcápolási történelem. Mirage Magazin. Retrieved June 5, 2025, from https://miragemagazin.hu/2024/07/23/a-savanyu-tejtol-a-csucstechnologiaig-rovid-arcapolasi-tortenelem/
25. Mishra, R. (2024, March 26). Skincare target market: Navigating diverse landscape. Bo International. Retrieved June 5, 2025, from https://www.bointernational.net/blogs/skincare-target-market
26. Nagy, L. (2023, March 17). Piacszegmentálás – Hogyan igazítsd üzeneteidet célközönséged egyes csoportjaihoz? 360 Marketing. Retrieved June 5, 2025, from https://360-marketing.hu/blog/piacszegmentalas-jelentese/#celkozonseg-nem-csak-egy-van
27. Online, F. (2024, November 1). Azt tudod-e, mit jelent a clean beauty? Fashionstreet Online. Retrieved June 7, 2025, from https://fashionstreetonline.hu/2022/07/07/azt-tudod-e-mit-jelent-a-clean-beauty/
28. Sandel, K. (2022, October 8). 5 essential content marketing strategies for skincare brands. Aventive Studio. Retrieved June 5, 2025, from https://aventivestudio.com/skincare-content-marketing-strategies/

29. Shaks, B. (2023, August 1). Skin care market size, consumer trends and forecast: Top stats [2030]. Brenton Way. Retrieved June 5, 2025, from https://brentonway.com/skin-care-market-size-trends-forecast/

30. Shanker, M. (2024, June 28). How consumer behaviour is changing in the cosmetic industry. L-factor Cosmetics. Retrieved June 5, 2025, from https://lfactorcosmetics.com/blogs/blogs/how-consumer-behaviour-is-changing-in-the-cosmetic-industry?srsltid=AfmBOopZLdmfRNAwruL2lEqa34DLVh4xb5gVMQcTgpTV0hby2uD4l7sY

31. Street, F. (2022, July 7). Azt tudod-e, mit jelent a clean beauty? Fashion Street Budapest. Retrieved June 5, 2025, from https://fashionstreetonline.hu/2022/07/07/azt-tudod-e-mit-jelent-a-clean-beauty/

32. Trends, T. 2.-C. (2023, December 15). WholEmollient® by EKK Candle Art: A mother's promise of purity and care. Retrieved June 3, 2025, from https://www.wholemollient.com/pages/embrace-the-gift-of-nature-with-wholemollient%C2%AE-by-ekk-candle-art

Consumer perception of the influence of influencers and celebrities

Szigeti, Márk
MSc Student, Óbuda University, Keleti Károly Faculty of Eusiness and Management, szigeti.mark@uni-obuda.hu

Szigeti, Orsolya
Head of Dean, Óbuda University, Keleti Károly Faculty of Eusiness and Management, szigeti.orsolya@uni-obuda.hu

Abstract: The increasing prevalence of social media has redefined marketing strategies, with influencers and celebrities playing pivotal roles in shaping consumer behaviour. This thesis examines consumer perceptions of the impact that influencer and celebrity endorsements have on purchasing decisions, highlighting the differences between the two marketing approaches. Using a quantitative methodology involving a survey of 204 respondents, the research explores how consumers engage with influencers and celebrities on platforms like Instagram and TikTok. The findings reveal that while influencers are seen as more relatable and effective in niche markets, celebrities retain broader trust and reach. However, authenticity and transparency are essential across both groups for effective marketing. The study provides insights into the evolving digital landscape and the growing importance of influencer marketing in driving consumer decisions.

Keywords: influencer marketing, celebrity endorsements, consumer behaviour, social media, online shopping, authenticity, trust

1. Introduction

In my article, I explore the significant influence that celebrity and influencer marketing have over the changing landscape of online shopping behaviours. The careful selection of this subject comes from its high significance in the modern digital age, which is defined by a growing number of electronic devices that allow users to access social media with simplicity. Social media platforms are becoming increasingly popular in this digital age, and this has led to a noticeable increase in influencers and celebrities who use these platforms for various objectives. Furthermore, the fact that I am personally involved with this subject adds to its importance. As an active user of social media, I actively follow celebrities and influencers, and their endorsements frequently have an impact on my purchase selections. This combination of social relevance and personal interest acts as a starting point for exploring the complex dynamics of influencer and celebrity marketing in the context of online consumer behaviour (Garai-Fodor – Csiszárik-Kocsir, 2018; Csiszárik-Kocsir et al, 2022).
In addition to upending traditional assumptions, the internet has opened an endless number of new opportunities for marketing methods. In the forthcoming literature review, I aim to break down these transformative shifts, with a concentrated exploration of the developing patterns, operational mechanisms, and pivotal factors shaping the landscape of influencer and celebrity marketing.

In order to guarantee a comprehensive investigation of the various elements present in the selected subject, I am prepared to undertake primary research. An online survey is carefully used to extract insightful data and provide a broad overview of the complexities of influencer and celebrity marketing. This marketing research aims to uncover the principles that drive influencer and celebrity-driven advertising, evaluate its subtle effects on the intended audience, and identify the reactions that followers and fans have to sponsored content. Essentially, my goal is to provide a comprehensive understanding of the influencer phenomena by thoroughly investigating public attitudes and viewpoints regarding the use of influencers and celebrities in advertising. By means of this thorough investigation, I hope to make a valuable contribution to the academic conversation on modern marketing strategies.

2. Literature Review

As digital platforms proliferate, the marketing landscape has shifted dramatically. According to Meltwater and We Are Social’s 2023 report, the number of global internet users has increased by 1.9%, bringing the total to 5.16 billion. People now spend an average of over 6 hours per day online, with social media usage dominating much of this time. Platforms like Instagram, Facebook, and YouTube continue to grow, with a significant portion of users falling between the ages of 18-44. The growing influence of these platforms underscores the increasing importance of digital marketing in reaching global audiences (Kemp, 2023).

Influencer marketing has emerged as a major force in digital advertising. It involves collaboration between companies and individuals who have large followings on social media platforms. These influencers are categorized based on the size of their audience – ranging from nano-influencers, who have fewer than 1,000 followers, to mega-influencers, who boast over a million (Ismail, 2023). Influencers build personal relationships with their followers and are considered more relatable and authentic than traditional celebrities. Common forms of influencer marketing include sponsored content, giveaways, and brand ambassadorships. These methods are seen as effective because they leverage the trust that influencers have built with their audiences (Kovács, 2022). However, this form of marketing is not without challenges. Transparency is a key issue, as influencers sometimes fail to clearly disclose sponsored content, leading to credibility concerns (Taskmo, n.d.). Celebrity marketing, by contrast, leverages the fame and status of public figures to promote products. Celebrities typically have a much larger but less targeted audience compared to influencers. Their endorsements are seen as a way to build brand credibility and awareness on a broad scale (Kraft, 2018). While celebrities might lack the personal engagement that influencers have with their followers, they carry significant weight in terms of trust and recognition. Successful celebrity endorsements can instantly boost a brand's profile and generate considerable attention. However, these partnerships also come with risks. If a celebrity's reputation suffers, it can negatively impact the brand they are associated with. Additionally, overexposure – where a celebrity endorses too many products – can lead to a dilution of credibility and a loss of influence (Vinikas, 2023). While both influencer and celebrity marketing aim to persuade consumers to purchase products, the two strategies have key differences. Influencers are typically more relatable because they cultivate closer, more personal relationships with their followers, often focusing on niche markets. Their endorsements tend to be seen as more authentic, which is a significant advantage in an era when consumers increasingly value transparency. In contrast, celebrities have a much broader reach, making them effective for large-scale brand recognition. However, their endorsements are often perceived as more commercial and less genuine. Influencers also tend to be more cost-effective, making them a better option for smaller brands with targeted markets (Ailion, 2023).

Consumer behaviour is shaped by a variety of factors, including external influences such as the economic environment, social conditions, and demographic characteristics. Internal factors like personal income, age, and gender also play significant roles in shaping buying decisions (Marywill University, 2023). For example, younger consumers are more likely to be influenced by digital advertising and influencer endorsements, while older consumers may rely more on traditional forms of media and word-of-mouth recommendations. Marketers must understand these nuances to effectively tailor their strategies to different consumer segments (Centroszet, n.d.).

Four main types of consumers buying behavior have been identified:

Complex Buying Behavior: Occurs when consumers are highly involved in the purchase decision, often due to the product's high cost or perceived importance.

Dissonance-Reducing Buying Behavior: Similar to complex buying but involves less extensive information-seeking due to a lack of perceived differences between brands.

Habitual Buying Behavior: Involves routine purchases that require minimal decision-making, often for low-cost items.

Variety-Seeking Buying Behavior: Occurs when consumers regularly switch brands for the sake of variety rather than dissatisfaction (Szigeti & Szakály, 2011).

Marketers tailor their strategies based on these behaviors, utilizing different tactics to influence each type of consumer decision-making (Albrecht, 2023).

3. Material and methods

In primary research, information is collected from a specific segment about their opinions, intentions or behaviour and motivations. Thus, in survey research, we target those who have relevant information and are interested in the topic being researched (Bauer, Berács & Kenesei, 2021).

During my research, I employed a quantitative research method. For data collection, I utilized an online Google survey, comprising a total of 22 questions, encompassing both closed and open-ended queries. A major advantage of closed questions is that the answers can be processed quickly and easily, and the results obtained are easier to generalise and provide a quick response. The multiple-choice question format, on the other hand, allows respondents to mark more than one response option at a time (Gyulavári et al., 2014).

The questions revolved around three main topics: respondents' online shopping habits, their perceptions of influencers and celebrities, and their opinion and personal experience of online advertisements.

Concerning online shopping habits, I aimed to understand the frequency of respondents' online purchases. Regarding influencers and celebrities, my primary interest was whether the participants follow influencers and celebrities, track their activities, and if these influencers have an impact on their purchasing decisions.

I primarily shared the survey on Facebook, on my own timeline, and other social media platforms between November 4th, 2023, and November 17th, 2023. During this period, a total of 204 responses were collected.

With this data collection method, the respondents were not randomly selected. Non-random sampling is based on the personal judgement of the researcher, rather than random selection of sample items. Researchers may decide which items to include in the sample based on their own judgment or on certain beliefs. Non-random samples can provide good estimates of population characteristics. However, they do not allow for objective assessment of the accuracy of sample results (Naresh and Simon, 2017).

I processed the results using Microsoft Excel, creating charts and tables with percentages, averages, and standard deviations for a comprehensive analysis.

Table 1 shows the distribution of the background variables of the sample.

Table 1.: Distribution of background variables of respondents

Description	N=Number of respondents	%
All respondents	204	100,0
Gender		
Woman	134	65,7
Man	70	34,3
Age		
>18	9	4,4
18-30	141	69,1
31-50	44	21,6
50+	10	4,9
Education		
Primary school	4	2,0
High school	96	47,1
Higher education/university	104	51,0
Residence		
Capital	119	58,3
City	52	25,5
Village	33	16,2

Income		
Under average salary	67	32,8
Over average salary	137	67,2

Source: Own research, 2023

This table explores the perceptions and attitudes of a diverse sample of 204 respondents across various demographic categories. The analysis of the demographic table reveals key patterns and characteristics that are essential to understanding the context and potential biases in the research findings. This discussion examines the distribution of respondents based on gender, age, education, residence, and income, providing valuable insights into the composition of the sample.

The survey reflects a notable gender imbalance, with 65.7% of respondents identifying as women and 34.3% as men. This skew towards female respondents may influence the research outcomes, potentially highlighting perspectives and concerns that are more salient to this demographic.

The age distribution is heavily concentrated in the 18-30 age group, comprising 69.1% of the respondents. This focus on young adults can lead to a greater emphasis on contemporary issues and trends, potentially neglecting perspectives from older age groups. It is crucial to consider this age bias when generalizing findings to a broader population.

Most respondents (51.0%) possess higher education or university degrees, emphasizing a well-educated sample. This educational skew could also impact the findings, potentially highlighting viewpoints and attitudes more prevalent among individuals with a higher level of education.

The urban-centric nature of the survey is evident, with 58.3% of respondents residing in the capital. This concentration may lead to an urban bias, potentially overlooking the perspectives of individuals in rural areas.

The income distribution indicates a majority (67.2%) of respondents earning above the average salary. This economic bias can also influence the study's findings, potentially highlighting concerns and priorities more relevant to those with higher income levels.

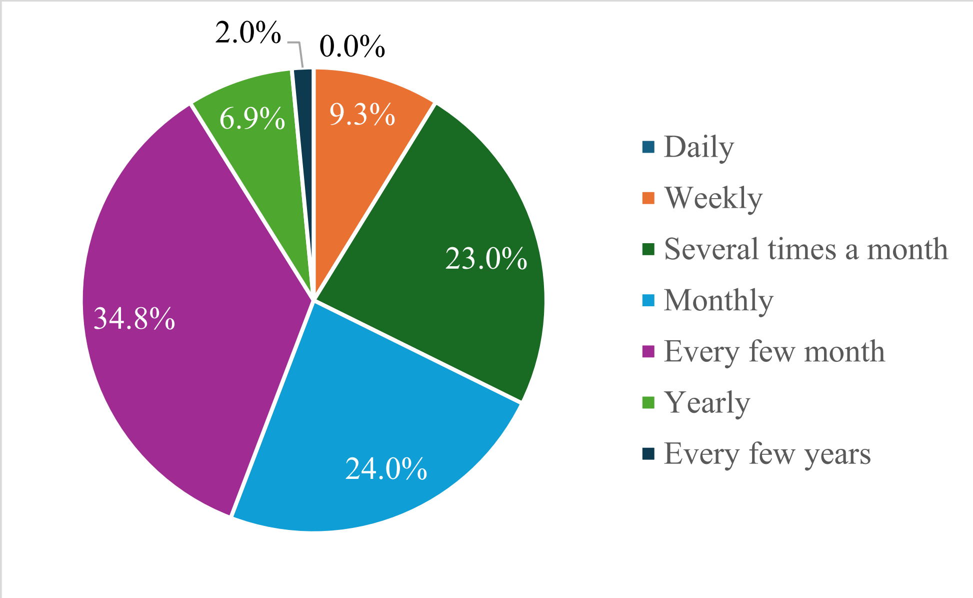
4. Results

Increasing digital presence has fundamentally shifted consumer behaviour, particularly regarding e-commerce. In my research, I examined how influencers and celebrities influence the consumer behaviours, focusing on how their endorsements affect purchasing decisions, what platforms are most effective, and the overall trust consumers place in them.

4.1. Online shopping habits

In terms of online shopping, every respondent in my survey (100%) confirmed that they have made purchases online. This indicates the centrality of e-commerce in modern life. Figure 1 illustrates the frequency of online shopping.

Figure 1.: Frequency of online shopping, % (n=204)

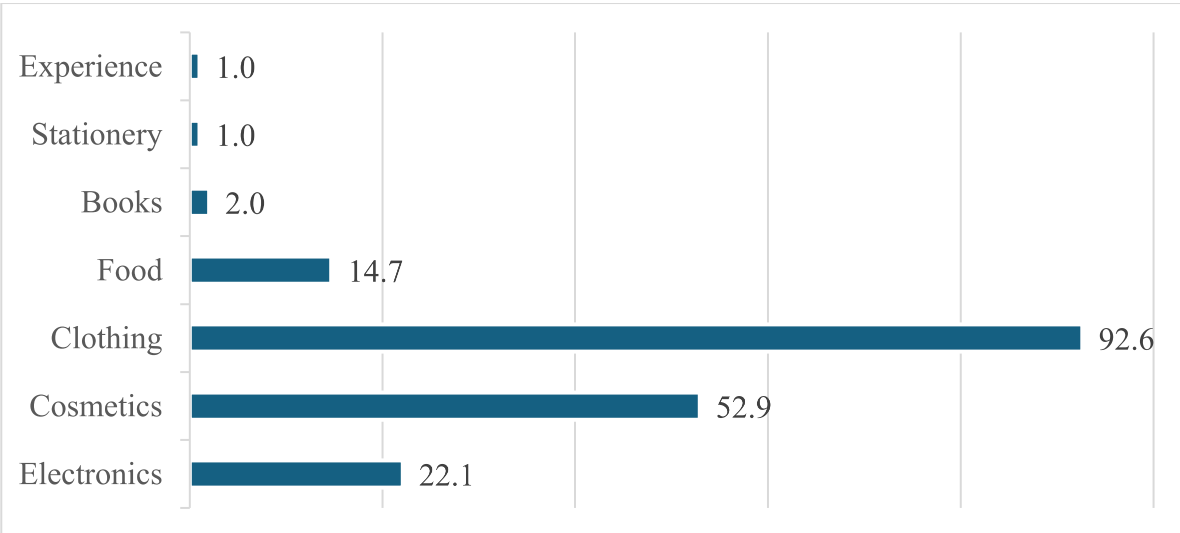


Source: Own research, 2023

Furthermore, while no respondent reported daily online shopping, 9% shop weekly, 23% shop several times a month, and 24% purchase items monthly. The most common pattern, however, is less frequent, with 35% of respondents shopping every few months and 7% purchasing items yearly. These findings reveal a broad range of shopping frequencies, suggesting that while online shopping is ubiquitous, consumers vary significantly in how often they engage in it.

In the questionnaire, I looked at the product categories that respondents bought online. The results are illustrated in Figure 2. In this question each respondent could give several answers.

