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CONTENT

LIFE WITHOUT WASTE – ZERO WASTE IN SOUTH BOHEMIAN HOUSEHOLDS

Roman Buchtele, Věra Novotná

Abstract

Zero Waste (ZW) is a lifestyle that translates the basic principles of the circular economy to the household level. It represents an individual approach to the environmental issue of meeting the common needs of households while reducing the waste produced. The paper aims to describe the perception of the ZW lifestyle by households in the South Bohemian Region. The subject of the survey is the consumer preferences of the inhabitants in the context of ZW and the perception of the advantages and disadvantages of the whole concept. The method of data collection is a questionnaire. A total of 134 questionnaires were used after data filtering. The results show which positives and negatives of the concept are perceived by the residents of the South Bohemian Region. Respondents underline the positives of ZW related to environmental impact and human health. The negatives associated with ZW are mainly the unavailability of information and the general unavailability of products. An interesting finding was that they felt rather supported in practising ZW and applied many rules spontaneously without knowledge of ZW. However, their buying behaviour is rather traditional.

Keywords: circular economy, consumer preferences, perception, South Bohemian Region, zero waste

1   INTRODUCTION

The origin of the term Zero Waste (ZW) can be traced back to the 1970s in connection with Zero Waste Systems Inc. (Palmer, n.d.). Today, it represents a visionary concept that aims to solve the waste problem. In practice, ZW programs have been implemented by many countries, but strategies to address the issue have not yet been developed in most cases (Zaman, 2015). Waste management and the ZW approach represent keys to the concept of circular economy (Deselnicu et al., 2019). Circular economics defines economic development in opposition to the linear model. The difference is that circular economics is regenerative and gradually decouples economic growth from resource consumption (Ellen MacArthur Foundation, n. d.). At the EU level, there is a Circular Economy Action Plan, which was adopted in 2020 and is one of the key parts of the European Green Deal. In particular, it is about promoting circular economy processes and sustainable consumption. Concrete steps are intended to prevent the waste of resources (European Commission, 2020).

ZW also raises the question of the sustainable behaviour of each individual. As Connett (2013) states, waste is an evidence that we are doing something wrong as a society. The transformation towards a sustainable strategy in the context of ZW is a combination of both an individual approach and the right policy. This paper aims to describe the perception of the ZW lifestyle by households in the South Bohemian Region.

1   LITERATURE REVIEW

A number of studies have focused on ZW at the household or individual level. Bogusz et al. (2021) examined ZW among consumers in Central and Eastern Europe. The results show that respondents identify their sustainable consumption activities with the concept of ZW. This is

mainly because all respondents are aware of the need to protect the environment in the face of environmental degradation. There are significant relationships between environmental, social, economic and ethical objectives. The first three mentioned are the most perceived among the respondents, while the economic ones are the least represented. Josuh et al. (2018) add that knowledge, attitudes and subjective norms also influence household waste management practices. This supports the impact of environmental education or awareness. Mintz et al. (2019) distinguish across cultural contexts. In addition to behaviour and social norms, it is also pro-environmental orientation that influences individuals' waste management within households. Germany, as a representative of Europe, performs better than, for example, Japan in the context of pro-environmental orientation. This is underlined by the influence of cultural factors. Nainggolan et al. (2019) also confirm the influence of sociodemographic characteristics on different waste management preferences using the Danish example.

Food shopping from a ZW perspective is also the subject of studies. Ananda, Karunasena, & Pearson (2023) found that there is a strong positive statistically significant relationship between online food shopping and wastage. Less wastage is associated with brick-and-mortar stores. Younger households were also found to be more likely to shop online. Similarly, more frequent shopping and higher spending are associated with higher wastage. Loučanová (2021) reports that Slovak respondents point to the importance of addressing ZW issues by encouraging friends to shop in ZW outlets and generally stimulating advertising to shop in such outlets.

It is also important to look at how ZW is perceived. Maulana & Dwipayanti (2022) indicate that 50.8% of university students have a positive attitude towards ZW. The number of these students who have good behaviour in the context of the ZW concept is similar. According to the findings, this is mainly influenced by gender and access to information. The perception of the ZW concept was particularly influenced by the COVID-19 pandemic, as reported by Deliberador et al. (2023). The pandemic has affected consumers' perceptions and the control they think they have over food waste. This is confirmed by the results of Italian research (Amicarelli et al., 2022), where respondents who are forced to stay at home more are more likely to perceive food waste and reduce it. It can be said that the COVID-19 pandemic was a significant accelerator of ZW at the household level.

2 METHODOLOGY

The present paper is a sub-part of a more comprehensive investigation by Novotná (2023) on the issue of ZW in the South Bohemian Region (Novotná, 2023). It is based on quantitative research (Disman, 2011). The subject of the investigation is the consumption preferences of the inhabitants of the South Bohemian Region in the context of ZW. The method of data collection is a questionnaire. Distribution among the residents of the South Bohemian Region was conducted online using the Survio platform. The use of community groups set up on social networks was the key element. Data collection took place in the spring of 2023. A total of 134 questionnaires were used after data filtering.

Respondents reside in the South Bohemian Region. The gender distribution is as follows – 50.5% women and 49.5% men. A total of 57% of respondents live in a family house and 43% in an apartment. Most respondents are 20-35 years old, i.e. 48%. Young people under 20 years old make up 21% of the population. A total of 18% correspond to the 36-50 age group. People aged 51-65 years are represented by 8%. The last category consists of people over 65 years, i.e. 5%. 35.8% of respondents live in municipalities with up to 2000 inhabitants and 64.2% in municipalities with over 2000 inhabitants. A total of 19% of respondents have primary education. A total of 30% of the respondents have completed secondary education with a high

school diploma. Vocational school certificates or grammar school certificates were reported by 4% of respondents. The most represented group of people with a university diploma, i.e. 41% (Novotná, 2023). The gender distribution and distribution according to the size of the municipality follows the actual distribution within the South Bohemian Region. This maintains the representativeness of the sample with some limitations.

Based on the analysis of scientific outputs and the literature, two research questions have been established. How is Zero Waste perceived across households in the South Bohemian Region? What is the consumer behaviour of households in the context of Zero Waste? Subsequently, these were transformed into null hypotheses, which are the subject of quantitative research.

$H1_0$: *The positives of ZW are not mainly in environmental issues.*

$H2_0$: *The negatives of ZW are not mainly in economic issues.*

$H3_0$: *ZW rules are not practised among people in the South Bohemian Region.*

$H4_0$: *Normal shopping patterns do not prevail.*

In addition to basic descriptive statistics, other methods were used for deeper analysis of the relationships between variables. For categorical questions, the crosstabs procedure was used and statistical significance was verified by the chi-square test. For questions where a Likert scale was used, an independent samples t-test was performed to determine the differences between the means across the group of respondents.

3 RESULTS

3.1 Positives and negatives of ZW

Important for assessing respondents' perceptions of the ZW concept are the positives and negatives they attribute to ZW. These can be broadly categorised into economic, social or environmental groups of factors. Positives were identified in different combinations. Figure 1 shows that the most frequent answer is that it positively affects the environment (40.1%). This is followed by the economic advantage that it reduces costs (26.8%). The answer that it has a positive impact on human health (25.2%) is similarly frequent. The other answers only had small frequencies.
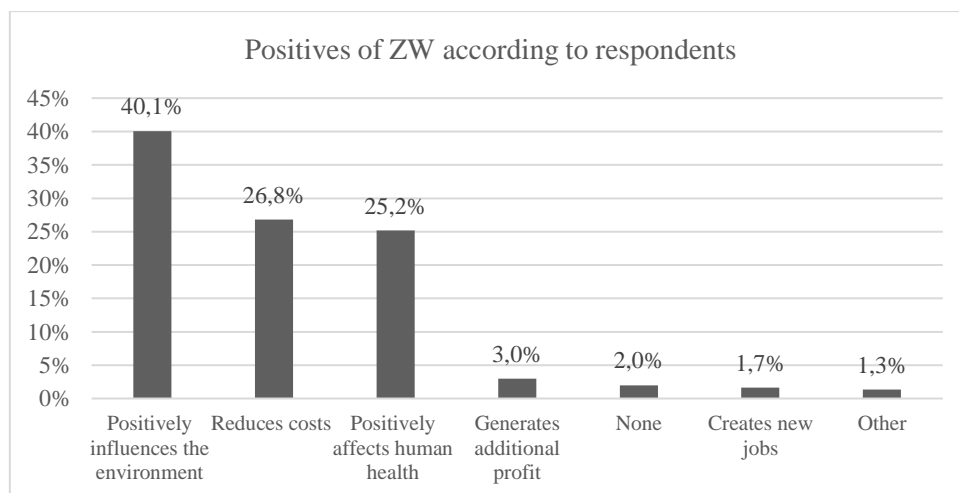
Fig. 1 – Positives of ZW. Source: own data, n = 134

On the other side are the negatives attributed to the ZW concept. The most frequently mentioned is the lack of information about the concept in terms of general awareness (26.3%). Another negative is directly related to the unavailability (23.2%). The other mentioned negatives can be classified in economic terms. These are time-consuming (22.4%) and the overall high cost of the ZW (16.2%). The other negatives are associated with low response rates (Figure 2).
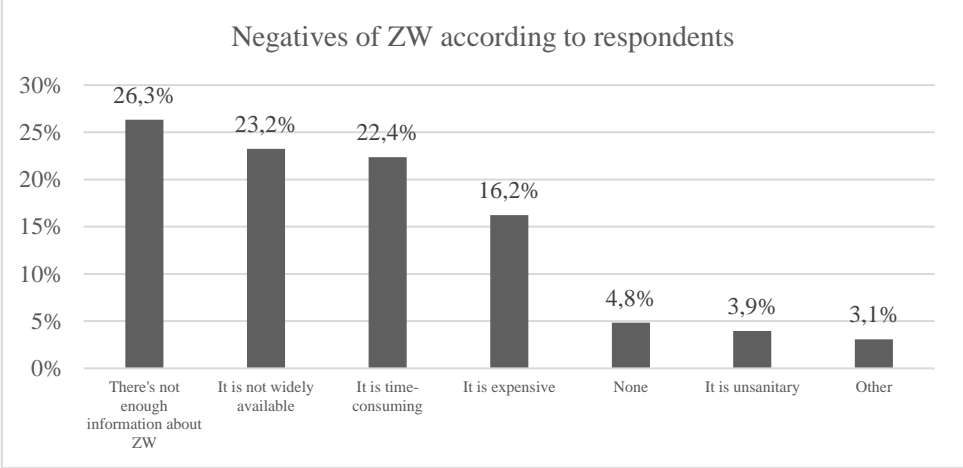
Fig. 2 – Negatives of ZW. Source: own data, n = 134

3.2 ZW rules

Specific rules are most often associated with the ZW concept in the professional literature. Respondents were asked to indicate in different combinations which of these rules they practice. Recycling was mentioned most often (30.6%). The second most common is reusing things (24.7%). Other rules according to their frequency have the following order: composting (18.2%), refusing consumption (14.8%), and reducing the amount of stuff owned (10.5%). Only 1.2% do not practice even one of the mentioned rules (Figure 3).
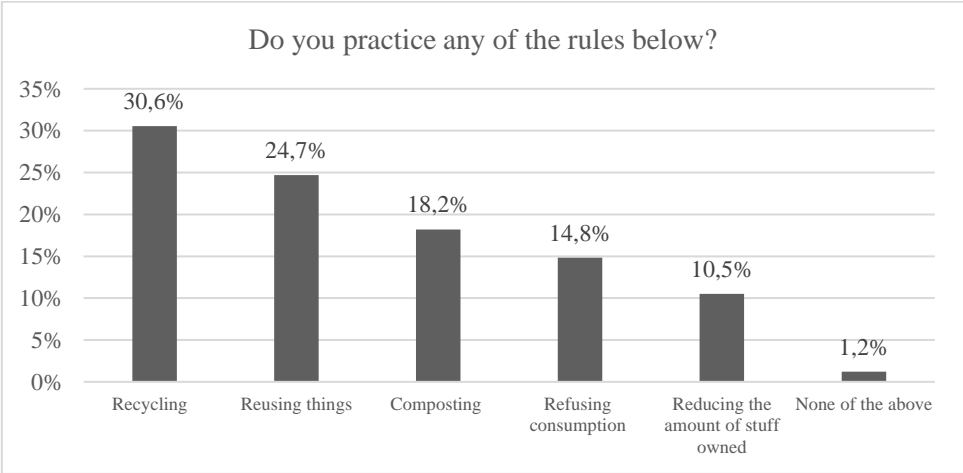
Fig. 3 – Practiced ZW rules. Source: own data, n = 134

The next question specifies the time aspect in more detail. Most people, i.e. 56%, state that they have already encountered some rules, but did not associate them with the concept of ZW. A smaller group, i.e. 26.9%, states that they encountered the ZW rules before filling out the questionnaire and knew that these were ZW rules. Only 17.2% of respondents state that they do not know a single rule (Figure 4).

A statistically significant relationship was found between the question and the respondents' education ($\chi^2 = 34.239$; df = 10; p = 0.000). Respondents who already knew the ZW rules before filling out the questionnaire are more often people with a university education (ar = 2.9). On the contrary, people who state that they have not encountered the rule more often have secondary education (ar = 3.6).

Another relationship was found between the size of the municipality and the question ($\chi^2 = 7.184$; df = 2; p = 0.028). People from municipalities with more than 2.000 inhabitants were generally more familiar with the ZW rules (ar = 2.0). On the contrary, people from municipalities with less than 2.000 inhabitants stated excessively that they did not know any of the ZW rules. (ar = 2.3).
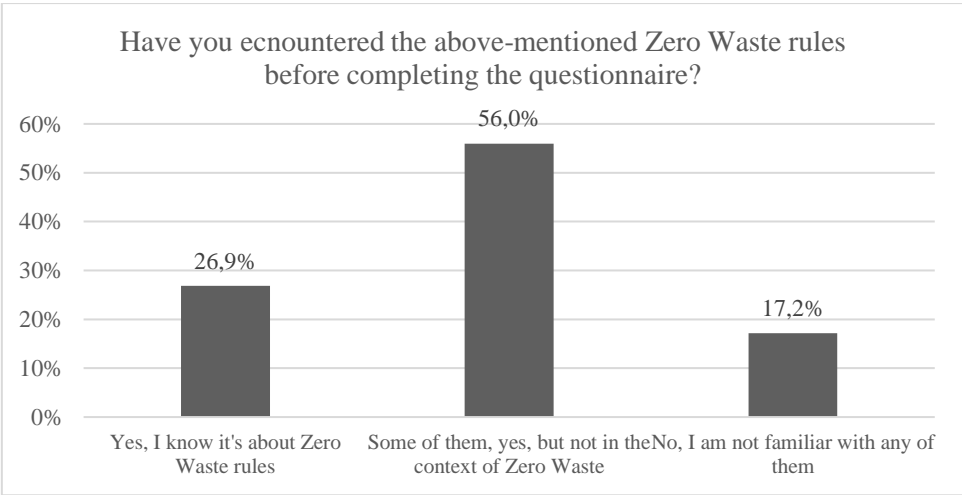
Fig. 4 – Have the respondents encountered the above-mentioned ZW rules before the survey? Source: own data,

n = 134

The following questions contain a Likert scale that can help indicate the degree of agreement or disagreement. In the first case, it is the influence of the surroundings in the form of support within the practice of ZW rules. At first glance, it is evident that the positive opinion prevails. A total of 48.5% of respondents answered "rather yes" and 14.4% answered "yes" in the context of support from their surroundings (Figure 5).
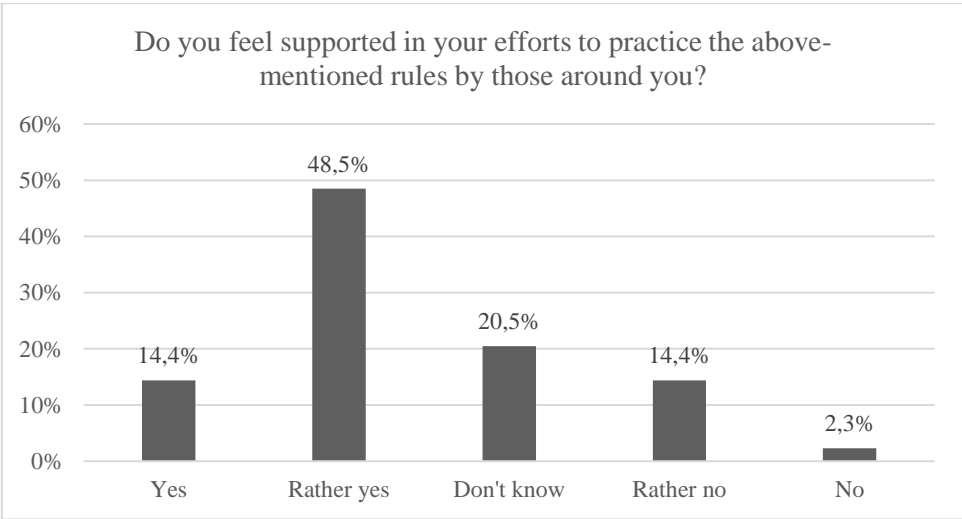
Fig. 5 – Feeling of support while practising above-mentioned ZW rules. Source: own data, n = 134

This is followed by a question reflecting the belief that ZW rules should be practised in all households. It is about seeing the ZW concept on a societal scale. The majority of respondents answered "rather yes" (50.7%). Total agreement was indicated by 17.9% of respondents. It is evident that the surveyed sample agrees that the ZW rules should be practised in every household (Figure 6).
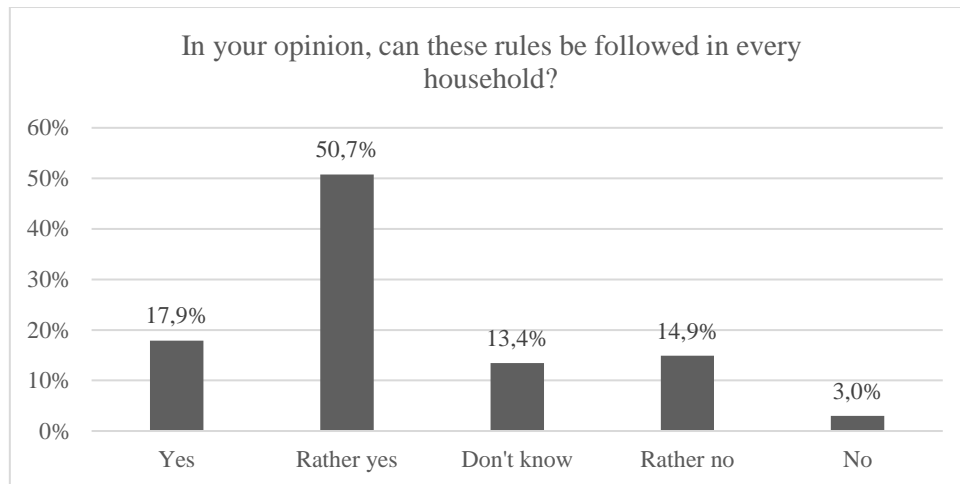
Fig. 6 – Practising ZW rules on a societal scale. Source: own data, n = 134

An Independent samples t-test was used to further specify the differences between the monitored groups of respondents.

Table 1 shows a t-test of independent samples with gender as the independent variable. The numbers represent the average differences in a mean between the groups – men and women. The values of men are higher if the number (mean difference) is positive, and the values of women are higher if the number is negative. The scale was from 1 (totally disagree) to 5 (totally agree). The results show that there is a statistically significant difference in the perception of the support of close individuals when women agree more that they have the support of close individuals in practising ZW rules.

Tab. 1 – Independent samples t-test – the difference between men and women. Source: own data

Gender	Men	Women
Do you feel supported in your efforts to practice the above rules by those around you?		
Mean	3.38	3.76
Mean Difference	-0.386	
p-value	**0.023**	
In your opinion, can these rules be followed in every household?		
Mean	3.59	3.72
Mean Difference	-0.130	
p-value	0.338	

Table 2 shows a t-test of independent samples with municipality size as the independent variable. The numbers represent the average differences in a mean between the groups (up to 2000 inhabitants and over 2000 inhabitants). The values of people who live in a municipality up to 2000 inhabitants are higher if the number (mean difference) is positive, and the values of people who live in a municipality over 2000 inhabitants are higher if the number is negative. The scale is the same as in the previous case. A statistically significant difference in the mean was found between the groups for the question of whether all households should follow the ZW rules. People who live in municipalities with more than 2000 inhabitants agree more.

Tab. 2 – Independent samples t-test – the difference between municipality size. Source: own data

Municipality size	up to 2000 inhabitants	over 2000 inhabitants
Do you feel supported in your efforts to practice the above rules by those around you?		
Mean	3.52	3.60
Mean Difference	-0.084	
p-value	0.757	
In your opinion, can these rules be followed in every household?		
Mean	3.35	3.83
Mean Difference	-0.471	
p-value	**0.045**	

Table 3 contains the results of a t-test of independent samples with type of housing as the independent variable. The numbers represent the average differences in a mean between the groups (family house and apartment). The values of people who live in a family house are higher if the number (mean difference) is positive, and the values of people who live in an apartment are higher if the number is negative. The scale is the same as in the previous case. The results show that there is a statistically significant difference between the means in the case of the opinion that all households should apply the ZW rules. People who live in apartments have a higher average value on the Likert scale.

Tab. 3 – Independent samples t-test – the difference between types of housing. Source: own data

Type of housing	Family house	Apartment
Do you feel supported in your efforts to practice the above rules by those around you?		
Mean	3.54	3.62
Mean Difference	-0.081	
p-value	0.716	
In your opinion, can these rules be followed in every household?		
Mean	3.54	3.81
Mean Difference	-0.271	
p-value	**0.006**	

3.3 Buying behaviour of respondents

Purchasing behaviour represents an important variable observed in the ZW framework. In the case of our sample, it can be seen that shopping in supermarkets is predominant (54.6%). Speciality stores (16.3%) and local stores (12.3%), which are often associated with ZW, are not strongly represented (Figure 7).
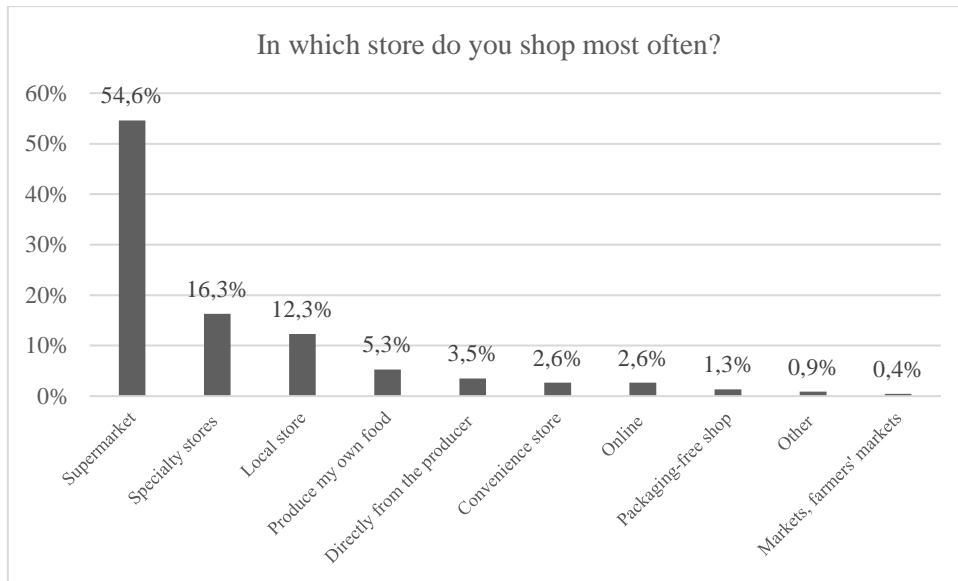
Fig. 7 – Where do respondents shop? Source: own data, n = 134

Buying behaviour is influenced by a number of factors. In this case, it was confirmed that the sample of respondents derived their purchasing behaviour mainly from traditional factors, i.e. quality of goods (30.2%) and price of goods (29.6%). Detailed results are in Figure 8.
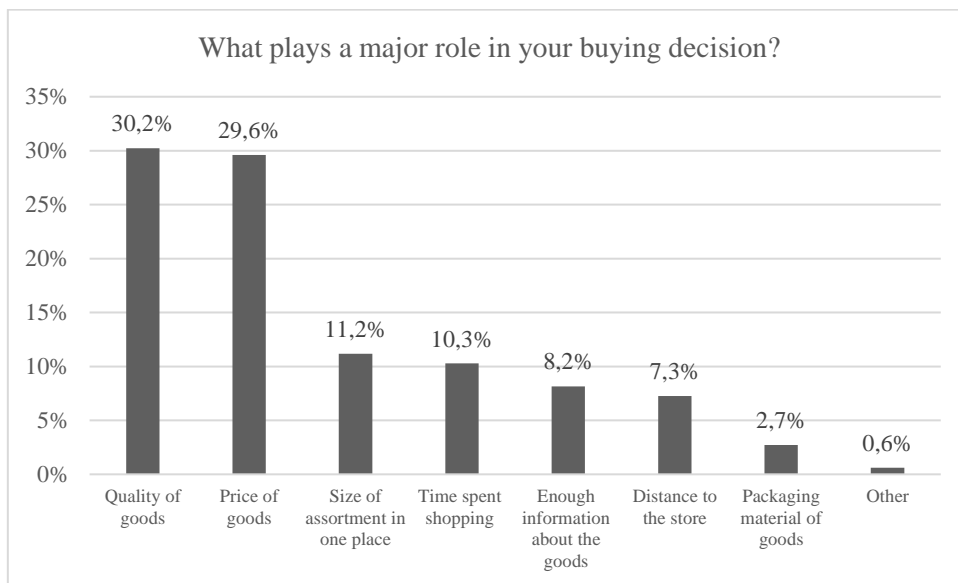
Fig. 8 – Buying decision according to respondents. Source: own data, n = 134

4   DISCUSSION AND CONCLUSION

The importance of the ZW concept is currently growing among households. This may be due to, for example, the COVID-19 pandemic (e.g. Deliberador et al., 2023; Amicarelli et al., 2022). The findings of the main positives of ZW are in the context of maintaining a healthy environment, which is confirmed by the research of Bogusz et al. (2021). Some socio-demographic variables also influenced the perception of the ZW concept, as in the case of Nainggolan et al. (2019). Consumption behaviour within ZW is rather conservative in the case of this survey, which can be viewed positively given the findings that online shopping produces more waste (Maulana & Dwipayanti, 2022).

A total of four hypotheses were established. The first null hypothesis is rejected and the alternative hypothesis is valid: *The positives of ZW are mainly in environmental issues.* Respondents underline the positives related to environmental impact and human health. We do not reject the second null hypothesis (*The negatives of ZW are not mainly in economic issues*). According to respondents, the negatives associated with ZW are mainly the unavailability of information and the general unavailability of products.

We reject the third null hypothesis in favour of the alternative: *ZW rules are practised among people in the South Bohemian Region.* Recycling and reusing things is the most practised rule. As an interesting finding can be perceived that some rules were practised by respondents before the survey without specific knowledge of ZW. Overall, they feel supported in their efforts and are of the opinion that all households should do so. There were also gender differences, with women feeling more supported. A similar statistically significant relationship was also found for the fact that people from larger municipalities believe that all households should practice ZW. The last null hypothesis was also rejected in favour of the alternative: *Normal shopping patterns do prevail.* It can be seen that shopping in supermarkets is particularly prevalent among respondents. Alternatives are represented in smaller numbers. Similarly, shopping behaviour is determined by factors such as the quality of goods and the price of goods.

The ZW concept is bound to expand and evolve in the future. In particular, this is supported by the situation in the EU, which can be confirmed by the results of the Climate Survey (EIB, 2023). A total of 72% of Europeans under the age of 30 are in favour of stricter government measures to force a change in personal behaviour. Similarly, 79% of Europeans are in favour of labelling all food to help reduce the impact on the climate and the environment. And on the financial side, 62% of Europeans stated they would pay more for climate-friendly food. Europeans' positive attitude towards tackling climate change is a great opportunity to further expand the ZW. The lack of available information and awareness may still be a challenge, as identified in the results. Educational institutions in particular have an important role to play in this context. However, this requirement is already reflected, for example, in the European Green Deal (European Commission, 2019).

The findings in this paper offer insights into the perception of ZW within the South Bohemian Region. A more detailed investigation is needed to further direct and explain the variables as there is an influence of a number of factors that have not been taken into account. In particular, these may include potential pro-environmental attitudes, knowledge (e.g. Josuh et al., 2018) or other more detailed factors at the level of overall household consumption.

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HIGHER EMOTIONS AND NEUROMARKETING: HOW FACEREADER WASN'T ENOUGH TO CAPTURE TOTAL CONSUMER REACTIONS

Tamás Darázs

Abstract

Aim: This research explores the use of neuromarketing methods and facial micro-emotion decoding to analyse consumer preferences, focusing on the differences between physiological measures and participants' subjective statements in response to positive and negative advertising stimuli.

Methodology: The research was conducted through a three-phase experiment. In the first phase, participants categorized the ads according to their emotional focus. In the second phase, physiological and emotional reactions to selected ads were measured using technologies such as eye tracking and facial expression analysis. The third phase involved face-to-face interviews where participants discussed their reactions to the ads.

Results: Positive advertisements consistently elicited positive emotional reactions, which were recorded by biometric methods and confirmed in face-to-face interviews. Conversely, negative advertisements often did not elicit significant physiological reactions as recorded by the facereader, although participants expressed negative emotions in interviews. This discrepancy may be related to the presence of so-called higher emotions, which are more difficult to detect with standard neuromarketing tools. The findings suggest that although the facereader is a frequently used tool, and in this research it also demonstrated its benefit in analysing ads categorised as positive, its results require further reflection as higher emotions may not always be recorded correctly.

Conclusions: The results highlight the importance of correctly interpreting neuromarketing results, as even in cases where no emotions are recorded, higher emotions may be present that have a profound effect on consumers' emotional perception and behaviour. Detecting these emotions can be challenging and requires a willingness on the part of the researcher to reflect on the results, or more robust methods than an affordable facereader.

Keywords: *consumer behavior, emotional reactions, facial microexpressions, higher emotions, negative advertisements, neuromarketing, positive advertisements.*

1   INTRODUCTION

Neuromarketing, integrating marketing and neuroscience, uses technologies such as fMRI, EEG and Facereader to analyse consumer responses. Facereader, despite its accessibility, shows limitations in detecting higher emotions such as guilt or pride, which are not expressed strongly enough on the face. This qualitative research is presented as a case study, demonstrating practical situations where Facereader does not pick up any emotions in negative advertisements, whereas participants' subjective accounts clearly reveal these emotions. We hypothesize that the Facereader has a limited ability to detect complex higher-order emotions, leading to a mismatch between physiological measures and participants' subjective accounts. The research highlights the need to critically assess the results from Facereader and interpret them correctly in the context of marketing research.

2 LITERATURE REVIEW

Neuromarketing is an interdisciplinary field that combines marketing and neuroscience to study how consumers respond to marketing stimuli at the brain level. It uses techniques such as fMRI, EEG and MEG to measure brain activity associated with consumer decision-making processes. For example, fMRI provides detailed images of brain regions activated by different stimuli, while EEG and MEG measure electrical and magnetic brain activity in real time (Ariely & Berns, 2010; Vecchiato et al., 2011). The advantages of these techniques lie in their ability to provide deep insight into brain processes, but they are accompanied by significant methodological and ethical challenges (Lee et al., 2007). Darázs (2023) emphasizes that the proper use of these techniques is crucial to obtain accurate and relevant results.

Measuring emotions in marketing has a long history. Poels and Dewitte (2006) provide an overview of 20 years of research in this area, focusing on different methodologies and their contributions to marketing research. Holbrook and Batra (1987) examined how emotions mediate consumer responses to advertisements, finding that emotions play a key role in how consumers perceive and respond to marketing stimuli. Venkatraman et al. (2015) extended this review and showed how new technologies and methodologies can improve the measurement of emotions and their impact on consumer behaviour.

Neuromarketing techniques such as EEG and MEG allow researchers to measure brain activity in real time and provide valuable data on consumers' implicit responses (Vecchiato et al., 2011; Ohme et al., 2009). EEG measures the brain's electrical activity, while MEG measures magnetic activity. These techniques are often used in combination with fMRI, which provides detailed images of brain regions activated during decision making (Ariely & Berns, 2010). However, techniques such as facerading are now more widely used as they are more accessible and less expensive (Harris et al., 2018). Both Havett & Darázs (2021) and Krajcovic & Darázs (2021) point out that facerading can effectively capture subtle emotional expressions that are key to understanding consumer behavior.

Emotions significantly influence consumer decision-making. Lerner and Keltner (2000) showed that different types of emotions have specific influences on decision making. Positive emotions can broaden attention and promote creativity, whereas negative emotions can narrow attention and increase criticality (Holbrook & Batra, 1987). The paradigm remains that positive and negative advertisements have different effects on consumers' emotions. Plassmann et al. (2008) found that marketing promotions can modulate neural representations of pleasantness, influencing how consumers perceive products. Knutson et al. (2007) found that neural predictors can predict purchase behavior, suggesting that positive emotions may increase the likelihood of purchase, while negative emotions may have the opposite effect. However, it is not that simple, because in other situations negative emotions can conversely increase the success of marketing, by inducing fear, such as when in a commercial a car is reversing and almost hits a pole and the viewer's breath is supposed to stop at that moment, but the car does not hit because it has good parking sensors and these are actually the product being promoted (Darázs, & Jurečka, 2020). These findings are key to understanding how marketing stimuli can influence consumer behaviour at a deeper level. Stasi et al. (2018) confirm that emotions play a critical role in consumer decision making, especially in the context of lower involvement purchases.

Both lower and higher emotions can be recorded through neuromarketing. Lower and higher emotions play a key role in marketing as they influence consumer decision making at different levels. Lower emotions, such as joy, sadness or fear, are often immediate and easy to detect, while higher emotions, such as guilt, pride or empathy, are more complex and more difficult to detect through traditional neuromarketing tools (Reimann et al., 2010).

Although neuromarketing offers new opportunities for understanding consumer behaviour, it also brings methodological challenges. Ariely and Berns (2010) highlight the limitations of neuroimaging techniques, which may not always provide completely accurate data. Vecchiato et al. (2011) discuss the limitations of EEG and MEG, especially in measuring complex emotional states. Techniques such as facerading have been shown to be effective for their accessibility and ability to capture subtle emotional expressions (MDRG, 2021). Darázs & Šalgovičová. (2019) point to the need for the integration of more advanced techniques and interdisciplinary approaches to overcome these challenges.

3 METHODOLOGY

The aim of this paper is to examine the differences between subjective statements and physiological responses recorded by neuromarketing research in recording emotional responses to positive and negative advertisements. To this end, an experiment was designed to determine whether negative advertisements would produce variable physiological expressions on participants' faces compared to positive advertisements. A secondary aim of this research was to investigate how negative advertisements are processed by research participants in order to better understand the specific effects and manifestations of such advertisements on participants in the context of negative and positive, or better stated, desired and unwanted emotions, focusing on the possible recognition of higher and lower emotions.

The research was conducted in three stages:

1. In the first phase, an experiment was conducted in which 35 participants in the first phase of the experiment were asked to categorize different videos according to whether their purpose was to evoke positive or negative emotions. The participants of the first phase of the experiment were random students of the second bachelor's year of marketing communication at the FMK UCM in Trnava.

2. In the second phase, an experiment based on knowledge of consumer neuroscience was conducted in which an independent group of 20 research participants were shown both positive and negative videos selected in the first phase of the experiment, and their implicit expressions were recorded.

3. In the third phase, face-to-face interviews were conducted with participants from the second phase experiment, eliciting their conscious feelings and impressions of the advertisements under study.

The experiment-based research captures the conscious and unconscious responses of research participants. The experiment was conducted in the second quarter of 2024 under laboratory conditions with controlled temperature, noise and light conditions. The research was approved by the ethics committee of the UCM in Trnava.

The subjects of the second and third phases of the experiment were 4 advertising videos, selected on the basis of a separate experiment in the first phase, where 35 participants of the initial experiment were asked to express whether they thought the purpose of the 8 videos selected in the first phase was to evoke positive or negative emotions. The shortlisting of the 4 videos to be tested in the second and third phases was based on how the participants in this experiment expressed themselves on a Likert scale about the ability of these videos to evoke the emotions in question, with those that scored highest being selected. Finally, the second and third phases of the experiment included 2 advertising videos that were intended to elicit positive reactions and 2 advertising videos that were intended to elicit negative reactions.

Twenty individuals between the ages of 19 and 21 participated in the neuromarketing study. The sample size was determined with consideration of time and financial constraints, but with an emphasis on the quality and validity of the data collection according to Lawton and Wilson (2010). This was based on the observation that even a sample size of 15 to 30 participants can generate statistically significant results, provided consistency and sample characteristics are maintained, as reported by Nascimben & Ramsøy (2020).

3.1 The course of the neuromarketing experiment

Upon entering the room, respondents sat at a monitor, which, after an initial briefing, started showing two positive and two negative pre-selected advertising videos, which were shown in a random order to reduce the effects of first-choice preference, better recall of the beginning and ending, and possibly participant fatigue during the research. Each commercial was shown to each respondent for 30 seconds, which was derived from the fact that only 30-second spots were included in the study. A Logitech camera designed for recording was placed on top of the monitor that participants were viewing. Respondents were simultaneously monitored using a SmartEye gaze tracking device Using these devices, a recording was made that captured various physiological and neural responses.

A biometric measurement platform (iMotions version 10.0), which uses methods such as eye tracking, facial expression analysis and biometric sensors, was used to measure implicit responses (Taggart et al., 2016). Measurements using multiple methods were implemented:

- **Emotion analysis using the AFFDEX method** - AFFDEX (Affectivity Detection and Facial Expression Recognition) is a software tool for the analysis of microemotions and facial expressions. Using computer vision, it can extract and interpret subtle changes in facial features such as muscle movements, wrinkles, and microthemes in the eye and lip area in real time. Based on this information, AFFDEX can identify and quantify emotions such as sadness, anger fear, or laughter. The AFFDEX methodology uses thresholds to define the range of emotions that are considered significant. These thresholds are set for each emotion and determine how much change in facial features is required for the emotion to be recognized. In this study, the threshold was set at 50%.

- **Gaze path analysis -** Gaze mapping is the recording and analysis of dynamic gaze data, that is, eye tracking data recorded in a dynamic environment. Based on this, the gaze path can be detected and heat maps can be created to point out exposed locations in the image, or static AOIs can be used to derive object-related eye-tracking statistics (Darázs, 2021).

Following neuromarketing testing, individually structured face-to-face interviews were conducted as a source of eliciting conscious responses from participants. The interviews were mainly concerned with capturing the emotions that participants were aware of during testing. The aim was then to compare these results with those obtained by neuromarketing testing.

4   RESULTS

Analysis of the aggregated data suggests that both negative and positive advertisements elicited different responses from research participants:

1. Reactions to positive ads

Positive advertisements elicited positive reactions on participants' faces, which were tracked via eye tracker and facereader. These reactions were further confirmed through face-to-face interviews where participants expressed positive emotions and reactions to the ad content

presented. This result highlights the effectiveness of positive advertisements in stimulating positive emotional reactions and the potential ability of these advertisements to influence consumer preferences. This result also confirms the ability of methods capturing implicit reactions to capture the identical reactions as research participants declared explicitly, but with much greater detail. As can be seen in Figures 1 and 2, strong positive emotions such as laughter and engagement were captured during the interaction with the ads, and thanks to modern methods, we can retrospectively determine exactly at which second the activation occurred and where the person was looking when it occurred.
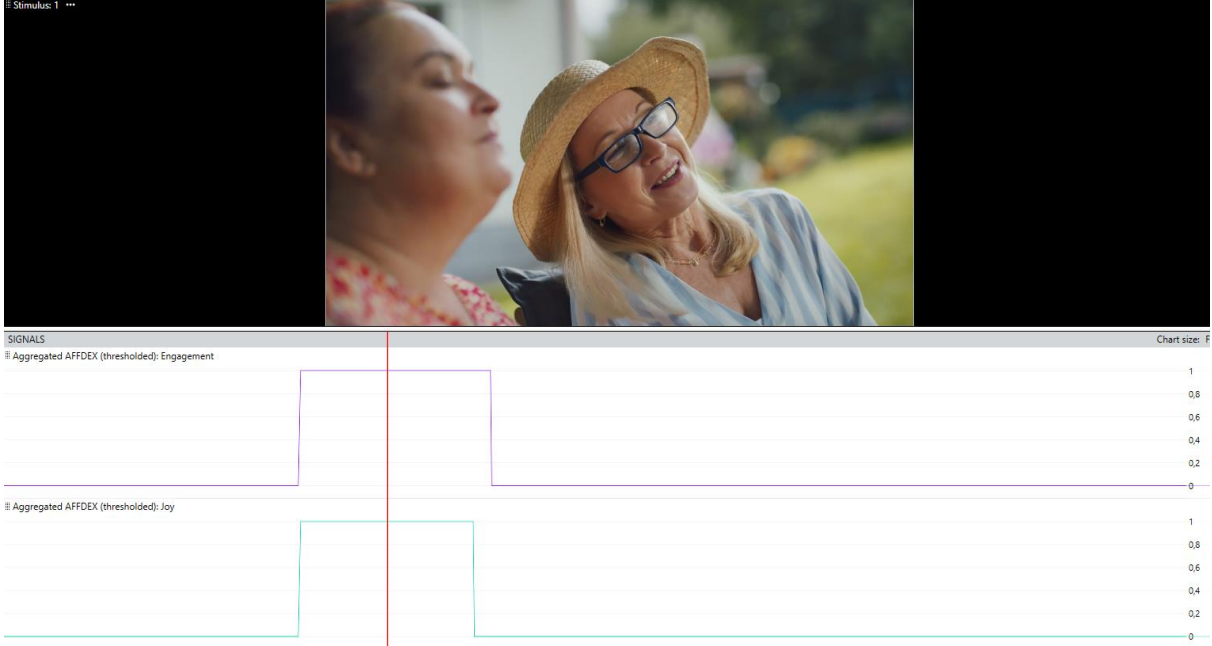
Fig. 1 - Positive video screen 1. Source: own research
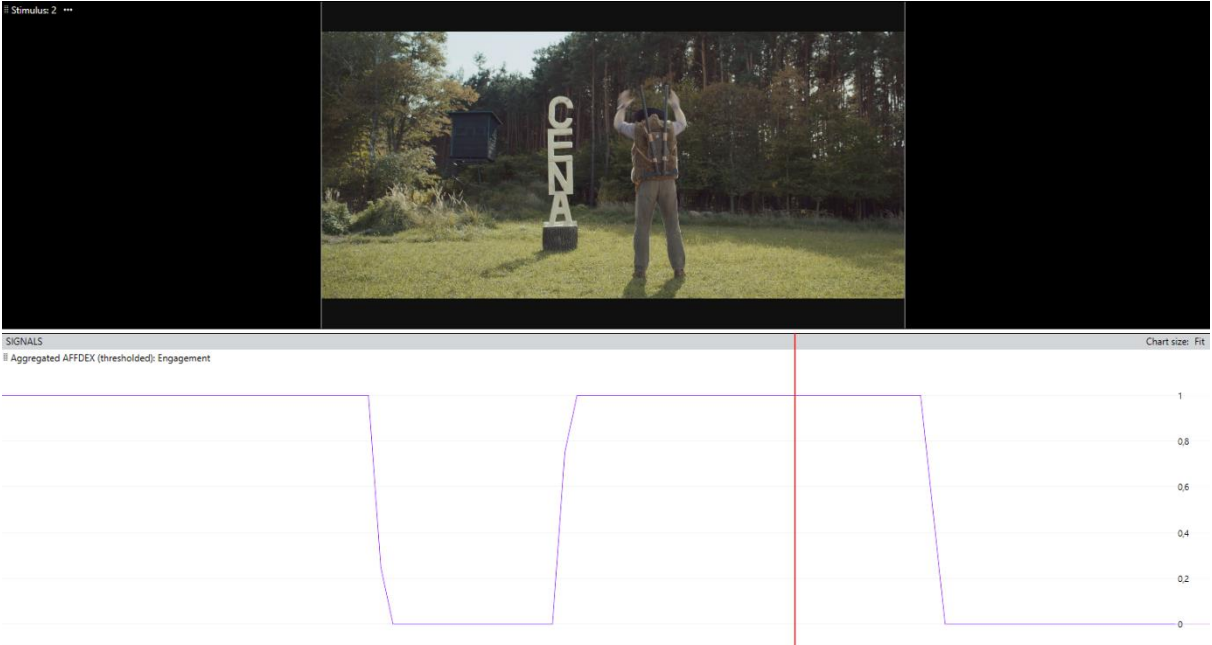
Fig. 2 - Positive video screen 2. Source: own research

2. Reactions to negative ads

Conversely, negative advertisements did not elicit significant physiological manifestations on the faces of the participants monitored through the neuromarketing tools of facial microemotion analysis. However, participants expressed during the face-to-face interviews that these advertisements caused negative emotions such as feeling bad and discomfort; these statements were analyzed and used to say that these were so-called higher emotions, based on experiences, preferences, and lived experiences. The discrepancy between the faceadder data and the in-person accounts can also be explained by the fact that negative advertisements may have triggered higher emotions, which are often not manifested visually, but have a deeper impact on the emotional level of individuals. These higher emotions may be more difficult to capture with neuromarketing tools, but they represent an important aspect of the emotional response to advertisements and may have important implications for consumer behaviour and preferences. As can be seen in Figures 3 and 4, no emotions were captured during the interaction with the second type of ads that the AFFDEX program evaluated as exceeding the 50% facial expression change threshold. In simple terms, all the curves are at zero, so indeed these reactions are harder to capture and it is up to the researcher to reflect on this or to state in the record that "no emotions/reactions"
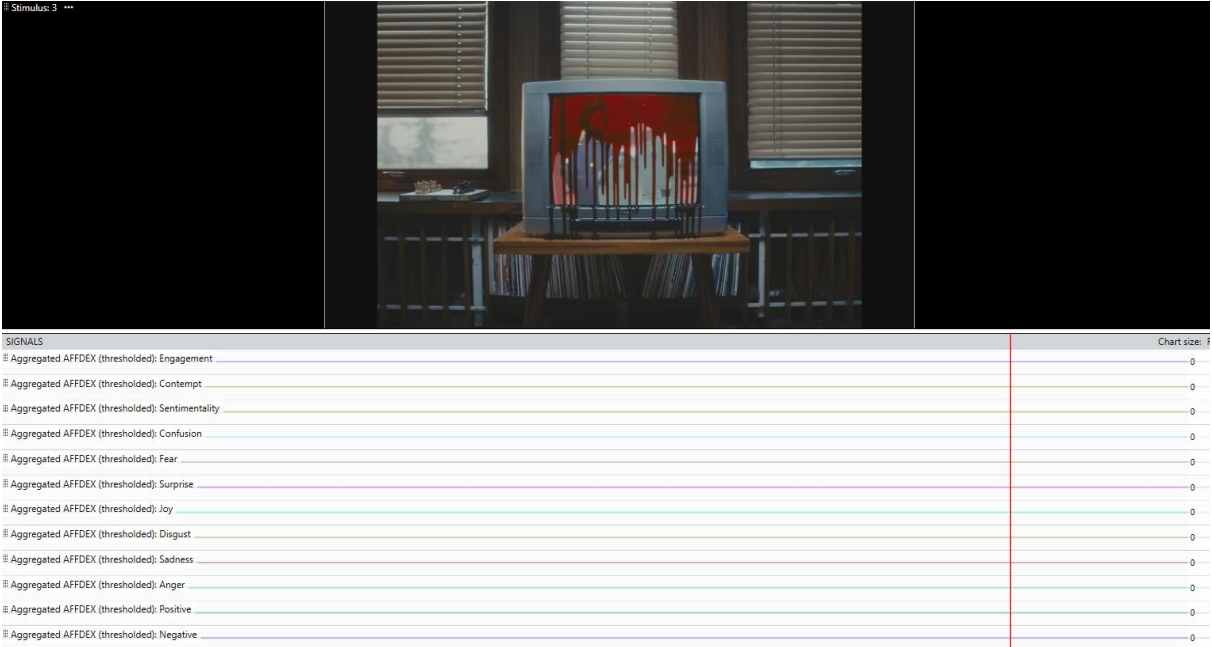
Fig. 3 - Negative video screen 3. Source: own research
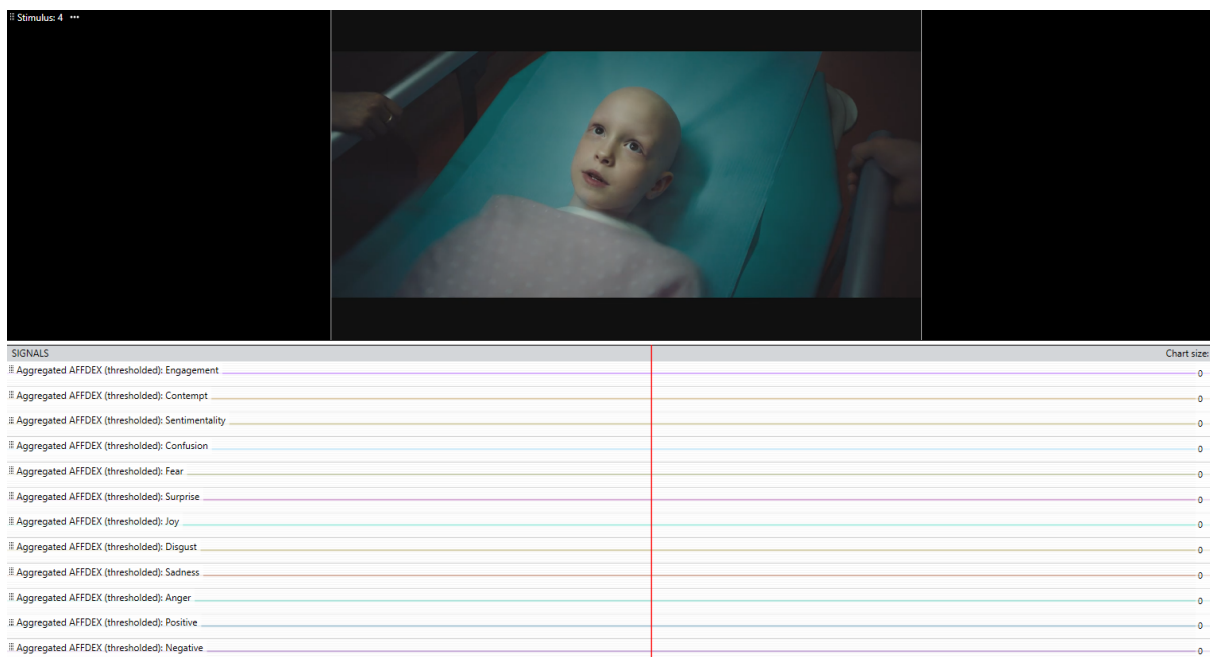
Fig. 4 - Negative video screen 4. Source: own research

5   DISCUSSION

Based on our research, we found a significant discrepancy between the data obtained by neuromarketing methods (facereader) and participants' subjective statements during face-to-face interviews, especially for negative emotions. While the facereader did not capture any significant physiological reactions to negative ads, the face-to-face interviews revealed that participants perceived these ads as negative and experienced complex emotions.

This discrepancy can be explained by the presence of so-called higher emotions, the presence of which is indicated by personal conversations. These emotions are more complex and more difficult to detect with standard neuromarketing tools because these higher emotions, such as guilt, pride or moral evaluations, are often not manifested by strong physiological reactions, but have a deeper impact on the emotional level of individuals (Zurawicki, L. 2010). Holbrook & Batra (1987) highlighted that these emotions have a significant impact on consumer behaviour and decision making. These emotions are more complex and are often related to cognitive and moral evaluations, which is important for understanding their influence on consumer behavior (Holbrook & Batra, 1987).

Facereader technology, while accessible and cost-effective, has its limitations in detecting subtle or higher emotions. It appears that while the facereader can effectively capture basic emotions, it has difficulty detecting complex emotional states. In our research, we observed instances where the facereader did not capture significant emotional reactions to negative advertisements that were later reported in face-to-face interviews. Compared to advanced neuromarketing tools such as fMRI or MEG, the Facereader is significantly cheaper and more accessible, making it an attractive choice for many studies. However, as Vecchiato et al. (2011) show, advanced methods provide deeper and more detailed insights into brain processes that may be key to understanding complex emotional responses.

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Facereader technology is significantly more accessible and cost-effective than advanced neuromarketing tools such as fMRI or MEG). When using a facereader, it is important for researchers to be aware that higher emotions may not be captured. Mechanical interpretation of the resulting curves may lead to the incorrect conclusion of "no response" even though there may be higher emotions present that would require other detection methods (Ariely & Berns, 2010).

Despite the limitations of the faceadder, our findings show that neuromarketing is still a practical and useful tool, this was particularly evident for positive emotions. In these cases, consistent emotions were found in both interviews and neuromarketing testing. However, neuromarketing allowed us to determine much more precisely at what time the emotional reactions occurred and where the participants' gaze was directed, giving us detailed information about what triggered these emotions.

Our findings can be very useful in developing marketing strategies, especially in designing ads that effectively capture and respond to consumer emotions because, in an age where artificial intelligence is replacing classical research and even neuromarketing, we point out that even neuromarketing is not yet so perfect that we can just interpret it mechanically and it needs to be thought about by humans. Understanding the higher emotions and the need to "keep an eye on it" when using a facereader can ultimately improve customer loyalty and engagement. Future research should focus on developing improved methodologies for emotion detection and exploring the role of higher emotions in different marketing contexts.

Finally, we emphasize the need for correct interpretation of results from neuroimaging techniques and point out their limitations. Misinterpretation of data can lead to incorrect conclusions, especially if researchers fail to account for higher emotions.

6   CONCLUSION

This research has provided a deeper understanding of the use of neuromarketing methods and facial micro-emotion decoding to analyse consumer behaviour. Our study aimed to identify discrepancies between physiological measures and participants' subjective accounts, focusing on differences in responses to positive and negative advertising stimuli. Results showed that while positive advertisements consistently elicited positive emotional responses, which were effectively recorded by both neuromarketing methods and personal interviews, negative advertisements did not elicit significant physiological responses, although participants expressed negative emotions in personal interviews.

This discrepancy points to the presence of so-called higher emotions, which are more difficult to detect with standard neuromarketing tools such as facereader. Higher emotions, such as guilt or pride, have a deeper impact on consumers' emotional perceptions and behaviour, but their detection requires more than traditional methods. While the Facereader is significantly more accessible and cost-effective than advanced methods such as fMRI or MEG, researchers must be cautious in interpreting the results and be aware that higher emotions may not be captured.

Despite these limitations, the results show that neuromarketing remains a practical and useful tool, especially for positive emotions, where it can pinpoint the temporal sequence and gaze of participants, thus providing detailed information about the source of the emotion. Our findings can be very useful in designing marketing strategies that effectively capture and respond to consumer emotions, and in improving customer loyalty and engagement.

However, a significant limitation of the research may be the small sample size. In the future, the sample of participants could be expanded and different neuromarketing tools could be applied for more comprehensive results.

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THE ROLE OF DIGITAL TOOLS IN THE VISIBILITY OF SMALL MUNICIPALITIES

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Abstract

The paper examines the role of digital tools in the promotion of small municipalities in the district of Veľký Krtíš in Slovakia with a focus on increasing their visibility, attractiveness and competitiveness. The research uses qualitative methodology and thematic analysis of interviews with representatives of ten municipalities. The identified research gap lies in the lack of studies focusing on small municipalities and their digital strategies. The sample was selected based on the size of the municipality, availability of digital tools and willingness to collaborate. Coding the data revealed key themes such as the types of digital tools used, the challenges in implementing them and the benefits they bring. Digital technologies significantly improve community visibility, reduce marketing costs, and promote community engagement. Benefits include an increase in tourists, better communication with residents and visitors, and increased participation in local events. The introduction of tools such as social media, websites, and mobile apps allows for more effective communication of unique community features and personalization of visitor experiences. Challenges include high start-up costs, the need to constantly update content, and a lack of technical skills. Strategic investment in education and training can mitigate these challenges and deliver significant returns for small municipalities, making them more competitive and attractive in the digital era. The findings are valuable for policy makers and municipal leaders in supporting local development. Future research could explore the long-term impacts of digital initiatives and identify best practices for sustainable digital transformation.

Keywords: digital tools, qualitative research, small municipalities, thematic analysis

1 INTRODUCTION

In recent years, we have witnessed the rapid development of digital technologies, which have brought about significant changes in various areas of society. One area where digital tools can play a key role is in the promotion of small communities. Small municipalities often face challenges such as limited resources, declining population and lack of visibility compared to larger cities. These challenges require innovative approaches to ensure the sustainable development and attractiveness of these communities. The present paper focuses on the role of digital tools in the promotion of small municipalities, with a focus on municipalities in the district of Veľký Krtíš in the Banská Bystrica Self-Governing Region (Slovak Republic).

Digital technologies offer many opportunities for small municipalities to overcome their inherent limitations. They provide platforms for cost-effective marketing, improve communication with residents and visitors, and facilitate the promotion of local culture and tourism. By leveraging digital tools such as social media, mobile apps and interactive websites, municipalities can reach a wider audience, attract tourists and foster community engagement. The present paper aims to explore these aspects, examining specific digital strategies used by small municipalities and assessing their impact in the context of the issues analysed.

The research uses a qualitative approach, focusing on in-depth interviews with representatives of ten small municipalities in the district of Veľký Krtíš. This methodological choice allows for a comprehensive understanding of the nuanced experiences and perspectives of those directly

involved in the implementation of digital tools. The interviews focus on identifying key themes such as the benefits of digital technologies, the challenges of implementation and which digital tools they use. Through this analysis, the paper seeks to provide valuable insights into the practical applications and outcomes of digital tools in small communities.

One of the main themes that the paper explores is the significant benefits that digital technologies bring to small municipalities. These benefits include improved visibility, reduced marketing costs, and increased community engagement. For example, municipalities can use social media to share news, promote events, and highlight local attractions. Mobile apps can offer interactive maps, event calendars, and real-time alerts, making it easier for residents and visitors to stay informed and active. Interactive websites serve as comprehensive information hubs, providing important information about the community, its history, cultural heritage and tourist attractions.

Despite the benefits of implementing digital technologies, municipalities also face challenges. The study highlights several obstacles that small municipalities often face, such as the high upfront costs of implementing digital tools, the need to constantly update content, and the lack of technical skills among municipal staff. These challenges require strategic planning and resource allocation to ensure successful adoption and sustainability of digital tools. The article then discusses various strategies municipalities are using to overcome these challenges, including partnerships with outside experts, training programs for staff, and the use of grants and financial contributions.

In terms of theoretical background, it is important to link digital tools to the concept of new public administration and the digitization of processes at the local level. The new public administration emphasises transparency, efficiency and citizen-centredness, which can be achieved precisely through digitisation. Digitalization of processes in municipalities not only allows for better governance and communication, but also for a higher level of citizen participation in decision-making processes (Osborne, 2010). The aspect in question is critical for understanding how digital tools can transform the functioning of small municipalities and increase their attractiveness.

The literature review supports the existence of a research gap, as previous contributions have mainly focused on large cities and their digital strategies, leaving small municipalities less explored. The paper brings a novelty by focusing on qualitative case studies of small municipalities and their digital strategies, which allows for an understanding of the specific challenges and successes in this context, with a focus on the district of Veľký Krtíš.

The presented paper highlights the importance of digital tools for sustainable development and promotion of small municipalities. By strategically investing in digital technologies, small municipalities can significantly increase their visibility, attract more tourists and foster greater community engagement. The findings of the present paper offer valuable insights for policy makers and municipal leadership, highlighting the potential of digital tools to transform small municipalities into vibrant and attractive communities in the digital age.

2 LITERATURE REVIEW

Promotion is a key element of any entity's marketing strategies, including small municipalities. Effective promotion can increase community awareness, attract tourists, boost the local economy, and increase resident pride. Traditional methods such as flyers, print advertisements, and local events have their place, but their reach and effectiveness are currently limited (Bednar et al., 2017). It is therefore important to understand the potential and challenges associated with new digital technologies in this context. Modern technologies provide innovative ways for

municipalities to engage with the public and reach wider audiences. For example, digital campaigns can be targeted to specific demographic groups, allowing for more effective and personalized outreach to potential visitors and investors (Wang & Wu, 2024).

In the digital era, communication channels and marketing tools have changed significantly. The Internet and digital technologies have brought new opportunities that allow small communities to reach a wider audience and communicate more effectively (Mashau & Kroeze, 2023). Digital platforms such as social media, websites, and mobile applications allow communities to showcase their unique features and attractions in an attractive and interactive format. The importance of digital innovations also lies in the fact that they allow communities to be competitive on a global level, which is important for attracting tourists and investors from different parts of the world (Hosseini et al., 2018).