Figure 2.: Product categories purchased online, % (n=204)

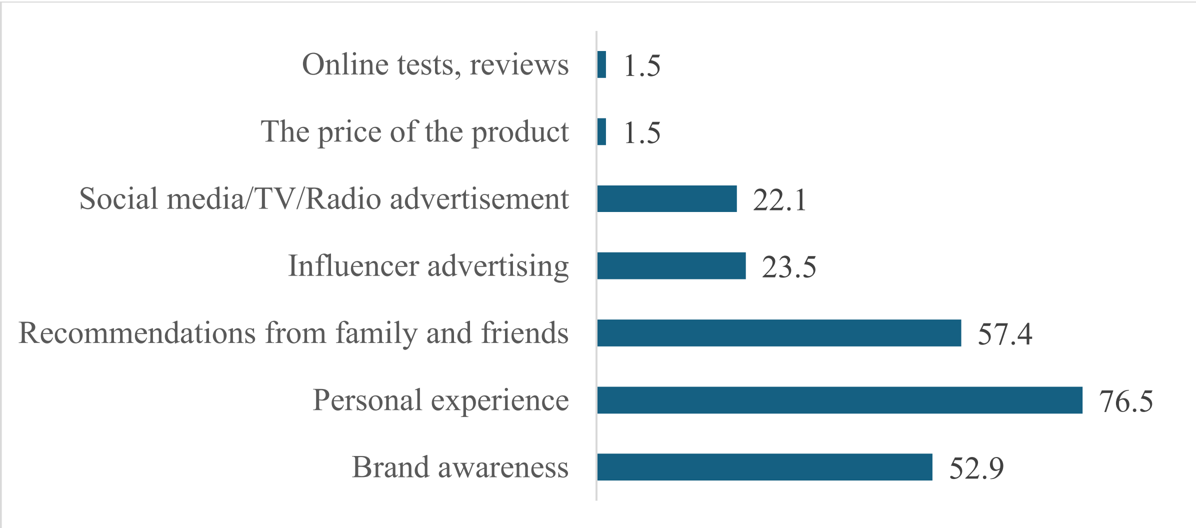


Source: Own research, 2023

When it comes to product categories, clothing was the most popular, with 92.6% of respondents purchasing apparel online. This aligns with the broader trend of fashion being one of the most heavily promoted sectors on social media platforms such as Instagram and TikTok. The second most popular category was cosmetics, with 52.9% of respondents purchasing beauty products online. These results confirm the significant role that influencers play in these industries, especially as many influencers focus on beauty and fashion in their content. Other categories, such as electronics, books, and stationery, were less frequently purchased but still showed substantial engagement.

In my next question, I sought to understand the criteria based on which respondents choose which brand, model, or version to purchase. In this question as well, I provided multiple choice answer options, including an "other" category at the end. The results can be seen in Figure 3.

Figure 3.: Factors influencing purchasing decisions, % (n=204)



Source: Own research, 2023

Personal experience was the most cited reason for product selection, with 76.5% of respondents stating that they relied on their own previous experiences. This suggests that while influencers and celebrities can introduce new products to consumers, the final decision is often based on prior personal interaction with a brand or product.
Brand awareness was another significant factor, with 52.9% of respondents mentioning it as a key consideration. Consumers gravitate toward well-known brands they trust, which underscores the importance of maintaining a strong brand presence, whether through traditional marketing channels or influencer collaborations.

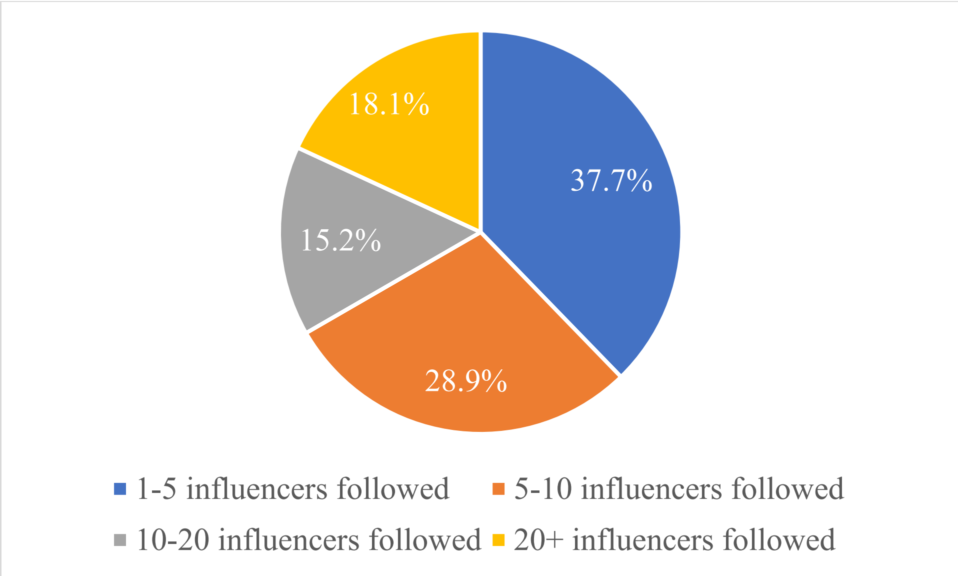
Recommendations from family and friends also play an important role in shaping purchasing decisions. Most respondents (57.4%) indicated that they often consult with their close social circles before making purchases. This reflects the continued importance of word-of-mouth marketing, even in a digital age dominated by influencer content.
However, influencer advertising, while not the most decisive factor, still influenced 23.5% of respondents. Social media and other forms of digital advertising (22.1%) also had a notable impact, but less so than personal recommendations and prior experiences.

4.2. Perception of influencers vs. celebrities

When looking at engagement with influencers specifically, the results show that 88.2% of respondents follow at least one influencer. Instagram dominates as the primary platform for following influencers, with 91.8% of respondents using it for this purpose. TikTok is the second most popular platform, with 62.3% of respondents following influencers there. This reinforces the dominance of these two platforms in influencer marketing and highlights how visual content – whether in photos or short-form videos – is a key driver of engagement. Interestingly, 89.7% follow celebrities, indicating significant engagement on these platforms.

The number of influencers followed varied significantly across respondents, which can be seen in Figure 4.

Figure 4.: Number of influencers followed by respondents, % (n=204)



Source: Own research, 2023

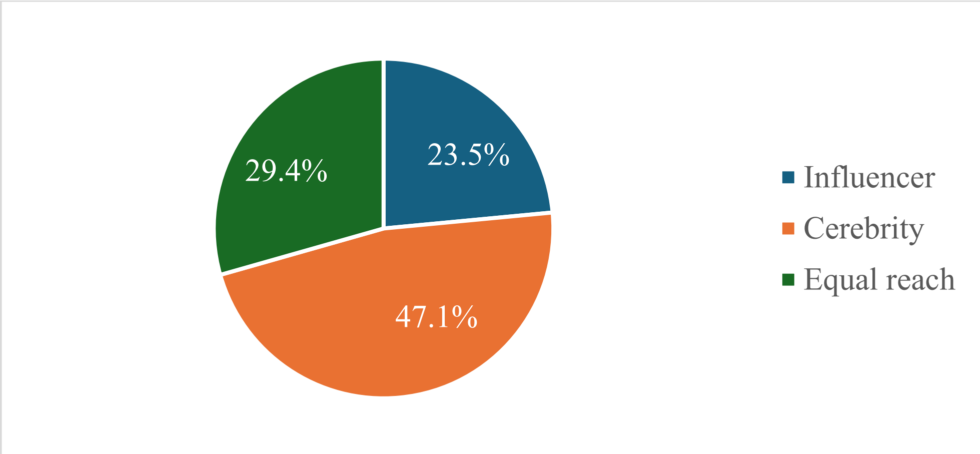
The majority (37.7%) followed between 1 to 5 influencers, suggesting that people prefer to curate a relatively small and manageable number of influencers whose content they consistently consume. Interestingly, as the number of influencers increases, the percentage of respondents decreases. Only 18.1% of respondents follow more than 20 influencers, indicating that while influencers are popular, users may prefer a more selective approach, following those they find most relevant or trustworthy.

In terms of trust, the results reveal a nuanced relationship between consumers and influencers. The relationship between consumers and celebrities differs somewhat from that of influencers. When asked who they trust more when it comes to advertisements, 79.4% of respondents said they trust celebrities over influencers. This aligns with the perception that celebrities, who usually have a secondary income stream apart from endorsements, are less likely to promote products solely for profit. In contrast, influencers are often viewed as being financially dependent on advertisements and sponsorships, which may reduce their credibility in the eyes of consumers.

However, influencers still command a significant amount of trust. Even though 20.6% of respondents stated they trust influencers more than celebrities, the fact that influencers often work within niche markets and develop close, interactive relationships with their followers suggests they still have strong appeal for specific audiences. This dynamic is particularly important in industries like beauty and fashion, where personal recommendation and relatability can significantly sway consumer decisions.

The research was also interested in whether respondents think celebrities or influencers reach more consumers (Figure 5).

Figure 5.: Perception of whether influencers or celebrities reach more consumers, % (n=204)

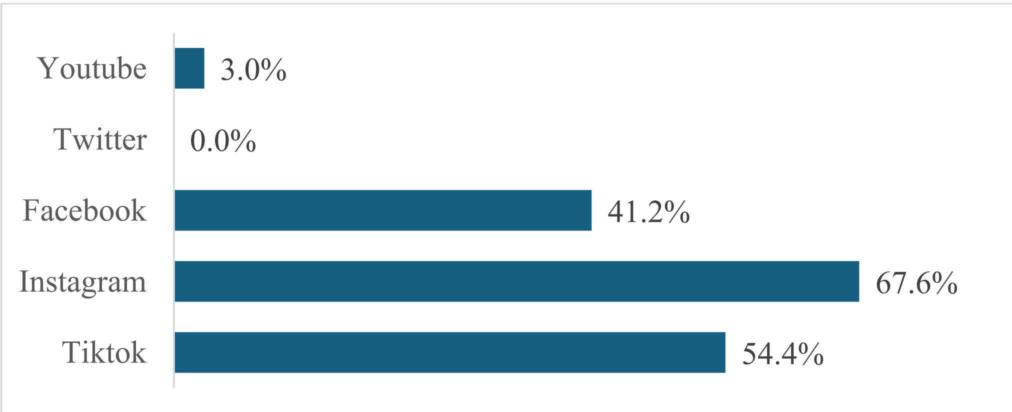


Source: Own research, 2023

In terms of reach, 47.1% of respondents believe that celebrities reach more people with their posts, while 23.5% think influencers have a broader reach. Interestingly, 29.4% of respondents believe that both influencers and celebrities reach an equally large audience, which suggests that, in the eyes of many consumers, the lines between these two groups are becoming increasingly blurred

In my next question, I aimed to explore on which social media platforms respondents follow influencers. I provided multiple choice answers with an "other" option as well where they can name the social media platform. Instagram continues to dominate as the most effective platform for influencer marketing, with 67.6% of respondents encountering the most advertisements by influencers and celebrities on this platform. TikTok follows with 54.4%, reflecting the platform's growing role in shaping modern consumer culture. Facebook, while still used, plays a lesser role, with only 41.2% of respondents encountering advertisements there. Other platforms, such as Twitter and YouTube, show minimal engagement in terms of advertising exposure (Figure 6).

Figure 6.: Distribution of social media follows for influencers, % (n=204)



Source: Own research, 2023

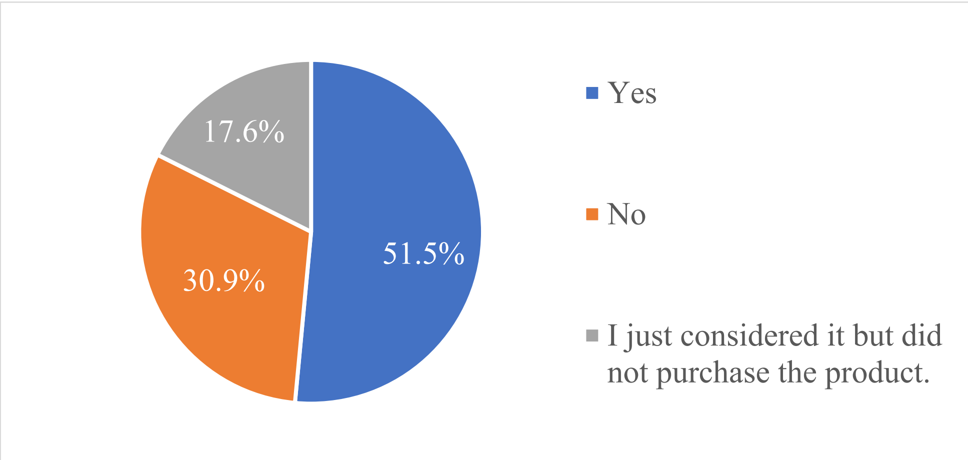
This trend suggests that visual-centric platforms, where influencers and celebrities can showcase products through images, stories, and short-form videos, are the most effective in reaching consumers.

Moreover, the nature of these platforms allows for a more interactive and engaging advertising experience, making it easier for influencers and celebrities to connect with their audiences in real-time.

4.3. Consumer behaviour influenced by influencers and celebrities

My next question aims to determine whether the respondent has ever purchased something based on an influencer's or a celebrity's recommendation For this question, I provided three options for responding: yes, no, and I just considered it but did not purchase the product. Figure 7 shows the distribution of responses for influencers and Figure 8 shows the distribution of responses for celebrity influenced purchases.

Figure 7.: Distribution of responses for influencers influenced purchase, % (n=204)



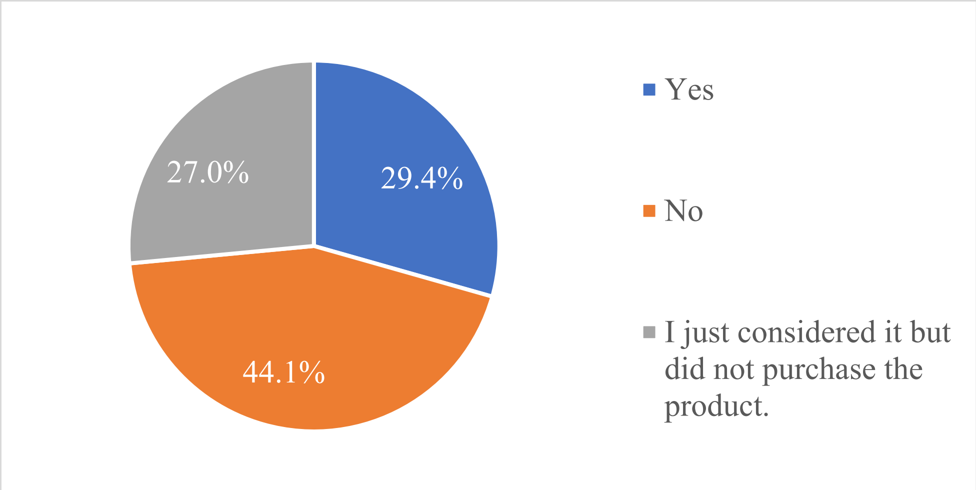
Source: Own research, 2023

While influencers can sway purchasing decisions, respondents remain cautious. Most respondents (51.5%) have made purchases based on an influencer's recommendation, yet a sizable 30.9% have never bought anything because of an influencer's endorsement. Additionally, 17.6% of respondents considered purchasing a product based on an influencer's recommendation but ultimately decided against it. This suggests that while influencers can spark initial interest in a product, other factors such as price, reviews, or personal research are often the determining elements in whether a purchase is made.

One of the most revealing findings of this research was the high percentage of respondents who purchased a product based on an influencer's recommendation (51.5%). This confirms that influencers wield significant power when it comes to driving consumer decisions.

However, only 29.4% of respondents bought something based on a celebrity's recommendation, suggesting that while celebrities are trusted more, their endorsements do not always convert into actual sales (Figure 8).

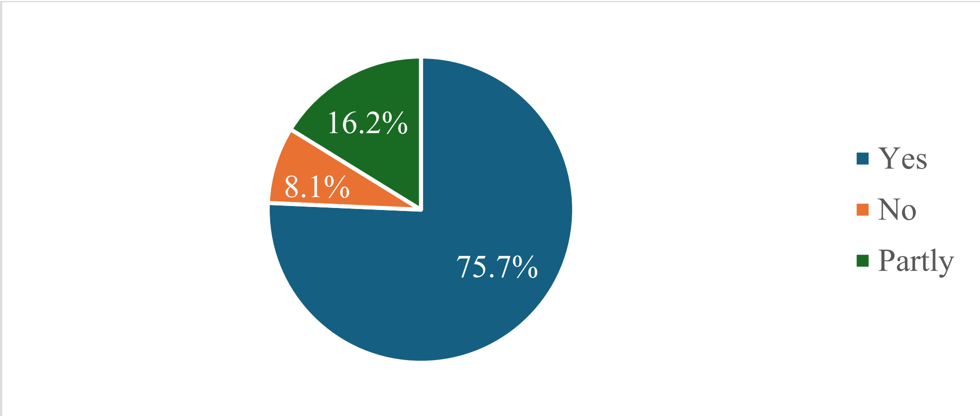
Figure 8.: Distribution of responses for celebrity influenced purchase, % (n=204)



Source: Own research, 2023

It was important to know whether consumers who have bought from influencers or celebrities were satisfied with the product they bought. Figure 9 illustrates satisfaction with products bought influenced by influencers and Figure 10 illustrates satisfaction with products bought influenced by celebrities.

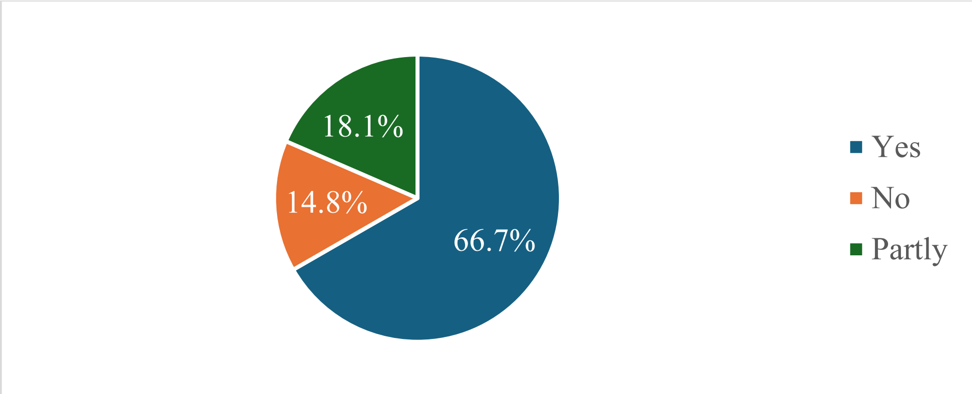
Figure 9.: Perception of satisfaction with the product purchased by the influencer, % (n=105)



Source: Own research, 2023

Based on the results of Figure 9 in terms of satisfaction with the products they bought, the results were generally positive. 75.7% of respondents reported being satisfied with the products they purchased based on an influencer's recommendation. In contrast, only 8.1% of respondents were dissatisfied, while 16.2% were partially satisfied. These figures indicate that influencer marketing, when done correctly, can result in positive consumer experiences and boost brand loyalty.

Figure 10.: Perception of satisfaction with the product purchased by the celebrities, % (n=60)

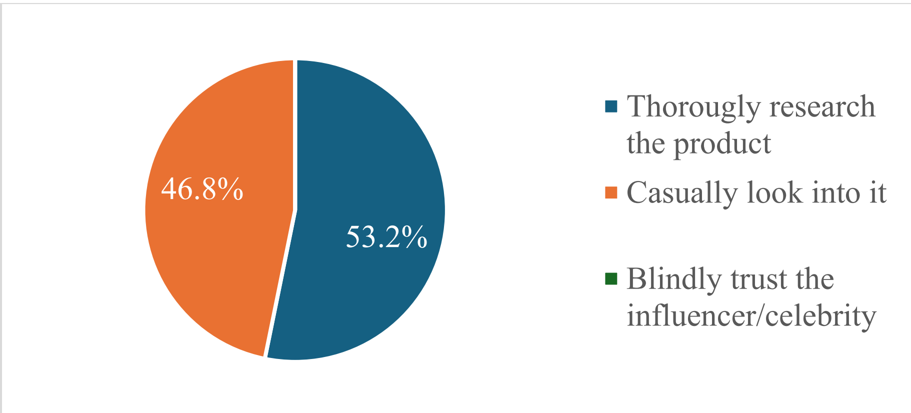


Source: Own research, 2023

Similar trends were observed for celebrity endorsements, with 66.7% of respondents stating that everything the celebrity claimed about the product was true, and only 14.8% expressing dissatisfaction (Figure 10). This reflects the continued influence celebrities have, especially when their endorsements are perceived as credible and authentic.

Despite the significant impact of influencers and celebrities, most respondents (53.2%) indicated that they thoroughly research products before making a purchase (Figure 11). Another 46.8% casually look into the products before buying them, while no respondent blindly trusts influencers or celebrities. This suggests that modern consumers are highly conscientious and prefer to base their decisions on multiple sources of information, rather than relying solely on endorsements.

Figure 11.: Product research behaviour based on influencer/celebrity recommendations, % (n=204)



Source: Own research, 2023

These results also support and confirm the answers to the previous research question on what influences respondents' purchasing decisions (Figure 3). This aligns with broader trends in consumer behaviour, where reviews, price comparisons, and personal recommendations play a central role in shaping purchasing decisions. It also highlights the growing sophistication of today's consumers, who are more likely to scrutinize advertising claims and rely on user-generated content, such as product reviews, to make informed decisions.

4.4. Results based on background variables

A deeper dive into the demographics of respondents reveals that age and income play significant roles in shaping how people interact with influencers and celebrities. Younger respondents, particularly those in the 18-30 age range, were more likely to follow influencers and make purchases based on their recommendations. This group also showed higher engagement with platforms like TikTok, which is known for its younger user base. Older respondents, on the other hand, were more likely to trust celebrities over influencers, reflecting a generational difference in how each group interacts with digital content.

Income also played a role, with higher-income respondents more likely to purchase products based on celebrity endorsements, while lower-income respondents showed a stronger preference for influencer recommendations. This suggests that influencers, who often promote affordable or mid-range products, may resonate more with price-conscious consumers, while celebrities, who tend to endorse luxury or high-end brands, appeal to wealthier audiences.

5. Conclusion

In the modern digital era, mobile phones have become the primary tool for online browsing and shopping, leading to the decline of desktop and laptop use. My research shows that most respondents spend significant free time online and prefer to shop for well-known products through online channels. Social media platforms, such as Instagram, TikTok, and Facebook, are highly popular, and users often encounter influencers.

The perception of influencers is strong, with 88.2% of respondents following at least one. Interestingly, 89.7% follow celebrities, indicating significant engagement on these platforms. However, there is still scepticism toward paid promotions, and consumers prefer authentic recommendations from influencers or celebrities.

My study reveals that 51.5% of respondents have purchased products based on influencer recommendations, while 29.4% have done so based on celebrity endorsements. Popular items include clothing, cosmetics, and electronics. Respondents appreciate authenticity, which highlights the growing importance of genuine experiences shared by influencers or celebrities in marketing.

Furthermore, the negative perception of influencers is declining. Both companies and influencers are focusing on maintaining credibility by promoting quality products. In the past, there were concerns about false claims, but this issue is fading as companies and influencers recognize the value of trustworthiness.

Overall, the rise of mobile internet access and social media usage is shaping consumer behaviour, with influencers playing a crucial role in marketing. Although celebrities continue to have a broader reach, influencers excel in connecting with niche audiences. The digital landscape continues to evolve, emphasizing authenticity and trust in influencer marketing.

In conclusion, my research shows that influencers and celebrities play a significant role in shaping online consumer behaviour. While personal experience, brand awareness, and recommendations from family and friends remain important factors, the power of social media cannot be understated. Platforms like Instagram and TikTok have transformed the way people discover and purchase products, with influencers playing a crucial role in this process.

However, the results also highlight a key distinction between influencers and celebrities. While influencers are highly effective at promoting products, particularly within niche markets, celebrities maintain broader trust and reach. Despite this, influencers are gaining ground, particularly among younger demographics who value authenticity and relatability over traditional fame.

Ultimately, my research underscores the importance of authenticity, transparency, and trust in the influencer and celebrity marketing landscape. Brands that can successfully leverage these qualities will be better positioned to connect with consumers and drive sales in the digital age.

References

33. Ailion, J. (2023) Guide to influencer marketing and celebrity endorsement | Moburst. https://www.moburst.com/blog/influencer-marketing-vs-celebrity-endorsement/ [Accessed 18 Nov. 2023].
34. Albrecht, M.G. (2023) 3.1 Understanding consumer markets and buying behavior – Principles of Marketing | OpenStax. https://openstax.org/books/principles-marketing/pages/3-1-understanding-consumer-markets-and-buying-behavior [Accessed 18 Nov. 2023].
35. Bauer A., Berács J., Kenesei Zs. (2021): Marketing alapismeretek. Akadémiai Kiadó, Budapest, 1-452.
36. Centroszet (n.d.) A fogyasztói magatartást befolyásoló tényezők. http://centroszet.hu/tananyag/marketing/62_a_fogyaszti_magatartst_befolysol_tnyezk.html [Accessed 18 Nov. 2023].
37. Csiszárik-Kocsir, Á., Garai-Fodor, M., Varga, J. (2022) Preference system for the choice of savings in a generation-specific approach of the financial culture before and after the coronavirus pandemic. In A. Szakál (Ed.), Proceedings of the 10th IEEE Jubilee International Conference on Computational Cybernetics and Cyber-Medical Systems (ICCC 2022) (pp. 287-291). IEEE Hungary Section.
38. Garai-Fodor, M., Csiszárik-Kocsír, Á. (2018). The validity of value-based consumer behavioral models in the financial consciousness of the Z generation. On-Line Journal Modelling the New Europe, 27, 107-131.
39. Gyulavári T., Mitev A.Z., Neulinger Á., Neumann-Bódi E., Simon J., Szűcs K. (2014): A marketingkutatás alapjai. Akadémiai Kiadó, 1-348.
40. Ismail, K. (2023) “Types of social media influencers: mega, macro, micro or nano” CMSWire.com. https://www.cmswire.com/digital-marketing/social-media-influencers-mega-macro-micro-or-nano/ [Accessed 18 Nov. 2023].
41. Kemp, S. (2023). Digital 2023: Global Overview Report. [online] DataReportal. Available at: https://datareportal.com/reports/digital-2023-global-overview-report [Accessed 15 Nov. 2023].
42. Kovács N. (2022) A szponzorált tartalom nyomában: hatékonyság, hirdetés, Instagram. https://www.whitepress.com/hu/tudasbazis/1259/a-szponzoralt-tartalom-nyomaban-hatekonysag-hirdetes-instagram [Accessed 18 Nov. 2023].
43. Kraft K. (2018) The Pros and Cons of celebrity endorsements – BAER Performance Marketing. https://baerpm.com/2018/01/02/pros-cons-celebrity-endorsements/ [Accessed 18 Nov. 2023].
44. Marywill University (2023): What is consumer behavior? Mastering the Arts | Maryville Online. https://online.maryville.edu/online-bachelors-degrees/marketing/resources/what-is-consumer-behavior/ [Accessed 18 Nov. 2023].

45. Malhotra, N.K., Simon J. (2009): Marketingkutatás. Akadémiai Kiadó, Budapest, 1-832.
46. Szigeti O., Szakály Z. (2011): Marketing digital note, 22-26. [Accessed 18 Nov. 2023].
47. Taskmo (n. d.) TaskMo – Task Fulfillment Platform | Gig Marketplace. https://taskmo.com/blog/influencer-marketing-advantages-disadvantages [Accessed 18 Nov. 2023].
48. Vinikas I. (2023) Celebrity Endorsement: All You Need To Know – Kaltura. https://corp.kaltura.com/blog/celebrity-endorsement/ [Accessed 18 Nov. 2023].

The Hungarian financial consumer protection principles based on the recommendations of the central bank

Dávid Keskeny
Msc student, Obuda University

Abstract: Financial consumer protection is a crucial aspect of the modern economy, and the Hungarian National Bank (MNB) plays a significant role in ensuring fair and transparent financial market operations while safeguarding consumer rights. The MNB regularly issues recommendations and guidelines, outlining essential principles for both financial institutions and consumers to consider when providing or utilizing financial services. These principles encompass various areas, such as credit provision, consumer credit contracts, credit cards, and electronic payment services. The aim is to secure consumers' information and decision-making rights, prevent unfair practices, and promote responsible borrowing and good credit quality.

Keywords: Financial consumer protection, Hungarian National Bank (MNB), Transparency in financial services, Responsible borrowing, Consumer education in finance

1. Introduction

The Hungarian National Bank's status is defined by Act CXXXIX of 2013, emphasizing its responsibility for economic stability, financial system supervision, and monetary policy management. It also outlines the MNB's consumer protection tasks, encouraging financial education and ensuring fair business practices. The Act grants the MNB independence and autonomy to implement effective monetary policy without political interference. Additionally, the MNB collaborates with international organizations and central banks, adhering to international requirements in the realm of financial stability and cooperation. In the general area of financial consumer protection, there are challenges such as lack of information, complex contract terms, unfair practices, poor complaints handling, and debt spirals. To address these issues, the MNB issued Recommendation No 9/2020, setting guidelines for financial institutions to follow while protecting consumers and fostering fair financial market conditions.

The principles encompass transparency, cost disclosure, effective complaint handling, risk management, debt management, and fair business practices. Although not legally binding, the MNB monitors compliance and takes action if irregularities occur. To optimize financial consumer protection, several measures are essential, including a robust legal framework, effective supervisory mechanisms, consumer education, transparent complaints handling, risk sensitivity, data protection, fair contract terms, user-friendly digital solutions, financial product comparison platforms, review and feedback mechanisms, and international cooperation and harmonization. By combining these measures and implementing them effectively, financial consumer protection can be enhanced, leading to increased transparency, sustainability, and consumer confidence in the financial sector. The MNB's active role in promoting these principles ensures the continuous development and improvement of financial services for the benefit of consumers.

The objectives of this research can be stated as follows: (1) To analyze the effectiveness of the MNB in financial consumer protection; (2) to evaluate the impact of Recommendation No 9/2020 on financial institutions; (3) to identify challenges and propose measures to enhance financial consumer protection in Hungary.

The questions this research paper aims to provide answers for are: (1) How effective is the MNB in ensuring financial consumer protection? (2) What are the key challenges in financial consumer protection in Hungary? (3) What measures can be implemented to optimize financial consumer protection?

The rest of the paper is structured as follows. In the literature review section, we provide an outline of financial consumer protection theories and models. We analyze previous research to assess the role of central banks in financial stability and consumer protection. In the methodological section we provide a qualitative and quantitative data analysis on consumer protection and the MNB. We apply a qualitative, quantitative and a case study approach focusing on the Hungarian context. The primary data are collected through interviews with MNB officials, financial institutions, and consumers. The secondary data is an Analysis of MNB reports, Recommendation No 9/2020, and relevant legal documents.

2. Literature Review

The theoretical framework for financial consumer protection encompasses various models and theories that highlight the importance of safeguarding consumers in financial markets. These theories underscore the role of regulatory bodies, such as central banks, in ensuring financial stability and consumer protection. One prominent theory is the Agency Theory, which explains the relationship between principals (consumers) and agents (financial institutions). The theory suggests that due to the information asymmetry between these two parties, there is a need for regulatory oversight to protect the interests of the consumers. According to Matolcsy (2022), effective regulation can mitigate the risks associated with agency problems, such as moral hazard and adverse selection. (Tariq et al.,2024) Another relevant theory is the Behavioral Economics Theory, which emphasizes that consumers often do not act rationally in financial decision-making due to cognitive biases and limited information. Badics et. Al,. in (2015) argue that regulators need to design policies that 'nudge' consumers towards better financial decisions without restricting their freedom of choice. This theory supports the development of transparent and consumer-friendly financial products and services.

Previous Research

Previous research on financial consumer protection has shown varying degrees of effectiveness in different regulatory frameworks. Studies have indicated that a strong regulatory environment, combined with effective supervision and consumer education, can significantly enhance consumer protection in financial markets. (Khan et al.,2023)

For instance, a study by the MNB (2018) highlights that countries with comprehensive financial consumer protection frameworks tend to have higher levels of consumer trust and market stability. The research points out that clear regulations, efficient complaint handling mechanisms, and active consumer education programs are key components of effective financial consumer protection.(Csiszárik et al.,2024)

In the context of Hungary, research by Molnár and Horváth et al (2010, 2024) discusses the role of the Hungarian National Bank (MNB) in financial stability and consumer protection. The study highlights that the MNB's responsibilities, as defined by Act CXXXIX of 2013, include overseeing the financial system, managing monetary policy, and protecting consumers. The authors note that the MNB has made significant strides in promoting financial literacy and ensuring fair business practices among financial institutions.Csiszárik et al.,2024)

Regulatory Framework

The Hungarian National Bank's (MNB) status and responsibilities are detailed in Act CXXXIX of 2013. This act emphasizes the MNB's role in maintaining economic stability, supervising the financial system, and managing monetary policy.(Csiszárik,2021) It also outlines the MNB's consumer protection tasks, which include encouraging financial education and ensuring fair business practices.

Act CXXXIX of 2013 grants the MNB independence and autonomy, allowing it to implement effective monetary policy without political interference. This autonomy is crucial for maintaining credibility and trust in the financial system. The act also mandates the MNB to collaborate with international organizations and other central banks, ensuring that Hungary adheres to international standards in financial stability and cooperation.

In the area of financial consumer protection, the MNB faces challenges such as lack of information, complex contract terms, unfair practices, poor complaints handling, and debt spirals. To address these issues, the MNB issued Recommendation No 9/2020, which sets guidelines for financial institutions to protect consumers and foster fair market conditions.Csiszárik et al.,2016) The principles outlined in the recommendation include transparency, cost disclosure, effective complaint handling, risk management, debt management, and fair business practices.Garai-Fodor et al.,2023)

Although Recommendation No 9/2020 is not legally binding, the MNB monitors compliance and takes action if irregularities occur.(Forgács et al.,2024) This proactive approach aims to enhance financial consumer protection through a combination of regulatory oversight and educational initiatives.(Pató et al.,2023)

3. Methodology

The research design incorporates both qualitative and quantitative methods to provide a comprehensive analysis of financial consumer protection by the Hungarian National Bank (MNB).

Qualitative Research Methods: These include in-depth interviews with officials from the MNB, financial institutions, and consumers. The qualitative approach helps to capture detailed insights and perspectives on the effectiveness of financial consumer protection measures.

Quantitative Research Methods: These involve structured surveys and statistical analysis of numerical data to measure the perceptions and satisfaction levels of consumers regarding financial protection mechanisms.