Social media such as Facebook, Instagram, Twitter, and YouTube provide a platform for municipalities to interact directly with residents and potential visitors. These platforms allow them to share news, organize events, showcase cultural and historical places, and build community (Oksa, 2021). Through social media, municipalities can not only inform but also engage the public in various initiatives, which can lead to increased awareness and interest in the community. Examples of successful uses of social media include campaigns that have increased tourism or attracted new investment to communities (Jayashree, 2016).

Virtual reality (VR) and augmented reality (AR) are technologies that allow for the creation of immersive experiences. VR can be used to provide virtual tours of communities, historic sites, and natural attractions, allowing potential visitors to experience a community before physically visiting it. AR can enhance the visitor experience by adding digital information to the real world, such as through interactive maps or audio guides. These technologies can enhance the attractiveness of communities and attract tech-savvy tourists looking for innovative and memorable experiences (Blahut, 2019).

Mobile apps and geolocation services allow municipalities to offer information and services directly on users' mobile devices. Tourists can easily find attractions, restaurants, accommodation and events nearby. Apps can also provide interactive maps, audio guides, and other useful features (Filus, 2019). Geolocation technologies allow for personalization of experiences based on the user's current location, which can increase the convenience and attractiveness of a community visit. These technologies can also be used for marketing purposes, such as sending real-time alerts about current events or special offers (Cavalli, 2021).

A well-designed and optimized website is an essential tool for the digital promotion of communities. SEO (Search Engine Optimization) ensures that a municipality's website appears high in search engines, increasing its visibility and accessibility to potential visitors. The website should be intuitive, aesthetically appealing and provide all the necessary information for tourists and locals (Piotrowski & Borry, 2009). In addition to basic information, the website should include interactive elements such as virtual tours, videos, and visitor reviews. Website optimization also includes using keywords that are relevant to searches and creating quality content that can attract and keep visitors on the site (Karkin & Janssen, 2014).

The theoretical underpinnings should be better linked to the concept of new public administration and digitalization processes at the local level. The new public administration emphasises transparency, efficiency and citizen-orientation, which can be achieved precisely through digitisation. Digitalization of processes in municipalities not only enables better governance and communication, but also a higher level of citizen participation in decision-making processes (Osborne, 2010). This aspect is key to understanding how digital tools can transform the functioning of small municipalities and increase their attractiveness.

A review of the literature (e.g., Aunkofer & Geyer, 2020; Meijer & Bolívar, 2016; Rodríguez Bolívar, 2018; Scholl & Scholl, 2014) supports the existence of a research gap, as previous studies have mainly focused on large cities and their digital strategies, while small municipalities have remained less explored. This paper makes a novel contribution by focusing on qualitative analyses of specific cases of small municipalities and their digital strategies, allowing for an understanding of the specific challenges and successes in this context.

3 METHODOLOGY

The aim of the research was to investigate the use of digital tools in small municipalities and their impact on communication, promotion and overall attractiveness of municipalities. We focused on identifying effective strategies and tools used by municipalities and evaluating their benefits and challenges. For our research we selected ten small municipalities in the district of Veľký Krtíš. The selection of the municipalities was done randomly, but the selected municipalities have several common features. Apart from the common geographical location (Veľký Krtíš district), these are demography (low population), history and culture (many of these municipalities have a rich history and cultural heritage), governance and administration (each of the municipalities has its own municipal office and mayor who manage local affairs and ensure the running of the municipality) and social and cultural activities (the municipalities organise various social and cultural events that support community life). The selected municipalities were Malé Zlievce, Šuľa, Veľká Ves nad Ipľom, Malý Krtíš, Želovce, Bušince, Modrý Kameň, Dačov Lom, Hrušov and Vinica.

The sample was selected purposively to ensure that the selected municipalities represented different aspects of demography, history and culture, governance and administration, and social and cultural activities. Random selection was included to eliminate potential biases that could arise from subjective selection of municipalities. This approach ensures that our findings will be relevant and applicable to the wider population of small municipalities in the Veľký Krtíš district.

Data collection took the form of semi-structured interviews with representatives of the selected municipalities during June 2024. Semi-structured interviews allow for a deeper insight into the issues under study, as they combine fixed questions with the possibility of developing a discussion based on the respondents' answers. The interviews were conducted in person, by telephone, or by videoconference. The interviews focused on the following topics: what digital tools municipalities are currently using, what are the main objectives of using these tools, what are the main advantages and benefits of these tools for the municipality, what are the challenges and problems municipalities have encountered in using digital tools, and how they evaluate the feedback from citizens and visitors on these tools.

The data collected from the interviews was transcribed and analysed using thematic analysis. Thematic analysis allows patterns in the qualitative data to be identified and interpreted. We followed the following steps in the analysis: data coding, identification of main themes and interpretation. During coding, we identified key themes and patterns in the interview transcripts. Coding was conducted in concert with multiple coders to ensure reliability and consistency. We used a combination of open and axial coding, first identifying broad categories and then sorting the data in more detail. Code frequencies were tracked and analysed to identify which themes recurred most frequently. Based on the coding, we identified the main themes that recurred in respondents' answers. We interpreted these themes in the context of the research objectives and existing literature.

4   RESULTS

For the research part, we worked with three basic questions in our semi-structured interviews. These questions were: What digital technologies do you use to promote your community? What have been the main challenges in implementing these technologies? What benefits have you seen in using digital technologies? We received the following responses to the first question:

A representative of the Municipality of Malé Zlievce (MZ) stated that they use social media, especially Facebook and Instagram, where they regularly post information about events and news in the municipality. In addition, they have invested in a modern website that provides all the necessary information for tourists and locals. The representative of the municipality of Šuľa (Š) mentioned that they mainly use social media and local web portals. They have also started using QR codes at tourist spots to direct visitors to digital information about the history and attractions of the municipality. Veľká Ves nad Ipľom (VVNI) uses social media and also has a mobile app that provides updates on events and important announcements. Malý Krtíš (MaK) uses Facebook and YouTube to share videos of local events and showcase the natural beauty of the surrounding area. The municipality of Želovce (Z) uses a website and social media. Recently they have also introduced a newsletter which they send via SMS. Busince (B) uses social media and has a blog where they regularly post articles about cultural and social activities. Blue Stone (MoK) uses social media and works with influencers to promote their events and attractions. Dačov Lom (DL) has a mobile app that includes interactive maps and information about hiking trails. Hrusov (H) uses social media and runs online competitions and campaigns to raise awareness of local crafts. Vinica (V) runs digital campaigns on social media to attract tourists to its wineries and vineyards. From the responses, it is clear that social media is the most commonly used tool in the villages, followed by websites and mobile apps.

The second question, regarding the main challenges in implementing digital technologies, received mixed responses. Municipal representatives often mentioned a lack of technical expertise and funding. Many municipalities also faced problems with inadequate infrastructure and low digital literacy of residents. For example, a representative of the municipality of Malé Zlievce stated, "The implementation of a modern website was difficult due to limited financial resources and the lack of experts in our municipality." The municipality of Šuľa had a problem with motivating older residents to use digital technologies, "Our biggest challenge was to convince the older generation to start using our digital tools."

In response to the third question regarding the benefits of using digital technologies, municipalities mentioned various positive effects. The efficiency of communication with citizens and tourists has increased, the availability of information has improved and municipalities have gained more visibility. For example, a representative of Veľká Ves nad Ipľom stated, "Our mobile application allows us to quickly inform citizens about important events and changes, which has significantly improved our communication." A representative of the municipality of Bušince added: "The blog has helped us attract more visitors to our cultural events and raise awareness of our municipality."

Based on the analysis of the responses, we identified the main themes that recurred in the respondents' answers. Social media, websites and mobile apps are the most commonly used digital tools. Major challenges include lack of technical expertise, funding and infrastructure, as well as low digital literacy among residents. The main benefits include improved communication, increased accessibility of information and greater visibility of municipalities. The results of our research highlight the importance of digital tools for small municipalities and their potential to improve communication, promotion and overall attractiveness.
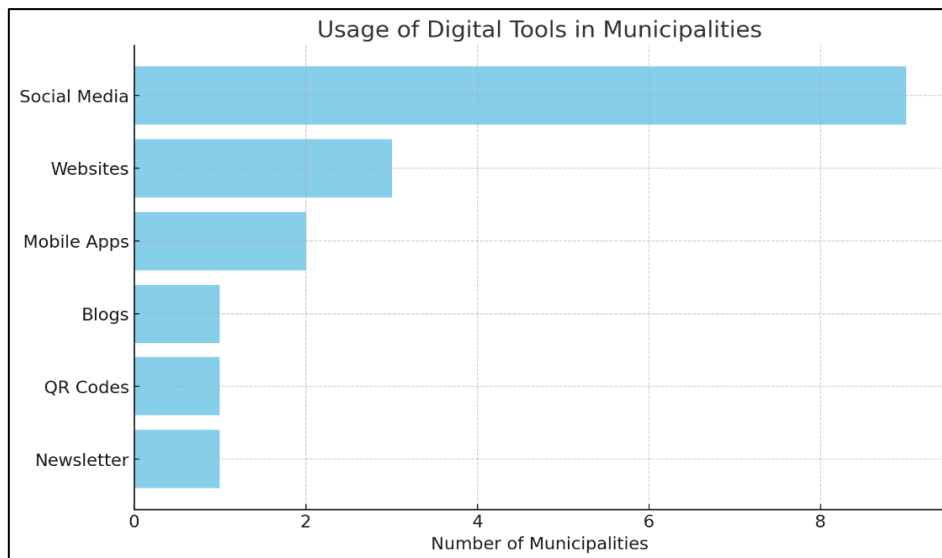
Fig. 1 – Usage of Digital Tools in Municipalities. Source: own research

This topic covers the various digital technologies municipalities use for promotion, including social media, websites, mobile apps, blogs, QR codes, and online campaigns or newsletters. Identified codes include: social media (Facebook, Instagram, YouTube), websites, mobile apps, blogs, QR codes and newsletter.

Codes identified: Social media (Facebook, Instagram, YouTube), websites, mobile apps, blogs, QR codes, newsletter

We received the following answers to question number 2:

The representative of the municipality of Malé Zlievce (MZ) stated that the biggest challenge was the lack of technical skills among employees. It was necessary to organize trainings and look for external experts to help them with the technical aspects. The representative of the village of Šuľa (Š) mentioned that the main challenge was obtaining funds to start these projects. They had to look for grants and support from various organizations. Veľká Ves nad Ipľom (VVNI) said that the biggest challenge was providing technical support and keeping content on the website and app up to date. The representative of the Malý Krtíš municipality (MaK) stated that the challenge was mainly the training of employees to use these platforms and create quality content. Želovce (Z) had a problem with financing and technical support. It was necessary to look for external partners for help. Bušince (B) said that ensuring regular content and interaction with citizens was difficult at first. Blue Stone (MoK) faced the challenge of gaining community trust and support for new approaches. Dačov Lom (DL) said that the costs of developing the application and maintaining it were significant challenges. Hrušov (H) had a problem with maintaining the interest of residents and tourists through digital campaigns. Vinica (V) said advertising costs and the need to regularly update content were the main challenges.

According to an analysis of respondents' responses, creating quality content was the biggest challenge, followed by funding and a lack of technical skills. An interesting quote from a representative of the Malé Zlievce municipality illustrates this challenge: "The implementation of a modern website was difficult due to limited financial resources and a lack of experts in our municipality." The Šuľa municipality added: "Our biggest challenge was to convince the older generation to start using our digital tools. "

Summary of results: The research results show that social media, websites and mobile applications are the most used digital tools in small municipalities. The main challenges

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municipalities face in implementing these technologies include lack of technical skills, funding and keeping content up-to-date. Despite these challenges, the municipalities achieved significant benefits, such as improved communication with citizens and tourists, increased availability of information and greater visibility of the municipalities. The findings highlight the importance of digital tools for small municipalities and their potential to improve communication, promotion and overall attractiveness. This knowledge is valuable for municipalities that are trying to improve their digital presence and communicate more effectively with their citizens and visitors. In further research, it would be appropriate to focus on specific strategies that municipalities can use to overcome the identified challenges, and on other possibilities of using digital technologies to support local development and community life.
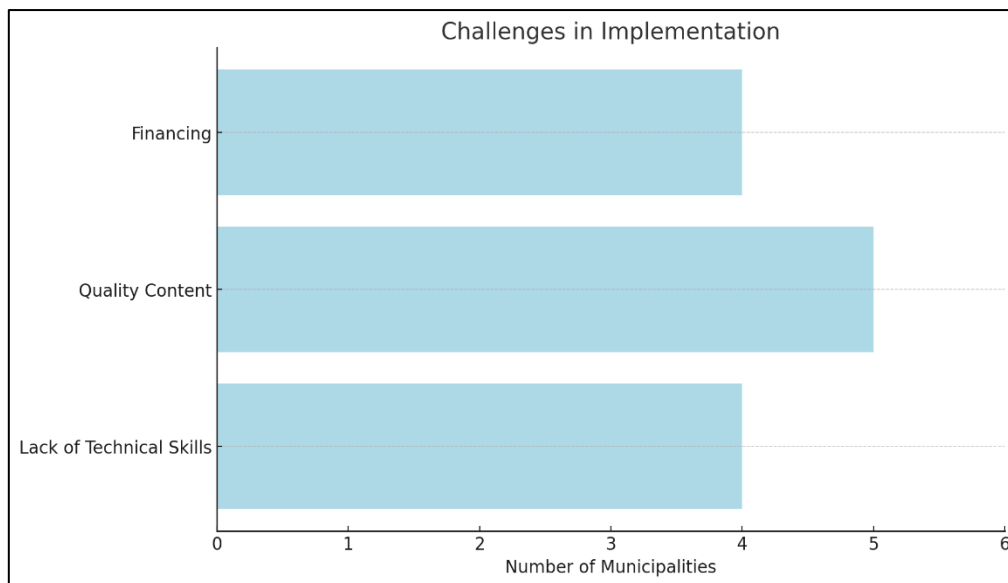
Fig. 2 – Challenges in Implementation. Source: own research

This topic addresses the main challenges municipalities face in implementing digital technologies, including lack of technical skills, funding, technical support, staff training and regular content updates. Codes identified include lack of technical skills (staff), quality of content and funding.

Codes identified: Lack of technical skills (staff), quality content, funding

We received the following answers to question number 3:

The representative of Malé Zlievce (MZ) said that the visibility of their village and the number of tourists have increased. Digital technologies have also helped them reduce the cost of traditional marketing campaigns. The village of Šuľa (Š) mentioned that their village has become more attractive for young people and tourists. They also noted increased involvement of local residents. Veľká Ves nad Ipľom (VVNI) said that increased awareness among citizens and visitors led to higher participation in events and greater interest in their village. Malý Krtíš (MaK) has seen an increase in tourists and positive feedback from local residents, who now have better access to information. Želovce (Ž) said that communication with citizens has improved and interest in local events and activities has increased. Bušince (B) saw increased blog and social media traffic, which brought more tourists and more interest in their activities. Modrý Kameň (MoK) said that interest in their events has increased and they have received positive feedback from visitors. Dačov Lom (DL) recorded high tourist satisfaction with the availability of information and an increased number of visitors. Hrušov (H) noted more interest in local crafts and events, as well as more interaction with the community. Vinica (V) reported

that tourist interest in their vineyards and wineries has increased, public awareness of their events and activities has increased, and they have more effectively reached their target audience at a lower cost compared to traditional marketing methods.

Based on the respondents' answers, we can identify the main advantages of using digital technologies: increased interest of tourists, increased engagement of citizens and reduced marketing costs. For example, the representative of Malé Zlievce said: "The visibility of our village and the number of tourists have increased. Digital technologies also helped us reduce the costs of traditional marketing campaigns." The representative of Šuľa village added: "Our village has become more attractive for young people and tourists. We have also noticed increased involvement of local residents."
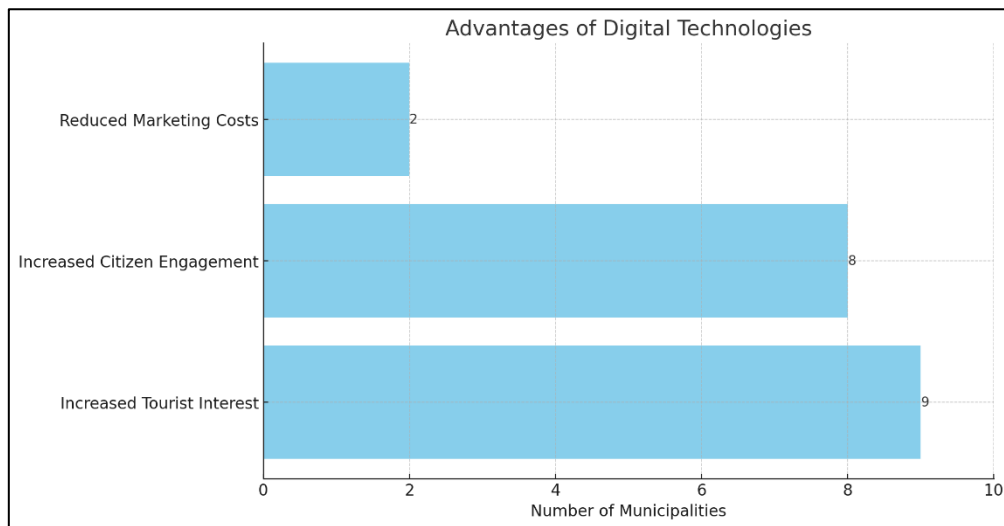
Fig. 3 – Advantages of Digital Technologies. Source: own research

Identified codes: Increased tourist interest, increased citizen engagement, reduced marketing costs

Summary of Results: The research results show that the main benefits of using digital technologies in small municipalities include increased tourist interest, increased citizen engagement and reduced marketing costs. These technologies allow municipalities to communicate more effectively with citizens and visitors, improve the availability of information and increase the visibility of municipalities. Despite challenges such as a lack of technical skills, financing and maintaining up-to-date content, municipalities have achieved significant positive effects that contribute to their development and attractiveness. The findings highlight the importance of digital tools for small municipalities and their potential to improve communication, promotion and overall attractiveness. This knowledge is valuable for municipalities that are trying to improve their digital presence and communicate more effectively with their citizens and visitors.

Despite various challenges, including a lack of technical skills and funding, small municipalities are successfully using digital technologies to improve their visibility and communication with citizens and visitors. These technologies allow them not only to inform and engage the community more effectively, but also to attract tourists and reduce marketing costs. The results of this research can serve as inspiration for other municipalities that are trying to improve their digital presence and communicate more effectively with their citizens and visitors. This topic deals with the benefits that municipalities have experienced thanks to the use of digital technologies. These benefits include increased visibility, higher tourist numbers, improved communication, citizen engagement and reduced marketing costs. The codes

identified include increased tourist interest, increased citizen engagement and reduced marketing costs.

5 DISCUSSION

Social media is the most used digital tool among communities, reflecting its effectiveness in reaching a wide audience and engaging locals and tourists. These findings are consistent with the work of Smith (2020), which suggests that social media is a key tool for local governments to increase visibility and interaction with citizens. Similarly, a study by Johnson (2019) shows that municipalities that actively use social media experience higher levels of citizen engagement and satisfaction.

Challenges in creating quality content and securing funding are widespread, suggesting that despite a willingness to embrace digital technologies, there are significant barriers to their effective implementation. This issue is not unique to our study; similar findings are reported in research by Davies (2018), who identified that a lack of resources and technical skills are the main barriers for small municipalities in implementing digital strategies.

The use of digital technologies has led to increased tourist interest and greater citizen engagement, demonstrating the potential of these tools to increase municipal visibility and community engagement. These findings are consistent with research from Thompson (2021), which showed that communities using digital marketing tools experienced an increase in tourism and positive responses from local residents. The reduction in marketing costs is also a significant benefit, demonstrating the cost-effectiveness of digital marketing compared to traditional methods. This finding is supported by a study by Clarke (2017) which showed that digital campaigns can be significantly cheaper and more effective in reaching target audiences.

Our findings suggest that despite the significant benefits that digital technologies offer to municipalities, it is crucial to address challenges related to content quality and funding to maximize their potential. Future efforts should focus on providing training and resources to improve technical skills and secure funding for digital initiatives. This approach is in line with recommendations from García (2020), who stresses the importance of investing in training and technical support for local governments.

At the same time, it should be emphasized that our work contributes to the theoretical foundations on local government by providing empirical evidence on the effectiveness of digital tools in increasing visibility and community engagement. In contrast to previous studies, our work offers a deeper insight into the specific challenges and benefits that small municipalities experience when implementing digital technologies. This approach allows us to generate new research questions in this area, such as: what specific digital tools are most effective for different types of municipalities? What are the best practices for overcoming financial and technical barriers?

Despite various challenges, including lack of technical skills and funding, small municipalities are successfully using digital technologies to improve their visibility and communication with citizens and visitors. These technologies not only allow them to inform and engage the community more effectively, but also to attract tourists and reduce marketing costs. The results of the research can serve as inspiration for other municipalities seeking to improve their digital presence and communicate more effectively with their citizens and visitors.

6 CONCLUSION

The research was qualitative in nature and focused on understanding the unique responses of the participants, which opens us up to further research. Potential future studies could quantitatively validate these initial findings and explore their applicability to a broader population. Our findings are not universal and cannot be applied to the entire population without further investigation. The results may be influenced by the specific contexts and personal experiences of the participants, so the extent to which they can be generalised needs to be considered. Despite these limitations, we believe that the research's contribution to existing knowledge is significant and can serve as a solid foundation for future studies in this area.

The qualitative research focused on an in-depth understanding of the unique responses of participants from ten small villages in the district of Veľký Krtíš. These interviews revealed that digital tools such as social media, mobile apps, and interactive websites contribute significantly to improving municipal visibility, reducing marketing costs, and increasing community engagement. The results also highlighted several challenges in implementing digital technologies, such as high upfront costs, the need to constantly update content, and a lack of technical skills among municipal staff. These findings are not only relevant for small municipalities in Slovakia, but also have the potential to be applied to other similar contexts.

The policy implications and managerial implications of this research are considerable. On a theoretical level, this paper contributes to the literature on digital technologies and their impact on the visibility and sustainable development of small municipalities. On a practical level, it provides valuable insights for policy makers and municipal leadership who can use these findings to formulate effective strategies for implementing digital tools. Many small municipalities can gain inspiration to improve their visibility and attractiveness, making them vibrant and thriving communities. Managerial implications include the need for strategic planning, training for staff, and leveraging financial resources such as grants and partnerships with outside experts.

Research has several limitations that need to be considered. Although the qualitative approach provided a deep and nuanced understanding of participants' experiences and perspectives, the findings cannot be generalized to the entire population without further quantitative validation. Results may also be influenced by the specific contexts and personal experiences of participants, which may limit their applicability to other contexts. In addition, although the study identified several challenges in the implementation of digital tools, further research could explore specific solutions and strategies to overcome them.

Future research could quantitatively validate the initial findings of this study and explore their applicability to a broader population. Further studies could also explore specific solutions and strategies to overcome the identified challenges to implementing digital technologies in small communities. Other aspects of digitalisation in municipalities could also be explored, such as the impact on citizen participation and transparency in government. Last but not least, it would be useful to explore how small municipalities can use digital technologies to promote economic development and social cohesion within their communities.

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THE ROLE OF FOMO IN FOSTERING USER ENGAGEMENT AND PERCEIVED PRIVACY CONCERNS IN A METAVERSE ENVIRONMENT

Karla Foltisová, Radka Bauerová, Veronika Kopřivová

Abstract

Metaverse has the potential to be a transformative digital ecosystem that changes the way individuals interact, shop, and engage with new technologies. Fear of Missing Out (FOMO) has emerged as a significant psychological driver influencing consumer behaviour in digital environments. In the rapidly evolving landscape of the metaverse, understanding the psychological factors that drive user engagement is important for optimizing virtual experiences. Therefore, the paper aims to determine the impact of FOMO on the willingness to test new products, attitudes toward shopping, and perceptions of privacy concerns within the metaverse. Using a dataset of 510 respondents from an Ipsos online research panel, this study analyses how varying levels of FOMO affects user engagement in this environment. The findings show that FOMO significantly affects willingness to test new products, with men and individuals experiencing higher levels of FOMO showing a greater propensity to engage. Further analysis shows that while higher levels of FOMO are correlated with a higher willingness to engage in new product testing, they do not have a significant effect on attitudes towards metaverse shopping. However, privacy concerns are significantly higher for those with elevated FOMO, suggesting a trade-off between engagement and perceived risks. The results highlight the importance of addressing privacy concerns to promote a safer and more appealing metaverse environment, particularly for users with high levels of FOMO. These findings contribute to the growing body of knowledge on virtual consumer behaviour and offer practical implications for developers and marketers aiming to optimize user experience in the metaverse.

Keywords: attitude, consumer behaviour, FOMO, metaverse, privacy concerns

1 INTRODUCTION

Metaverse was a highly searched term at the end of 2021, when there was a boom in searches for the term (see Google Trends), fuelled by increasing interest in headsets that allow users to enter virtual reality. Metaverse, can be understood as a digital ecosystem, combining technologies such as blockchain, augmented reality (AR), virtual reality (VR), artificial intelligence (AI) and 5G, to create an immersive virtual world (Gao and Chong, 2023). Metaverse can enhance the performance of both individuals (altering how people interact, communicate and make decisions) and organizations (supply chain monitoring, automotive supply chain monitoring solutions, freight tracking tools, mitigation of cyber vulnerability, medical diagnosis, surgeries, medical therapeutics) (Hajian et al., 2024). In addition, at an individual level, through prospection, immersion in experiences in virtual environments, metaverse users can anticipate alternative futures and define ways to cope with uncertain, unexpected or risky scenarios and situations (Ritala et al., 2024). Despite the fact that interest in the concept has cooled, further hype can be expected, driven by increasing consumer interest in virtual and augmented reality, driven by new product launches in this area in recent months (Lee, 2024; Apple, 2024; Meta, 2024). In conjunction with this, the transformative potential for social interaction, commerce and entertainment can also be assumed (Huang et al., 2023; Canbay, 2022). As the metaverse grows, it promises new opportunities for virtual engagement

but also raises significant privacy concerns. Metaverse service providers collect vast amounts of personal data, heightening the risk of unauthorized access and data leakage (Albayatia, 2023). Understanding these dynamics is crucial for optimizing virtual experiences and ensuring user privacy (Ghirmai et al., 2023). Given that a key psychological factor in the digital environment is fear of missing out (FOMO), which significantly influences consumer behaviour by inducing anxiety and a constant urge to stay connected (Gokul, 2023; Syukur, 2023), it is appropriate to explore the impact of this phenomenon in the metaverse as well. Indeed, the impact of FOMO on cognitive processes and decision making is profound (Kusuma et al., 2023). Despite the growing body of research on FOMO and privacy in the digital context, there is still a lack of comprehensive studies examining their interplay within the metaverse. The current literature focuses primarily on social media and traditional online environments (Westin, 2020; Chiasson and Westin, 2021), so there remains a gap in understanding how FOMO may influence user engagement and perceptions of privacy in this specific environment.

Given the rapid integration of FOMO within the digital behaviours of individuals, this study seeks to explore several key areas of interest within the context of the metaverse. Firstly, it examines how the level of FOMO influences individuals' willingness to test new products in the metaverse, probing into whether the anxiety of missing out drives users to engage with novel virtual offerings. Additionally, the study investigates the relationship between FOMO and privacy concerns, aiming to understand if heightened FOMO correlates with increased apprehensions about personal data security in these immersive environments. Furthermore, it explores the relationship between FOMO and attitudes towards the metaverse, determining whether the fear of missing out shapes overall perceptions and acceptance of this emerging digital landscape. The research also delves into users' attitudes towards purchasing new products in the metaverse, assessing how FOMO impacts consumer buying behaviour within virtual spaces. Lastly, the study seeks to identify what specific fears consumers have when entering the metaverse, providing insights into the underlying concerns that may hinder full user adoption. The research question is therefore as follows: *How does FOMO influence the willingness to test new products, attitudes toward shopping, and perceptions of privacy concerns within the metaverse?*

This paper aims to determine the impact of FOMO on the willingness to test new products, attitudes toward shopping, and perceptions of privacy concerns within the metaverse. The second part of this paper is devoted to a literature search that focuses on current areas of interest in the metaverse, primarily in terms of user engagement, privacy issues and social behaviour. Furthermore, the search is directed towards the area of FOMO due to the focus of the paper. This is followed by a section outlining the methodology used in this study. The fourth section presents the research findings, detailing the specific outcomes derived from the questionnaire survey. This section includes comprehensive tables and graphics based on the primary data analysis. Thereafter, the discussion section evaluates the results, addressing study limitations. The paper concludes with a summary of the principal findings from the conducted research.

2 LITERATURE REVIEW

Important areas of recent attention include user engagement, privacy issues (Hwang, 2023a), and social behaviour in the metaverse (Huang et al., 2023; Canbay, 2022). Defined by social utility, immersive engagement, virtual world creation, and extensibility, the metaverse offers a new digital environment that is vulnerable to security and privacy issues such as illegal access and data leakage (Albayatia, 2023). Metaverse is a concept that combines VR, AR, blockchain, AI and 5G technology to create a self-sufficient system with virtual object trading and economic

structures. However, it faces challenges with decentralized platforms and layers of interaction (Sarkar, 2022; Gupta, 2023; Throness, 2022).

As it develops, Metaverse is expected to change the way people interact with technology and with each other. It will provide new opportunities for immersion and interaction in the virtual world. However, the provision of personal data to Metaverse service providers for the creation and management of this virtual world raises privacy concerns that require appropriate countermeasures. (Thomanson and Ivwurie, 2023; Selvarani et al., 2023).

In the context of metaverse there are serious privacy concerns such as data intrusion, unauthorized access, and leakage of personal information, are becoming increasingly prevalent (Selvarani et al., 2023; Huang, Y. et al. 2023). The transition to Web 3.0 and the Metaverse places stringent demands on privacy and secure data access, underscoring the critical need for solutions to address these issues. In order to improve security and interoperability in the Metaverse, it is proposed to integrate mobile phone identity proofing or Self-Sovereign Identity (SSI) with the blockchain. This would allow users to maintain control over their identity and data and dispel concerns about decentralization and trust in this virtual world (Ghirmai, S. et al., 2023). In summary, privacy concerns in the metaverse highlight how critical it is to implement strong security measures to protect user data and thus guarantee a reliable and compliant virtual environment.