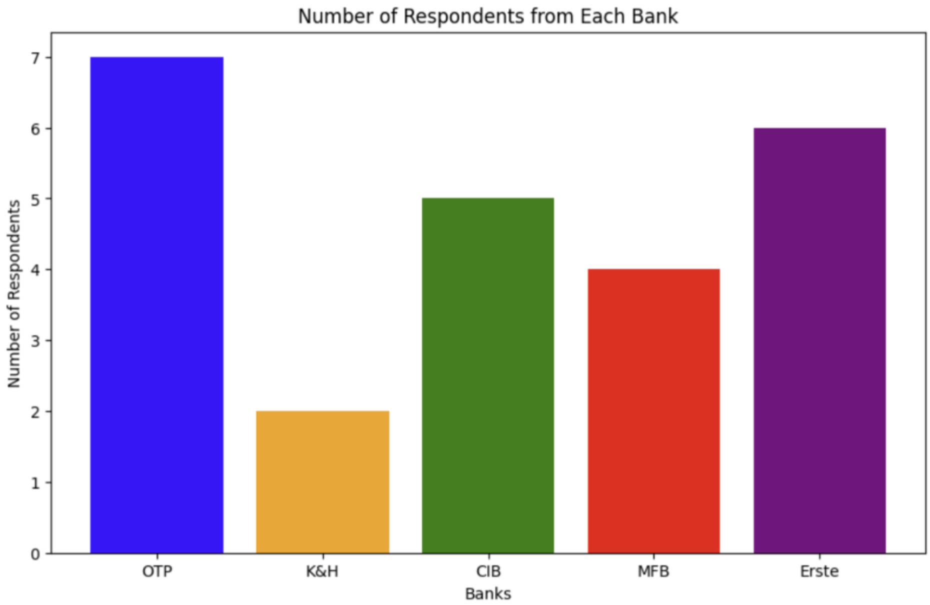
We used the Likert scale to determine the satisfaction levels of the bank officials.

We surveyed 240 officials from 5 institutions (OTP bank, K&H bank, CIB bank, MFB Bank, Erste Bank). 7 of them were from OTP, 20 from K&H, 50 from CIB Bank, 40 from MFB bank and 60 from MFB Bank. We asked them to rate on a scale from 1 to 5 the following 50 questions:

1. To what extent is financial consumer protection in hungary important (1-5)
2. How likely is the financial institution to encounter a consumer proteciton issue (1-5)
3. How satisfied are the consumers with banks and financial institutions offering cosnumer protection? (1-5)
4. How likely is it that the bank will be able to cover a loss of up to 100,000 Euros due to a violation of the financial consumer protection law (1-5)
5. Is the MNB doing enough to advance consumer protection? (1-5)

The respondents per bank can be seen in Figure 1

Figure 1.: Distribution of respondents per bank.



Source: Own research. N=240

This chart provides a clear visual representation of the distribution of respondents across the five banks. It helps to quickly understand which banks have more or fewer respondents, giving an initial overview of the sample distribution. This is important for understanding the context of the data and ensuring that the sample size from each bank is sufficient for analysis. Table 1. provides the descriptive statistics of the responses provided.

Table 1. Descriptive statistics of responses provided for the 5 questions.

Stats	Q1	Q2	Q3	Q4	Q5
count	240	240	240	240	240
mean	4.044076	4.105415	4.014456	3.979355	4.177589
std	0.604819	0.479268	0.434837	0.641222	0.425659
min	2.723505	3.184901	3.146865	3.009602	3.413438
0.25	3.631263	3.813465	3.6895	3.450889	3.861711
0.5	4.074748	4.191266	3.923408	3.896307	4.133448
0.75	4.373716	4.473981	4.382575	4.485604	4.477634
max	4.971811	4.74704	4.892935	5	5

Source: own research. N=240

Based on the respondents generally have a positive view but with slight variations. The data reflects moderate to high satisfaction or importance ratings, aligning with other survey results that were done in this field.

Some further descriptive statistics on the variance, standard deviation, kurtosis as well as skewness are provided in Table 2.

Table 1.: Variance, standard deviation, kurtosis, skewness - statistics of responses.

Questions	Variance	Standard Deviation	Kurtosis	Skewness
Q1_Importance_of_Financial_Consumer_Protection	0.365807	0.604819	-0.60582	0.009117
Q2_Likelihood_of_Consumer_Protection_Issue	0.229697	0.479268	-0.85655	-0.53459
Q3_Consumer_Satisfaction	0.189083	0.434837	-0.67829	0.031561
Q4_Ability_to_Cover_Loss	0.411166	0.641222	-1.154	0.271595
Q5_MNB_Efforts	0.181185	0.425659	-0.68247	0.372092

Source: own research. N=24

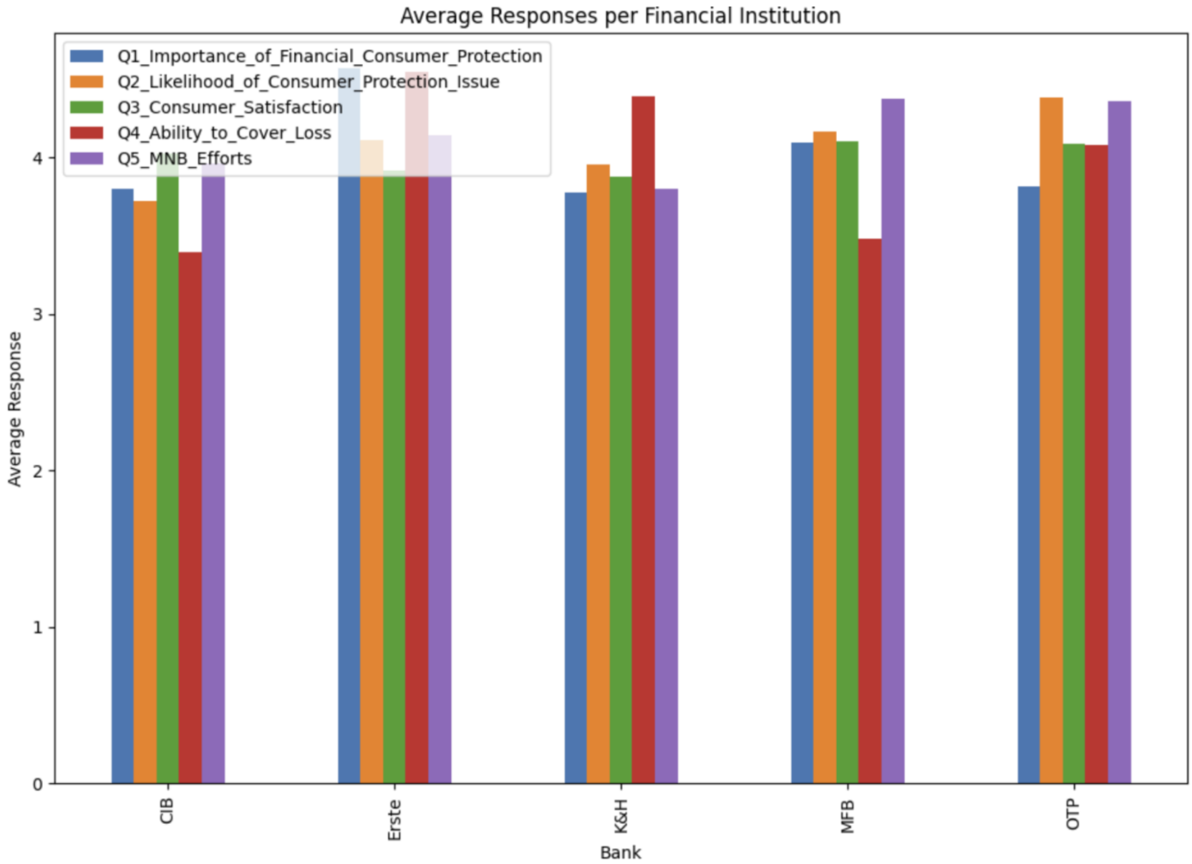
The mean indicates the average response is around 4.044, while the standard deviation and variance show how spread out the responses are. We can see that the standard deviation is quite low. Kurtosis and skewness provide insights into the distribution's shape, indicating whether the data is peaked or flat (kurtosis) and whether it is symmetric or skewed (skewness). These statistics help in understanding the overall trends and variability in the responses. The responses for the importance of financial consumer protection have moderate dispersion, indicating that most respondents have similar views but with some variability. The distribution is somewhat flat, indicating a moderate spread of responses without many outliers. The distribution is almost symmetric, indicating that responses are evenly spread around the mean.

Responses about the likelihood of encountering consumer protection issues show less variability compared to Q1, suggesting more agreement among respondents. The responses are flatter than Q1, showing even fewer extreme values and more uniformly distributed opinions. Slight negative skew, indicating that more respondents rated lower on the scale, but not drastically so.

Consumer satisfaction ratings have the least variability, indicating a high level of consensus among respondents on this aspect.

The data indicates that respondents generally agree on the importance and satisfaction of financial consumer protection, with low variability and symmetric distributions. The slight skewness and kurtosis values suggest that the responses are fairly consistent without extreme outliers. The ability to cover losses shows the most variability, suggesting differing opinions among respondents, which might indicate a topic that could benefit from further investigation or communication. The MNB's efforts are perceived consistently, with low variability and a slight positive skew, indicating general approval but with room for improvement.

Figure 2. Average responses per financial institution.



Source: Own research. N=24

High Consistency: Across all banks, the average responses for all questions are centered around 4 with low variability. This indicates a general consensus among the respondents about the importance of financial consumer protection, satisfaction levels, and the efforts of the MNB.

Confidence in Covering Losses: Q4 (Ability to cover losses) is rated high across most banks, suggesting a strong financial stability and readiness to handle potential financial consumer protection violations. Perceived Efforts of MNB: Q5 (MNB efforts) also consistently rates high, indicating a positive perception of the MNB's role in advancing consumer protection.

The chart illustrates a generally positive outlook on financial consumer protection in Hungary across major banks, with slight variations in specific areas such as the likelihood of encountering issues and the ability to cover losses. The high ratings and low variability demonstrate confidence in both the regulatory environment and the banks' internal measures for consumer protection.

Table 3. ANOVA table results.

ANOVA Table:				
	sum_sq	df	F	PR(>F)
C(Bank)	3.45556	4	3.770106	0.006857
C(Question)	0.591217	4	0.645033	0.631735
C(Bank):C(Question)	6.445517	16	1.758057	0.048804
Residual	21.7685	95	NaN	NaN

Source: Own research. N=240

The results of the ANOVA table can be described from the perspective of these three points:

Significant Bank Effect: The responses significantly vary between banks, indicating that different banks may have different perspectives or practices related to financial consumer protection.

Non-Significant Question Effect: There is no significant difference in responses based on the different questions, suggesting a general consensus among respondents across all questions.

Significant Interaction Effect: The interaction between bank and question is significant, indicating that responses to specific questions depend on the bank. This complexity shows that banks might prioritize or view aspects of consumer protection differently depending on the specific issue addressed by the question.

Conclusions

The results of the ANOVA indicate that there is a significant difference in the average responses to the consumer protection questions across the different banks ($p < 0.01$). This suggests that the bank chosen may have an impact on consumer perceptions of financial consumer protection. The ANOVA also reveals a significant interaction effect between the bank and the question asked ($p < 0.05$). This means that the effect of the bank on the average response depends on the specific question being asked. This indicates that banks have different strengths and weaknesses when it comes to consumer protection. For example, one bank may be perceived as being more important in terms of financial consumer protection, but another bank may be perceived as being more likely to encounter a consumer protection issue. Further investigation into the interaction effect is warranted to determine which banks are perceived as stronger or weaker in which areas of consumer protection. Additionally, considering the differences in variance and skewness between the questions, further statistical analysis may be needed to understand the effect of these differences on the ANOVA results.

References

49. Rutledge, S. L. (2010). Consumer protection and financial literacy: lessons from nine country studies. *World Bank Policy Research Working Paper*, (5326).

50. Molnár, M. (2010). enhancing Financial Stability through Better regulation in Hungary.

51. Blazsek, V. (2020). Financial Consumer Protection in the US and the EU: A Preventive Building Block of Banking Bailout Law. *Union University Law School Review, Belgrade, Serbia, at http://doi. fil. bg. ac. rs/pdf/eb_book/2021/union_pf_ccr/union_pf_ccr-2021-ch19. Pdf*

52. Matolcsy, G. (2022). The Appearance of Economic, Social, Financial and Environmental Sustainability Aspects in the Practices of the National Bank of Hungary. *Pénzügyi Szemle/Public Finance Quarterly (1963-)*, *67*(3), 315-334.

53. Badics, J., Kiss, K. M
54. ., Stenger, Z., & Szikszai, S. (2015). Financial regulation in Hungary. In *Financial Regulation in the European Union* (pp. 163-193). Routledge.
55. Fejős, A. (2013). *European, Hungarian and Serbian models of fairness in consumer contracts and their application to consumer credit* (Doctoral dissertation, Szegedi Tudomanyegyetem (Hungary)).
56. Kerényi, Á. (2011). Financial Assistance for Hungarian Crisis Management: A Case Study. *Studies in International Economics and Finance. Szeged: JATEPress*, 35-61
57. Padoa-Schioppa, T. (2004). *The euro and its central bank: Getting united after the union*. MIT Press
58. Duenwald, C., Gueorguiev, N., & Schaechter, A. (2007). Too much of a good thing? Credit booms in transition economies: The cases of Bulgaria, Romania, and Ukraine. In *Rapid Credit Growth in Central and Eastern Europe: Endless Boom or Early Warning?* (pp. 236-263). London: Palgrave Macmillan UK
59. Fracasso, A., Genberg, H., & Wyplosz, C. (2003). *How do central banks write?: An evaluation of inflation reports by inflation targeting central banks* (Vol. 2). Centre for Economic Policy Research
60. Matolcsy, G. (2021). Shifting Paradigms for the Hungarian Economy and the MNB. *POLGÁRI SZEMLE: GAZDASÁGI ÉS TÁRSADALMI FOLYÓIRAT*, *17*(Spec.), 9-25
61. MNB, M. N. B. (2018). Business Report and Financial Statements of the Magyar Nemzeti Bank
62. Dönmez, P. E., & Zemandl, E. J. (2019). Crisis of capitalism and (de-) politicisation of monetary policymaking: reflections from Hungary and Turkey. *New political economy*, *24*(1), 125-143.
63. Kálmán, J. (2015). The institutional framework for the supervision of the financial intermediary system in Hungary. *Public Finance Quarterly/Pénzügyi Szemle*, *1*
64. Horváth, M., Szabó, D., Puhl, G., & Sándor, N. A. (2024). Transition Towards Sustainability in Eurasia–Report on the Budapest Eurasia Forum 2023. *FINANCIAL AND ECONOMIC REVIEW*, *23*(1), 192-204
65. Piroska, D. (2022). Financial nationalism and democracy. In *Handbook of Economic Nationalism* (pp. 256-274). Edward Elgar Publishing
66. Sipiczki, Z., Parádi Dolgos, A., & Varga, J. (2023). Analysis of the inflationary redistribution of consumption and wealth, evidence from Hungary. *Acta Oeconomica*, *73*(1), 129-143.
67. Tóth, I. M., & Csiszárik-Kocsir, Á. (2021). Application of the agile methodology in a Hungarian financial institution. The macrotheme review. (10/1)
68. Kurti, L.(2016) . Determinants of Non-Performing Loans in Albania The Macrotheme Review 5(1)
69. Kanten P., Ulker Funda Ert (2013) The Effect of Organizational Climate on Counterproductive Behaviors: An Empirical Study on the Employees of Manufacturing Enterprises. MAcrotheme review 2(4)

70. Tariq, Habib, Yousaf Ali, Muhammad Sabir, Monika Garai-Fodor, and Ágnes Csiszárik-Kocsir. 2024. "Barriers to Entrepreneurial Refugees' Integration into Host Countries: A Case of Afghan Refugees" Sustainability 16, no. 6: 2281. https://doi.org/10.3390/su16062281

71. Khan, Ubaid Ullah, Yousaf Ali, Mónika Garai-Fodor, and Ágnes Csiszárik-Kocsir. 2023. "Application of Project Management Techniques for Timeline and Budgeting Estimates of Startups" Sustainability 15, no. 21: 15526. https://doi.org/10.3390/su152115526

72. Á. Csiszárik-Kocsir, J. Varga, A. Popovics and M. Garai-Fodor, "Generation-specific perception of competences leading to agility1," 2024 IEEE 22nd World Symposium on Applied Machine Intelligence and Informatics (SAMI), Stará Lesná, Slovakia, 2024, pp. 000127-000132, doi: 10.1109/SAMI60510.2024.10432853.

73. Garai-Fodor, M., Vasa, L., & Jäckel, K. (2023). Characteristics of consumer segments based on perceptions of the impact of digitalisation. Decision Making: Applications in Management and Engineering, 6(2), 975–993.

74. Garai-Fodor, M., Vasa, L., & Jäckel, K. (2023). Characteristics of segments according to the preference system for job selection, opportunities for effective incentives in each employee group . Decision Making: Applications in Management and Engineering, 6(2), 557–580.

75. Á. Csiszárik-Kocsir, B. Revák and S. Savas, "The Use of Artificial Intelligence in Learning on Social Networking Sites Among Hungarian and Turkish Youth," 2024 IEEE 18th International Symposium on Applied Computational Intelligence and Informatics (SACI), Timisoara, Romania, 2024, pp. 000231-000236, doi: 10.1109/SACI60582.2024.10619892.

76. Forgács, A., Lukács, J., Csiszárik-Kocsir, Ágnes, & Horváth, R. (2024). Towards the Investigation of Online Shopping Behaviours Using a Fuzzy Inference System. Decision Making: Applications in Management and Engineering, 7(2), 337–354. https://doi.org/10.31181/dmame7220241059

77. J. Varga, E. Kahler-Korcsmáros and Á. Csiszárik-Kocsir, "Microeconomic Factors Affecting Competitiveness Based on the Opinion of Hungarian Companies1," 2024 IEEE 11th International Conference on Computational Cybernetics and Cyber-Medical Systems (ICCC), Hanoi, Vietnam, 2024, pp. 1-6, doi: 10.1109/ICCC62278.2024.10582926.

78. Pató, Beáta Sz. G., Gábor Heizler, Márk Herczeg, Gábor Bálint Pató, Al Fauzi Rahmat, Lóránt Dénes Dávid, Imre Varga, and Ágnes Csiszárik-Kocsir. 2023. "The Importance of the New Silk Road in the Hungarian Automotive Supply Chain" Sustainability 15, no. 23: 16439. https://doi.org/10.3390/su152316439

79. Csiszárik-Kocsir, Á. (2021). Customer Preferences in Bank Selection before and after the Pandemic in the Light of Financial Culture and Awareness. Acta Polytechnica Hungarica, 18(11), p. 151-169. https://doi.org/10.12700/APH.18.11.2021.11.9

80. Csiszárik-Kocsir, Á., Varga, J. & Garai-Fodor, M. (2016). The value-based analysis of the financial culture. The Journal of Macro Trends in Social Science, 2(1), p. 89.-100.

Communication solutions and practices in Polish and Hungarian business during the pandemic[2]

János Varga Dr.
Associate Professor, Óbuda University, Keleti Károly Faculty of Business and Management, varga.janos@kgk.uni-obuda.hu

Mónika Garai-Fodor habil. Ph.D.
Associate Professor, Óbuda University, Keleti Károly Faculty of Business and Management, fodor.monika@kgk.uni-obuda.hu

Ágnes Csiszárik-Kocsir habil. Ph.D.
Associate Professor, Óbuda University, Keleti Károly Faculty of Business and Management, kocsir.agnes@kgk.uni-obuda.hu

Abstract: The year 2020 was a milestone in our lives, both individually and organisationally. Digital solutions and the process of digitalisation itself, which had been evolving at a rapid pace, received a new impetus this spring thanks to the closures. However, the physical distance has meant that there have been many challenges in all areas of life. But existing in the online space has not been an easy process. At an individual level, we had to move education, entertainment and work from the physical space to the digital reality, and organisations had to reach consumers and customers through the same space. Communication with consumers also increasingly requires new solutions within the online space. The aim of this study is to shed light on the communication practices and practices of organisations, specifically micro, small and medium-sized enterprises, based on the results of a questionnaire survey conducted in Hungary and Poland. I would like to examine the extent to which the Hungarian and Polish SME sector need external assistance, whether they rely on external experts and organisations or whether they entrust the communication process to internal experts in a spirit of mutual learning.

Keywords: pandemic, communication, public transport sector, Hungary, Poland

1. Introduction

The impact of digitalisation is felt in all areas of our lives, including communication habits, media use and the way we gather information. As digitalisation progresses, information exchange in the online space and so-called user-generated content (UGC) are becoming increasingly important alongside traditional forms of communication. Globally, Internet penetration has increased significantly over the last few years and IT tools are becoming more and more widely available. As a consequence, the effects of digitalisation are reaching not only the economy but also the most diverse segments of society, requiring new strategies from market players, including businesses.

2. Literature review

Consumer behaviour has been significantly transformed by the rise of the internet (Lee, 2020). Instead of making decisions at the place and moment of purchase, the decision process has moved forward and the search for information in the online space has become more dominant. The physical shopping space is also increasingly being displaced by the online space, which is characteristic of the entire spectrum of consumer goods (Forgács et.al, 2023). This is forcing organisations to take a different approach to communication than was previously common (Eagle et.al, 2020; Martin et.al, 2020). This is also true for purchasing decisions (Alimin - Marco, 2023). Today, consumers no longer only pay attention to the official communication channels of brands and products, but make their purchasing decisions primarily on the basis of consumer opinions and experiences available online, in which social

2 National Research, Development and Innovation Office Hungary
PROJECT FINANCED FROM THE NRDI FUND

media play a prominent role (Szeberényi, 2018; Naim, 2023; Mensah - Amenuvor, 2022). This phenomenon plays a particularly important role in consumer decisions. In many cases, consumers find the opinions of real users more reliable than traditional advertisements or commercials, which often appear to be manipulated (Saplacan et.al, 2019). This trend has clearly contributed to the growing importance of Consumer Generated Media (CGM), which has become a fundamental tool in digital marketing. For example, CGM takes the form of reviews, blog posts, product testimonials and social media posts (Seberenyi et al, 2022; Usui et.al, 2023). As this content is not sponsored and is often shared by real customers or users, potential customers are more inclined to believe in it than in messages in advertisements or paid ads. These trends also require different responses from businesses on the organisational side. All these trends have been significantly exacerbated by the pandemic, where there was no other way of communicating with customers than through the digital space. In many cases, the emergence of digital business solutions and models during the Covid pandemic is also a step forward for sustainability (Csutora et al., 2022)

As digital technology has evolved, so-called virtual reality (VR) and augmented reality (AR) technologies have become increasingly available and their role in consumer decision-making has grown. AR applications can be particularly useful for presenting products and services online, as they allow customers to try them out virtually. This gives shoppers a new level of comfort and convenience that can significantly speed up the decision-making process. Consumers are increasingly looking for personalised, customised experiences, which are increasingly available to them through the opportunities provided by the digital space (Hexian, 2023). This trend is driven by the rise of individualism in consumer behaviour (Rahmah - Satyaninggrat, 2023). Today's consumers not only want to find the best solutions to their needs in the range of products and services they choose, but also expect greater personalisation in digital communication experiences. However, these trends require different responses and solutions from organisations than would have been the case in the past.

In terms of communication, the role of social media should be highlighted. Kaplan and Haenlein (2010) examine the concept and definition of social media in consumer decisions. The impact of social media on consumer behaviour is also specifically addressed by Smith et al. (2020). These studies are of particular importance for understanding consumer thinking and responding to the challenges of the new millennium. This work is complemented by the work of Wang et al (2018) and Ryan and Jones (2012), which focus on the impact of social media on marketing strategies and purchasing decisions, trends that are amplified by the increasing consumer and financial awareness of younger generations (Harangozó, 2015).

Research on SMEs in Hungary has shown that the level of innovation activity in enterprises is very low. Global Entrepreneurship Monitor (GEM) research data early-stage enterprises (76%), while nearly nine tenths (89.4%) of established enterprises do not use any new technology or processes (Csákné Filep et al., 2022), e-mail, online tax payment), while advanced digital solutions such as the use of social media (28.7%), selling goods or services through a dedicated website (27.3%), or even cloud storage on a dedicated server (18.9%) or on a third party server (15.5%) are only a disadvantage for SMEs (Szennay - Csákné Filep, 2024).

3. Material and method

The analysis presented in this study is the result of a survey conducted in 2023 in Hungary and Poland. The survey used a Koplex questionnaire to assess the crisis management practices of Hungarian and Polish SMEs, the effects of the pandemic and some aspects of the pandemic along the operational characteristics of the enterprises. The present questionnaire survey was preceded by several consultations, in-depth interviews and a test questionnaire in order to assess as accurately as possible the transformation of the SME sector due to the pandemic. As a result of the research, 331 questionnaires from Hungary and 114 evaluable questionnaires from Poland were used. In the present study, we have measured the communication practices of organisations during and after the pandemic, based on the size category and market presence of the respondents. The composition of the sample is shown in Table 1:

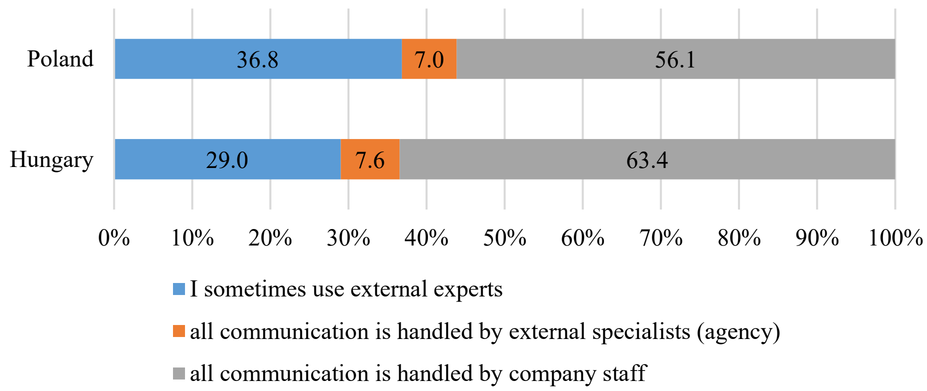
Table 1: Composition of the sample

		Hungary-France	Polish-Country
Size category	Micro enterprise (number of employees < 10 persons, annual net turnover or balance sheet total < 2 million €,	62,2	31,6
	Small business (number of employees < 50, annual net turnover or balance sheet total < €10 million,	16,9	36,0
	Medium-sized company (number of employees < 50, annual net turnover < 50 million €, balance sheet total < 43 million €)	20,8	32,5
Operational experience	Less than 5 years	26,3	25,4
	5-15 years	36,6	34,2
	More than 15 years	37,2	40,4

Source: own research, 2023, N = 331 (Hungarian), N = 114 (Polish)

The businesses in the survey are classified as small and medium-sized enterprises (SMEs), so we will look at the communication practices we want to assess in their case. Respondents were asked to indicate the communication practices they used in communicating and promoting their business. They could choose from three categories, the results of which are shown in the figure below. Our analysis was carried out using cross tabulation analysis and Pearson's Chi-square and adjusted standardised residuals were calculated to examine the relationships.

Figure 1: Solutions for promoting and communicating your business



Source: own research, 2023, N = 331 (Hungarian), N = 114 (Polish)

4. Results

In the following we will present the detailed results of Hungarian and Polish companies. To do this, we have used a cross-tabulation analysis, presenting the column percentages in the tables, and also discussing the value of the adjusted standardised residuals and the size of the Chi-square value to see how the clustering characteristics affect practices. First, we assess the sample by firm size.

The table shows that there are marked differences between Hungary and Poland in the way businesses organise their communication. In Hungary, the majority of businesses, especially micro and small enterprises, rely mainly on in-house communication solutions. In-house practices account for 66.5% of micro enterprises and 53.6% of small enterprises. This proportion is also high for medium-sized enterprises at 62.3%. This indicates that Hungarian firms tend to rely more on their own employees for communication and only to a lesser extent on external experts or agencies. The use of agencies, for example, is particularly low among medium-sized enterprises (only 2.9%). There are several reasons for this. On the one hand, the financial situation of businesses often does not allow them to use more expensive agency services, but it is also possible that businesses do not consider the field important enough to invest financial resources in it. Unfortunately, in many cases, the practice of the SME sector does not go so far as to consider an organised form of communication important, which explains a large proportion of the results obtained.

In Poland, an even higher proportion of micro-enterprises, 77.8%, use their own staff for communication and do not use external agencies at all. However, there is a marked difference in the case of medium-sized enterprises, where the use of external experts is very high at 54.1%, compared to only 24.3% for in-house communication. Agencies also play a much larger role in Poland's medium-sized enterprises (21.6%), compared to 2.9% in Poland.

Table 2: Communication practices in Hungarian and Polish enterprises by size of enterprise

	Hungary			**Poland**		
	Micro enterprise	*Small business*	*Medium enterprise*	*Micro enterprise*	*Small business*	*Medium enterprise*
I sometimes use external experts	26,2%	32,1%	34,8%	22,2%	34,1%	54,1%
all communication is handled by external specialists (agency)	7,3%	14,3%	2,9%	0,0%	0,0%	21,6%
all communication is handled by company staff	66,5%	53,6%	62,3%	77,8%	65,9%	24,3%

Source: own research, 2023, N = 331 (Hungarian), N = 114 (Polish)

The Pearson's Chi-squared value indicates that there was no correlation between the size of the firm and communication practices in Hungarian firms. The residual value also shows a very modest picture, with only small companies showing a result above the two-point threshold for agency involvement (above the expected level). In contrast, the Chi-square for Poland shows that company size has a clear influence on communication. For micro and medium-sized enterprises, there was a difference in all cases. Micro enterprises clearly underperformed in terms of the use of external expertise and agencies, while the reverse was true for medium-sized enterprises. In the Polish sample, the micro-enterprises performed above the expected level in the case of full communication by staff, and the reverse was the case for medium-sized enterprises. For small enterprises, the only noteworthy value in the residuals was that of communication by agencies, where the sample performed below the expected level.

Table 3: Adjusted standardised residuals and Chi-squared values for Hungarian and Polish firms by firm size

	Micro enterprise	*Small business*	*Medium enterprise*	*Chi-square*
	Hungary			
I sometimes use external experts	-1,4	0,6	1,2	0,089
all communication is handled by external specialists (agency)	-0,2	2,1	-1,6	
all communication is handled by company staff	1,5	-1,7	-0,2	
	Poland			
I sometimes use external experts	-2,2	-0,4	2,6	0,000
all communication is handled by external specialists (agency)	-2,0	-2,2	4,2	
all communication is handled by company staff	3,2	1,6	-4,7	

Source: own research, 2023, N = 331 (Hungarian), N = 114 (Polish)

The communication solutions of Hungarian businesses less than 5 years old typically rely on internal resources, as is the case for micro-enterprises. 72.4% of firms carry out all their communication with internal staff, suggesting that these young enterprises have not yet developed their external expert network and are likely to rely on their own staff due to cost efficiency or lack of adequate human resources. The proportion of occasional use of external experts is 19.5%. It can also be seen that external expertise is sometimes used, for example for specific tasks or advice. External agencies are not used at all, they are not considered relevant at this stage of their lives. Hungarian businesses that have been operating for 5-15 years are more open to external solutions. The percentage of occasional use of external experts has increased to 28.1%, indicating that these businesses are making greater use of external expertise. The share of internal solutions has fallen to 62%, indicating that middle-aged enterprises are gradually becoming more active in using external help than their younger counterparts. For organisations older than 15 years, the use of external experts reached 36.6%, indicating that older firms are more willing to use external help for communication tasks. At the same time, the role of internal resources is still significant, with 58.5% of staff involved in communication.

In Poland, the communication of companies under 5 years old also relies mainly on internal resources, as in the case of their Hungarian counterparts. 86.2% of young firms use internal staff to carry out communication tasks, suggesting that companies prefer to rely on their own resources, as they are less likely to have the resources available to use external experts and agencies. The proportion of occasional use of external experts is estimated at 13.8%, which is slightly lower among young enterprises than in Hungary. The share of Polish enterprises with 5-15 years of experience using external experts rises to 41%, which is significantly higher than in Hungary (28.1%). This suggests that more mature Polish enterprises rely more on external help, which is also explained by the increase in market competition and business complexity. The share of internal communication staff in this category decreases to 59%, and the use of external agencies is not at all common at this level. For Polish companies older than 15 years, the share of external experts increases dramatically to 47.8%, while the role of external agencies becomes more prominent (17.4%). These companies are now more willing to delegate communication tasks to external experts. In-house communication falls to 34.8%, showing that older businesses are now using professional external help rather than their own resources.

Table 4: Communication practices of Hungarian and Polish enterprises based on the market experience of the enterprise

	Hungary			**Poland**		
	Less than 5 years	*5-15 years*	*More than 15 years*	*Less than 5 years*	*5-15 years*	*More than 15 years*
I sometimes use external experts	19,5%	28,1%	36,6%	13,8%	41,0%	47,8%
all communication is handled by external specialists (agency)	8,0%	9,9%	4,9%	0,0%	0,0%	17,4%
all communication is handled by company staff	72,4%	62,0%	58,5%	86,2%	59,0%	34,8%

Source: own research, 2023, N = 331 (Hungarian), N = 114 (Polish)

The Chi-squared score again shows that there was no apparent correlation between the age of the business and the communication solution for Hungarian businesses. However, it can be observed that enterprises that have been on the market for less than 5 years have used external experts less than the expected value, which is the reverse for enterprises that have been operating for more than 15 years, who used this option more than the expected value. It can also be seen that the youngest enterprises use internal communication solutions well above the expected level for the Hungarian sample. In the Polish sample, we again see much more correlation, as in the case of the analysis by size category. In their case, there is a demonstrable correlation between the age of the organisation and the use of communication tools, as was seen for the previous segmentation characteristic. Enterprises less than 5 years old have a lower than expected use of external experts, which is the reverse of what is expected for the oldest enterprises. In the case of internal communication, as was also seen for Hungarian enterprises, the youngest enterprises perform above the expected value and the oldest enterprises below the expected value. For middle-aged enterprises, the only deviation from the expected value is seen in the use of agencies, where they also performed below the expected value, with the reverse being the case for the oldest enterprises.

Table 5: Adjusted standardised residuals and Chi-squared values for Hungarian and Polish firms based on the firm's market experience

	Less than 5 years	5-15 years	More than 15 years	Chi-square
	Hungary			
I sometimes use external experts	-2,3	-0,3	2,3	0,065
all communication is handled by external specialists (agency)	0,2	1,2	-1,4	
all communication is handled by the company's own staff	2,0	-0,4	-1,4	
	Poland			
I sometimes use external experts	-3,0	0,7	2,0	0,000
all communication is handled by external specialists (agency)	-1,7	-2,1	3,6	
all communication is handled by the company's own staff	3,8	0,4	-3,8	

Source: own research, 2023, N = 331 (Hungarian), N = 114 (Polish)

5. Summary, conclusion

A comparison of the two countries shows that while in Hungary firms in all size categories typically manage their communication in-house, in Poland this trend is only true for micro and small enterprises. Medium-sized enterprises in Poland are much more open to the use of external experts and agencies, which is a striking difference compared to their counterparts in Hungary. The outliers are also noteworthy based on the results of the survey. In Poland, for example, micro-enterprises do not use agencies at all, while in Hungary this is the case to a lesser extent. At the same time, an unusually high proportion of Polish medium-sized enterprises rely on external experts, while in Hungary this category tends to rely more on in-house solutions. Overall, the data suggest that there are significant differences in the communication strategies of enterprises in the two countries. In Hungary, the use of in-house tasks is significant, while in Poland, especially for medium-sized enterprises, the use of external experts and agencies plays a significant role. This difference is probably due to differences in the economic, cultural and market characteristics of the two countries.