2.1 Social interaction tendencies

The immersive and interconnected nature of virtual worlds that allow users to participate in various activities such as gaming, social gathering, and shopping shapes people's propensity to interact socially in the metaverse (Khuzwayo, 2023). Metaverses support fluid embodied user interactions by enabling real-time communication and dynamic interactions with digital artifacts (Throness, 2022). By creating virtual groups, participating in virtual events and communicating through text, voice, and video, users can expand the scope of their social interactions (Selvarani et al., 2023). Interest in the metaverse as a place for virtual experiences and social interactions has grown rapidly due to the pandemic-induced shift to Internet technologies (Hwang, 2023b). In addition, the shift away from physical art galleries and performances to virtual ones has changed the way artists and audiences engage and interact and has provided more opportunities for flexible communication (Rachmawanti, 2022). After all, a fundamental feature of the metaverse is that it redefines conventional social norms and behaviours in virtual worlds, offering a dynamic and ever-changing environment for social interaction.

Social contact tendencies encompass a wide range of activities and impacts in different individuals and settings. Studies in humans with borderline personality disorder reveal problems with social affiliation, cooperation, and hostility (Remmers, 2020), while studies in animals such as mice have shown that social recognition is essential for maintaining social hierarchy and attachment (Kaidanovich-Beilin et al., 2011). Moreover, the link between personal preferences and mechanisms in the development of social anxiety and withdrawal from the collective is highlighted by the fact that we have experienced these anxieties in early childhood and during adolescence (Lis and Bohus, 2013). Together, these findings underscore the complexity and importance of social interaction tendencies in human behaviour.

2.2 Fear of missing out in the metaverse environment

"Fear of missing out" or "the fear of missing out" (FOMO) has a profound effect on cognitive thinking and decision-making processes because it causes anxiety and a constant urge to be connected to social media to avoid feeling excluded (Gokul, 2023; Syukur, 2023). Although

FOMO is seen as a dispositional trait, it can also be examined as a behavioural state where situational cues cause short-term fluctuations in its intensity (Holte, 2023). Individuals suffering from FOMO often compare their lives to those of others on social media, which impairs their ability to concentrate, perform well academically, and causes them to prioritize social networking over academic activities (Kusuma et al., 2023). In response to this concern, people continuously seek social interactions online, participate in social media activities that are relevant to their interests, and exhibit behaviours such as using social media while watching live events, which impacts their ability to think clearly and make decisions (Younghan and Sang-jin, 2023).

FOMO exerts a substantial impact on online purchasing patterns, metaverse engagements, and consumer conduct (Christy, 2022). The phenomenon known as Fear of Missing Out (FOMO), often linked to the utilization of social media, can lead to adverse mental health and a decreased overall well-being (Jourbert, 2022). Real-time multisensory social interactions (RMSIs) are essential in the metaverse and may even benefit users more than typical 2D online interactions (Thorsten et al., 2022). The metaverse's immersive quality also changes how people consume news, turning it from a traditional format to a more interesting digital experience that affects how people interpret and apply the news (Patil, 2022; Zheng, 2022). In order to effectively manoeuvre through these digital realms, it is crucial for both organizations and individuals to properly grasp the influence of FOMO (Fear of Missing Out) on customer behaviour and social interactions within the metaverse This understanding must encompass the emotional and psychological factors that shape interactions and decision-making processes in virtual spaces.

Researchers have discovered a strong correlation between social media users' privacy concerns and their FOMO. Studies show that people who suffer from FOMO are more likely to use social media, especially those that allow for more private interactions, such as Facebook and Snapchat (Vittoria, 2018). Moreover, FOMO has been found to be a predictor of hesitant online privacy-compromising behaviours, in which users experience pressure to participate in spite of privacy concerns in order to stay up to date and engage in social interactions (Westin, 2020; Chiasson and Westin, 2021). Furthermore, increased FOMO has been associated with increased social media weariness; positive attitudes toward advertising and privacy concerns are two predictors of this fatigue (Milas and Lesinger, 2022; Bright et al., 2018). The Metaverse has grown in popularity because it allows for socializing, immersive engagement, development of real-world environments, and expandability, but it also comes with a lot of privacy and security risks, such as the possibility of unauthorized entry and the disclosure of personal information (Canbay and Utku, 2022). Because personal data is exploited to develop and maintain the virtual environment, users in the Metaverse express worries about privacy, which means that Metaverse Service Providers need to address these issues (Canbay and Utku, 2022; Hwang, 2023a). Furthermore, people use the Metaverse to improve their online social relationships and have more realistic experiences due to FOMO, particularly during pandemics when internet technologies are essential for social interactions (Huang, Y. et al. 2023). For both users and service providers, striking a balance between the attraction of immersive experiences and resolving privacy concerns is an essential issue as the Metaverse expands.

It has been shown that the idea of FOMO greatly skews decision-making in a variety of situations. Based on current research, FOMO has a significant impact on consumer behaviour, especially when it comes to experiencing purchases, as people are motivated by a fear of missing out on worthwhile events. (Solt, Rixom and Taylor, 2018) This phenomenon extends to financial markets, where young investors may make decisions influenced by their fear of missing potential gains, thereby potentially compromising their investment strategies. (Bo, 2023) Additionally, FOMO appears to motivate retail investors

to engage in Initial Coin Offerings (ICOs), often leading to an underestimation of the associated risks in their investment decisions. (Kärkkäinen, 2023)

FOMO has a wider effect on overall happiness and decision-making abilities because it is also connected to mental health problems including anxiety and depression, especially among teenagers. This anxiety-driven behaviour further manifests in compulsive online shopping, demonstrating how FOMO can lead to uncontrollable spending habits and suboptimal financial choices. (Fitrazaphyra and Hamsyah, 2020)

Recognizing the widespread impact of FOMO on decision-making is important, as it emphasizes the necessity of measures targeted at reducing its negative consequences, especially in the domains of investments and consumers. (Handayani and Haryadi, 2022)

3   METHODOLOGY

This paper aims to determine the impact of FOMO on the willingness to test new products, attitudes toward shopping, and perceptions of privacy concerns within the metaverse. A quantitative research approach was used to explore participants' attitudes, perceptions and behaviours in the metaverse. The primary data collection instrument was a structured survey questionnaire. The research, conducted in January 2022 by the reputable research agency Ipsos, plays a pivotal role in this scientific investigation. Ipsos, renowned for harnessing the latest advancements in science and technology, ensures the highest quality throughout the research process. In pursuing our research objectives, we used a primary data collection technique with an appropriately designed questionnaire.

Given the nascent nature of the metaverse concept, a brief yet informative explanation was provided within the questionnaire to ensure clarity for respondents less familiar with the term. The questionnaire explained the metaverse as follows: "The metaverse can be imagined as a virtual environment that can be entered instead of just viewing a flat screen. It is a world of unlimited possibilities, interconnected communities, of places for virtual meetings, work, and play. Special virtual and augmented reality headsets such as glasses, smartphones, and other devices that work with these technologies play a major role in the metaverse."

The questionnaire included various dimensions related to engagement with the metaverse, including willingness to test new products, attitudes towards purchasing products, privacy concerns, and the concept of FOMO in relation to the possibility of influencing attitudes towards purchasing products in the metaverse. A 7-point Likert scale was employed to gauge participants' responses to various survey items. The Likert scale ranged from 1 (Strongly Disagree) to 7 (Strongly Agree), allowing participants to express their level of agreement or disagreement with the statements presented. This scale offered a quantifiable framework for capturing the nuances of participant sentiments and perceptions regarding metaverse-related phenomena.

3.1 Sample characteristics

The dataset consists of responses from 525 individuals, with various categorical and continuous variables. During the data cleaning process, 510 respondent answers were retained, as 15 respondents indicated that they do not use the internet, which is a fundamental prerequisite for utilizing the metaverse. Consequently, for the purposes of this study, 510 respondents were included in the subsequent analysis, and their characteristics are detailed in Table 1. The respondents' ages range from 18 to 65 years. In the dataset, respondents were assigned to four generations based on their age (Generation Z, Y, X, and Baby Boomers) according to the generational timeframes defined by Kot (2023). The respondents are from the Slovak

Republic are come from different regions and sizes of residences. Given that the metaverse represents a relatively new concept, with usage patterns that may vary significantly across different age groups, ensuring a representative sample across these generations was crucial for obtaining valid and generalizable results. The selection of respondents from various regions and sizes of residences ensures diversity within the sample and provides a suitable foundation for exploring the chosen topic within the selected population as a whole.

Tab. 1 – Characteristics of the respondent sample. Source: own research

Segmentation variable	Segments	Sample (N=510)	Sample %
Gender	Male	304	59.6
	Female	206	40.4
Generation*	Generation Z (born after 1995)	93	17.7
	Generation Y (born 1980-1995)	164	31.2
	Generation X (born 1964-1979)	191	36.4
	Baby Boomers (born 1946-1963)	77	14.7
Education	Primary school	50	9.8
	Secondary school with apprenticeship	146	28.6
	Secondary school	214	42.0
	College	100	19.6
Internet usage	More than 6 hours a day	190	36.2
	3 to 6 hours per day	121	23.0
	Daily, but less than 3 hours	186	35.4
	4-6 times a week	8	1.5
	Less often	5	1.0

* distribution of years within each generation by Kot (2023).

The sample consists of a majority of male respondents (59.6%) and is predominantly composed of Generation X and Generation Y individuals (36.4% and 31.2%, respectively). In terms of education, most respondents have completed secondary school (42.0%), followed by those with secondary school with apprenticeship (28.6%). Regarding internet usage, a significant portion of respondents use the internet for more than 6 hours a day (36.2%) or daily but for less than 3 hours (35.4%).

3.2 Measures

The survey methodology, which utilized a 7-point Likert scale, allowed for an in-depth examination of participant attitudes and behaviours within the metaverse. This approach provided valuable insights into the changing landscape of virtual engagement by enabling a nuanced understanding of participant attitudes and behaviours. The 7-point Likert scale allowed for precise measurement of varying degrees of agreement or disagreement, capturing subtle differences in responses. This granularity helped identify patterns and trends in how participants perceive the metaverse.

In this study, the FOMO was assessed using the 10-item FOMO scale developed by Przybylski et al. (2013). The scale exhibited excellent internal consistency, with a Cronbach's alpha of .856. Individual participant scores were determined by sum the responses across all ten items, resulting in a mean score of 26.877 (SD = 10.475). A FOMO scale index was then created to summarize the results for the FOMO scale. The index took the form of 0-60 scores. And analogously, according to Jupowicz-Ginalska et al. (2020), it was divided into three levels of FOMO. A high FOMO in range 35.5-60 on index score, an average or mid

FOMO level was based on the range of values 13-35.4, and a low FOMO level was based on values 0-12 range score. The following table shows the distribution of respondents by FOMO score.

Tab. 2 – FOMO level scale distribution Source: own research

FOMO LEVEL	Sample (N=510)	Sample %
Low FOMO	42	8.2
Mid FOMO	375	73.5
High FOMO	93	18.2

Attitude toward purchasing products in the metaverse were measured using a 4-item scale. Participants were asked to evaluate this attitude from four perspectives: inconvenient/disadvantage, negative/positive perception, feasibility (good/bad idea), and logical coherence (doesn´t make sense/make sense). These four items were summed to create one attitude score for each participant (α = .697, M= 13.347, SD = 4.463).

Willingness to test products in the metaverse was assessed using a single-item question that asked participant to rate how much they agreed with the statement that they would be willing to test new products for money in the metaverse (M = 3.80, SD = 1.713).

Privacy and security concerns were assessed using a seven-point scale on which respondents commented on the extent to which they agreed with the statement that they were concerned about their privacy and security being breached if behavioural data were collected about them in the metaverse, i.e. information about their habits, activities, and decisions; personal information (age, gender, health information, occupation, religion, education, financial status); data about their behaviour in the metaverse based on my consent; data from personal communications; if they encounter avatars posing as other people; exposure to bullying (α = 0.734, M = 3.669, SD = 1.102).

4 RESULTS

The first part of the analysis focused on whether the level of FOMO achieved and selected demographic factors such as generation, gender and education level influence individuals' willingness to test new products in the metaverse. We analysed the data to identify patterns and trends in the behaviour of different demographic groups and FOMO level and determined which of these factors have a statistically significant impact on the willingness to engage in testing new products in this virtual environment (see Table 3).

Tab. 3 – Influence of FOMO level and demographic factors on willingness to test new products in the metaverse

Source: own research

Dependent variable	Willingness to test new products in the metaverse for money.		
Independent variables	Type of test	Results of the test	
Gender	Mann-Whitney U	Sig.	**0.012**
Generation	Kruskal-Wallis H Test	Chi-Square	4.980
		Df	3
		Sig.	0.173
Education	Kruskal-Wallis H Test	Chi-Square	1.322
		Df	2
		Sig.	0.516
FOMO level	Kruskal-Wallis H Test	Chi-Square	21.088
		Df	2

		Sig.	0.000

Gender and **FOMO level** are significant factors influencing individuals' willingness to test new products in the metaverse. **Generation** and **Education** do not show a statistically significant impact on the willingness to test new products in the metaverse in this study.

Subsequent analysis showed that males show higher levels of strong agreement (Agree: 22.70%, Completely Agree: 20.72%) compared to females (Agree: 16.99%, Completely Agree: 14.08%). This indicates that males are generally more willing to test new products in the metaverse for money than females. A higher percentage of females (28.16%) rather agree compared to males (23.68%). This suggests that females show more moderate willingness than males. In neutral stance the percentages for males (12.50%) and females (13.11%) are quite similar, indicating a comparable level of neutrality between genders. A larger percentage of females (27.66% when combined) disagree to some extent compared to males (20.39%). Specifically, the "Rather Disagree" category shows a notable difference, with females at 15.53% and males at 8.55%.

The detailed results showing the differences between the level of FOMO and willingness to test new products in the metaverse have been compiled into the following graph in the following figure for clarity.
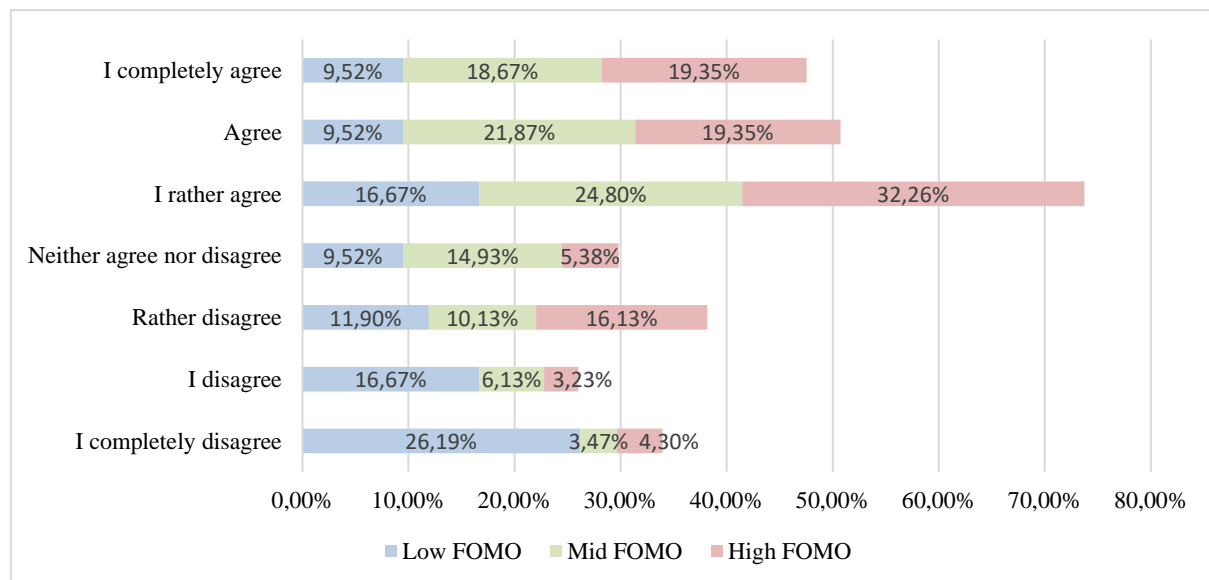
Fig. 1 – The differences between the level of FOMO and willingness to test new products in the metaverse.

Source: own research

Individuals with moderate levels of FOMO and individuals with high levels of FOMO show the greatest willingness to test new products in the metaverse and show higher levels of agreement. Low FOMO individuals are the least willing to test new products in the metaverse, showing higher levels of disagreement and lower levels of agreement. This results demonstrates a clear trend that individuals with higher levels of FOMO are generally more willing to engage in testing new products in the metaverse compared to those with lower levels of FOMO.

In the following investigation, the focus was on how FOMO is related to attitude toward purchasing new products in the metaverse. The assumption is that FOMO has a positive influence attitude towards shopping. The results of the regression analysis are shown in the following table.

Tab. 4 – The results of the effect of FOMO on attitude toward purchasing new products in the metaverse Source: own research

Dependent variable		β	SE β	Sig	R2 change
Attitude	Regression model results			0.000	0.000
	FOMO	0.018	0.019	0.338	

The results show that the overall regression model is not significant. The coefficients table confirms that FOMO is not a significant predictor of Attitude, as indicated by its p-value of 0.338. In conclusion, FOMO does not significantly influence attitude toward purchasing new products in the metaverse based on this regression analysis.

The following table presented shows the results of a statistical test examining the effect of FOMO on privacy concerns about the metaverse.

Tab. 5 – The results of the effect of FOMO on privacy concerns about the metaverse Source: own research

Dependent variable		β	SE β	Sig	R2 change
Privacy concerns	Regression model results			**0.000**	0.024
	FOMO	**0.102**	0.161	**0.000**	

The beta coefficient for FOMO is 0.102. This indicates that for every one-unit increase in FOMO, there is an expected increase of 0.102 units in the perceived privacy concerns. This positive value suggests that higher FOMO is associated with increased privacy concerns. The p-value for the FOMO variable is 0.000, indicating that the effect of FOMO on privacy concerns is statistically significant. The R^2 change value is 0.024. This indicates that approximately 2.4% of the variance in attitudes towards privacy concerns can be explained by FOMO. While this value is relatively small, it does suggest that FOMO has a measurable impact on privacy concerns. Higher levels of FOMO are associated with greater privacy concerns.

Subsequently, consumer attitudes towards the possibility of purchasing products in Metaverse were investigated. The following figure illustrates the results of consumer attitudes towards the possibility of purchasing products in the metaverse, with a comparison between male and female respondents. The attitudes are listed on the y-axis from left to right as negative (inconvenient, negative, bad idea, doesn't make sense) to positive (advantageous, positive, good idea, makes sense).
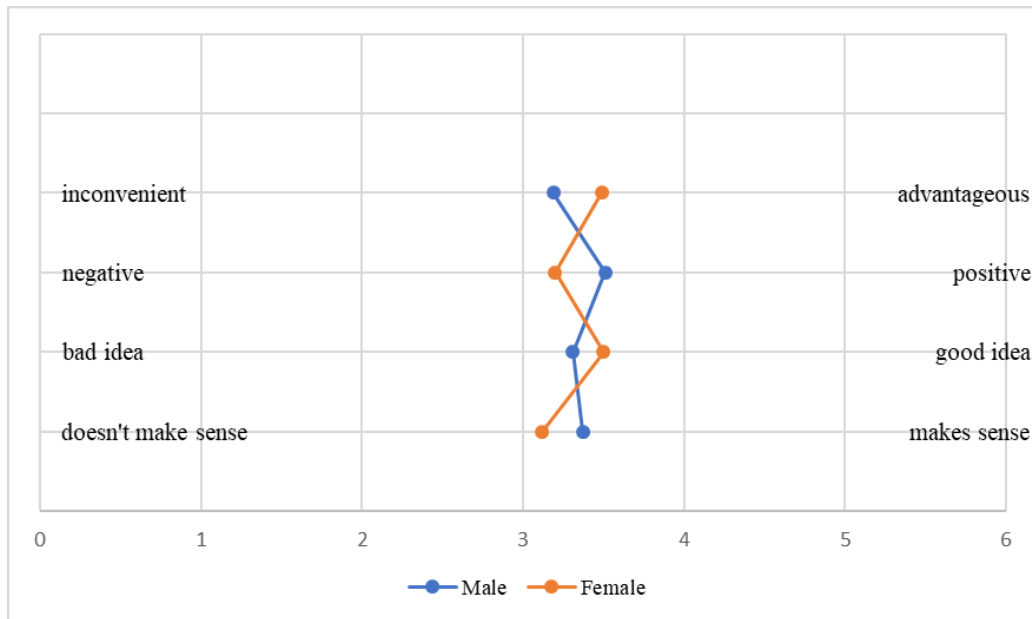
Fig. 2 – consumer attitudes towards the possibility of purchasing products in Metaverse. Source: own research

The results, suggests that consumers, regardless of gender, have a generally neutral to slightly positive attitude towards the idea of purchasing products in the metaverse. There are no strong positive or negative opinions, and the attitudes of males and females are quite similar.

The final area explored was what consumers fear when entering the metaverse. The following table shows the results of exploring within each concern when entering the metaverse from the perspective of respondents divided by the amount of FOMO they indicate.

Tab. 6 – The results of the concerns when entering the metaverse from the perspective of respondents according to their level of FOMO Source: own research

Privacy concerns statement	Code		Low FOMO	Mid FOMO	High FOMO
I am concerned about privacy risks if Metaverse will collect behavioural data about me (i.e. information about my habits, activities and decisions).	PC1	M	2,55	**3,84**	3,77
		SD	2,34	1,562	1,575
I wouldn't mind companies collecting data about my behaviour in the metaverse based on my consent.	PC2	M	**4,76**	3,67	2,58
		SD	1,303	1,739	1,604
I'm very worried about meeting avatars in the metaverse who impersonate other people.	PC3	M	2,29	3,1	**3,78**
		SD	1,798	1,613	1,366
I am concerned about the threat to my privacy if personal information will be collected about me in the metaverse (this is information that is often already collected in the real world, such as age, gender, health information, occupation, religion, educational attainment, financial status, etc.).	PC4	M	2,71	3,75	**3,96**
		SD	2,34	1,693	1,343
I believe that if a user bullies another user in the metaverse, it can have the same effect as if it were happening in the real world.	PC5	M	2,69	4,13	**4,18**
		SD	2,374	1,568	1,276
I am concerned about the threat to my privacy if personal communications data will be collected about me in the metaverse.	PC6	M	2,81	**3,96**	3,87
		SD	2,361	1,577	1,361

It is clear from the previous test conducted, as well as from this table, that users with higher FOMO rates are more concerned about privacy. The most pronounced changes in the level of concern are often observed between the low and medium FOMO groups, suggesting that

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even moderate levels of FOMO can significantly increase privacy concerns. The statements with the highest overall concerns in the High FOMO group are related to privacy of personal information (PC4) and bullying in the Metaverse (PC5), suggesting that these are key concerns for users with high levels of FOMO. Low FOMO users tend to worry less about privacy issues in the metaverse compared to their high FOMO counterparts.

5 DISCUSSION

The results of this study suggest a significant role of gender in the metaverse, with males demonstrating a higher willingness to test new products compared to females. This suggests that marketing strategies in the metaverse might need to be gender-specific to maximize engagement. Additionally, Fear of Missing Out (FOMO) is identified as a critical psychological factor influencing users' propensity to engage with new products in the metaverse. Users with elevated levels of FOMO are more inclined to try out new offerings, indicating that creating a sense of urgency or exclusivity could be effective in driving user engagement. Interestingly, while FOMO increases the willingness to test new products, it does not significantly affect attitudes toward purchasing these products in the metaverse. This suggests that while FOMO can attract users to new products, other factors may influence the decision to purchase. Furthermore, privacy concerns are notably higher among users with elevated levels of FOMO, presenting a challenge for developers and marketers in balancing engagement with privacy assurance. These findings provide useful insights for enhancing user experience in the metaverse by addressing the psychological aspects that impact user behaviour.

Our findings align with the research of Syukur (2023), which observed that FOMO has a substantial effect on cognitive processes and decision-making. This aligns with our observation that FOMO motivates consumers to interact with new items in the metaverse. This study also corroborates the insights of Holte (2023), who identified FOMO as a dispositional trait that fluctuates in intensity based on situational cues. Our research extends these findings into the metaverse context, highlighting how FOMO not only affects engagement with new products but also intersects with privacy concerns, as suggested by Hwang (2023a) and Selvarani et al. (2023).

One unexpected result from this study was the finding that FOMO does not significantly influence purchasing attitudes, despite its strong impact on the willingness to test new products. This divergence suggests that while FOMO can drive initial engagement, other factors, such as product quality, trust in the vendor, and pricing, may play more crucial roles in the actual purchase decision. This nuance adds complexity to our understanding of consumer behaviour in the metaverse and indicates that strategies focused solely on exploiting FOMO may not be sufficient to drive sales.

5.1 Limitations of the Study

Several limitations should be noted. Initially, the sample size was somewhat limited and primarily composed of individuals who were quick to embrace metaverse technologies, potentially lacking a comprehensive representation of the wider community. A limitation of the study may be the half-size sample of respondents born as Generation Z (after 1995) and Baby Boomers (1946-1963) compared to the other two generations studied, Generations X and Y. Furthermore, the study's cross-sectional design restricts the capacity to establish a causal relationship between FOMO, privacy concerns, and customer behaviour. In addition, it is important to acknowledge that self-reported data about the FOMO and worries about privacy may be influenced by social desirability bias, which might potentially impact the reliability and validity of the results.

5.2 Implications for Practice

For practitioners, the findings suggest that marketing strategies in the metaverse should consider gender differences and the psychological impact of FOMO to enhance user engagement. However, it is equally important to address privacy concerns by implementing robust data protection measures and transparently communicating them to users. By balancing engagement tactics with privacy assurances, developers and marketers can foster a more secure and appealing environment for metaverse users.

Future research should aim to explore longitudinal designs to better understand the causal relationships between FOMO, privacy concerns, and consumer behaviour. Expanding the demographic diversity of the sample could also provide more generalizable insights. Additionally, investigating the specific factors that influence purchasing decisions in the metaverse, beyond FOMO, would further enrich the literature and inform more effective marketing strategies.

6 CONCLUSION

The primary purpose of this study was to investigate the phenomenon of Fear of Missing Out (FOMO) and its impact on user engagement in the metaverse environment. Specifically, it examines how FOMO affects users' willingness to try new products, their attitudes towards shopping, and privacy concerns. The key findings highlight the substantial influence of FOMO in stimulating user participation in the metaverse. Although FOMO may heighten the inclination to engage, it has little impact on views towards purchasing in the metaverse. This implies that there are intricate decision-making processes involved beyond the initial interest. Moreover, there exists a clear and direct relationship between increased levels of FOMO and heightened concerns around privacy among users. This emphasizes the importance of striking a delicate balance between user engagement and privacy issues. Moreover, gender disparities were noted, with males exhibiting a greater inclination to engage in experimentation with novel items in comparison to females.

The findings indicate that FOMO strongly motivates user engagement in the metaverse. However, this also highlights the need for careful consideration of the privacy problems associated with it. To improve user experience and create a safe virtual environment, developers and marketers need to successfully manage these factors. In order to uphold customer confidence and engagement in the growing area of virtual technologies, it is imperative to address these concerns.

Ultimately, this study provides significant insight on the relationship between FOMO, user conduct, and privacy apprehensions in the metaverse. It is important to do additional research in the future that investigates these processes across an extended timeframe and among diverse demographic segments. This will help us gain further understanding and provide valuable insights for the development and marketing of the metaverse.

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DO EU AND NATIONAL SUPPORT OF NGOS CROWD OUT PRIVATE DONATIONS IN SLOVAKIA?

Lucia Johanesova

Abstract

Transition process of the post-Soviet economies included a change into a market economy that covers the opening of public services market to a various providers as private companies or non-governmental organizations (hereinafter 'NGOs'). Slovak Republic as a representant of transition economy country has the highest number of NGOs compared to a population size (70k NGOs and 5.5 million inhabitants) among the V4 countries, therefore relevance of private and public financial support of public services provided by NGOs is important to explore for a follow-up public policy creation. Interaction between individual donations and government subsidies has been analysed among literature by a crowd-out effect analysis. The aim of the paper is to examine a crowd-out effect of EU and government subsidies on private donations within NGOs in Slovakia during the period 2014-2022. The analysis of the crowd out effect was conducted using a fixed effect model at the NGO level, including 25,754 organizations, to evaluate EU and national government support levels' subsidies that covers all supported NGOs from these funds. The results show crowd-in effect of government funding on private donations that means people's willingness to contribute into NGO sector. Average monthly nominal income, the population of seniors, and population density are significant impact factors of an increase in private donations.

Keywords: non-governmental organizations, crowd-out effect, private donations, government support

1 INTRODUCTION

Transition process of post-Soviet countries in Europe brought a development of civil society in the various forms of organizations and associations that needed more time as social capital has usually delay after economic capital development (Skidmore, 2001). Nowadays all these economies face a journey towards knowledge economy that requires cooperation of private and public sector and civil society altogether. Civil society is the active part using social practices and innovations that support knowledge creation through new approaches towards societal challenges and required innovation practices (Domanski et al., 2020). All these countries, including the Czech Republic and Slovakia, faced challenges from transitioning to a market-driven economy, such as social exclusion and rising unemployment (Vacekova et al, 2020). Nonprofit organizations started becoming a part of the national economy, with government nonprofit organizations providing welfare state public services accompanies by nongovernmental organizations which started to complement the insufficient quantity and quality of public services. However, the relationship between NGOs and government is still evolving. Based on the analyses of Cox (2020) and Strecansky (2017), NGOs in eastern Europe, including Visegrad countries, these organizations rely on support from local government levels, as they complement a social, health or education services. They are also involved in leisure time or sport activities. Focusing only on Visegrad countries, Czech Republic has 131k NGOs; Poland 72k NGOs; Hungary 47k NGOs and Slovakia 70k NGOs (data in 2022). Compared them to bigger countries such as as Brazil with 290,00 nonprofit organizations (da Costa, 2016) or Nepal with 39,606 NGOs (Dipendra, 2018), the numbers of NGOs in V4 countries are high, mostly in the case of Slovakia which has the highest amount of NGOs per inhabitant.

Transition economies were facing also changes in public administration that required transition from centralization into decentralization to look for regional solutions of local problems. In the case of Slovakia, uncompleted decentralization of public administration still brings issues in the provision of public services (Niznansky, 2010), mainly in the less populated areas. On the other hand, based on the theories, nonprofit organizations focus on the need of inhabitants living in particular area (Anheier, 2006). Combination of unmet needs and higher number of NGOs open question related to private and government financing of public services provided by NGOs and their common interaction. High numbers of NGOs compared to small population size in Slovakia represents a suitable case of transition country and a reason to analyze funding sources of NGOs (private donations and government subsidies) that may better explain patterns related to NGOs' survival from the perspective of funding, private donations and government support and their interaction. According to Strecanský (p. 104, 2017) the relationship between government and NGOs in Slovakia is "more formal than real" as NGO sector struggles with access to government funding. Despite government support, various funding options exist for NGOs, such as fundraising from individuals and companies, or EU sources. However, EU funds involve significant bureaucracy, complicating NGOs' operation, often requiring administrative capacities and their own budget to ensure long-term sustainability of EU-funded projects (Strecansky, 2017). EU funds support and government support provide funding options for NGOs. Additionally, private donations contribute to the NGO sector.

These interactions can be analysed through the crowd-out effect which describes a situation when government subsidies reduce private donations to NGOs (Andreoni and Payne, 2010). This means NGOs are subsidized to a level where individuals are less willing to contribute. Conversely, the analysis may also reveal a crowd-in effect, where government subsidies motivate individuals contribute even more to NGO sector.

This research is conducted based on the lack of crowd-out effect analysis at the microlevel among European countries, moreover, transition economies which could better explain the status of civil society and understanding of their civil society development. Among literature, analysis including international and local sources is missing. In the case of EU, opportunity to analyse EU structural funds and Erasmus+ funding may show the relationship of these financial sources to private donations. Third research gap relates to the missing NGO sector overview as a whole, as many analyses are focused on specified subsectors only or data were extracted from questionnaire interviews. Therefore, analysis of whole NGO sector in Slovakia may bring better overview of a whole country status, as this analysis includes all subsidized NGOs.

The aim of the paper is to examine the crowd-out effect of EU and government subsidies on the private donations within NGOs in Slovakia during the period 2014-2022. The crowd-out effect analysis is conducted at the NGO level, including 25,754 organizations, assessed using fixed effect model to evaluate EU and national government support levels' subsidies.

This research paper is divided into following sections – the current state of the art regarding the crowd-out effect studies and explanation of support forms given to NGOs, methodology, describing data collection, cleaning and econometric model used in the analysis of paper, results providing the descriptive statistics of EU and government support and private contributions to NGOs in the form of tax assignation and results of the econometric analysis using fixed effects model. The last sections contain discussion with comparison of the paper results with previous studies and conclusion.

2 CROWD-OUT AND CROWD-IN EFFECT IN NONPROFIT

The examination of government subsidies in the crowd-out effect analysis primarily focuses on private donations and includes analysis of upper-state level support towards lower government-

level subsidies. While the crowd-out effect of government subsidies can be described, it is essential to mention impact of the political orientation of the state, which influences government subsidies into nonprofits. Sokolowski (2012) characterizes the USA and English-speaking countries as those with an indirect relationship between government subsidies for some public goods, highlighting the importance of private charity in contrast with 'consensus democracies', described by Lijphart (1999). In these democracies, governments formed by a variety of political parties need to protect diverse interests, resulting in great pressure to reach compromises and collaborate among different groups. This approach to interest groups is common in countries such as Denmark, Sweden, Norway, Germany, Austria, or Belgium. Conversely, Eastern European countries such as the Czech Republic, Slovakia, Poland, or Hungary adopt a more restrictive approach towards nonprofit funding and development. However, the approach to government funding is contingent on whether the nonprofit's goals align with government strategy. Furthermore, for government support to be properly allocated, nonprofits must comply with legislative requirements and other regulations stipulated in strategic documents (Jegers, 2023).

Different forms of government support mechanisms, in combination with a wide range of private donation forms, interact within every nonprofit or NGO. This interaction is known as 'crowd out' or 'crowd in' effect, which defines the relationship between government support and private donations into third sector. Based on Andreoni (1990), individuals have disposable income which they used to decide whether to pay for a private good or to donate to a public good. By aggregating all individuals' preferences, the demand for a public good can be calculated. Everyone's preference can be mathematically described as a utility function balancing private good payment and public good donations (Andreoni, 1990). While individual donors aim to contribute to a public good, they must maximize their utility function. The optimum donation amount will depend on their wage which limits their budget and reflects government decisions.

The extent of crowd-out, or crowd-in, effect differs across the studies. A wide range of methods has been used to examine crowd-out effects in nonprofit organizations. However, this literature review summarizes only selected studies to provide an overview of the results, methodologies, and differences in outcomes. Most studies analysing crowd-out in nonprofits use quantitative data derived from tax return documents of nonprofits (Payne, 1998; Andreoni and Payne, 2010; Grasse et al.2022), individuals' tax documents (Bönke et al., 2013), and their own survey (Hladká et al. (2017). There are also differences among countries, with most of the studies originating from the USA (Brooks, 2003; Andreoni and Payne, 2010; B. Ferreira Neto, 2018; Werfel, 2018); Grasse et al., 2022).

The first approach to measuring the crowd-out effect is at the individual donor level. Behavioural experiments or individuals' taxpayers' reports were used in the literature. Sutter and Weck-Hannemann (2004) summary of the studies on charitable giving considers crowd-out to be small, ranging from 5% up to 28%. One of the important studies on the crowd-out effect was conducted by Andreoni (1990, 1993) who examined the crowd-out effect based on behavioural experiments, followed by further studies Chang et al. (2002), Tyran and Feld (2002), or Sutter and Weck-Hannemann (2003) (Sutter and Weck-Hannemann, 2004). Andreoni's results of experiments show an incomplete crowd-out at level of 71%, influenced by involuntary lump-sum tax that individuals have to pay. Consequently, Sutter and Weck-Hannemann (2004) replicated Andreoni's experiment and found an almost complete crowd-out at the level of 97.5% when taxation is exogenous. Bönke et al. (2013) analysed the crowd-out effect at the individuals' level covering Germany. He found crowd-out effect of government spending to individual giving at the scale -1.359 up to −1.151, while Sutter and Weck-Hannemann (2004) confirmed a near-complete crowd-out of 97.5% at the aggregate level.

Sokolowski (2012) provided a comprehensive overview of European countries and the crowd-out effect at the macroeconomic level, including impact factors of private donations in his analysis. Most crowd-out effect analyses have focused on individual countries; however, Sokolowski's (2012) research paper includes data from 43 countries, examining nonprofit private donations and government subsidies using OLS regression. Sokolowski (2012) analysed private donations as a percentage of each country's GDP, comparing them to government subsidies and all earned incomes, both expressed as a share of GDP. Additionally, study includes proxies for national wealth (per capita GDP), altruistic social values (aggregate volunteering time converted to full-time jobs), income inequality (Gini index), and governmental social welfare spending as a percentage of GDP. These proxies were chosen based on the assumption that higher inequality in countries correlates with higher need for nonprofit services. Sokolowski (2012) confirms that higher national wealth, in the form of GDP, correlates with an increased number of financial sources available for nonprofit organizations. However, this analysis only tests relationships, not the effect. The result indicates a noticeable crowd-in effect across all nonprofit organizations (0.52%). When analysed separately, services such as education, health, and social assistance exhibit a higher crowd-in effect (0.65%) compared to excessive activities such as arts and recreation, environment, housing and community, civic activities, religion, labour unions and professional associations (0.14%) (Sokolowski, 2012). Based on the analysis, the 'philanthropic flight' effect is explained as a situation where individual donors shift their preferences to the nonprofit organizations that are not government-supported, as they perceive a higher 'marginal utility' compared to subsidised ones (Sokolowski, 2012).

Numerous American studies have investigated the crowd-out effect on public goods, which can also be supported by private donations. Consequently, many of these studies compare state-owned nonprofit organizations and private nonprofits. One such study by Brooks (2000) examined the non-linear crowd-out effect of varying levels of government subsidies on nonprofits. The hypothesis behind this study is that organizations focused on similar topics typically receive comparable amounts of government support. However, within nonprofit subsectors, specific organizations may receive either higher or lower amount of government subsidies compared to other nonprofits in the same subsector (Brooks, 2000). He examined panel data from American orchestra nonprofits', grouping them according to the number of budgets, and analysed the data using OLS and GLS regression. The paper explored the relationship between private donations and government subsidies, controlling for development expenditures and earned revenues. Data used for analysis showed significant results for the effect of government subsidies at the squared level, confirming the hypothesis of nonlinearity between government subsidies and private donations (Brooks, 2000). There was a significant positive effect of development expenditures on private donations and an increasing trend in private donations over time.

In a further paper, Brooks (2003) analysed whether government donations crowd out private donations or donors. He examined total donation to nonprofit subsector (1st analysis), average donation revenue to nonprofit subsector and the number of donors (2nd analysis) in relation to government subsidies to the subsector, controlling for GDP, the percentage of population over 45 (who are more likely to donate) and dummy variables addressing the subsector covered by NGOs and federal tax. The analysis used lagged values of panel data in OLS, and in the next step, a tw-stage GLS estimator. Brooks' (2003) results confirm that subsectors such as arts and health are more dependent on private donations compared to subsectors as education and environment, which are primarily supported by the government. On the other hand, analysis of donation portions found that nonprofits in the arts and education are dependent on larger donations, whereas those in the environmental or health receive more small donations (Brooks,

2003). The results of crowd-out analysis are consistent with other studies; however, there are significant findings regarding GDP, which increases donations, subsectoral dummies are positively associated with donations, and federal tax levels are negatively associated with giving. From second analysis, Brooks' (2003) results on the crowd-out made significant contributions to the literature. He found that 1 billion USD in government subsidies decreases the average private donation by 0.75 USD but, on the other hand, increases the number of donors by 30,000.

Another study of Andreoni and Payne (2010) analysed nonprofit-level data in the USA, yielding different results depending on the econometrics model used. The crowd-out effect of government support on private donations was found to be -0.757 using the maximum likelihood method, -0.756 using two-stage least squares estimation, and -0.758 using the GMM model. Few studies have analysed European countries. One of them analysed the crowd-out effect in Czech Republic. Hladká et al. (2017) found that public funding had an almost negligible effect on private donations, with crowd-out level of -0.001. An important extension of crowd-out research was brough about by examining multiple levels of government support, investigated by B. Ferreira Neto (2018) and Grasse et al. (2022), both in the USA. B. Ferreira Neto (2018) confirmed a crowd-in effect of local (1.1 USD), state (0.18 USD) and federal (1.06 USD) governments support on donations using the Tobit model. Grasse et al. (2022) confirmed a crowd-in of total government support on private donations (0.039-0.538), a crowd-in of municipal support (0.005), but no significant results at other levels of government support. Moreover, Grasse et al. (2022) provided a complex analysis, also considering subsector differences (nonprofit mission).

B. Ferreira Neto (2018) contributed to the literature by analysing whether public subsidies crowd out donations to libraries. Even though libraries are public, they depend on taxpayers. He used new approaches to examine three levels of public support: local, state, and federal. The analysis used controls for library characteristics and state demographic characteristics, such as average, percentages of women, white and black people, married couples, immigrants, people with high school degrees and bachelor's degrees, unemployed people, and the location of the region of operation (B. Ferreira Neto, 2018). The sample data were aggregated to state-level averages using weights, with panel data for the period 2000-2013 analysed by fixed effects model (B. Ferreira Neto, 2018). B. Ferreira Neto's (2018) results indicate different scales of crowd-in effect of public subsidies on private donations, which vary among government levels: local (0.04-0.06 USD), state (0.20-0.23 USD) and federal (0.73-1.33 USD). He also claimed that there is a non-linear relationship between private donations and government subsidies (B. Ferreira Neto, 2018).

Grasse et al. (2022) set up crowd-out analysis based on the hypothesis that donations vary with the level of government subsidies. This hypothesis builds on studies that explain individuals' trust in different levels of governments, where trust tends to be higher at the local government level due to community interaction; consequently, individuals are more likely to donate more into organizations support by local government in comparison with federals (Grasse et al., 2022). The analysis also considered a type of nonprofit mission (or subsector) to determine if the amount of government subsidies varies across nonprofit subsector (Grasse et al., 2022). Donors' decision depends on various endogenous or exogenous factors. Personal donor needs increase the likelihood of donating to nonprofits if the government signals the quality of nonprofit through subsidisation; conversely, unwillingness to donate may arise from declining government subsidies to nonprofit, prompting individuals redirect their donation to nonprofits with lower subsidies (Grasse et al., 2022). This GMM analysis helps to mitigate issues such as missing data and omitted variables, using panel data at the organization level in Canada. While comparing subsectors, variations were observed based on the type: hospital experienced crowd-

out effect in federal (-0.41%) and municipal funding (-0.46%); education showed crowd-in effect with provincial funding (0.14%), but crowd-out effect with federal funding (-0.12% in period t − 2); libraries, museums and other repositories did not exhibit significant effect from funding levels, with a slightly crowd-in effect (0.10 in period t − 2) (Grasse et al., 2022). These differences in crowd-in and crowd-out effects are associated with the specific services provided by subsector.

Previous literature brings overview of mainly crowd-out effect analyses from developed countries such as Canada, USA, or Germany that resulted in crowd-out effect. All these countries have more developed status of civil society and public administration which uses contracting as a form of funding to NGOs provided public services. Therefore, tendency to crowd-out private donation may occur in these countries. Moreover, specific nonprofit organizations or subsectors were analysed that did not bring proper overview of whole NGO/NPO sector status across more countries.

2.1 NGOs' funding opportunities within the Slovak Republic

Funding of NGOs can be divided into three level – international, national, and local. International government level of NGOs support is provided based on the membership agreements with EU. The inclusion of NGOs is mentioned in strategic documents as Regulation No 1303/2013 (for the programming period 2014-2020) or the Partnership agreement of the Slovak Republic, through which Slovak NGOs have access to funding opportunities from the Cohesion fund, Structural funds and the Erasmus+ Programme. This level of support is provided through grants that requires direct calls and competition among project proposals from different types of legal entities.

The national level of support for NGOs represents direct methods involving the Government, Ministries or associated institutions that provide funding directly from national, regional, or municipal budgets. In the context of Slovakia, applicable support mechanisms are based on Law nm. 503/2004 on budget rules which permits grants and subsidies. These are approved before the year they are used and must be stated in the institutions' budget. Other acceptable types of support include normative limits funding or contracting.

Normative support for NGOs, spread across sectors such as education, health, and social care, is established by the government for a whole nonprofit, not only NGOs. However, there are various disadvantages associated with normative support. Normative funding set up by the government often does not meet the needs of nonprofits as it may not cover all expenditures related to service provision, and it does not count with overhead costs and aimed at fiscal leanness (Mitchell, 2015). Consequently, only cost per client is covered, while the overall service and some development costs are not covered.

Contracting is the best prevention against the asymmetry of information between the government and nonprofits, and it anchors stakeholders' expectations and conditions in delivered results, protecting both sides (Anheier, 2006). Cooperation with the government in the form of contracting may cause issues for nonprofits such as bureaucracy in administrative, financial uncertainty, and inequality in the roles of government and nonprofit role within the contract (Carman, 2011). On the other hand, contracting with nonprofit organizations creates issues for the government and other donors in terms of control, monitoring and trustworthiness (Carman, 2011).

Svidronova and Vacekova (2012) claims that the most common sources of financing for nonprofit organizations include the 2% income tax assignation, membership fees, and donations. These are regarded as forms of private funding sources within nonprofits, and NGOs alike. Income tax assignation is a state policy mechanism that allows individuals and companies

to allocate 2% or 3% of their income tax to a chosen NGO. The choice is left to donor based on their personal preferences, as discussed in the previous studies of Andreoni (1993, 2000) concerning utility function analysis, 'warm-glow' effect and altruism effect. Income tax assignation represents a portion of money that the government allocates to benefit NGOs. Donations from individuals or companies can be regular (monthly or year payments to NGO), or irregular (support for particular projects or crowdfunding calls). Various types of fundraising sources can be combined among themselves.

3 METHODOLOGY

Based on Law No. 346/2018 of the Slovak Republic regarding the register of non-governmental organizations, the following types of organizations are considered as NGOs: foundations, non-profit organizations providing public services, non-investment funds, civic organizations, professionals' organizations, employers' organizations, and international organizations with local branch. According to this law, it was necessary to filter all organizations needed for the analysis of NGOs based on their legal entity type. NGOs owned by state or local governments were excluded and removed. Subsequently, only NGOs with private international, foreign, local ownership or group ownership were included. The database contains information covering the period of 2013-2023. The list of NGOs contains 71,139 active NGOs and non-active 4,178 NGOs (169 international organizations; 1,650 foundations, 727 non-investment funds; 3,611 nonprofit organizations providing public services; 1,782 nonprofit organizations and 67,378 civic organizations).

The econometric model consists of a panel data collecting various levels of government support and private donations for the period 2014-2022. Data are collected at the organisation's level, providing a microeconomic oversight of the crowd-out effect within the organisation. Based on recommendations from empirical models in the literature as Payne (1998), Andreoni and Payne (2010), B. Ferreira Neto (2018), the following model will be used:

$$\log tax\_as\ ijt = \beta 0 + \beta 1.\ \log EU\_sup\ ijt + \beta 2.\ \log Eras\_sup\ ijt + \beta 3.\ \log gov\_supijt + \gamma.\ \log Zjt + \varepsilon it \tag{1}$$

In this model, tas_as represents the private donations received through tax assignments by NGO i located in district j at time t. EU_sup denotes the real EU support from EU funds, Eras_sup indicates the Erasmus+ support received by NGO, gov_sup signifies the support received by NGO from all levels of government. Z represents the vector of socio-economic measures of the district in which the NGO is located, such as population density, average monthly nominal income, youth and senior population, and unemployed population. The coefficients β will determine the magnitude of the crowd-out effect.

Tab. 1 - Overview of the empirical model variables. Source: own proceeding

Dependent variable		
tax_as	Tax assignation	Amount in EUR
Independent variables		
eu_sup	EU support	Amount in EUR

eras_sup	Erasmus+ support	Amount in EUR	B. Ferreira Neto (2018), Grasse et al. (2022)
gov_sup	Government support	Amount in EUR	
Control variables			
income	average monthly nominal income in a district	Amount in EUR	Replacing per capita income: Payne (1998), Andreoni and Payne (2010), B. Ferreira Neto (2018)
pop_dens	population density in a district	Number of persons living in $1km^2$	Replacing population amount: Payne (1998), Andreoni and Payne (2010), B. Ferreira Neto (2018)
junior	youth population in a district	Numbers of people under 19-year	Payne (1998), Andreoni and Payne (2010), B. Ferreira Neto (2018)
senior	senior populationin a district	Numbers of people over 65-year	Payne (1998), Andreoni and Payne (2010), B. Ferreira Neto (2018)
unempl	unemployed population in a district	Numbers of unemployed people	Payne (1998), Andreoni and Payne (2010), B. Ferreira Neto (2018)

Private donations in this model are represented by income tax assignation data, which reflects the utility of individuals in a particular NGO and their public services. This model does not include fundraised contributions. On the other hand, independent variable – government level support is represented by three types of support. European support is covered by EU support (support from all Cohesion fund and Structural funds) and Erasmus+, which is a separate form of European Union support. The third form of support is government support, which contains data from all levels of government in Slovakia.

Based on examples of Payne (1998) and B. Ferreira Neto (2018), it is recommended to use the fixed effect model for this analysis. The fixed effect model benefit brings control for NGO-specifics factors that impact private donations and government support, such as NGO mission, history, or operation style (Payne, 1998). According to Payne (1998), Andreoni and Payne (2010), B. Ferreira Neto (2018), the control variables to be used include: per capita income, population size, unemployment rate, share of young population (5-17), share of population over 65. However, due to the availability of regional statistics, data such as per capita income or population amount is only available at the regional or a municipal level. Therefore, per capita income is replaced by average monthly nominal income in a district, and population size is replaced by population density in a district. The purpose of this replacement is to ensure consistency in the data level (a district) across the entire dataset. Population density serves as a proxy for providing relevant information about the population in a particular district. Average monthly nominal income reflects the net income receive in a district. This variable is more suitable because income tax assignation depends on tax income, which is calculated from gross income, represented by nominal income.

Preparation of this dataset required matching various data sources. Since the aim is to analyse all NGOs that received either private donations and/or any kind of government support, it was necessary to match data on income tax assignation, EU support, Erasmus support and government support. As a result of data matching, a dataset was created comprising 25,754 NGOs with complex information about private donations and government support for the period 2014-2022. The district level has been chosen to examine the factors influencing private donations (Payne, 1998; Andreoni and Payne, 2010; B. Ferreira Neto, 2018) because it provides better characteristics overview of the characteristics of the NGOs location. Therefore, the next step in this analysis model creation is to match NGO data with district characteristics, which represent controls variables of this model.

Prior to analysis, it is necessary to check for heteroscedasticity and the relationship between dependent variable and independent variables. Pearson's correlation matrix does not show any significant correlations within dataset. Heteroscedasticity of the dataset is tested using scatterplots, a residuals plot, which suggests that the assumption of a model linear in parameters seems to holds. Moreover, the displayed errors are not to systematically clustered. Therefore, it is necessary to use logarithmic transformations, as log distributions of variables closely resembles a normal distribution. Additionally, the mean of tax assignation systematically differs between supported and non-supported NGOs. To find the root cause, binscatters are performed. For the purpose of this analysis, NGOs have been divided into groups based on whether they received no support or any support. Binscatters show a linear relationship between income tax assignation and any government support in the case of Erasmus and EU support. In the case of government support, there is non-linear relationship between income tax assignation and government support. Therefore, it is necessary to use government support in the squared form (Wooldridge, 2012). Log – transformation of all variables requires values higher than zero. Therefore, it is necessary to make a small correction, especially for financial variables containing zero values. This concerns NGOs that either receive no support from any level of government or no private donation in the form of income tax assignation, resulting in variable value of zero. As a treatment, an adjustment of 0.01 is applied to every financial variable.

It was necessary to verify if panel data are strongly balanced, which was confirmed. It is essential to ensure the appropriateness of panel data analysis. This was accessed using the Breusch and Pagan Lagrangian multiplier test for random effects, conducted after OLS regression. The resulting of p-value is zero, indicating significance and rejecting the null hypothesis that variances across entities equals zero, thus confirming the suitability for panel analysis (Wooldridge, 2012). Despite previous studies recommending fixed effect model, the Hausman test was conducted to choose between fixed and random effects models. The Hausman test yielded a p-value of 0.0000, indicating that the fixed effect model is more appropriate (Wooldridge, 2012).

4 RESULTS

The crowd-out effect of EU and government support on private donations has been analysed using a fixed effect model. Data from 25,754 NGOs with varying levels of support have been examined.

In Model (1), the effects of Erasmus, EU, and government support on private donations in the form of tax assignation have been examined. There is no significant relationship between Erasmus support and private donation in this model. EU support has a significant positive relationship to private donations. If EU support for an NGO increase by 1%, then income tax assignation to the NGO increases by 0.0458%. Government support also has a significant

positive relationship. If government support increases by 1%, then private donations increase by 0. 0609%.

Model (2) shows difference results in comparison to Model (1). There is a significant positive relationship between Erasmus support and private donations in the form of income tax assignation. If Erasmus support increases by 1%, then private donations to NGO increases by 0.0193%. EU support has no significant relationship with private donations. In the case of government support, there is a significant relationship with private donations. If government support increases by 1%, then private donations increase by 0.0361%.

Tab. 2 - Analysis of the EU and Government Support Crowding Out Private Donations to NGOs in Slovakia during the Period 2014-2022. Source: own proceeding in Stata

VARIABLES	(1) FE	(2) FE
Erasmus support (log)	0.0185	0.0193*
	(0.0115)	(0.0113)
EU support (log)	0.0458***	0.0138
	(0.00887)	(0.00870)
Government support (log & squared)	0.0609***	0.0361***
	(0.00157)	(0.00156)
Average monthly nominal income (log)		4.314***
		(0.126)
Population of youth (log)		-0.930**
		(0.407)
Population density (log)		2.758***
		(0.603)
Population of senior (log)		0.633***
		(0.229)
Unemployed population (log)		-0.345***
		(0.0378)
Constant	2.044***	-37.75***
	(0.0671)	(1.831)
Observations	231,785	231,785
R-squared	0.007	0.048
Number of NGOs	25,754	25,754

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

While analysing impact factors of private donations in the form of income tax assignation to NGOs, there is a significant relationship with all chosen variables – average nominal monthly income, population of youth, population of seniors, population density and unemployed population. If average nominal monthly income increases by 1%, then private donations for NGO increase by 4.314%. When population of youth in a district increases by 1%, then income tax assignation to NGO decreases by 0.93%. While population density in a district increases by 1%, private donations of NGO increases by 2.758%. When population of seniors increase by 1%, then private donation in NGO increases by 0.633%. If unemployed population in a district increases by 1%, then private donations decrease by 0.345%.

5   DISCUSSION

The aim of the paper was to examine the crowd-out effect of EU and government subsidies on the private donations within NGOs in Slovakia during the period 2014-2022. The main research question of the paper was: Do the EU and government support crowd-out private donations within NGOs? The supporting research question was: Which factors impact the private donations?

The analysis of the crowd-out effect was conducted using a fixed effect model at the NGO level, examining data for the period 2014-2022. Multi-level government subsidies from the EU (represented by EU funds and the Erasmus+ programme) and the Slovak (national and local) government were used. Information about income tax assignation to NGOs was used to present private donations. Results of the fixed effect model show that there is a significant positive relationship between the Erasmus+ program and government support on private donations. The crowd-in effect is higher for government subsidies (0.0361%) compared to Erasmus+ subsidies, confirming theory that private trust toward local government, in this case, the Slovak government, is higher than upper government levels, represented by Erasmus+ subsidies (Grasse et al., 2022). Although, B. Ferreira Neto (2018) analysed the crowd-out effect with various levels of government subsidies, his study focused only on libraries, which did not include the entire nonprofit or non-governmental sector. The crowd-in effect in the Slovak Republic, resulting from analysis of NGO-level subsidies, was previously shown also in the analysis of Canada by Grasse et al. (2022). Considering only the results of the crowd-in effect among other countries, it was confirmed also in USA (B. Ferreira Neto, 2018), or among 40 EU and non-EU countries (Sokolowski, 2012). The crowd-out effect was found in Czech Republic (Hladká et al., 2017), in Germany (Bönke et al., 2013) or other prior analyses of Canada (Payne, 1998) and USA (Brooks, 2003). Various approaches brought various results, however, the local level of subsidies causing crowd-in effect of private donations (Grasse, 2022) has been confirmed also in the case of Slovakia. Crowd-in effect of private donations also can be caused by missing public services providers which are replaced by NGOs; therefore people are willing to contribute to NGO sector more, even the government subsidies are provided.

The impact factors of private donations have been analysed based on the average monthly nominal income in a district, the population of youth in a district, the population of seniors in a district, population density in a district and the unemployed population in a district, which is operational location of the NGO. In the analysis by Payne (1998), a positive relationship was found between population of seniors and private donation. In contrast, Payne's (1998) results show a negative relationship between the population over 65 and private donations in Canada. Bönke et al. (2013) confirmed in his analysis of Germany that individuals above 45 years are more willing to donate. The positive relationship may be attributed to situations where seniors become clients of public services provided by NGOs, thus motivating them to donate more in

advance, or prompting their family members want to contribute more to this sector. The same results to those in Canada (Payne, 1998) show a negative relationship between the population of youth and private donations in the Slovak Republic. In this model, in which private donations are represented by income tax assignation, young people typically lack a regular income that would enable substantial donations. However, youths make up a significant portion of clients using public services provided by NGOs. Therefore, their parents are more likely to assign their income tax to NGOs that serve their children. Average monthly nominal income in a district shows a significant positive relationship with private donations. As this determinant replaces per capita income used in previous analyses (Payne, 1998; Andreoni and Payne, 2010), there is positive relationship between per capita income and private donations. Average monthly nominal income represents the net income available to individuals, whereas income tax assignation is derived from gross income. Individuals with higher incomes tend to make higher private donations, both in the form of income tax assignation and traditional donation. Population density in a district exhibits a positive relationship with private donations. This regional proxy has been used as a substitute for the population amount in districts where such data is not available at the district level. An increasing population density in a district can result as a growing source of private donations.

Limitations of this paper are evident across variables and methodology. In this stage of analysis, only income tax assignation data has been used as private contributions, which does not encompass the entirety of privately fundraised donations. The analysis does not include NGOs' subsectors, thus limited ability to provide a comprehensive overview of whether crowd-in effect appears across all subsectors, or if there are any sub-sectoral differences indicating a crowd-out effect. The analysis of impact factors should be expanded to include more control variables from previous studies, such as the political ideology of government (Werfel, 2018), the numbers of democrats in government (Payne, 1998; Andreoni and Payne, 2010), church membership, and marital status (Bönke et al., 2013). Regarding methodological limitations, the fixed effect model, chosen based on recommendations from the literature, should be compared by another models. The analysis encompasses all NGOs supported by EU and government funding accompanied along with private donations. Many NGOs do not receive support from all government levels, resulting in zero values for government support. A similar situation occurs with private donations. Therefore, it is recommended to use another appropriate model previously used in literature and compare results with current model results.

Future research should include (t-1) values of support from all government levels, as recommended by Grasse (2022), because private donations result from fundraising activities in previous periods and are influenced by information about government subsidies. As the government support dataset includes data on subsidies from local governments, there is a recommendation for future research to expand dataset to include government subsidies disaggregated by lower levels of government. Further extension of NGOs subsectors would offer better insight into which subsectors experience crowd-in effect or crowd-out effects.

6   CONCLUSION

The aim of the paper was to examine the crowd-out effect of EU and government subsidies on the private donations within NGOs in Slovakia during the period 2014-2022. Research questions of the paper were as follows: Do EU and government subsidies crowd out private donations in NGOs in Slovakia during this period?

The analysis of the crowd-out effect was conducted using a fixed effect model at NGO level, based on the recommendations of Payne (1998), Andreoni and Payne (2010), B. Ferreira Neto (2018), combining various levels of government support. EU support was represented by EU

funds and Erasmus+ program funding available from 2014 to 2022. National government support included all levels of government subsidies given to NGOs during this period. As private donations were measured using income assignations of NGOs provided by individuals and companies in the period 2014-2022. A total of 25,754 NGOs were analysed.

Based on the analysis results, the crowd-out effect was not confirmed at any level of EU or government support. A crowd-in effect was observed among all NGOs in the dataset at the EU level, represented by Erasmus+ support, and at national government level. If Erasmus+ support increases by 1%, then private donations to NGO increases by 0.0193%. If government support increases by 1%, then private donations increase by 0.0361%.

Contribution of this paper to the literature provides a comprehensive overview of NGO sector in Slovakia representing all subsidized NGOs at the government or EU level. Slovakia is a representant of transition economy in Europe that a high number of active NGOs (71,139) compared to 5,5 million of inhabitants and civil society development is still evolving due to public administration processes (unfinished decentralization) and religionist, cultural and ethnic changes in recent years. This result show different results compared to more detailed analysis of more developed countries such as USA or Canada with crowd-out results.