The youngest firms in both countries rely on internal resources, but in Hungary they are slightly more likely to use external experts than in Poland. Middle-aged enterprises (firms operating for 5-15 years) show a higher propensity to use external help in both countries, but to a greater extent in Poland. The use of external consultants and agencies is also higher among the oldest firms in Poland than in Hungary. This suggests that businesses in Poland are adapting more quickly to external solutions, while in Hungary the strategy of communicating with internal resources is maintained even for older businesses. Overall, both Hungarian and Polish enterprises prefer to solve their corporate communication problems in-house rather than using external help. This may be due to lack of money, lack of experience, or even inadequate prioritisation of the area. However, in a digital world, communication is becoming a priority to reach consumers, partners and customers. In this light, all businesses will have to improve their communication strategy in the future in order to remain competitive and maintain their position in the market.

Acknowledgements

The project 2019-2.1.11-TÉT-2020-00167 was implemented with the support of the Ministry of Culture and Innovation from the National Research Development and Innovation Fund, funded by the 2019-2.1.11-TÉT funding scheme.

References

6. Alimin, E., & Marco, R. F. (2023). The Effect Of Customer Relationship Management, Personal Selling, And Sales Promotion On Customer Loyalty With Customer

Satisfaction As Intervening Variable In PT Sri Intan Karplas Industry. International Journal Of Social, Policy And Law, 4(3), 35-51.

7. Arshi Naim.(2023). consumer behavior in marketing patterns, types, segmentation. european journal of economics, finance and business development, 1(1), 1-18.
8. Csákné Filep, J., Radácsi, L., Szennay, Á., & Timár, G. (2023). Entrepreneurship and livelihood - entrepreneurial motivations and opportunity perception in Hungary. Budapest University of Economics. https://doi.org/10.29180/2939-8320_978-615-6342-55-3
9. Csutora, M., Harangozo, G., & Szigeti, C. (2022). Sustainable business models-Crisis and rebound based on hungarian research experience. Resources, 11(12), 107. https://doi.org/10.3390/resources11120107
10. Eagle, L., Czarnecka, B., Dahl, S., & Lloyd, J. (2020). marketing communications. routledge.
11. Forgács, A., Lukács, J., Csiszárik-Kocsir, Á., & Horváth, R. (2024). Towards the Investigation of Online Shopping Behaviours Using a Fuzzy Inference System. Decision Making: Applications In Management And Engineering, 7(2), 337-354.
12. Harangozó, G. (2015). Economic and financial education. In J. Kormos & F. Pálvölgyi (Eds.), The goals and development areas of public education in the light of the National Curriculum.
13. Hexian, Y. (2023). Impact of economic factors on consumer buying behavior with the mediating role of consumer perception. Dinkum Journal of Economics and Managerial Innovations, 2(06), 359-370.
14. Kaplan, A. M., & Haenlein, M. (2010). users of the world, unite! The challenges and opportunities of social media, Business Horizons, 53(1), 59-68.
15. Lee, S. M. (2020).Effects of social media on consumer behavior: a review.Journal of Distribution Science, 18(4), 95-104.
16. Martin, S. L., Javalgi, R. R. G., & Ciravegna, L. (2020). Marketing capabilities and international new venture performance: The mediation role of marketing communication and the moderation effect of technological turbulence. Journal of Business Research, 107, 25-37.
17. Mensah, K., & Amenuvor, F. E. (2022) The influence of marketing communications strategy on consumer purchasing behavior in the financial services industry in an emerging economy Journal of Financial Services Marketing, 27(3), 190-205.
18. Rahmah, K., & Satyaninggrat, L. M. W. (2023). the effect of consumer characteristics and lifestyle toward purchase decision. journal of consumer sciences, 8(3), 395-413.
19. Ryan, D., & Jones, C. (2012) Understanding Digital Marketing: Marketing Strategies for Engaging the Digital Generation, Kogan Page Publishers.
20. Saplacan, Zs., Alt, M. A., & Pop, R. A. (2019). The evolution of marketing competencies in the age of digitalization. Forum on Economics & Business, 22(138), 3-21.

21. Smith, A. N., Fischer, E., & Yongjian, C. (2018). How Does Brand-related User-generated Content Differ across YouTube, Facebook, and Twitter? Journal of Interactive Marketing, 43, 102-113.
22. Szeberényi, A. (2018). How to use the social media to influence secondary school and university students opinion toward environmental protection. In N. Baranyai & P. Honvári (Eds.), Smart Communities Academy Conference Proceedings (pp. 127-140).
23. Szeberényi, A., & Rokicki, T., & Papp-Váry, Á. (2022). Examining the Relationship between Renewable Energy and Environmental Awareness. Energies, 15(19), 7082. https://doi.org/10.3390/en15197082
24. Szennay, Á., & Csákné Filep, J. (2024). digital revolution powered by COVID-19? An analysis of the digitalisation activities of Hungarian entrepreneurs. Society and Economy. https://doi.org/10.1556/204.2024.00010
25. Usui, Y., Toriumi, F., & Sugawara, T. (2023). user behaviors in consumer-generated media under monetary reward schemes. Journal of Computer Social Science, 6, 389-409. https://doi.org/10.1007/s42001-022-00187-3
26. Wang, Y., Zhang, L., & Wu, J. (2021). social media content, emotional engagement, and loyalty: the case of China. international journal of information management, 57, 102322.

The entrepreneurial spirit of young people studying at Óbuda University

Zita Andó
Msc student, Obuda University

Abstract: The aim of the research is to explore the entrepreneurial propensity of 18-25 year old students of Óbuda University. Young people play a crucial role in shaping the future from an economic and social perspective, so it is particularly important to investigate what factors motivate or hinder them to start their own business. The research tested three hypotheses, concerning the capital needed to start a business, the entrepreneurial environment in Hungary and the timing of students' start-ups. The results showed that young people lack not only capital but also experience and knowledge to start a business. Although Hungary is not considered an ideal place to start a business, the majority plan to do so. The research shows that students plan to start a business 1 to 5 years after finishing their university studies, once they have gained the necessary experience and financial security.

Keywords: young entrepreneurs, entrepreneurship, university students, Hungary, entrepreneurial motivation, lack of capital, economic environment, gaining experience.

Introduction

I investigate the entrepreneurial propensity of young people aged 18-25 among the students of Óbuda University. Their situation plays an important role in the life of our country, as they have a key role for the future and the economy. They are capable and their creativity plays an important role in economic and social terms. I feel that research on young people is proving to be very important today and has a very important role to play for the future. The topic is close to my heart, as I am one of the subjects of this study, both in terms of age and my studies. I was interested to see what other students at university think about starting a business, what they see as the advantages and disadvantages, what makes them want to start a business or what discourages them from starting a business in today's world. I chose the 18-25 age group for my research because many students over 25 with several years of experience attend university. They may already have a different opinion or even already have several years of experience running their own business. Thus, I was mainly interested in the opinion of students who are still "only one foot out the door", so to speak. This does not mean, of course, that these young people do not have experience, just that they do not yet have as much as, for example, a 40-year-old student at university. In my thesis, I will first describe in the literature section what we mean by young people today, and the problems young people face and the difficulties they face in integrating into the labour market. I will present the results of previous research by recognised authors on the entrepreneurial propensity of young people. The need for an entrepreneurial mindset, the relationship between entrepreneurship and business performance, and the most important characteristics of entrepreneurs will be discussed. In the research section, I present the results of my primary research with young people aged 18-25 studying at the University of Óbuda.

For the purpose of this research, I formulated the following hypotheses:

H1: Young people lack only capital to start a business.

H2: Young people consider Hungary as ideal for starting a business and they would like to start a business in Hungary.

H3: Young people would like to start a business after finishing their university studies and gaining more than 10 years of work experience.

Finally, I will examine the validity of the hypotheses on the basis of the results and conclusions and make my recommendations.

Literature Review

The situation of young people, their entrepreneurial spirit. The situation of young people is crucial for the future of a country. Around 17.1% of Hungary's population is aged between 15 and 29. The EU average is slightly higher, with 17.7% of the EU population young. Young people play a major role in economic growth and competitiveness through their skills and creativity (Vértesy, 2018).

Today, the definition of youth has also changed compared to previous definitions. Young people are defined as those who are no longer children but not yet adults. In other words, they have not yet started regular paid work, started a family, or have all the rights of adults. Full adulthood, the full assumption of adult roles, occurs at a later age, due to longer school attendance, later start of gainful employment, longer family formation, and longer separation from the parental family (Csikai, 2021). Providing opportunities for young people to fulfil their potential is also important for economic and social development in the European Union. Unfortunately, there has long been a mismatch between labour demand and labour supply, due to the failure of the school system to respond to rapidly changing labour market needs. On the other hand, some occupations exceed demand while others fall short. These trends have a negative impact on economic agents and workers alike. A major problem is that it also makes it more difficult for young people to enter the labour market. Compared to the EU average, Hungary lags behind in terms of youth labour market activity, has higher unemployment and more difficult conditions for student employment. These problems are compounded by the high degree of regional disparities in wages and job opportunities across the country. It is not worth comparing the chances of young people from the capital and small border towns in the local labour market with the same qualifications. In addition, social inequalities, for example in the employment of young women, are also apparent (Gyöngyösi-Geist, 2008).

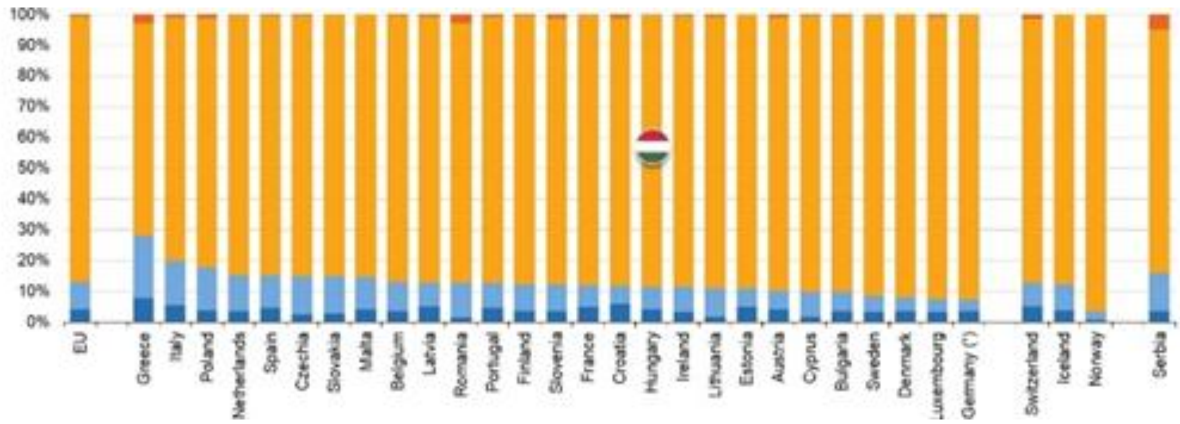
The promotion of entrepreneurship is an important factor for job creation and economic growth. It can also be a solution to reduce the unemployment rate of young people. According to research by the Global Entrepreneurship Monitor (GEM), the 18-34 age group is 1.6 times more entrepreneurial than the older age group. However, OECD data show that the proportion of people starting a business is much lower in this age group, and the survival rate of their business is lower than that of the older age group. Further research shows that surviving businesses are more growth-oriented, with those under 30 showing significantly higher growth compared to older age groups. In addition, higher-educated individuals start their businesses in higher value-added sectors and with higher initial capital, and they tend to start businesses at a higher rate (S. Gubik-Farkas, 2016).

Figure 1: Economic growth Source: (Anonymous, 2016)

Source: (Anonymous, 2016)

From an economic growth perspective, businesses with innovative, fast growth potential, i.e. gazelles, are significant. In the majority of cases, these firms are founded by young people, people with higher education. Most importantly, some of them are set up by students, so universities and colleges play an important role in entrepreneurship. The main objective of the GUESSS (Global University Entrepreneurial Spirit Students' Survey) project is to investigate the factors that influence student entrepreneurship, to assess the role of universities and colleges, and to examine students' individual career goals and entrepreneurial skills. The research focus of the project is the student index. This index assesses individual career goals, entrepreneurial intentions and activity, and the number of businesses created. According to GUESSS research, students' entrepreneurial activity is influenced by individual characteristics and abilities, i.e. age, gender, personal goals, strength of entrepreneurial intentions, and the university environment (Farkas-Kovács, 2010). Finding their place in the world of work is a difficult task for young people, which is why increasing their labour market participation has become a political priority. The European Commission aims to promote entrepreneurship as a form of behaviour that supports people in their daily lives. The aim is to develop entrepreneurial attitudes in the following areas: creativity, innovation, risk management, project orientation, leading by example, responsibility, autonomy/autonomy, goal orientation. However, entrepreneurial skills are difficult to teach, but rather to learn through experience. The challenge for entrepreneurship education lies in how to convey the core values of entrepreneurship. It is important to bring entrepreneurship education closer to reality, as working with real entrepreneurs can have a positive impact on young people. But it is also important to encourage the participation of entrepreneurs in practical programmes, which will provide experience for students. Compulsory work placements in higher education help to do just that (Árváné Ványi et al., 2016).

Figure 2: Employment and self-employment



Source:(Eurostat, 2021)

Hungary is below the EU-28 average for self-employment. Research shows that there is a link between high levels of education and self-employment, as the knowledge and skills acquired through higher education are conducive to starting a business. The generational pattern of self-employment choices is very strong, as children follow the pattern of their parents. Within the younger generation, the older generation will also be the most self-employed, with a higher proportion of men (S.Gubik-Farkas, 2017).

Supporting talented students, young entrepreneurs and start-ups is one of the ways to face the economic challenges of the European Union. This support helps to create new jobs, greater market competition and innovative products and solutions for higher growth. Alongside these macro-economic benefits, it can help young people develop skills, personal qualities and abilities that will serve them throughout their lives. The European Commission supports greater support for young entrepreneurs, whether it is through internships for young entrepreneurs in a foreign company through Erasmus or a programme to promote science and innovation, which can help them find funding, business partners or learn new technologies (Papalová-Papula, 2015).

The role of entrepreneurship in life

Entrepreneurship is needed everywhere. Entrepreneurship is a mental mindset where people actively participate in society by first defining what needs to be done in order to then find a solution. The entrepreneurial mindset has to be learned, in fact from generation to generation. Each generation challenges again these entrepreneurial competences, ideas and values that are important for people's lives and society. Developing an entrepreneurial mindset requires entrepreneurial learning and an environment that fosters and encourages entrepreneurship (Lindner, 2019). Entrepreneurs are primarily concerned with developing new products, processes or markets, they are able to bring something new to the market. The entrepreneur is more given to original thinking than anyone else and is able to produce solutions that defy established knowledge. Entrepreneurs tend to be more adaptable and willing to consider a range of alternative approaches. They question the status quo, which can sometimes put them in conflict with their colleagues. They dismiss their detractors and sometimes see them as aloof. Entrepreneurs take bold creative steps, but situations encourage creativity. However, creativity is enhanced when people have some freedom, but not too much. Thus, there is high internal commitment to the task (Okpara, 2007).

There are many researches and studies on the teachability of entrepreneurship. Some people believe that entrepreneurship, an entrepreneurial spirit and attitude, cannot be taught. They believe that some people are basically born with entrepreneurial qualities. And some believe that entrepreneurship can be influenced through education and training. According to researchers, entrepreneurship is about the attitudes that people learn, not the personal traits that people inherit. Entrepreneurship can and should be taught, just like leadership skills. Some entrepreneurial traits cannot be learned in the classroom, such as self-confidence and perseverance (Imreh-Tóth, 2015). Whether or not a person becomes an entrepreneur is influenced by many factors outside education. From a psychological point of view, risk-taking, problem-solving and innovativeness play an important role. From a sociological point of view, the influence of culture, social class, ethnicity and religion play a role (S. Gubik, 2013). Personality traits are only one of many factors that lead people to become entrepreneurs. Research shows that not all people with an 'entrepreneurial personality' start a business. Rather, it depends on other factors, such as push and pull factors, such as unemployment or an attractive business idea, that make someone take the step towards self-employment (Westermayer, 2017). The reason for entering self-employment is that the individual sees an opportunity, whether it is better working conditions, better self-expression or even the possibility of financial freedom. The possibility of bringing a new business idea to the market or the possibility of starting a new business are some of the pull factors that lead entrepreneurs to start a new business (Yimamu, 2018). It is also important to highlight the relationship between entrepreneurial propensity and business performance. In fact, many studies report that firms with higher entrepreneurial propensity perform significantly better in the market. It can therefore be said that businesses can benefit from a high entrepreneurial spirit. Companies that can learn more effectively than their competitors are also faster to grow. As a result, their products will be more successful and they will be able to gain a larger market share and competitive advantage, making the firm more profitable than its competitors (Hofmeister-Tóth et al., 2015). The 10 most important characteristics of entrepreneurs were summarised by Bygrave in his so-called 10D model in 2004. In this model he used everyday terms instead of psychological terms. In Bygrave's 10D model, the following terms are included: dream realisation, determination, purposefulness, determination, self-sacrifice, obsession, attention to detail, fatefulness, sharing material goods and responsibility (Koltai-Szalka, 2013)

Figure 3: Bygrave's 10D model

Source: owned.

There are individuals who prefer being an employee to being an entrepreneur. Their decision lies in the fact that being an employee provides them with a fixed, regular income, security and stability. On the other hand, they lack entrepreneurial skills and good business ideas (Koltai-Szalka, 2013). Entrepreneurship consists of cognitive and motivational elements. For an entrepreneur, market opportunities need not only to be seen and interpreted, but also to act in order to exploit them. In addition to motivation, environmental elements also influence entrepreneurship. Examples include university norms, regulations and role models. It is important to note that motivation alone is not sufficient for entrepreneurship and success. Some entrepreneurs are lifestyle-oriented, who do not necessarily want to go beyond a certain size. This is because they are afraid of their values, their lifestyle and their work-life balance. Financial goals and market growth are secondary (Novotny, 2014).

Generational difficulties

Bringing several generations together, with a common motivation, is essential for a balanced labour market. This is not only a problem today, as generational differences and different ways of thinking have always been present in their lives and in the labour market. The problems we are experiencing today arise from changes in the nature and depth of these differences. Young people are more critical of the actions of the generations before them. Today's young people have a clear vision of how they want to live, what they want to do and how they want to do it, or what they don't want to do. These ideas often clash with the expectations of parents and employers, leading to generational conflicts (Kocsisné Andrásik-Vajda, 2017). Life expectancy on our planet is on the rise according to preliminary calculations. This will result in the so-called "one-third population", i.e. one third of the population, i.e. one in three people on Earth will be elderly. These social trends also affect the life of companies and are the basis for the constant changes in the age structure of companies. In the 1950s, the majority of workers were in the 20 to 30 age group, but this has now changed significantly. Generation X, those born between 1965 and 1979, and even the Baby Boom generation, make up the bulk of the labour market. They are followed by Generation Y. IT companies are an exception, however, as they mainly have Generation Y employees. In the labour market, the demand for talented young workers has increased, but the supply has decreased. This in turn increases competition between employers. Workers are forced to spend more and more time on the labour market and in the workplace, and businesses and employers need to be prepared for this. These are of course a physical and psychological strain for workers (András Kissné, 2014). In recent years, a large number of older workers have retired in Hungary, which makes the labour market situation more difficult as fewer and fewer people take their place. Employers are facing serious challenges, as the generation entering the labour market is half as large as the generation leaving. In addition to the unfavourable demographic trend, the volume of Hungarian workers abroad is increasing. It is difficult to determine how many Hungarians are working abroad or in which countries, but the trends are broadly visible. According to data from the Population Research Institute of the Hungarian Central Statistical Office, Germany and Austria are the countries where most people choose to work, as well as the UK, Ireland, the Netherlands, etc. (Ásványi-Riedelmayer, 2021) When and how a new, young and skilled workforce can actually enter the labour market is of huge importance in the world of work and employment. Giving young people work experience during their studies helps them to integrate smoothly and quickly into the labour market (Ásványi-Riedelmayer, 2021). Youth unemployment is significantly affected by factors such as wages, education and experience. Macroeconomic conditions can also be blamed for youth unemployment, as well as society's inability to offer them attractive employment opportunities, leading to alienation. Youth unemployment requires a much more complex analysis than that of older people, as more and more people under 25 are now in school. Thus, young people are less economically active and have higher unemployment rates than older people (Artner, 2013). Unemployment, low wages and part-time, fixed-term employment affect the 15-24 age group most. Nowadays, not only unskilled young people but also skilled young people are finding it increasingly difficult to find work, especially in jobs and for wages that meet their expectations. Another problem is the resulting increase in the number of young people neither working nor studying. This generation is known in Spain as the 'ni-ni' generation (the English equivalent is 'neither-nor') and in other countries as the NEET (neither in employment, education or training) generation. The better-off and more educated members of this generation live with their parents, who can support them, or rent an apartment with their peers. They support themselves through casual work, income from here and there and the black market. The growth of the 'ni-ni' generation is dangerous for the existing social order not only because of their numbers, but also because of their alienation from society, disillusionment and lack of purpose (Artner, 2014).

The role of personality traits in entrepreneurship

Indecision about the choice of education or work is an indicator of purposelessness. Indecision makes people question their future intentions. The likelihood that an individual will enter into an entrepreneurial career depends on a number of factors, including personality, environmental opportunities, social skills and aspirations (Nyock Ilouga et al., 2014) The anecdotal accounts of many successful entrepreneurs highlight the point that entrepreneurs must be willing to dedicate themselves to their entrepreneurial activities to the exclusion of virtually everything else. In addition to the entrepreneurial mindset, the willingness of the adolescent to expend effort in any attempt to foresee an entrepreneurial career must be taken into account. Adolescents who are willing to work hard and who are curious about the world of work, regardless of their general intelligence or their achievements in a particular field, are more likely to pursue an occupation that requires self-direction and independent learning. Thus, for adolescents who leave school for work, it can be assumed that entrepreneurial orientation and willingness to exert effort predict the degree of entrepreneurial prospects. Research has shown that personality factors play a role in entrepreneurship. Success orientation, conscientiousness and low levels of agreement and avoidance of harm predict entrepreneurial activity and success. Entrepreneurs have also been shown to take greater risks, to be better managed internally and to have higher levels of self-efficacy. Such relationships were found not only in active entrepreneurs, but also in people who planned to start a business. They were more creative and had a greater need for autonomy than others. In addition to personality factors, parental models may underlie entrepreneurial orientation during adolescence. Research has confirmed that parents act as career models that influence their children's career interests and work choices. For example, individuals with self-employment and entrepreneurial family backgrounds are much more likely to start their own business than others (Schmitt-Rodermund-Vondracek, 2002) One's personal characteristics interact with the external environment. A common phenomenon that confirms this particular approach is that many people become entrepreneurs after a long period of work experience as an employee. In addition, personality is not simply a matter of heredity, but is constantly changing according to different environmental factors such as culture, family norms, relatives and friends. Entrepreneurship education can be defined on this basis, which some argue is more effective at an early age, so that each person's personality is at a stage of evolution. On the basis of this approach, many researchers argue that entrepreneurship education is more effective in the early years of education in terms of the inflation of certain behaviours, while in higher education it focuses mainly on the development of practical skills. But at about the time when entrepreneurship should be taught, the entrepreneurial mentality associated with the social utility of entrepreneurship should be kept very much in mind. In addition, it has been shown that a high level of general education and entrepreneurial skills leads to an increase in entrepreneurship. Entrepreneurship education should not only focus on limited tools (start-up, financial management and human resources) but also on broader behaviours, especially in primary and secondary education (Papagiannis, 2018).

Entrepreneurship is the desire of an individual to engage in entrepreneurial behaviour, to participate in entrepreneurial activities, to be self-employed or to create new businesses. But it is not enough. It takes inner courage, ambition and desire to stay afloat (Garo et al., 2015).

Entrepreneurship training and education plays a key role in economic prosperity and promotes economic development. A strong emphasis should be placed on the importance of a good and sound academic curriculum in order to promote a healthy perception of small business among university students. University entrepreneurship education and training should aim to raise awareness and the importance of entrepreneurship and business as a better alternative to a future career. It is important to include some form of entrepreneurship education in the university curriculum, but education alone cannot create entrepreneurs, as only certain aspects of entrepreneurship can be taught. Entrepreneurship education and training can equip students with the skills necessary to make students successful and increase their capabilities, which in turn will contribute positively to the economy by promoting the creation of successful small and medium enterprises (Al-Wugayan-Alshimmiri, 2010) Contextual factors include a range of factors that can influence the intention to engage in entrepreneurial activity. Important contextual factors include perceived support. Research has shown that business owners tend to have strong supporters, so the support of their families is perceived to be particularly important. The support and encouragement of family members, relatives and friends has been shown to be associated with the development of entrepreneurs. The support of family and friends is particularly important in shaping the perceived desirability of a particular business venture, as well as in providing financial assistance (Phuong-Hieu, 2015) According to economic theory, one important role of an entrepreneur is whether he or she is a risk-taker or a risk-bearer. This is seen as a characteristic that distinguishes entrepreneurs from non-entrepreneurs. When it comes to the relationship between risks and entrepreneurs, it is not true that risk always finds entrepreneurs. If only because entrepreneurs are confident of success, are willing to give up job security and take concrete risks. On the other hand, risk-taking is another motive for interest. Entrepreneurs with a high risk-taking attitude are adventurous, looking for excitement and opportunities, and they also show an energetic and optimistic attitude throughout the whole process. Entrepreneurs are lifelong learners.

Figure 4.: Lifelong learning

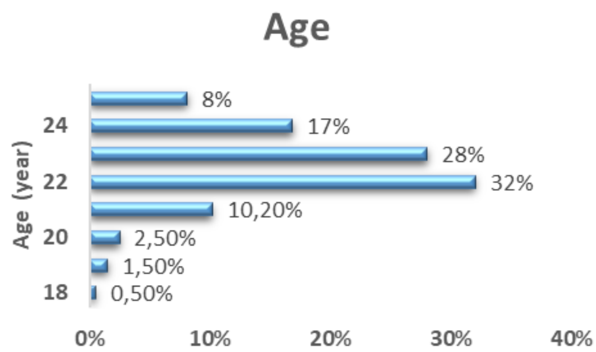
Source: (Lynne, 2018)

To acquire new ideas for innovation and continuous growth, entrepreneurs are eager to learn. They need to cope with change and challenges, be team players and collaborators, be good leaders with good teaching skills so that employees are as motivated as they are. They need to be sharp-eyed in deciding whether or not it is wise to accept opportunities. To acquire all these skills, entrepreneurs need to learn continuously. A willingness to work hard is a major factor in making a business successful. With talent, hard work and perseverance, an entrepreneur can revive a business from the brink of collapse (Yimamu, 2018). One's motivation to be an entrepreneur is not only to fulfill economic reasons but also to achieve social or lifestyle reasons. People have different motivations, skills and desires to seize the opportunity they see and become entrepreneurs. They have different perceptions of opportunity considerations, risk-taking behaviours and decision-making processes according to their different motivations. Behind every successful entrepreneur, there are some questions that keep one curious about where the persistent motivations that help them achieve their goals come from (Yimamu, 2018)

Methodology

In my research, I investigate the entrepreneurial spirit of students aged 18-25 at Óbuda University. I chose this age group because the older age group is also present at the university, and they have most likely continued their studies after several years of work experience. Thus, I am looking at the age group that started their higher education studies immediately after completing their secondary education or only after a few years of gap. As a Master of Business Development student at the University of Óbuda, I am particularly interested in the opinions and visions of students at the University of Óbuda. The questionnaire was sent to the students in Google Form format, which contained multiple-choice, multiple-choice questions. In addition, the questionnaire included a 5-point Likert scale for easy completion and evaluation. The questionnaire was completed by 197 students of which 133 were male (67.5%) and 64 were female (32.5%). In terms of age, the question was asked as to how old the students would be in the current year, i.e. in the year 2022. The majority of responses came from the 22 year old age group, 63 (32%). In addition, 56 (28.4%) were aged 23, 33 (16.8%) were aged 24, 20 (10.2%) were aged 21, 16 (8.1%) were aged 25, 5 (2.5%) were aged 20, 3 (1.5%) were aged 19 and 1 (0.5%) was aged 18.

Figure 5: Age of respondents



Source: Owned.

My questionnaire was sent to students at Óbuda University studying engineering and economics. Of those who completed the survey, 135 (68.5%) were studying in the field of engineering and 62 (31.5%) in the field of economics. I was interested to know what type of municipality the students in the survey live in. Most students live in Budapest, our capital city, with 97 respondents (49.2%) from Budapest, 28.4% (56) from cities, 9.6% (19) from county towns, 6.6% (13) from villages and 6.1% (12) from villages. I also considered the educational level of parents to be important for the research. The educational attainment of the mothers of the respondents was as follows: 24.9% (49) had a university degree, 25.9% (51) had a college degree, 29.4% had a high school degree, 17.3% (34) had a vocational degree, 2% (4) had a primary school degree and 0.5% (1) had a PhD degree. The highest educational attainment of the fathers of the respondents was as follows: 24.4% (48) had a university degree, 23.4% (46) a college degree, 17.3% (34) a high school degree, 32% (63) a vocational degree, 2% (4) a primary school degree and 1% (2) a PhD degree. Furthermore, I considered it important to ask whether the students' close family members are entrepreneurs. The majority of the respondents have an entrepreneur in their immediate family, as 64% (126) answered yes to my question and 36% (71) answered no.

A key question of my research was to ask young students whether they would start a business. On the positive side, 76.6% of the respondents (151) would start a business, and 1.5% (3) already have their own business. 43 respondents answered no, i.e. 21.8% of respondents would not start a business. This also showed that only 23% of those living in Budapest would start a business, compared to 77% of those living in a rural town.

Figure 6: Cross tabular analysis of business creation

Start a business	Budapest	Countryside
Yes	23%	77%
No	77%	23%

source: own editing

Students who already have their own business were interested in what motivated them to start a business at the time. Self-employment appeared as the main motivation for all three young people. In addition, the possibility of earning a higher income and self-fulfilment were important factors, as well as flexibility. 2 had set up a business as a Bt in the service sector and 1 as a self-employed person in IT. 2 had set up a business at the age of 23 and 1 at the age of 19. I was interested in how their annual income and profit developed in the year 2021. 2 persons had an annual income and profit between 500.000 and 3.000.000.000 HUF and 1 person had an annual income between 50.000.000 and 100.000.000 HUF and an annual profit between 25.000.000 and 50.000.000 HUF. The question of the impact of the COVID-19 pandemic on the income and profit of students who already had a business in 2021 compared to 2021 was also considered. Before the onset of the pandemic, 1 had both higher income and profits, 1 had about the same income and profits, and 1 had started a business during COVID. The majority of students who do not yet have a business but would start one, would start one years later after completing their university years. In fact, 59.6% (90) would start a business 1 to 5 years later, 27.2% (41) 5 to 10 years later and 2.6% (4) more than 10 years later than the end of their university years. Only 6% (9 persons) would start a business immediately after finishing their studies and only 7 persons (4.6%) would like to start a business during their university years. 41.7% (63) would like to start a business in the service sector, 23.2% (35) in IT, 13.9% (21) in manufacturing, 11.9% (18) in trade, 7.3% (11) in technical or engineering and 2% (3) in agriculture. In terms of the type of business, the most popular among young people who would like to start a business was the LLC. 65.6% (99 persons) would like to start a business as a LLC, 28.5% (43 persons) would like to work as a self-employed person, 5.3% (8 persons) would like to start a business as a Bt. and 0.7% (1 person) would like to start a business as a Nyrt. 63.6% (96 persons) of respondents would start a business in Hungary, 6.6% (10 persons) abroad and 29.8% (45 persons) both in Hungary and abroad. 43 would not set up a business, the main reason for not setting up a business being the main reason for not doing so. Most of them do not want to start a business because of too much responsibility and risk. They also feel that they do not have the entrepreneurial skills and that they would not feel secure enough in running their own business. They also feel that it would take up a lot of their free time and that they would not have enough capital anyway. I was interested to know how much they are influenced by a sense of excessive responsibility and it turns out that it plays a significant role in why they do not want to start a business. However, they were not afraid that if they did start a business, their leadership role would change their relationships. The following questions were again addressed to all respondents. I asked the respondents to list 3 positive things they would do if they started a business and 3 negative things they would not do if they started a business, whether they wanted to or not. The main reasons why they would start a business are that they believe that they can earn more income from a business and that they can be more independent and have more flexibility in their time. The freedom to pursue their own ideas without constraints, to develop their creativity and create value is also a key factor. Self-fulfilment and a sense of achievement are important for them, so that they can fulfil their potential in life. It is also a major advantage for them that they would not have a boss or superior, they would be their own boss and have the autonomy to make decisions. They can choose who they work with. They feel that they would be able to live a more comfortable life with a higher standard of living thanks to a business, or to actually do what they want to do. They would not set up a business mainly because of too much responsibility, risk and uncertainty. Changing circumstances - in particular pandemic and war, by which respondents mean - discourage them from starting a business, as they feel that nothing is certain these days. Although flexible working hours are an advantage, time is unfortunately also a negative, as they fear that they will have to invest too much time in a business, that they will have to spend 12 hours a day or more on their business and that this will lead to a stressful life. They also mentioned legislation and taxes as a major negative. They feel that they have no experience in these matters and that they have to look up and follow up every piece of legislation. They feel that starting a business is risky, they are afraid of the initial difficulties and fluctuations in income, especially because of changing circumstances. They feel that a business requires a lot of money and there is no guarantee of success. Fear of failure, fear that their small business will soon disappear alongside the big ones. Despite the pros and cons, the respondents still consider it important to start a business. But how ideal do they think Hungary is for starting a business? The majority of respondents, 39.1% (77), consider Hungary neither ideal nor not ideal. However, the rest of respondents consider that Hungary is not ideal for starting a business. We were interested to know at which stage of life current young people consider the most ideal to start a business. Most of them (62.9%) think that 26-30 years is the most ideal age to start a business, 26.9% (53 respondents) think that 31-40 years, 8.1% (16 respondents) think that 18-25 years and 2% (4 respondents) think that 41-50 years is the ideal age to start a business. We were interested in how much money young people think they need to start a business and how much money they would be brave enough to start a business with. 33% of respondents (65 people) think that HUF 3-6 million is needed to start a business, 29.9% (59 people) think that HUF 1-3 million is enough, 18.3% (36 people) think that HUF 6-10 million is needed, 7.1% think that HUF 10-15 million is needed, 3-3% think that HUF 15-20 and 25-50 million is needed, and 2.5% think that HUF 20-25 million is needed. In addition, 2% (4 people) think that less than HUF 1 million is enough, and 1% (2 people) think that more than HUF 50 million is needed to start a business. This is how the amounts were distributed according to students' opinions on how much money is needed to start a business. But how much money would they be brave enough to start their own business? The highest number of responses was also in the range of HUF 3-6 million, but there were fewer responses in this category than in the previous question, with 57 (28.9%) brave enough to start a business with this amount of money. 22.8% would be brave enough to start a business with HUF 6-10 million, 13.7% with HUF 10-15 million, 12.7% with HUF 1-3 million, 6.6% with HUF 15-20 million, 5.1% with HUF 20-25 million and 3.6% with HUF 25-50 million. 6.1% (12 people) think they would need more than HUF 50 million and 1 person (0.5%) would be brave enough to start a business with less than HUF 1 million. In the questions, it is clear that more than half of the respondents think that a maximum of HUF 6 million is enough to start a business. However, more than half of the respondents would only be brave enough to start a business with more than HUF 6 million. Of course, respondents would start a business in different forms, in different sectors, in different fields, with different ideas and needs. Nevertheless, they would only dare to start with more money than they need. Young people want to play it safe and avoid taking risks. Young people prefer to start a business with friends (129) or with people they know who have entrepreneurial skills. 82 would also like to start a business on their own or with their siblings, parents, other relatives or partners. The previous questions revealed how much money young people would be brave enough to start a business, but not whether they would be braver to start with their own money or with a loan. Of the 130 respondents (66%), the majority would be brave enough to start a business with only their own resources, 64 (32.5%) would dare to start a business with both their own resources and a proportion of loans and 1.5% (3) would dare to start a business with only loans. On a positive note, students are not averse to credit, i.e. a proportion of students would rather take out a loan than not start a business. In other words, starting a business is important, they would be willing to take out a loan to achieve their goals.