A limitation of this paper is missing analysis of NGOs' subsectors, which would provide a better understanding of whether the crowd-in effect appears across all subsectors, or if there are any sub-sectoral differences with occurrence of the crowd-out effect. Additionally, analysis of impact factors of private donations should be extended by more control variables from previous studies.

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COMPARISON OF SELECTED HOSPITALS COMMUNICATION ON SOCIAL NETWORKS FACEBOOK, INSTAGRAM AND LINKEDIN

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Abstract

In the first part of the paper the authors present the current state of the image of the Slovak health care system and the problem with public opinion about this segment and the lack of personnel in this area. They then go on to theoretically describe the importance of communication of health care institutions on social networks and branding, whether towards patients or staff. In terms of methodology, the paper focuses on the characteristics of the subjects studied and a description of the research itself. The research compares the communication of three selected healthcare facilities on social networks using different metrics. These metrics include number of followers, number of interactions, reactions, identification of the most successful posts, etc. This data was collected in order to compare and gain a basic insight into the communication of healthcare facilities on social media in order to determine the most appropriate topics to communicate. The results of the survey are presented in the final sections of the paper, where the authors analyze the connections and differences in the communication of each entity. The aim is to identify the establishment that communicates most effectively and to present the reasons why this communication has been most successful. In the discussion, the authors summarize the knowledge gained and present the most important findings of the research carried out. These findings can serve as a basis for further research on personnel marketing in Slovak health care institutions and thus contribute to solving the crisis of personnel shortage.

Keywords: *Branding. Healthcare Marketing. Slovak Healthcare. Social Media,*

1 INTRODUCTION

The topic of health care in Slovakia has long been associated with various problems and shortcomings in several areas. The problem in this segment is also confirmed by the "How to Confuse Slovakia" survey, which was carried out in order to find out the public opinion of the population in various areas. The survey was carried out on a sample of 1,000 respondents and was entitled "Concerns of Slovaks." The results show that up to 83% of Slovaks are afraid of the state of Slovak health care. In comparison, approximately 68% are afraid of the war in Ukraine (How is Slovakia?, 2022). In addition to the survey, other indicators can also assess the image of the healthcare system. In February 2023, the AKO agency conducted a survey on a sample of 1000 respondents, asking the question: "There will be early parliamentary elections in the autumn. Please list three problems of Slovakia that you consider the most important and should be discussed and addressed by politicians during the pre-election campaign." In this poll, the problem with health care dominated (SME,2022). The poor image of the healthcare sector can be partly made worse by well-defined and implemented communication with patients and the public. The internet and specifically social networks have become a very powerful tool for communication in recent years.

At the moment, we can say that the health sector suffers from several problems ranging from a large investment debt to a poor image, to long waiting times for interventions and examinations. One of the biggest problems in the health sector is the lack of staff. If we just look at the issue

of nurses, we can see that the average number of nurses per 1 000 inhabitants in EU countries is 8.1.

In Slovakia, it is currently only 6.7.1 If we wanted to reach the EU average, we would need to employ more than 15 000 nurses. One of the tools to improve the current situation seems to be the right involvement of personnel marketing. J. Koubek defines personnel marketing as efforts to attract and retain the necessary workforce for a certain organization. The acquisition and retention of nursing staff based on the above information has been a long-standing topic.

To a large extent, the outflow of recent medical graduates abroad is also a content of this topic. On the basis of the latest published research carried out by O. Dvorak on a sample of 500 outgoing doctors and medical students, several facts emerged. Young medical staff are leaving primarily because of the poor equipment of Slovak hospitals and poor working conditions, with low pay ranking as high as seventh. We think that the above-mentioned research has shown how important it is to have information about what can discourage potential employees from taking up employment in the Slovak healthcare sector.

We feel that in order to improve the situation and attract employees, it is necessary to understand their needs and expectations. B. Borsíková states that identifying the needs and expectations of job seekers in relation to what the company considers strategically important is HR marketing in practice. Finding out data about the requirements of potential employees appears to be an important part of personnel marketing, which is necessary to meet the stated goal.

However, the data collected on labour market requirements is only one of several important activities of personnel marketing. In order to attract a quality workforce, it is necessary for the institution to have a good image. In her study, M. Benovičová talks about personnel marketing as the application of marketing principles to the personnel area, which creates a positive image of the company, making it attractive to potential applicants, as well as to its own employees.

Nowadays, we can say that one of the important tools for building the image of organizations is communication on social networks. Social networks are becoming increasingly popular across all ages and economic strata of the population and have also enabled organizations to communicate their content at a lower cost than other media mediums, thus effectively helping them to their objectives. With long term well rolled out communication, organizations can carve out a strong community which is important for improving the economic drivers as well as spreading the reputation of the organization.

Healthcare entities are specific organizations and, at first glance, it may seem that social media communication is not as essential for them as it is, for example, for business entities. However, we can now see that these entities are also striving for active communication and quality content in their individual communications. Well-managed communication of healthcare institutions can be instrumental in improving their image and appears to be one of the tools that can retain or attract healthcare staff and thus alleviate the staffing crisis in healthcare entities. It is for these reasons that in our research we decided to do a basic overview of the communication of some health entities and find out how they communicate successfully. We will try to identify the main communication themes and to show the way and form of communication of the studied entities.

2　LITERATURE REVIEW

2.1　Communication of healthcare institutions on social networks

Social networks can serve as a tool for patients to connect with and form an opinion about healthcare facilities. It also promotes autonomy by, for example, publishing information and content about the facility. Patients actively visiting and interacting with a facility's social networks can be beneficial in building market positioning, stimulating conversation with patients, which is important in branding and service improvement. (Smailhodzic et. al., 2016) Similarly, A. Alsughayr (2015), who sees social media as a tool to help healthcare organizations and in various ways such as increasing patient volume, introducing new services, creating awareness, improving outcomes, and preserving the organization's reputation. He further presents social networking as a tool that can play an important role in recruitment.

As the healthcare industry requires specialized skills, more healthcare organizations have shifted from placing ads in conventional media to more targeted social media channels such as Facebook or LinkedIn. Organizations aiming to attract applicants, especially in industries where competition and demand is high such as healthcare, must make maximal efforts to promote a unique brand image and attract potential candidates.(Farsi, 2021) At the same time, social media provides the advantage of deeper screening by either the potential employee or the employer. Through social networking, the employer can find out more about the candidate than what has been written in the CV and in turn the candidate can find out more about the environment he/she is interested in joining.

In addition to the promotional and recruitment function, the social networking of health care entities can also serve an educational function by educating both patients and potential future health care workers... These can include topics such as vaccines, smoking, drugs, non-communicable diseases, eating disorders, and medical treatments (Jeyraman et. al., 2023).

All the above mentioned uses of social networking are primarily directed towards building the reputation of the health care institution which is relevant to the interest of the facility whether from the patients or the employees. Therefore, active communication on social networks and its success in a competitive market is important.

2.2　Brand building

A brand can be defined as a customer experience represented by a set of images and ideas. It often refers to symbols such as a name, logo, slogan, design scheme, etc. Brand recognition and other reactions are created by the accumulation of experiences with a given product or service. This can happen either through direct use of the product or through the influence of advertising (Francesca, 2016).

The goal of branding is to prove the creation of experiences and images that you want people to have and remember when they encounter your organization. It is about developing the identity of the organization. This is where the deliberate effort to build a positive brand experience comes in and so shape thoughts and opinions about your brand But brand building is not just about one good experience but is built up over time based on thousands of small interactions (Martin, 2018).

2.3　Employer branding

The research that we mentioned in the introduction of our work shows how important it is to start building a good image in Slovakia, whether with the public or with current or potential employees. Such communication is called employer branding. B. Borsíková characterizes it as

a tool for building the identity of the company as an employer. This includes, for example, company values, systems, policies and behavior towards current and potential employees (Borsíková, 2005). H. Rosethorn characterizes employer branding as a relationship between employer and employee. The brand helps in creating the image of the organization and provides people with reasons to join and later stay in the organization. (Rosethron, 2017). Similarly, J. Bednarik also sees this issue, who compares employer branding to answering the question of why an employee should be employed in a particular organization and not in some other organization (Bednárik, 2016).

2.4 Personal marketing

Recruitment is one of the tasks of HR marketing. Another task is staff retention or reducing staff turnover. H. Urbanc defines turnover as the transition of employees between organizations and their environment. Especially it concerns talented, experienced and efficient employees of a given organization, whose departure may mean the loss of key knowledge and cause problems in the organization. 15 An important prerequisite for employee retention is properly managed internal communication. The importance of this tool is described by J. Bednárik (2016), according to whom internal communication is a form of communication that takes place inside the company and is one of the basic prerequisites for the proper functioning of the company. Poorly managed communication can be the cause of problems in human resource management and cause problems in interpersonal relations in the workplace.

3 METHODOLOGY

3.1 Selection of the research sample

For our research, we set out to investigate two state hospitals located in western Slovakia that serve as regional hospitals for a catchment area of at least 500 thousand. population. The University Hospital in Trenčín, the Trnava University Hospital and the University Hospital in Nitra meet these requirements. Based on our initial research, we found that the hospitals in Trenčín do not have a LinkedIn account. Of the two hospitals, the hospital in Trencin was able to provide more information for our research based on Instagram, as the hospital in Nitra had an Instagram account in the early stages of ingestion and presentation. Therefore, we chose the University Hospital in Trencin and Trnava from among the state hospitals for the research. In the research, we wanted to compare the difference between private and state hospital, so we chose the largest private hospital Bory for the research. This one was only opened in March 2023 but their communication on our selected social networks started long before that and therefore we think it is suitable for the research.

The social networks we chose for our research were Facebook, Instagram and LinkedIn. We chose Facebook because it is the social network that has the most users and all of our research subjects have been using it for a long time. The social network Instagram is considered by many to be the successor to Facebook and is more popular with the younger age group. We want to use research to see how hospitals can reach younger audiences. LikedIn is a social network that focuses on the professional side and finding employees. Therefore, with the problems we mentioned in the introduction of our paper, we think it is appropriate to investigate how hospitals communicate towards their potential employees.

3.2 Characteristics of the objects of study

Bory Hospital

Bory Hospital is considered the newest and largest private hospital in Slovakia. It is located in Bratislava, in the locality of Bory. It was put into operation on 30.3.2023, when it started to provide outpatient care at selected workplaces. Currently, the hospital is already in full operation and provides patients with a wide range of medical care, which includes, for example, 14 operating theatres, 400 beds, emergency reception, delivery rooms, a modern robotic drug preparation room, etc.. (nemocnica-bory.sk, b.d)

The private company Penta Hospitals, which in the past also operated under the names ProCare and Svet zdravia, is behind the hospital construction project. According to the available information, the investment in the construction of the hospital was to exceed EUR 240 million. This is the largest private sector investment in the healthcare sector in the history of the Slovak Republic. The hospital employs about 400 people in various positions, but there are still more than 70 vacancies. (pentahospitals.sk, b.d)

We chose this entity for our research primarily because we wanted to include a private hospital in the analysis so that we could compare the private and public sectors.

University hospital in Trnava

The history of the University Hospital as a healing facility dates back to the 15th century. However, its modern history can be dated back to 1998, when it acquired the status of a University Hospital. Currently, it provides planned outpatient and acute medical care in 641 beds. It examines approximately 20 000 patients annually. (fntt.sk, b.d)

It is a public hospital whose founder is the Ministry of Health. According to sources from the statistical office, the hospital employed more than 1,000 employees in various positions in 2022. (finstat.sk, b.d.) On its website, the hospital offers more than 40 job positions. (fntt.sk, b.d)

In our brief research, we found this entity to be very attractive in terms of communication on social networks, and therefore decided to include it in our next research.

University hospital in Trenčín

The first references to the University Hospital in Trenčín date back to the 19th century. It was officially established in the form we know it today by the Ministry of Health of the Slovak Republic in 1991. At present, it provides planned outpatient and acute health care in the scope of 17 inpatient wards, 21 departments of joint investigation and treatment components, 17 admission outpatient clinics, 45 separate specialised outpatient clinics and other specialised outpatient clinics which are part of the departments. (fntn.sk, b.d)

It is very similar in size and number of employees as well as the founder to the Trnava University Hospital.

3.3 Aim of the research

The main objective of the investigation is to compare the success of selected healthcare entities in communicating on social networks based on a social network survey and to determine the primary topics communicated by individual facilities.

3.4 Research questions

1. Which of the hospitals studied has the highest number of interactions in the reserach time?

2. Which hospital has made the most progress in outreach during the period under study?

3. What is the most popular format of posts among the studied subjects?

4 RESULTS

4.1 Facebook a Instagram

In our analysis, we focus on three selected healthcare entities to examine across all metrics offered by the Benchmarking tool in Zoomsphere. For our research, we have chosen the social networks Facebook and Instagram. The analysis is conducted in the time range of January 1, 2023, to December 31, 2023.

We present the basic parameters of each entity on the social networks such as subscribers, total number of reactions and formats used in turn.

Name	Follower´s	Followers´s change	Interactions	
Hospital Bory - Facebook	20 575	7477 (36,34%)	likes : 56 793	
			comments: 3514	
			shares: 5070	
			total: 65 377	
Hospital Bory - Instagram	6 955	4 026 (57,89%)	likes : 17 264	
			comments: 246	
			total: 17 510	
Faculty hospital Trenčín - Facebook	8 559	511 (5,97%)	likes : 21 190	
			comments: 441	
			shares: 2577	
			total: 24 208	
Faculty hospital Trenčín - Instagram	2 144	134 (6,25%)	likes : 6 427	
			comments: 37	
			total: 6464	
Faculty hospital Trnava - Facebook	9 197	852 (9,26%)	likes : 16 717	
			comments: 1 467	
			shares: 2 405	
			total: 20 589	
Faculty hospital Trnava - Instagram	1 701		likes : 4 679	
			comments: 54	
			total: 4 733	

Fig. 1.- Summary table. Source: Page Summary Table (www.zoomsphere.com)

Based on the results shown in Table 1, we can conclude that Bory Hospital has the most subscribers on both social networks. On the social network Facebook as of the date of the research it reached 20,575 subscribers. Compared to the second most followed entity, Trnava University Hospital, which has 9197 subscribers, this is more than double. Trenčín University Hospital with its 8,559 subscribers is almost on par with Trnava University Hospital.

When we take statistics from the social network Instagram we also see the dominance of the Bory Hospital. The other hospitals do not even have a third of the subscribers. In second place is Trenčín University Hospital, which has 400 more subscribers than Trnava University Hospital.

Based on the data analysis, we can conclude that the private Bory Hospital has the strongest social networks, by a significant distance from the public hospitals surveyed. It is also possible to see a common trend of all hospitals, namely that they have more subscribers on the social network Facebook than on the social network Instagram. This fact can be attributed to the nature of the studied organization and the specificity of the social networks, where Facebook is considered a more content-saturated network and Instagram a more visual social network. They also differ in the age structure of the population groups that visit social networks. Here, Instagram can be called a social network for younger users. We assume, also based on the results, that there is not yet such a natural interest in healthcare facilities in this age group.

Interactions are a very important indicator of activity on the site. Based on the data that came out of the analysis, we can see that Bory Hospital has the most interactions as well as subscribers with a total of 65,377 on average 353 interactions per Facebook post. Compared to Trenčianska , which has an average of 133 interactions per post and Trnava Hospital with 118 interactions, this is also the page with the most interactions from the public after the most followed page.

An important aspect besides the number of reactions is their emotional charge. Based on Graph 2, we can see that the vast majority of reactions for all subjects are dominated by a positive charge, namely the "Like" and "Love" reactions.
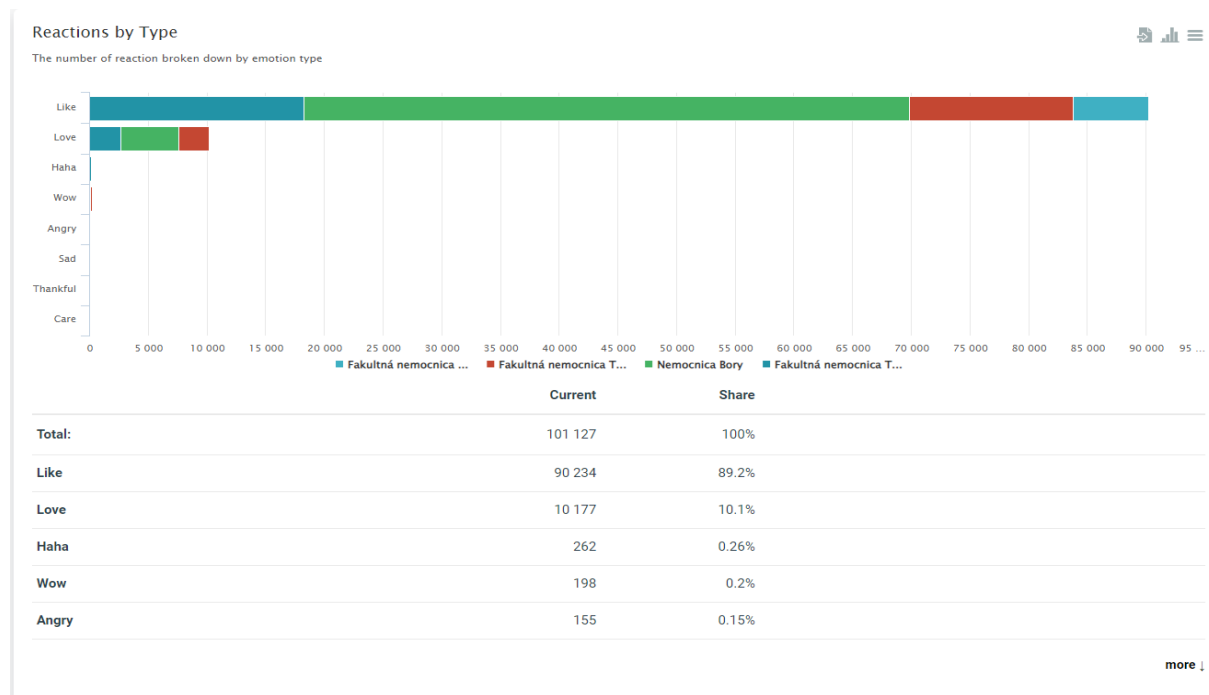
Fig. 2 – Reaction by type. Source: Reaction by Type (www.zoomsphere.com)

On the social network Instagram, we can also see that Bory Hospital dominates the number of reactions with 17 264 reactions. In the average number of interactions per post on the social network Instagram, the hospitals were ranked as follows.

From the analysed data, which shows us the number of interactions, it is clear that Hospital Bory has the most active social networks. This fact is probably connected with the largest number of subscribers on each social network. Public hospitals do not differ that much in these metrics and we think they are at a similar level.

In the next section, we will try to analyse the formats chosen by hospitals to communicate on social networks.
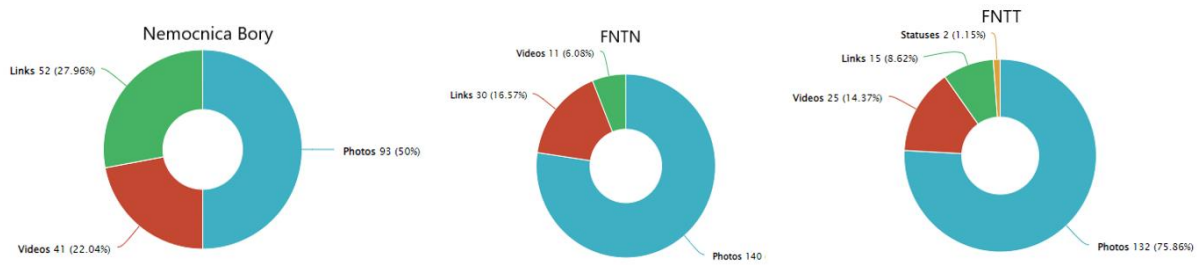
Fig. 3 – Page posts.Source: Page posts (www.zoomsphere.com)

Already at a glance in Figure 4 we can see the difference between the private and the public sector. In the last year, Bory Hospital used 93 posts (50%) containing photos, 52 posts (28%) containing links and 41 posts (22%) containing video for its communication. Public hospitals relied predominantly on posts containing photos in 2023. In contrast, Bory Hospital promoted fewer videos and significantly fewer posts containing a link. When we look at the total number of posts added on Facebook we find that all the hospitals studied added a similar number of posts namely: the Bory Hospital 186, the University Hospital Trnava 181 and the University Hospital Trenčín 174. Another interesting indicator is the distribution of interactions into the days of the week. Based on Figure 3, we can see that all hospitals received the fewest interactions on Saturdays. On the contrary, the most interactions were obtained on Monday and Friday. Interestingly, FNTN has a similar number of interactions on Sunday with Tuesday and Wednesday. The other hospitals surveyed have significantly less social media activity on the weekend than during the work week. This result may also be largely influenced by the days when hospitals post. It can be assumed that they post most of their posts mainly during the working week.
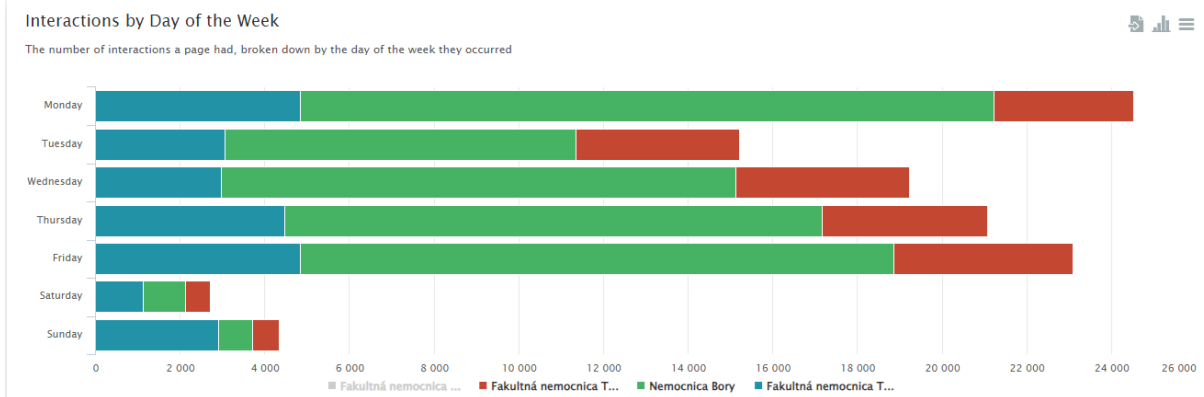
Fig. 4 - Interactions by day. Source: Interactions by Day of the week (www.zoomsphere.com)

We will take this analysis further and look at the most active hours of the day for individual hospitals. In Figure 4 we can see that all hospitals received the majority of interactions between 9:00-16:00. For Trnava Hospital, the morning is the strongest period. On the other hand, for Trenčianska and Bory hospitals the afternoon. Overall, however, the fans of all three sites behave very similarly in this case.

Interactions by Hour of the Day

The number of interactions a page had, broken down by the hour of the day they occurred
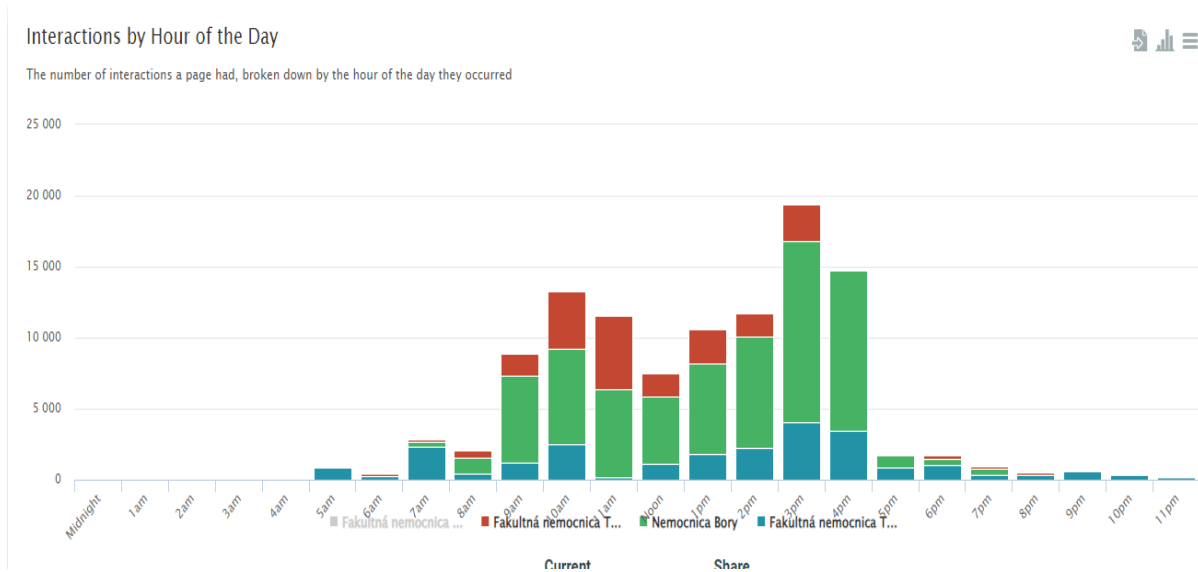
Fig. 5 – Interactions by hour. Source: Interactions by Hour of the Day (www.zoomsphere.com)

In the last part of our analysis, we discuss the most successful contributions of each health facility according to the results from the Zoomsphere tool. As in previous metrics, Bory Hospital dominated the number of responses and also had the top ten most successful posts. The absolute most successful post is a post about the first baby born at the hospital. Overall, the topic related to new parts of the hospital opening and first procedures performed seems to be very popular. Overall, six of the top ten most popular posts include "first" or its synonymous meaning in the title. Other successful posts were mainly related to examples of the work of health professionals and the care provided. The most successful Trnava Hospital posts focused on the achievements of their staff or on thanking them for their work. Of the ten most successful posts, up to nine contained this theme. Trenčín Hospital addresses a number of topics in its top ten posts. The topic of renovation of premises, either by the hospital or donations from sponsors, appears most often. There is also an interesting collaboration with the influencer "FeroJoke", as well as a presentation of the collaboration in the filming of the TV show "My Diagnosis."

Overall, when we summarize the content that was most successful in the period studied, we can say that each facility had it different. Bory Hospital relied on a demonstration of its new premises and a presentation of the first operations that were carried out in the hospital. Trnava University Hospital relied primarily on the presentation of the expertise and skill of its staff. The University Hospital Trenčín also used the service of an influencer and presented the remodelling of the premises and the improvement of healthcare in its facility.

4.2 LinkedIn

The social network LinkedIn is based on the presentation of professional achievements and the search for jobs or employees. The University Hospital in Trnava and the Bory Hospital are active on this network. The Hospital Bory has 4 000 followers on its profile, which is a big difference from the Hospital in Trnava, which has only 136 followers on its account. This is the first difference , which can be very serious when looking for employees. The follower reach of Bory Hospital gives them a much better chance to attract potential employees, or persuade employees away from competitors with their communication by adding quality content. When we look at the cover photo and the actual profile of each hospital, we can see a big difference right away. Bory Hospital in its cover photo has only the sign , which is and hospital. On the other hand, the hospital in Trnava has its doctors photographed undergoing surgery and the badge "most employer 2023" added. This makes the profile look more professional at first

glance and the badge adds credibility to the page. Both facilities have their hospital's logo on the profile photo. The basic description differs in the substance of the message being told. Bory Hospital has its tagline in the description "A hospital for all patients without distinction. The modern Bory Hospital in Bratislava." Such a slogan may be more interesting for patients than for employees. The hospital in Trnava uses the description "University Hospital Trnava is the largest health care provider in the Trnava region.." This description is rather too ordinary and unthought of and may appear too ordinary to the visitors of the profile.

Bory Hospital has the content of its posts aimed largely at attracting the attention of potential employees. From the content, we can see the presentation of their workplace. Very often adjectives such as "state of the art" and "the best" are inflected. This can have a very positive effect on the employees because it reassures them that they are working in a quality facility, and of course, such information is sure to attract potential employees who may decide to work in a bory hospital because of the modern technology and facilities. In addition to the presentation of the premises and technology itself, we can see content on the profile that focuses on educating employees. Several posts are dedicated to training lectures from foreign medical authorities, etc. Employee education is one of the great benefits that an employer can provide and this can be considered an important aspect especially for medical professionals. Other content is aimed squarely at recruiting employees and specifically through various graphics where we can see signs such as "join us" and so on. It is also important to publish such posts so that job seekers know that the hospital is always looking for employees and they can apply for these precarious positions.

However, on LikedIn Bory Hospital we do not only find content for employees but also for patients. It is represented to a lesser extent, but it complements the other content. These posts mostly try to attack the emotions of the patient. This is an example of the statistics of successful operations. Babies born, hospital birthday celebrations, etc. But in general, it is seen that the profile is trying to appeal primarily to the employees and attract new workforce to the hospital.

The University Hospital in Trnava has the content of the posts differentiated into different content units. A large part of the content consists of introducing the individual departments of the hospital. This content can be beneficial for both patients and potential employees as they have the opportunity to get to know the departments and the staff working there better. Another part of the content is content that presents different awards that the hospital or the staff has received. Such content helps to build a good image and brand for the hospital. Videos that address different symptoms of diseases and explain their treatment and prevention appear to be completely different content. These videos can be of interest to patients and can get the site into wider public awareness and thus help build a better image. On the other hand, such content is primarily perhaps tailored to other kind of social networking sites such as Facebook and Instagram. However, Trnave Hospital also has posts on LikedIn that directly motivate healthcare professionals to get employed at the hospital. The hospital is constantly looking for employees and they can apply for these precarious positions.

5   DISCUSSION

In the theoretical part of our paper, several authors agreed that nowadays it is necessary for health care institutions to communicate on social networks because of active communication with patients, building a positive image of the organization and also trying to reach new employees. The use of all the named functions of social networks can be seen in the objects we have studied. In many ways, they try to make the best possible image of themselves and present their organization with the intention of building a quality brand. Most of the posts are prepared in very good quality either graphically or textually, which is proof that social networks are not

taken lightly by facilities in the present day. Bory and Trnava hospitals are one step further in personal marketing. They are already active on the social network LikedIn and share content to attract new employees.