Figure 7: Word cloud on motivations for entrepreneurship

Source: owned.

I was interested in what young people today see as the secret to success, what they think are the characteristics of a successful entrepreneur. According to young people, a successful entrepreneur is a person who is authentic, knowledgeable, confident and has the right values and skills. They have good communication skills, are a good leader, are patient with their colleagues, and handle problems and stress well. A responsible and reliable person, committed to his/her work, with a positive attitude to everything, constantly improving himself/herself and therefore the business, and recognising opportunities. Despite all this, he can lose, accept things and facts. In addition, young people see a successful entrepreneur as a persuasive, determined, experienced, resilient person who has the necessary humility and self-confidence, but who does not get carried away or look down on others. They are honest, hard-working, persistent and creative in their ideas to achieve their goals. Finally, I concluded my questionnaire with a 5-point Likert scale, asking students to rate their level of agreement with 12 statements. Young students at the University of Óbuda feel that they do not have all the knowledge they need to start a business during their university studies. They agree with the statement that it is necessary to gain experience before starting a business, for example in a multinational company. More than 80% of young people definitely want to gain experience before starting a business. Young people feel the need to gain experience, and in their own case they feel it even more so. In the case of young people, it is not only capital that they lack to start a business. So even if they have/had enough money, they lack something else than money to start a business. Some students agree and some disagree with the statement that it is more convenient to be an employee in a large company than an entrepreneur. Although the majority want to start a business, there is some agreement that being an employee can be more comfortable. Students were unsure about the issue that entrepreneurial skills and abilities are difficult to develop, and that one has to be born an entrepreneur. Yet they prefer to feel that, at some level, these skills can be developed and taught. Young people that if they were to start a business, they would definitely start it with a partner or possibly a peer, rather than alone. There was uncertainty about the assertion that a new, innovative idea is essential to start a business. Yet young people tend to think that a new idea is not necessarily needed to start a business. Many entrepreneurs say that the pandemic COVID-19 had a negative impact on their business. Some have gone bankrupt, but others have been the winners. I was therefore interested to know whether the pandemic deterred them from starting a business or whether it encouraged them. Unfortunately, it has deterred them because they are afraid of uncertainty. However, 27 (13.7%) were more encouraged to start a business. From the previous questions, we learned that many students have entrepreneurs in their immediate family. I wondered whether the fact that they had an entrepreneur in their family influenced them and whether this fact also made them want to start a business. Young people say that it does not influence them, that they do not want to be entrepreneurs because there are entrepreneurs in the family. The majority of students could not decide whether they were more risk-taking or risk-averse, although this is an important issue in the life of an entrepreneur. A majority of the students prefer to be risk-takers, which is a positive thing, because if they want to start a business, it is important to take risks to a certain level. I was interested to know what their attitude is towards internships, as many students owe their jobs to internships, and some students report that they have been given unsuitable tasks, such as making coffee, etc. Fortunately, students believe that internships have made it easier for them to find a job or to find a job in the labour market.

Conclusions

The literature mentions that children follow the pattern of their parents. Parents' education shows that more than 50% of mothers have a college or university degree and almost 50% of fathers also have a tertiary education. It can also be said that a significant proportion of parents have a college or high school education. This leads to the conclusion that young people are following the pattern of their parents by pursuing tertiary education. Research has shown that people with an entrepreneur in the family are more likely to start a business. I also mentioned earlier that children follow their parents' example. Yet, young people believe that the fact that they have a lot of entrepreneurs in their immediate family does not influence them, they do not want to start a business because of it. However, the literature and previous research contradict this. In my opinion, young people do not realise how much it actually affects them, and they do not even admit to themselves that they are very much affected by the businesses in their family. For young people, the decisive factor, the advantage of starting a business was to be independent, not to have a boss or a superior, and to be able to organise their time themselves, so that they have a more comfortable life. As we learned, they would mainly start a business with friends, but there were also a lot of responses for starting a business alone. Nevertheless, they would rather start a business with a partner or partners than alone. Although autonomy and independent decision-making are important to them. They don't want a boss, but they need to discuss decisions with their partners, but this does not mean that they are completely autonomous. However, the reason for this may be that they are not in a situation of constraint, they choose themselves who they want to start a business with and they choose the employees, i.e. they can choose who they want to work with. Furthermore, despite the fact that they would choose entrepreneurship for the convenience of it, they still prefer to believe that being an employee is more convenient. This is because of the many negative factors already listed above. As an entrepreneur, they may have too much time on their hands, too much legislation to comply with, more responsibility and more stress, so they believe that being an employee is more comfortable. They may also think it is more comfortable to be an employee because they are discouraged by what they are doing now. Many young people and their family members have lost their jobs because of pandemic COVID-19, which does not necessarily motivate them to start their own business. Changing circumstances create uncertainty and young people want to be sure. Although young people do not consider Hungary to be an ideal place to start a business, the majority (96 - 63.6%) of the 151 students who want to start a business would do so in Hungary. In addition, 45 would start a business both in Hungary and abroad. I think it is a huge positive that only 10 people plan to start a business abroad. This leads me to conclude that a significant proportion of students are planning their future in Hungary. Nowadays, many young people are planning their future abroad, and many of them are already living abroad and, unfortunately, do not plan to come back home. However, just because they want to start a business in Hungary does not mean that they want to live here. Nevertheless, I believe that even if they did not live here, they would still have some ties to their country. Rural residents are the most likely to set up a business, compared to only 23% of those living in the capital. My previous research showed that many young people in rural secondary schools want to start a new life in the capital or abroad to make a better living, because they do not find the environment where they live conducive. Young people in Budapest have more opportunities, more job possibilities than a young person in the countryside, so they do not think about starting a business. Furthermore, many Budapest students want to work abroad, where they believe there are more job opportunities and much higher wages than in Budapest. Young people are also unlikely to see Hungary as a good place to start a business because of the relatively high taxes (business tax, VAT, etc.) compared to other EU countries. The most popular type of business among students wishing to start a business was the Kft. The reason for this is that young people are influenced by excessive responsibility and uncertainty. So they like security, which is why the limited financial responsibility for the company is attractive in an LLC. The other popular form of business was the sole trader, the reason being that all decisions are in one hand and with low start-up capital, they can become entrepreneurs quickly and easily. However, the fact that they are liable with all their assets for any negative consequences that may occur and, as it turns out, they prefer to start a business with a partner/partners rather than alone, is not an attractive feature. The most popular sectors for young people wishing to start a business were services and IT. In the literature, I have pointed out that the labour market is mainly occupied by Generation X, but the situation is different in the IT sector, where it is mainly young people, Generation Y, who work. According to young people, the ideal age to start a business is between 26 and 30 years old, and their answers show that this is the age at which they would like to start a business, as students who want to start a business after finishing their university studies want to start one to five years later. They were unsure that a new, innovative idea was essential to start a business. Although they tended to disagree, they thought of a successful entrepreneur as creative, a person full of new, innovative ideas. In other words, success is still seen in new, innovative ideas. There was also some uncertainty in terms of risk-taking, with students finding it difficult to decide whether they were risk-takers or risk-averse. Although they do not consider Hungary ideal for starting a business, they still plan to start a business in Hungary. In other words, they are risk-takers, because they would set up a business in a country that they do not consider ideal in this respect. In addition, one third of students would take out a loan to start a business, which is also risky, but they would still take the risk. In the literature, I have pointed out that internships allow students to gain experience and find a job. On the positive side, my respondents agree with this. Young people feel that they have been or will be able to find a job more easily thanks to the traineeship.

Based on the conclusions drawn from the questionnaire, I accept or reject my hypotheses below:

- H1: Young people only lack the capital to start a business.

Young people clearly lack not only capital to start a business. Rather, they lack experience and know-how. A bigger problem for them is the changing circumstances, uncertainty, responsibility and lack of knowledge of the law. Initial capital was not even mentioned as a negative or disadvantage by young people, and they are relatively open to borrowing. Thus, young people need more than capital in their lives to start a business. On these grounds I reject my hypothesis.

- H2: Young people consider Hungary as ideal for starting a business and would like to start a business in Hungary.

Young people do not consider Hungary as an ideal place to start a business, as many EU countries could offer them more favourable conditions to start a business. Despite this, the majority of young people who want to start a business in Hungary and very few would like to start a business exclusively abroad. Although there are countries where conditions are more favourable, young people plan their future in Hungary. On this basis, I reject the first half of my hypothesis and accept the second half.

- H3: Young people want to start a business after completing their university studies and gaining more than 10 years of work experience.

The main problem for young people when starting a business is the lack of experience. In addition, they do not feel that they can acquire the knowledge needed to start a business during their university studies. Lack of experience is a much bigger problem for them than lack of initial capital. Nevertheless, they feel that after 1-5 years of experience they would be ready to start their own business. Furthermore, young people consider that the ideal age to start a business is between 26 and 30. On this basis, I reject my hypothesis.

Overall, young people are highly entrepreneurial and very few already have a business. Young people lack not only the capital to start a business, but also and above all the experience. Without sufficient experience they would not dare to start their own business. They feel that their university education does not provide them with sufficient knowledge and they want to acquire this missing knowledge by gaining experience. The main reason given by young people who do not want to start a business is that it is too much responsibility. Unfortunately, young people who want to start a business are also discouraged by current events such as pandemics, war and their consequences. In any case, young people want to gain experience after finishing their studies before starting a business. They believe that the ideal age to start a business is between 26 and 30, by which time they will have the experience, knowledge and capital to venture into business. They don't like uncertainty, they like financial stability, so they would dare to start a business with a higher amount of money than they think they need. They would like to do this on their own, but they are not averse to credit if success is at stake. Although they do not consider Hungary ideal for starting a business, they would like to start a business here, and they have plans for the future in Hungary.

References

1. Al-Wugayan, A., & Alshimmiri, T. (2010). Encouragement of entrepreneurship in affluent economies: The case of Kuwait. International Business & Economics Research Journal (IBER), 9(4).

2. Anonyous (2016). Mi felé tart a gazdaság, felvidék ma, letöltés dátuma: 2022.04.10.
3. Artner A. (2014). Tőke, munka és válság a globalizáció korában. Akadémiai Kiadó, Budapest.
4. Artner, A. (2013). A fiatalok munkanélküliségének kérdéséhez Európa példáján keresztül. Közgazdasági Szemle, 60(12), 1370-1392.
5. Árváné Ványi, G., Katonáné Kovács, J., Gál, T., & Popovics, P. (2016). Vállalkozói képzés a 21. században a felsőoktatásban – lehetőségek, módszerek, jó gyakorlatok. International Journal of Engineering and Management Sciences, 1(1), 1-18.
6. Ásványi, Zs., & Riedelmayer, B. (2021). Iskolapadból a munkaerőpiacra – A fiatalok munkaerőpiaci integrációját ösztönző munkavégzési formák. Tudásmenedzsment, 22(1. különszám), 63-77.
7. Csikai, A. (2021). A magyarországi fiatalok munkaerőpiaci integrációja a covid-19 világjárvány idején. Acta Sociologica–Pécsi Szociológiai Szemle, 7(1).
8. Eurostat (2021). Foglalkoztatás és önfoglalkoztatás, eurostat. letöltés dátuma: 2022.04.05.
9. Farkas, Sz. & Kovács, N. (2010). Egyetemi és főiskolai hallgatók vállalkozói aktivitása Magyarországon. In Proceedings-8th International Conference on Mangement, Enterprise and Benchmarking (MEB 2010) (pp. 277-288). Óbuda University, Keleti Faculty of Business and Management.
10. Garo, E., Kume, V., & Basho, S. (2015). Determinants of entrepreneurial intention among university students: Case of Albania. Multidisciplinary Journal for Education, Social and Technological Sciences, 2(2), 176-190.
11. Gyöngyösi, K., & Geist, G. (2008). Fiatalok foglalkoztatottsága, munkaerő-piaci helyzete. Új ifjúsági szemle.
12. Hofmeister-Tóth, Á., Kopfer-Rácz, K., & Sas, D. (2015). A magyar kis-és közepes vállalkozások vezetőinek vállalkozói hajlandósága. Vezetéstudomány-Budapest Management Review, 46(7), 41-51.
13. Imreh-Tóth, M. (2015). Az egyetemi vállalkozásoktatás lehetséges szerepe a vállalkozóvá válás elősegítésében. Szeged: JATEPress.
14. Kissné András K. (2014). Generációk, munkaerőpiac és a motiváció kérdései a 21. században. HR Magazin, On-line. http://www.ohe.hu/hrmagazin/cikkek/generaciok-munkaeropiaces-a-motivacio-kerdesei-a-21-szazadban letöltés dátuma: 2022.02.12
15. Koltai, J. P., & Szalka, É. (2013). A vállalkozói hajlandóság vizsgálata a női hallgatók körében Magyarországon. Vezetéstudomány-Budapest Management Review, 44(7-8), 71-79.
16. Lindner, J. (2019). Entrepreneurial spirit for the whole school ways to become an ee-si entrepreneurship school. Discourse and Communication for Sustainable Education, 10(2), 5-12.
17. Lynne Doughtie (2018). The Changing Nature of Work: Why Lifelong Learning Matters More Than Ever forrás: https://www.forbes.com/sites/kpmg/2018/04/23/the-changing-nature-of-work-why-lifelong-learning-matters-more-than-ever/?sh=44c1c5e91e95 letöltés dátuma: 2022.04.19
18. Novotny, Á. (2014). Siker és motiváció a magyar vállalkozó-kutatók körében. Competitio, 13(1), 75-87.
19. Nyock Ilouga, S., Nyock Mouloungni, A. C., & Sahut, J. M. (2014). Entrepreneurial intention and career choices: The role of volition. Small business economics, 42(4), 717-728.

20. Okpara, F. O. (2007). The value of creativity and innovation in entrepreneurship. Journal of Asia entrepreneurship and sustainability, 3(2), 1.
21. Papagiannis, G. D. (2018). Entrepreneurship education programs: The contribution of courses, seminars and competitions to entrepreneurial activity decision and to entrepreneurial spirit and mindset of young people in Greece. Journal of Entrepreneurship Education, 21(1), 1-21.
22. Papulová, Z., & Papula, J. (2015). Entrepreneurship in the Eyes of the Young Generation. Procedia Economics and Finance, 34, 514-520.
23. Phuong, T. H., & Hieu, T. T. (2015). Predictors of entrepreneurial intentions of undergraduate students in Vietnam: An empirical study. International Journal of Academic Research in Business and Social Sciences, 5(8), 46-55.
24. S. Gubik, A. (2013). A magyar hallgatók vállalkozásindító szándékát befolyásoló tényezők modellje - Ajzen tervezett magatartás elméletének kiterjesztése. Vezetéstudomány-Budapest Management Review, 44(7-8), 19-29.
25. S. Gubik, A., & Farkas, Sz. (2016). A karriermotívumok változásának hatásai a magyarországi hallgatók vállalkozásindítási elképzeléseinek alakulására. Vezetéstudomány-Budapest Management Review, 47(3), 46-55.
26. S. Gubik, A., & Farkas, Sz. (2017). Hallgatói vállalkozások Magyarországon. Taylor, 9(2), 168-178.
27. Schmitt-Rodermund, E., & Vondracek, F. W. (2002). Occupational dreams, choices and aspirations: Adolescents' entrepreneurial prospects and orientations. Journal of Adolescence, 25(1), 65-78.
28. Vértesy, L. (2018). A pályakezdők munkaerőpiaci helyzete. Budapesti Műszaki és Gazdaságtudományi Egyetem Gazdaság- és Társadalomtudományi Kar, Pénzügyek tanszék.
29. Westermayer, C. (2017). Persönlichkeitseigenschaften und Unternehmergeist. Unternehmer statt Unterlasser. pp 27–46.
30. Yimamu, N. (2018). Entrepreneurship and entrepreneurial motivation. CENTRIA UNIVERSITY OF APPLIED SCIENCES.