Based on our analysis, we can assess that the most successful healthcare entity studied in social media communication among the compared healthcare institutions is Bory Hospital. We derived this statement based on several examined indicators such as the number of subscribers, interactions and also the most successful posts. Bory Hospital clearly outperformed the government hospitals in these indicators. The studied public hospitals were very similar to each other in the studied indicators. Where all hospitals differed was in the topics communicated in the most successful posts. FNTN and FNTT communicated themes that they can continue to pursue. FNTT focused primarily on communicating the quality of staff working in the hospital and in our view this communication content is sustainable going forward and at a relatively low cost to produce. FNTN has taken a relatively more "commercial" approach to its content and has also used celebrities and influencers to communicate to create content on social networks to ensure the reach of its content. This method of communication can be relatively more costly however we feel that it is sustainable for the future.

On the other hand, we have the Bory Hospital, which focused mainly on presenting the new premises and previews of the first operations in the hospital during its communication. Based on our research, this content appears to be of interest to the public, as it had the best response among the facilities studied. The form of communication of modern spaces, operating theatres, modern devices appears to be the opposite of the long discussed investment debt in state hospitals. This debt has resulted in a long-standing neglect of certain spaces, apparatus, etc. All of these aspects underpin the negatively perceived image of public hospitals, which Bory Hospital has taken full advantage of. However, content communication focused on new approaches is not sustainable in the long run and therefore the hospital will have to switch to new content themes.

HR marketing is an area that is evolving very rapidly. With the advent of new technologies, companies need to do their best to keep up with the modern age in order to attract or gain quality employees. Slovak healthcare facilities specifically hospitals in general are associated with several problems and one of the main ones is definitely the lack of staff. Also based on our research, it can be seen that the surveyed entities are trying to actively communicate on social networks and thus improve their image. Building a quality employer brand will be very important for this segment and social networks seem to be one of the appropriate tools that can help hospitals with this issue. LikedIn appears to be a suitable social network for the hospital.

Two facilities that we studied, namely Trenčín University Hospital and Bory Hospital, operate on this social network. Both hospitals are trying to use this social network to attract potential employees but also to build their image. In addition to the classic posts that directly search for the necessary employees, they also try to attract them with other content. Bory Hospital presents its modern facilities and equipment very well. It also communicates education with medical authorities very often, which adds to the professionalism and credibility of the facility. Such content is also added by the hospital in Trnava, but in our opinion, the quality of processing and the concept of these contributions is better on the side of Bory Hospital. Another advantage of the hospital in Bratislava is also the effort to attract graduates by means of content, which is completely absent in the communication of the Trnava hospital. The overall impression and concept by which the social network LikedIn is made works better on the Bory Hospital page. Graphically very well-handled posts. High quality and well edited photos. Very well-balanced content that presents the hospital, is tailored for those interested in getting involved and also for patients. The difference in the number of followers is also very noticeable. The Bory hospital

has 4 000 followers, while the Trnava hospital has only 136 followers. This number does not reflect the quality of the content they are adding and thus the problem is likely to be in the promotion of the profile to which it would need to be promoted. The hospital in Trencin has not yet joined this platform we see this as a competitive disadvantage that should be removed in the near future. The legitimacy of being on this social network is also confirmed by the fact that most healthcare institutions of similar size to the Trenčín hospital are already on it.

6 CONCLUSION

Based on the analysis conducted, we can conclude that the communication of healthcare entities on social networks is an important aspect for their success and public outreach. In our research we focused on three healthcare entities - Bory Hospital, University Hospital Trnava and University Hospital Trenčín. The analysis was conducted on the social media platforms Facebook and Instagram between 1 January 2023 and 31 December 2023, and we evaluated key parameters such as number of subscribers, interactions and post formats Hospital Bory stood out in all the metrics studied, achieving the highest number of subscribers on both platforms and the highest number of interactions. Its Facebook posts received an average of 353 interactions, which is significantly higher compared to Trenčín University Hospital (133 interactions) and Trnava University Hospital (118 interactions). On Instagram, Bory Hospital dominated with 140 interactions per post, while Trenčín Hospital achieved 65 interactions and Trnava Hospital 47 interactions per post.

Data analysis shows that the private Hospital Bory has the most active social networks, which is probably associated with the largest number of subscribers. The public hospitals do not differ that much in these metrics, suggesting a similar level of communication on social networks. In the next part of the analysis, we focused on communication formats. Bory Hospital used a wide range of formats, including photos, links, and videos, while public hospitals relied primarily on photos. The total number of posts added was similar for all hospitals, indicating consistency in their communications. Another interesting aspect was the distribution of interactions over the week and days. All hospitals recorded the least number of interactions on Saturdays, with the most interactions being received on Mondays and Fridays. During the day, the most interactions took place between 9:00 and 16:00, which is the period when users are most active. Analysis of the most successful posts revealed that Bory Hospital also dominated in this area, with its most successful post being about the first baby born. University Hospital Trnava focused its posts on achievements and thanking employees, while University Hospital Trenčín featured renovations of premises and collaboration with influencers.

Overall, we can conclude that successful communication on social media is important for healthcare facilities. Bory Hospital uses diverse and effective formats to showcase its achievements, enabling it to achieve the highest number of interactions and subscribers. Public hospitals have room for improvement, especially in the use of different formats and optimizing posting time. These findings can serve as a basis for improved marketing strategies and more effective use of social networks in the healthcare sector. For a better chance to attract quality employees, the University Hospital in Trencin should consider setting up the social network LikedIn.

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TARGET AUDIENCE ON INSTAGRAM PROFILES PRIVATE EDUCATIONAL INSTITUTIONS

Michal Kubovics

Abstract

The research explores the impact and possibilities of Instagram as a promotional tool for educational institutions in Slovakia. Utilizing a quantitative methodology and the HypeAuditor tool, information from 443 private schools was examined, revealing remarkable discoveries regarding interaction and audience characteristics. The main focus was on establishing a link between student numbers and Instagram followers. The main results suggest that the predominant demographic of Instagram users is females between the ages of 25 and 34, which contradicts the initial assumption that teenagers between the ages of 13-17 would make up the largest group. Followers exhibit a diverse range of interests from education to entertainment, suggesting that content tailored to these interests can increase engagement. A direct relationship between students and followers was identified, highlighting the potential of Instagram to increase the visibility of educational institutions. The study also highlights the need for educational institutions to expand their social media reach by integrating platforms such as TikTok and Snapchat to effectively engage with a younger demographic. In addition, it highlights the strategic importance of tailored content and engagement across multiple platforms for educational institutions seeking to strengthen their brand presence and connect with diverse audiences in an ever-evolving digital environment. The results advocate a holistic approach to social media marketing in education. A future focus on exploring other social networks and examining the complexity of SMM of educational institutions is important.

Keywords: Digital marketing, Educational institutions, Instagram marketing, Social media, SMM

1   INTRODUCTION

Social media is now an established and essential digital marketing tool that is very important for businesses. As Smith and Anderson (2018) state, it is the social network Instagram that has the potential to be a highly effective tool. Especially for the possibility of engaging the target audience, which is just very suitable for businesses that are focused on education (Shane-Simpson et al., 2018). The authors further define that it is mainly about the possible increases in awareness and positive image, due to the target audiences of parents, students and the wider community that respond optimally when communicating with visually appealing digital content. The aforementioned claims are the impetus and the proposition for the present article, which aims to deepen the knowledge on the above mentioned issue, while focusing on key unexplored areas, especially from the perspective of the home environment.

2   LITERATURE REVIEW

Social media marketing (SMM) has emerged as an essential tool for marketing educational institutions, significantly influencing their brand, student engagement and overall market positioning. Author Agrawal (2024) conveys that the National Institutional Assessment Framework highlights the importance of using digital marketing strategies, particularly on platforms such as X or Instagram, and Facebook to improve the perception and evaluation of higher education institutions. Further investigation found that the impact of SMM on brand

perception, encompassing narrative, sensory, service and stakeholder environments, is positively associated with strong brand perception among students (Pasuhuk & Mandagi, 2023). The shift from traditional marketing communications to interactive platforms closely connected to the user, such as Instagram, Facebook, and X, has changed the way institutions attract prospective students and stay competitive (Barus, 2023). Creating innovative content on platforms such as Instagram is critical to increasing audience engagement. Research highlights the importance of different content formats to engage audiences (Altamira et al., 2023). Further research defines the notion of a specific community, where students express their identity through the institution's brand, is greatly enhanced by effective SMM as observed at higher education institutions (Almutawaa et al., 2023). According to the investigation of Rahmawati et. al. al. (2024), the target audience of private educational institutions on Instagram is made up of prospective students, active students, parents, and stakeholders with a focus on engaging content that emphasizes academic and community content. Ramadanty and Syafganti (2021) similarly affirm. In addition, SMM plays a key role in shaping brand awareness, image and attitude, and positive relationships have been found between these factors in universities (Marhareita et al., 2022). Perera's elaboration probability model posits that brand equity in higher education can be cultivated through SMM, with brand credibility being a key element, especially among students (Perera et al., 2023). SMM strategies, including adjustments to content types, have been shown to be effective in expanding reach and audience engagement. (Aliyev & Quliyev, 2023; Ulfa et al., 2023). Integrating social media into the marketing strategies of educational institutions not only enhances their credibility but also promotes a unified brand image, which ultimately leads to acceptance and expansion in the market of educational institutions (Haidar et al., 2023). According to NapoleonCat, the latest statistics define that the most dominant age group in Slovakia is from 25-34 years old (males 15.9% and females 16.5%) for a total of 567,000 users (NapoleonCat, 2024). Authors Bordalba and Bochaca report that 78% of private schools use Instagram to communicate with parents, and 65% of parents reported following their child's school's Instagram. Dixon (2024), on the other hand, defines that Instagram is generally popular among young people, with 72% of 13-17 year olds actively using it. As a result, the strategic use of social media in educational institutions is essential, especially for those seeking to increase their brand equity, communicate with a diverse and international audience, and adapt to a rapidly evolving digital environment.

3 METHODOLOGY

The present study employs a mixed quantitative and qualitative research design comprising and analysis through the Hypeauditor tool. The aim of the study is to find out the current status and potential of Instagram social network with respect to the educational institutions segment. The sample selection consisted of a list of private schools from the Centre for Scientific and Technical Information of the Slovak Republic (CVTISR, 2024). A total of 443 schools were included in the sample. The baseline analysis consisted of excluding schools that did not have an Instagram account. The official documents include the number of pupils for each school. Subsequently, the Instagram account belonging to the study subject was assigned to the dataset that originated from the Science and Technology Information Center. Next, the HypeAuditor tool was used through which further analysis of the subjects' profiles was carried out. All the mentioned Instagram profiles of the educational institutions were successively added to the tool. Once the data was retrieved, the data on the number of profile followers, target audience size, number of posts and location of users were stored in a document and the resulting values were averaged. In the final result set, 37.47% of the subjects were included in the result set, which corresponds to 166 subjects. The distribution of the subjects is even with respect to the population size, where the data was used to determine the population size in each region.
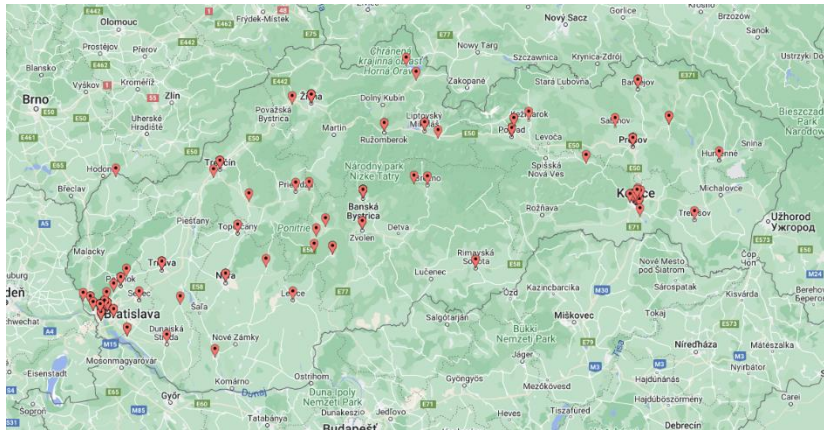
Fig. 1 - Visualization of the location of the surveyed private educational institutions. Source: own research

The research population includes 56 private kindergartens, 32 private primary schools, 81 private secondary schools and grammar schools. The exact location can be found in Figure 1.

Based on the theoretical background, the following hypotheses were formulated:

RQ: What audiences are most numerous on private Instagram profiles, and how does the number of students correlate with the number of followers on those profiles? (Shane-Simpson et al., 2018)

H1: The largest target audience on private school Instagram profiles are current and potential students aged 13-17. (Habibah & Hidayati, 2023)

H2: The interests of the most prevalent target group on private school profiles include education and technology primarily match the content framework of the educational institution (Marques et al., 2024).

H3: The number of followers of private schools' Instagram accounts is positively correlated with the number of students at these schools (Habibah & Hidayati, 2023).

The results were statistically processed using SPSS 29 and MS Excel. The descriptive data were used for sum, mean and for verifying the relationship of variables. Normality was verified for the value of the number of followers of Instagram profile and the number of students in secondary schools using histogram and Gaussian curve filtering. Based on the results, Spearman's correlation coefficient was chosen and used to verify the relationship between the variables since it was a character cardinal and nominal. The following formula was used.
n= number of data points of the two variables
di= difference in ranks of the "ith" element

Spearman's correlation coefficient in the result uses the following verbal reasoning: 0 - 0.1 - none - trivial relationship, 0.1 - 0.3 - weak relationship, 0.3 - 0.5 - moderate relationship, 0.5 - 0.7 - strong relationship, 0.7 - 0.9 - very strong relationship, 0.9 - 1 - perfect relationship - the variables are identical (Utheim Grønvik et. al., 2016).

4   RESULTS

The following section is devoted to the results of the individual findings. The findings are specifically devoted to answering the research question of what target groups are most numerous on private Instagram profiles and how the number of students correlates with the number of followers on these profiles. Among the key indicators that were measured in the examination of private educational institutions was the frequency of followers of the entity's Instagram profile. The following table number 1 contains the number of followers of the profile

of the private educational institution. The mean number of followers is 560.65, the median is 288 and the mode is 1100. The minimum is 5 followers and the maximum is 9900.

Tab. 1 - Frequency, mean, median and mode of subscribers on the instagram profile of private educational institutions. Source: own research

N	Valid	166
	Missing	0
Mean		560,65
Median		288,00
Mode		1100
Std. Deviation		1234,261
Skewness		6,403
Std. Error of Skewness		,188
Kurtosis		44,173
Std. Error of Kurtosis		,375
Minimum		5
Maximum		9900
Sum		93068
Percentiles	25	146,25
	50	288,00
	75	582,25

The validation of hypothesis H1, which included the claim that the largest target audience on private school Instagram profiles are current and potential students aged 13-17 years old, was verified through the collection of data from the HypeAuditor tool, the result is the proportion of . In the target group, males aged 13 to 17 reached 9.6 percent, followed by those aged 18 to 24 with 15.7 percent, and those aged 25 to 34 with a percentage of 40.7. Followed by age group 35 to 44 with a percentage share of 24.4 percent, followed by age group 45 to 54 with a percentage share of 5.7 percent. This is followed by 55 to 64 years which accounts for 1.5 and the last age group of males 65+ with a measured value of 2.4 percent.
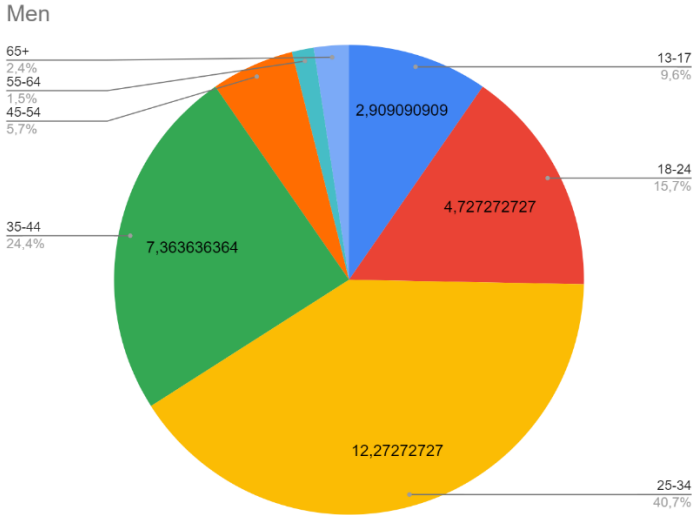
Fig. 2 - Percentage representation of different age categories on Instagram profiles of private educational institutions - men. Source: own research

On the other hand, women showed a higher representation in the overall percentage. The percentage in the 13 to 17 age group was 10.5%. This is followed by the age group 18 to 24 years with a percentage share of 18.3%. Next is the 25 to 34 age range with a percentage share of 38.5%. This is followed by the age group 35 to 44 years with a percentage share of 19.8%,

next is the age group 45 to 54 years with a percentage share of 9.2%, followed by 55 to 64 years with a percentage share of 1.6%. Last is the 65+ age group with a percentage share of 2.1 per cent. See Figure 3 for a visualisation.

Fig. 3 - Percentage representation of different age categories on Instagram profiles of private educational institutions - men. Source: own research

As a result, the largest target group is between 25 and 34 years of age, 38.5% (p = 27.36), and female gender. Based on the evidence, it can be stated that hypothesis H1 is not confirmed. The most frequent users are not those aged 13-17 years. They are most often school leavers and supporters, which may indicate less appropriate content for current pupils.

Hypothesis H2 was related to the interests of target audiences on individual private school Instagram profiles. According to the hypothesis, interests such as education and technology are the most frequently included according to the content framework of the educational institution. The results show that the most common interests include social issues, bussiness & careers, educational, theater, literature, science, dance, video gaming, entertainment, film & television. The visualization through word cloud is figure number 4. The frequency representation represents the word with larger font in the word cloud and the lower representation is with smaller font.

Fig. 4 - Word cloud of keywords in the form of interests of the target group following the profile of private educational institutions. Source: own research

On deeper exploration, the initial interest is often focused on either educational activities or professional development. As a result, interest is primarily based on attending school, followed by an apparent shift towards interests such as Instagram, cinema, literature, science, dance, video games, film and television. These preferences signify the traditional hobbies and interests commonly associated with the demographic of young individuals who devote their leisure time to the aforementioned activities. Another hypothesis, H3, defined as the number of followers of private schools' Instagram accounts positively correlates with the number of students at these schools. The hypothesis was tested by Spearman's coefficient of ordinal correlation which was selected based on the normality check which came out with a negative result and the nature of the variables where both were cardinal in nature. The result is presented in table number 2.

Tab. 2 - Correlation between the variable "number of followers of the Instagram profile of the private educational institution" and the variable "number of students of the private educational institution". Source: own research

Correlations			Number of followers on the educational institution's Instagram	Pupil population of the educational institution
Spearman's rho	Number of followers on the educational institution's Instagram	Correlation Coefficient	1,000	,360[**]
		Sig. (2-tailed)	.	,000
		N	166	166
	Pupil population of the educational institution	Correlation Coefficient	,360[**]	1,000
		Sig. (2-tailed)	,000	.
		N	166	166
**. Correlation is significant at the 0.01 level (2-tailed).				

Hypothesis H3 was tested using the calculation of Spearman's rank correlation coefficient, the result of which is presented in Table 2 based on the statistical significance found Sig. < 0.001, we consider the correlation relationship between the variables number of followers on Instagram of the educational institution and the number of students of the educational institution to be significant. We accept the hypothesis H3. The number of followers on Instagram of an educational institution is linearly related to the number of pupils of an educational institution.

5   DISCUSSION

Important findings emerge from the results. During the hypothesis analysis and ground-truthing, we looked at various aspects of the composition of educational institutions and their Instagram profiles, as well as the interests and hobbies of the target group. We also examined whether there was a correlation between the number of complaints and the number of subscribers on social media, specifically on the profiles of educational institutions. Important findings suggest that it is very important for educational institutions to focus on other social networks, not only Instagram. The research showed that the most dominant group on Instagram is women between the ages of 25 and 34. A similar investigation by Gil-Quintana and Vida de León led to the finding that educational infuencers are most frequently followed by women aged 25-45 (2021), which is the same as for educational instuencers. In the study area, it is very important to look at which platform is important for the target group between 13 and 18 years

old. Examples of such social networks include TikTok or Snapchat (NapoleonCat, 2024). Differentiation to other social networks is further provided by Melchiorre and Johnson (2017) and Basbas, 2024). They define that it is imperative for educational institutions to focus on another demographic group, namely individuals between the ages of 35 and 44 who are actively engaged on platforms such as Facebook and other social networks. When it comes to interests and entertainment, it is of great importance that the educational entity creates content that matches the interests and hobbies of the target group (Marques et al., 2024). As our own research reveals this includes content that is relevant to the school department as well as content related to the leisure activities preferred by the audience and their behaviour on social media platforms. The correlation between the size of the student base of educational institutions and the number of followers of the profile suggests that a larger number of students results in a higher number of followers. The above correlation is self-evident as institutions engage both students and their parents, thereby increasing the relevance of subscribing to the institution's Instagram profile. Smaller educational institutions can use this model to expand their target demographic by attracting potential followers, potential students or parents who are considering or interested in enrolling their children in these institutions at a later date (Habibah & Hidayati, 2023). Similarly, the general public can add to the popularity of an educational institution, thereby enhancing its position, reach and brand awareness. Moreover, Gunawan et. al. al. (2020) add that a higher number of Instagram followers positively influences public trust in an educational institution. All in all, the research presented very interesting and strong findings regarding the need for a presence on other social networks where some educational institutions are not even present. Additional tools and communication channels need to be integrated into the existing social media marketing strategy. The limitations of the study are rooted in the potential for expanded research across a wider range of educational institutions and regions, encompassing the public sector, private schools, other educational institutions, and commercial entities.

6   CONCLUSION

The set objectives were successfully met. Instagram undoubtedly serves as a platform that is relevant to the marketing of educational institutions, especially in the area of SMM for educational institutions. The validation process undertaken was significant in anticipation of upcoming advancements and in particular the suggestion that apart from Instagram, educational organisations should integrate platforms such as Facebook, TikTok, LinkedIn and Snapchat, for example, into their social media marketing strategies. While some institutions have already embraced these platforms, there is new potential to explore alternative networks. It is imperative that educational institutions carefully select a communication platform and content that matches their target audience and implement a defined strategy. Given that a higher number of students equals a higher number of profile followers, educational institutions should also direct their attention to other target groups and create content that corresponds to the specificity of their work and leisure focus.

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WHEN AMAZON IS NOT A SELLER, PRICES RISE AND VICE VERSA

Robert Laskowski

Abstract

The aim of this research study is to analyse whether product prices on the Amazon marketplace in Germany increase significantly when Amazon itself ceases to be a seller of an item. It also aims to prove that prices fall again when Amazon re-enters as the seller of the item. For this analysis, more than 14,000 product prices were analysed over a period of 15 days, in which Amazon initially had a price on the Amazon marketplace and then no longer appeared as a seller and vice versa. This means that it was also analysed whether product prices fall again when Amazon re-enters the price competition. The period analysed was always five days before the event and ten days after the event. Daily price indices were created for each individual item. It was found that prices rose on average by more than 8.5 % on the tenth day after the event, when Amazon no longer had a price, and that prices fell again by -3.1 % when Amazon re-entered the price war for the Buybox. The results expand the understanding of the behaviour of online prices and give product manufacturers an indication of the influence Amazon has as a seller on the price on the marketplace of the same name. This research relates only to the Amazon marketplace in Germany and is not applicable to other online marketplaces.

Keywords: *Amazon, marketplace, online trade, prices, retail, seller,*

1   INTRODUCTION

Amazon is the largest online shop and online marketplace in Germany. According to the latest online monitor (2024), Amazon already accounts for 60% of German online retail sales totalling 85.4 billion euros. Amazon generates around half of its total turnover as an online store. As an online store, Amazon buys goods from manufacturers and then sells them in its own name and on its own account. The other half of Amazon's retail turnover comes from its marketplace model. This means that every independent retailer can sell their goods on Amazon and Amazon receives a marketplace fee for the goods sold.

Amazon.com, Inc., originally launched in 1994 as a pioneer in online book sales in the US, has evolved into a global, multi-faceted e-commerce giant offering a wide range of products and services (Moore, et al., 2018). According to Jeff Bezos, the founder and CEO, Amazon wants to sell everything except guns and live animals, as he emphasized in an interview in the early 2000s. By constantly expanding its product range and diversifying its services, Amazon has achieved significant market leadership based on several strategic advantages. These include an extensive and diverse product selection, efficient and fast supply chains, a strong customer focus and a competitive pricing policy. These elements work together to create a high level of consumer confidence and drive impressive market growth. In recent years, this has led to significant trust in Amazon as a reliable shopping platform in Germany. The existence of a Prime membership indicates a high level of trust in Amazon, making the company the first port of call for many members. All these factors mean that a significant proportion of the German population already feels committed to Amazon even before they buy products via the platform.

Amazon is also one of the world's leading cloud providers alongside Google and Microsoft and is a major player in the fields of artificial intelligence and machine learning. Amazon's pricing strategy is particularly notable as it is based on dynamic and volatile pricing enabled by

advanced, algorithm-driven web scraping systems. These systems constantly monitor the entire online market to identify the best available offers for its own products. As soon as a cheaper offer is identified, Amazon adjusts its own price or discontinues the offer (Chevalier, et al., 2003). As a result, Amazon is often perceived by the public as the most reliable source for the best prices and its pricing reflects the market price. Although not yet sufficiently taken into account by the statistical offices, online prices have an influence on Germany's inflation rates (Laskowski, 2022).

As an online store and marketplace, Amazon acts both as a seller of its own products and as a platform for third-party sellers. This role enables constantly dynamic pricing, which is supported by automated price adjustment systems (Chen, et al., 2016). These systems make it possible to adjust prices dynamically and in real time to market conditions, resulting in frequent price changes (Cavallo, 2018). While offline prices are largely stable, online prices change frequently and to a greater extent (Hillen, et al., 2021). While Amazon as a direct seller collects the margin as profit, Amazon as a marketplace receives a sales commission for each item sold, the amount of which depends on the product category. On the Amazon product detail pages, the sellers are subordinate to the items. This means that each item with a unique EAN only exists once on Amazon but can be sold by different sellers. The best offer wins the Buybox. The so-called "Buybox", the synonym for the buy button, is central to the competitive dynamics and pricing policy, as the best offer of all sellers is placed in it. This pricing strategy aims to present the best offer to customers, even if this means foregoing higher margins or better trade commissions. With predatory pricing as a growth strategy, Amazon primarily makes customers happy and eliminates competitors (Khan, 2016). This policy leads to a high conversion rate and maximizes overall revenue by focusing on higher sales and maximum customer satisfaction. Competition for the Buybox not only influences pricing, but also shapes the market dynamics on the platform. As Amazon's algorithms are constantly trying to offer the best price in all of online retail, you will often find the best deal on the website. This makes Amazon a key player in market research, as the majority of Amazon sales are discount and offer-driven, either through its own promotions or discounts on other websites. In addition, manufacturers can discount their items on Amazon at any time in order to increase sales in the short term.

Amazon is generally considered the most successful seller in the battle for the Buybox, although other sellers can also put Amazon under pressure with aggressive pricing policies and conquer the Buybox. It is not uncommon for an item to have up to one hundred other third-party sellers. Amazon certainly has the best purchasing conditions with manufacturers and the most comprehensive data to provide the best offer for the end customer (Hunold, et al., 2022). However, should Amazon fail as a competitor for the Buybox, the most promising candidate with the best price offer will drop out. There can be many reasons why Amazon withdraws or hides its offer, such as an out-of-stock situation, too high a loss of profit, the price war with third-party sellers becoming too strong, or simply a bug in the system.

This study is conducted to emphasise the importance of online price behaviour and to add another insight to the existing knowledge. The aim is to show how online prices change when the structure and number of sellers change, especially when the most powerful seller change.

1.1 Research Question

The aim of this research is to find out what influence Amazon, as the seller of an item, has on the pricing of the Buybox. While Amazon orients its pricing to the online market, the pricing of third-party sellers only arises in competition with each other for the Buybox. This leads to the question of how the price on Amazon changes if the most important and strongest competitor for the Buybox drops out. How much will prices rise or fall if Amazon itself does not offer any products and only lets third-party sellers do the end customer business? And how

much will the prices of the Buybox change if Amazon re-enters the price competition as a player?

1.2 Hypotheses

Amazon probably one of the largest trading partners for many manufacturers, can certainly realize the best purchase prices and has all the data on its side due to its ownership of the digital marketplace. Amazon itself should therefore be able to provide the best and most attractive offers for its customers. In addition, the growth and customer loyalty strategy described above will ensure that the customer finds the best price on Amazon. This leads to the hypothesis that

- if Amazon ceases to be a seller, prices will rise. So if only third-party sellers sell a product on Amazon and Amazon itself drops out of the price competition for the Buybox, products will become more expensive. Supply is falling and prices are rising.

- if Amazon re-enters the Buybox as a competitor, prices will fall again because the most powerful Seller returns to the pitch. Supply is increasing and prices are falling.

2 LITERATURE REVIEW

German online retail is diverse and multi-layered and generates a total turnover in 2023 of 85.4 billion euros (Online Monitor, 2024). There are many different online shops that buy and sell goods. Over the last few years, product-specific shops with a certain level of expertise have established themselves. For example, online shops for fishing accessories, furniture or sports equipment. Their product ranges are limited to a specific product category, which increases their credibility with customers. In addition, there are countless online brand stores, such as Apple, Adidas or Nike, which only sell their manufactured goods in their online shop. However, the biggest turnover is generated by online marketplaces where independent sellers can offer and sell their goods. The marketplaces are characterised by the fact that almost all products are available there. The best-known marketplaces in Germany are Amazon, Zalando and Otto. The operators of the marketplaces are usually also sellers on their own marketplace and, due to the data monopoly, also the strongest seller. Amazon is the largest marketplace in Germany and the largest also the largest online shop. Amazon takes 60% of the whole online trade alone (Online Monitor, 2024).

Customers increasingly recognize that Amazon provides consistently attractive offers, eliminating the need to compare prices on other online platforms. Another key factor for this centralization on Amazon, in addition to countless marketing measures, is the introduction and expansion of the Amazon Prime program in order to retain customers on Amazon in the long term (Verma, 2023).

The Prime program, which offers many included services for subscribers, has greatly increased customer loyalty. According to a study by Kantar (2021), more than 46.4% of German households use Prime, which frees them from additional shipping costs on Amazon. The annual fee for membership is 89.90 Euro, as stated on Amazon.de (2023). Prime also offers access to a wide range of home entertainment, which further increases the appeal of the program. Those who opt for a Prime subscription generally prefer Amazon for the purchase of their products, demonstrating a strong trust in Amazon as a preferred retailer (Jing, et al., 2023).

The link between customer trust and Prime membership demonstrates the importance of loyalty programs such as Amazon Prime in fostering customer loyalty and trust in the e-commerce sector (Khan, 2016).

Algorithmic price adjustment systems lead to an automated price war in online retail, resulting in the best possible prices for consumers. Amazon itself, as well as the third-party sellers on the

marketplace of the same name and other online shops, use such automated price adjustment systems with price wars to gain the favour of the buyer (Chen, et al., 2016). This also creates a kind of arms race between online retailers for the best price adjustment systems. At the end prices on the Amazon marketplace are driven and influenced by Amazon itself and the multiple 3P sellers (Wang, 2012).

In order to offer the end consumer a perfect shopping experience, Amazon also supports third-party sellers on the platform to offer the customer the best possible shopping experience (Altrad, 2021). Third-party sellers can benefit from an extensive warehousing and logistics service if they pay the necessary commissions. However, these additional services guarantee faster deliveries, more sales and ultimately a better customer experience (Etumnu, 2022).

However, there are also legal concerns with the marketplace structure on Amazon. Amazon can offer many items to customers via the marketplace model without being a seller itself. This means that Amazon can also evade responsibility if products lack the legal basis to sell the goods. Amazon can advertise and sell items on its own marketplace without having to assume responsibility (Monestier, 2021). There are already some lawsuits that attempt to hold Amazon responsible, but this is proving difficult or even impossible, as Amazon is only the intermediary and has too little control over the sellers (Shehan, 2018). So far, Amazon has been able to defend itself against any legal concerns, as Amazon guarantees the best price for the consumer at the end of the day and ensures sufficient competition with its marketplace model (Gassler, 2019).

Since Amazon can also access the data of third-party sellers, Amazon itself has the best challenges to win the battle for the Buybox or to calculate what gives Amazon itself the best profit - selling the goods itself or collecting the marketplace commission (Sikdar, et al., 2022).

However, sellers also compete with each other on the Amazon marketplace. Successful sellers present themselves as more innovative and thus try to gain a competitive advantage over less successful third-party sellers (Tahirkheli, 2022). Successful sellers use product specialisations, product communication and product classifications to give themselves an edge, even at the risk of this being copied or adopted by other sellers or Amazon.

Amazon's marketplace concept can also largely prevent usury, as has often happened with face masks during the COVID-19 pandemic (Levitan, 2021). While state regulatory authorities have had to watch usury emerge rather impotently without being able to take appropriate measures, the price on Amazon has remained stable.

3   METHODOLOGY

For this study, 6,974 price data sets from Amazon Germany in the period from May 2023 to April 2024 were analysed, which show the effect of Amazon withdrawing or hiding its offer for an item. The study also examined 8,370 price data series in which the effect occurs in reverse. In other words, the event in which Amazon initially had no offer of its own, but then re-entered the price war as a player (Table 1). The data sets are different because the event itself was investigated. It is not a question of proving the effect for one and the same article. The daily price data is provided by the scraping software AMVisor. AMVisor is a data information provider for the consumer goods industry, specialised on online trade. AMVisor covers among other information, like content changes, revenues, stocks or margins, daily product price data from the Amazon marketplace and which seller owns the Buybox.

The daily prices of the Buybox of various products from different product categories are recorded five days before the event and ten days after. The daily price changes are then calculated. The base value of the price changes is day -4. Day 0 is the last day before the event that Amazon either no longer had a price or showed a price again. The calculation is intended to determine the difference in price volatility before and after the event.

To check and trim the price data for errors and outliers in advance. Item data was removed from the data set if the Buybox price rose by more than 400% or fell by more than 80% from one day to the next. This reduced any errors in price collection. In addition, it was ensured that a Buybox price was available for every item on every day during the study period, regardless of whether Amazon had occupied the Buybox or not.

As mentioned in the introduction, online prices are subject to constant fluctuations, so prices can rise and fall at any time. This study only focuses on the dynamics of the price when Amazon itself intervenes in or exits the price competition.

Tab. 1 – Collecting Shema: days before and after the event. Source: Author's own according to scraped data by AMVisor

AZNP disappeared Case (1)	yes	…	yes	no	no	…	no	no
AZNP appeared Case (2)	no	…	no	yes	yes	…	yes	yes
day	day -4	…	day -1	day 0	day+1	…	day+9	day+10
Price BBP$_1$	5.00	…	5.15	5.00	5.05	…	5,70	5.80
Price BBP$_n$	8.50	…	8.60	8.40	8.35	…	8.10	7.90

The daily product price index (PPI) before the event is determined in relation to the first day of price recording (1). The daily product price index is then calculated after the event, always in relation to day zero (2).

$$BBPI_{n\ (AZNP\ disappear)} = \frac{BBP_{day} - BBP_{day-4}}{PP_{day-4}} \qquad (1)$$

$$BBPI_{n\ (AZNP\ appear)} = \frac{BBP_{day} - BBP_{day-4}}{BBP_{day-4}} \qquad (2)$$

with…

AZNP   …   Amazon price

BBPI$_{n\ (disappear)}$ …   daily buybox price index, when Amazon prices disappear

BBPI$_{n\ (appear)}$ …   daily buybox price index, when Amazon prices appear

BBP$_{day}$ …   daily buybox price

BBP$_{day-4}$ …   basis buybox price

day...   …   day

The hypothesis of this study is that prices will increase when Amazon no longer appears as a seller and that prices will fall when Amazon re-enters the market with a price offer.

The simple hypothesis test (t-test) is used for the significance of the study.

Accordingly, the null hypothesis (H$_0$) is that prices will not change significantly if Amazon exits or re-enters the price war. The alternative hypothesis (H$_1$) is that prices will rise significantly if Amazon itself no longer offers a specific item or that prices will fall if Amazon re-enters the price war. Thus, the hypotheses were confirmed that prices rise when Amazon

itself no longer has its own offer and prices fall when Amazon re-enters the battle for the Buybox.

4 RESULTS & DISCUSSION

When Amazon drops out of the price war, prices rise (Figure 1). When Amazon re-enters the battle for the Buybox, prices fall. If Amazon itself no longer displays a price, the median of all 6,974 product price surveys over all days is zero. The quartile-75% increases from the first day (day +1), from zero to 8.7% and on the tenth day (day +10) up to 10.7%. This means that the price of more than 25% of all items rises by more than 10.7% as soon as Amazon exits the price competition on its own marketplace. Research shows that prices rise slightly by up to 0.6% (day 0) even before the event.

Fig. 1 – price changes when Amazon prices disappear. Source: Author's own according to scraped data by

AMVisor

On the tenth day (day +10) after Amazon no longer had its own price, an average price increase of 8.5% was recorded compared to the first day of recording. Of the 6,974 items examined, 3,077 showed an average price increase of 24.8% on the tenth day. The prices of 1,551 articles fell by an average of -10.9%. For 2,343 items, no price change was detected due to the Amazon price drop (Appendix 1).

In comparison, on the last day on which Amazon was still able to show its own price (day 0), an average price increase of 13.3% was detected for 1,119 product prices, an average price reduction of -8.7% was detected for 1,252 items and no changes were detected for 4,603 prices. On average, a price change of just 0.6% was identified across all items on the first day of recording.

On the first day (+1), 2,860 articles already showed an average price increase of 24.4%. The price of 1,425 items fell by an average of -10.6% and no price change was recorded for 2,689 products. On average across all items, prices jumped from 0.6% to 7.8%. On the third day (day +3), prices across all items rose to an average of 8% and on the fifth day (day +5) to 8.3%. The number of items affected by a price increase rose from 1,119 to 3,077 items from the first day to the tenth day after the event, with the number of items with falling prices remaining relatively stable from 1,252 to 1,551.

With a standard deviation of 29.4 on the tenth day (day +10), a minimum value of -77.5% and a maximum of 382%, the prices show a wide range (Figure 2).
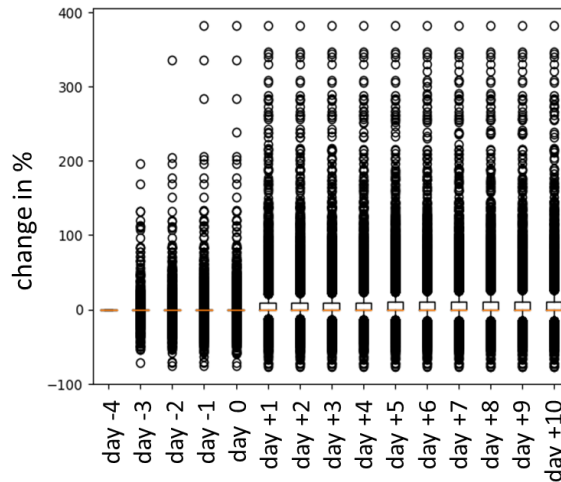
Fig. 2 – boxplot when Amazon prices disappear. Source: Author's own according to scraped data by AMVisor

However, when Amazon re-enters the price war after an episode without an offer of its own, prices fall again (Figure 3). In this case, too, the median is zero. The 25% quartile shows that a quarter of the items examined fall by more than -4.37%. Prices also rise slightly in this study, by up to +0.4% before the event.

Fig. 3 – price changes when Amazon prices appear. Source: Author's own according to scraped data by

AMVisor

By the tenth day (day +10) after the event, prices fall by an average of 3.1%. On the first day (day +1), as soon as Amazon displays its own price offer for an item again, prices already fall by -1.9% on average. While before the event only 1,265 items were affected by falling prices, after the event (day +1) the prices of 3,075 items fall by up to 12.8% and on the tenth day (day +10) of 3,792 items by up to 14.2% (Appendix 2). A steady trend of falling prices can be seen over the ten days examined.

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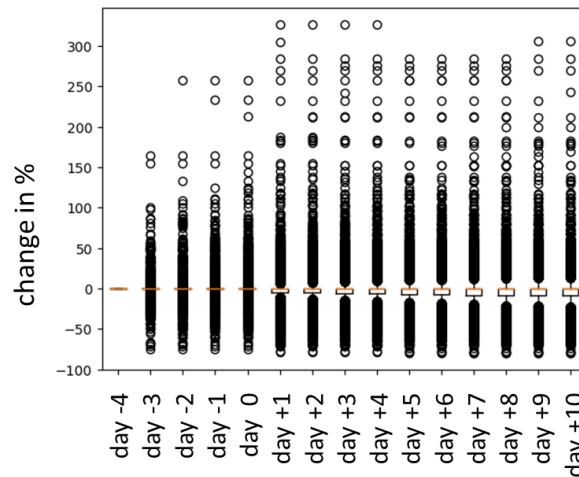
Figure 4 – boxplot when Amazon prices appear. Source: Author's own according to scraped data by AMVisor

With a minimum value of 80.0% and a maximum of 306.1% with a standard deviation of 18.6 on the last day of recording, the prices also show a wide range here (Figure 4).

The hypothesis test over all days shows that the results are highly significant with an error probability of 1,5% (Table 2). For the analysis, it is assumed that the results are approximately normally distributed and therefore the t-test can be used for significance.

Tab. 2 – values and results significance test. Source: Author's own according to scraped data by AMVisor

Values	AZNP disappear	AZNP appear
Mean BBP price before event	0,30%	0,17%
Mean BBP price after event	8,27%	-2,55%
Standard diviation with Amazon	0,21	0,13
Standard diviation without Amazon	0,25	0,42
Probability of error	1,5%	1,5%
BIAS	7,98	2,38
count	4,00	4,00
reference statistics t-value	**5,05**	**5,05**
BIAS / standard deviation	**31,59**	**5,68**

The descriptive analysis shows the differences and statistical characteristics before and after the event. When Amazon still had a price, the average price increase was still 0.3%. After Amazon exits the price war, the average price increase is 8.27%. This corresponds to an increase of 27.6 times the original mean price increase, indicating a significant impact of the event on the price. With Amazon as a competitor, the standard deviation was 0.21, indicating less variability in prices with Amazon. Without Amazon, the standard deviation was slightly higher at 0.25, indicating greater price volatility. The probability of error of the study is only 1.5%. The BIAS value of 7.98, the difference between the average price increase before and after the event, indicates a significant price increase. There are only four price points before the event, which is statistically rather a limited amount of data and could therefore limit the statistical significance and robustness of the results, but is absolutely sufficient for the effect to be described. The reference value of the t-distribution of 5.05 is much smaller than the ratio of

BIAS to the standard deviation of 31.59. This is an extremely high value, which proves the significance of the result. To summarise, the data shows a clear price increase after the event and an increased variability depending on whether Amazon displays a price or not.

The descriptive analysis of the data for the case that Amazon intervenes again in the price war for the Buybox shows an average price increase of 0.17% before the event. The price falls on average by -2.55% as soon as Amazon has its own price again. The standard deviation before the event is only 0.13 and after the event 0.42, which indicates greater volatility in price changes after the event. The bias, the difference between the mean price increase before and after the event, is 2.38, which indicates a significant price reduction. The reference value of the t-distribution of 5.05 is smaller than the ratio between bias and standard deviation, which confirms the significance of the study.

With around 7,000 and more than 8,000 items examined, it was found that Amazon, as the seller of an item, has a significant influence on pricing on the online marketplace of the same name, regardless of whether Amazon has occupied the Buybox itself or a third-party seller. The mere fact that Amazon has an offer has a price-reducing effect. Prices rise when Amazon withdraws from the price war.

However, as the effects investigated occur on both sides, they will have no influence on inflation rates in Germany. However, it shows that manufacturers should take great care to ensure that Amazon itself sells the items in order to ensure attractive market prices and maximum sales. Consumers should also look to see if Amazon itself has an offer to ensure that the item is currently available at a lower price.

As described in many other studies, online prices change almost immediately in response to internal and external influences. This research provides a further contribution to the fact that the type of seller can also have a decisive influence on the price. It could be shown that price competition is not only limited between individual online shops or between different sellers on a marketplace, but that the size and power of a seller also influence the price.

The results of this research can be classified as highly significant by the hypothesis test and should contribute to a better understanding of the dynamics of online prices in order to derive the right measures and decisions.

5 CONCLUSION

The aim of this study was to determine what influence Amazon has as a seller on pricing on the marketplace of the same name. With a market share of over 60 %, Amazon is a heavyweight in online retail in Germany. More than 15,000 data records were analysed to show the effects of Amazon withdrawing its offer for an item or re-entering the price war for the Buybox. Product prices were recorded and analysed five days before and ten days after the event. It was found that prices rise by an average of 8.5 % in the following days when Amazon withdraws its price offer for an item and prices fall by up to -3.1 % when Amazon re-enters the price war. The hypothesis test shows that the results are highly significant and therefore provide important information about pricing in online retail. The information obtained is of interest to both manufacturers and consumers. This study is limited to the Amazon marketplace in Germany. As Amazon is active in over twenty countries, it can be assumed that this effect also occurs in other countries. Here, too, it is important to investigate whether this effect also occurs on other marketplaces such as Zalando or Otto, which certainly have different algorithms for pricing. Germany is also a special case, as Amazon's market share is very high and many Germans shop on Amazon.

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Appendix

Amazon prices disappear

	day -4	day -3	day -2	day -1	day 0	day +1	day +2	day +3	day +4	day +5	day +6	day +7	day +8	day +9	day +10
number of price increase	0	547	856	1061	1119	2860	2877	2933	2963	2996	3008	3030	3046	3056	3077
mean % increase		10,1	10,8	12,9	13,3	24,4	24,5	24,3	24,5	24,7	25	25,1	25	24,9	24,8
numer without changes	6974	5812	5142	4738	4603	2689	2665	2600	2580	2509	2461	2425	2381	2388	2346
number of price decrease	0	615	976	1175	1252	1425	1432	1441	1431	1469	1505	1519	1547	1530	1551
mean % decrease		-7,3	-7,8	-8,5	-8,7	-10,6	-10,5	-10,6	-10,8	-10,8	-10,9	-11	-10,9	-11	-10,9
Averange	0	0,1	0,24	0,5	0,6	7,8	7,8	8	8,2	8,3	8,41	8,5	8,5	8,5	8,5
Total	6974	6974	6974	6974	6974	6974	6974	6974	6974	6974	6974	6974	6974	6974	6974

Amazon prices appear

	day -4	day -3	day -2	day -1	day 0	day +1	day +2	day +3	day +4	day +5	day +6	day +7	day +8	day +9	day +10
number of price increase	0	625	1000	1164	1312	1761	1732	1738	1803	1828	1880	1903	1916	1951	1959
mean % increase		8,2	8,8	9,4	10,3	13,2	13,7	14,1	13,9	14	14,2	14,4	14,3	14,1	14
numer without changes	8370	7126	6369	6003	5793	3534	3466	3325	3179	3047	2934	2812	2730	2657	2619
number of price decrease	0	619	1001	1203	1265	3075	3172	3307	3388	3495	3556	3655	3724	3762	3792
mean % decrease		-7,1	-7,3	-7,7	-8	-12,8	-13	-13	-13,1	-13,4	-13,5	-13,8	-14	-14,1	-14,2
Average	0	0,1	0,2	0,2	0,4	-1,9	-2,1	-2,2	-2,3	-2,5	-2,6	-2,7	-2,9	-3	-3,1
Total	8370	8370	8370	8370	8370	8370	8370	8370	8370	8370	8370	8370	8370	8370	8370

EVALUATING LIQUIDITY INFLUENCE ON VIETNAMESE COMMERCIAL BANK PERFORMANCE

Le Truc Quynh, Le Ngoc Thuy Trang, Lai Do Nhu, Tuong Vo Minh

Abstract

The research aim is to examine the relationship between liquidity and performance of Vietnamese commercial banks. The authors used variables representing liquidity such as Cash ratio (CASH), Loan to Deposit Ratio (LDR), Loan-to-Asset Ratio (LA), Equity to Total Asset Ratio (ETA) and customer deposits to total assets ratiso (DEP) along with other control variables such as bank size (BSIZE), economic growth (GROWTH), inflation (INF) and economic shock (RISK) to obtain the research model. The data is from 29/41 joint stock commercial banks operating in Vietnam from 2010-2021. The regression results show that most variables have a significant influence except INF, which does not have enough basis to conclude with net profit on total assets (ROA) and net return on equity (ROE) but is statistically significant with net interest margin (NIM). Following that, the authors have suggested several suggestions for banks related to liquidity assurance to avoid risks and improve operational efficiency.

1   INTRODUCTION

The banking system's liquidity is essential in ensuring economic stability and growth. According to Arif & Anees (2012) and Halling & Hayden (2006), the primary function of banks is to enhance capital flows and ensure liquidity for depositors. However, the 2007-2008 global financial crisis showed that many banks faced difficulties due to poor liquidity management. Recently, the arrest of Truong My Lan related to Saigon Commercial Joint Stock Bank (SCB) in Vietnam raised concerns about the bank's liquidity. In the US, the collapse of Silicon Valley Bank, Signature Bank, and Silvergate and warnings about liquidity risks from various studies have highlighted the importance of managing this risk. Liquidity risk is the biggest threat to banks. The reason is that it not only endangers commercial banks but also affects the security of the entire banking system (Eichberger & Summer, 2005). Therefore, assessing the impact of liquidity ability on the performance of commercial banks is extremely important. This helps to understand liquidity management better and provides a basis for recommending improvement measures. At the same time, it ensures the banking industry's future stability and sustainable development.

Most studies on bank liquidity in Vietnam are relatively outdated and have not considered a large number of banks to provide the most accurate results possible. Meanwhile, some international studies only use a few indicators to represent liquidity or operational efficiency or have not considered instability factors in the economy, such as crises or pandemics, so they have not been able to accurately assess the impact. By analyzing a wide range of liquidity measures, macroeconomic indicators, and operational efficiency metrics, our sudy aims to provide more comprehensive, accurate, and up-to-date results in analyzing the impact of liquidity risk on the operational efficiency of commercial banks in Vietnam. Consequently, this

research offers recommendations and proposals to enhance the management of liquidity risk for these banks.

2 LITERATURE REVIEW

2.1 Relevant theories

Liquidity management and bank performance outcomes are explained in this study using background theories such as (1) The Commercial Lending Theory; central banks ought to provide banks with short-term loans to fulfil the short-term capital requirements of the economy and maintain liquidity. This highlights the significance of liquidity management in preserving the financial stability of both banks and the economy (Wilson et al., 2010); (2) The Efficiency Structure (ES) theory holds that banks can achieve higher profits through effective cost management, adopting good policies, improving operational efficiency through good banking governance, and Optimizing production costs; (3) the Trade-off Theory highlights the relationship between investment risk and expected return and addresses the maintenance of optimal excess liquidity during times of crisis to ensure safety, financial integrity and operational stability (Miller & Bromiley, 1990). These theories provide a theoretical basis for analyzing and explaining the impact of internal management factors and external economic conditions on efficiency.

2.2 Literature review

Empirical research indicates a positive correlation between operational performance and liquidity risk. However, some studies indicate opposite results or insufficient evidence to conclude (Ndoka et al., 2017), leading to inconsistencies in research results (Maduwanthi & Morawakage, 2019). According to Y.-K. Chen et al. (2018), Dezfouli et al. (2014), Khalid et al. (2019), Muriithi & Waweru (2017) and Musiega et al. (2017), banks financial performance is negatively impacted by liquidity risk. Similarly, Hacini et al. (2021) concluded that liquidity risk considerably negatively affects Saudi Arabian banks' financial performance. These studies show that banks' profits can be improved by reducing bad debt and increasing financing gaps. On the other hand, research by Arif & Anees (2012) and Bassey (2015) demonstrated a favourable relationship between liquidity risk and the bank performance of Pakistan, Nigeria, and Southeast Asian nations. This reflects the difficulty in determining how liquidity risk affects bank performance and implies that such research should be conducted with caution and close attention to each nation's unique banking system and context.

Focusing on the Vietnamese banking sector, Trang et al. (2021) observed that banks in Vietnam expanding their loan activities typically have higher liquidity risk. This suggests that higher interest revenue itself raises the risk of liquidity. The bank's liquidity will be reduced, and its risk of liquidity will rise in the event of an unanticipated shock. Similarly, Huong & Yen (2024) claimed that rising bank profitability and loan expansion would raise liquidity risk. Liquidity risk, however, can be mitigated by banks retaining specific highly liquid securities that they can sell right away to satisfy solvency requirements and keep their capital adequacy ratio (CAR) high. Pham & Pham (2022) demonstrate that while return on assets, provisions, lending risk, inflation, and economic growth all have a positive influence on bank liquidity, bank size, capital, and return on equity have a negative impact.

Controlling liquidity risk is a priority for financial institutions (Purbaningsih & Fatimah, 2018). Liquidity management is an important issue in the banking sector (Ibe, 2013). Lartey et al. (2013) found that maintaining a good level of liquidity can increase bank profits in Ghana. However, bank size has a negative impact on liquidity and a negligible effect on profitability.

Additionally, Alshatti (2015) demonstrates how Jordanian banks' profitability is positively impacted by liquidity management. According to Khalid et al. (2019), liquidity risk has a major effect on how well banks operate in developing nations like Vietnam.

Arif & Anees (2012) show that increased deposits lead to increased profitability in Pakistani banks. Mustafa (2020) indicates the contradiction between liquidity and profitability, suggesting that banks must balance these two factors. The Basel Committee (2008) emphasizes sound liquidity risk management. Lepetit et al. (2008) and Youssef & Samir (2015) show that bank size affects risk and returns. Ndoka et al. (2017) show a correlation between pre-tax profits and cash, suggesting appropriate deposit and liquidity management to maximize pre-tax profits. Almekhlafi et al. (2016) indicate that the ratio of outstanding debt to total assets positively correlates with the ROA profitability ratio, while other variables show a negative relationship.

In general, effective liquidity management can improve bank performance and profitability, but there needs to be a balance between liquidity and other financial factors to ensure stability and sustainable development. However, several studies simultaneously consider liquidity-related factors and macroeconomic proxies. Most studies use only a few indicators to represent liquidity or performance, thus not thoroughly assessing their impact.

3 DATA AND METHODOLOGY

3.1 Data

The authors use secondary data from Financial Statements and balance sheets of 29/41 banks operating in Vietnam between 2010 and 2021 to investigate the association between liquidity risk and bank performance. However, to have complete and highly reliable data to avoid affecting the research results, the authors have eliminated banks that do not have complete data or have been merged. Furthermore, the General Statistics Office provides macro variables like GDP and inflation, which have been reported by the State Bank and World Bank over the years. Based on the real circumstances, risks like the economic crisis (2011–2012) and COVID-19 (2020–2021) are also acknowledged. Therefore, the authors propose the analysis of independent variables: Cash ratio (CASH), Loan to Deposit Ratio (LDR), Loan-to-Asset Ratio (LA), Equity to Total Asset Ratio (ETA) and customer deposits to total assets ratio (DEP), bank size (BSIZE), economic growth (GROWTH), inflation (INF) and economic shock (RISK) to bank performance (represented by ROA, ROE and NIM).

3.2 Methodology

Previous research often used the least squares (OLS) regression model to analyze the relationship between liquidity ability and bank performance. This model was chosen because of its simplicity, popularity and reliability, having been applied by many previous studies (Arif & Anees, 2012; Bassey, 2015; Ndoka et al., 2017; Trang et al., 2021). However, the OLS model may not be suitable if it cannot handle the unique factors of each bank and the time factor. Therefore, to improve and be more appropriate, the authors have considered two other regression modelling methods: fixed effects model (FEM) and random effects model (REM). They help solve the problem of discrete factors and time.

The authors used the F, and Hausman tests to select the most suitable models. The F test helps authors choose between OLS and FEM, while the Hausman test helps them choose between FEM and REM. Additionally, the Breusch and Pagan test is used to select between OLS and REM.

When the appropriate model is selected, the authors check to ensure the model is not too troubled by testing for heteroskedasticity and zero autocorrelation. In the case of turbulence, the generalized least squares (GLS) model is used to correct. Finally, to solve the endogeneity problem, the authors used the Generalized Method of Moments (GMM) model (Arellano & Bond, 1991) with two main tests: the Sargan/Hansen test and the Arellano-Bond test. The GMM model is considered suitable for estimation in the case of short panel data and for handling issues such as first- and second-order autocorrelation of residuals.

Overall, the combination of OLS, FEM, REM and GMM methods has helped the authors study the relationship between liquidity risk and bank performance more comprehensively and accurately, thereby Providing highly applicable conclusions and policy recommendations.

3.3 Research models

The authors present a research model that builds upon the theoretical foundation and the empirical research that has been analyzed. This model is based on the research framework of Dezfouli et al. (2014), Khalid et al. (2019) and Siaw et al. (2013). It incorporates the following factors: bank size (BSIZE), economic growth (GROWTH), inflation (INF), and economic shock (RISK), such as the COVID-19 pandemic (2020–2021) and the economic crisis (2011–2012). NIM stands for net income margin; ROA, ROE, and ROA for return on assets are the performance indicators. These are the details of the suggested regression model:

$$ROA_{it} = \beta_0 + \beta_1 L.ROA_{it} + \beta_2 CASH_{it} + \beta_3 LDR_{it} + \beta_4 LA_{it} + \beta_5 DEP_{it}$$
$$+ \beta_6 BSIZE_{it} + \beta_7 GROWTH_{it} + \beta_8 INF_{it} + \beta_9 RISK_{it} - \varepsilon_{it} \quad (1)$$

$$ROE_{it} = \beta_0 + \beta_1 L.ROA_{it} + \beta_2 CASH_{it} + \beta_3 LDR_{it} + \beta_4 LA_{it} + \beta_5 DEP_{it}$$
$$+ \beta_6 BSIZE_{it} + \beta_7 GROWTH_{it} + \beta_8 INF_{it} + \beta_9 RISK_{it} - \varepsilon_{it} \quad (2)$$

$$NIM_{it} = \beta_0 + \beta_1 L.ROA_{it} + \beta_2 CASH_{it} + \beta_3 LDR_{it} + \beta_4 LA_{it} + \beta_5 DEP_{it}$$
$$+ \beta_6 BSIZE_{it} + \beta_7 GROWTH_{it} + \beta_8 INF_{it} + \beta_9 RISK_{it} - \varepsilon_{it} \quad (3)$$

Tab. 1 - Variable description. Source: own research

Variable	Symbol	Fomular	Previous studies
Dependent variable			
Bank performance	ROA	$\dfrac{\text{Profit after tax}}{\text{Total assets}} \times 100\%$	Cebenoyan & Strahan(2004) and Musiega et al. (2017)
	ROE	$\dfrac{\text{Profit after tax}}{\text{Equity}} \times 100\%$	Alshatti (2015)and Khalid et al. (2019)
	NIM	$\dfrac{\text{Interest income} - \text{Interest expense}}{\text{Average total profitable assets}}$ $\times 100\%$	Y.-K. Chen et al. (2018; Siaw et al. (2013)
Independent variables			
Liquidity ability	CASH	$\dfrac{\text{Cash} + \text{Deposit in State bank} + \text{Deposit in financial institution}}{\text{Total asset}}$	N. Chen & Mahajan (2010) and Mustafa (2020)
	LDR	$\dfrac{\text{Loan capital}}{\text{Mobilized capital}}$	Dezfouli et al. (2014), Khalid et al. (2019) and Siaw et al. (2013)
	LA	$\dfrac{\text{Total outstanding debt}}{\text{Total assets}}$	Cucinelli (2013) and Kosmidou (2008)
	DEP	$\dfrac{\text{Deposit}}{\text{Total assets}}$	Arif & Anees (2012) and Dezfouli et al. (2014)
	BSIZE	Logarithm of total assets	Dezfouli et al. (2014) and Siaw et al. (2013)
	GROWTH	$\dfrac{\text{GDP}_n - \text{GDP}_{n-1}}{\text{GDP}_{n-1}}$	Anand et al. (2018) and Orlova (2020)
	INF	$INF = \dfrac{CPI_t - CPI_{(t-1)}}{CPI_{(t-1)}} \times 100$	Almekhlafi et al. (2016), Dezfouli et al. (2014) and Mustafa (2020)
	RISK	Economic crisis: 1 for 2011-2012, 0 is otherwise COVID-19: 1 for 2020-2021) is otherwise.	Trang et al. (2021)

4 RESULTS

Tab. 2 - Descriptive statistics of research variables. Source: own research

Variable	Observe	Medium	Standard deviation	Smallest	Biggest
ROA	348	0.0189728	0.0446419	-0.0551175	0.4349784
ROE	348	0.1017122	0.0555487	0.0160301	0.4349784
NIM	348	0.0385642	0.0411402	-0.0078471	0.4349784
CASH	348	0.1797278	0.0907481	0.0160301	0.610376
LDR	348	0.8730023	0.1908712	0.3632857	1,789327
LA	348	0.9038651	0.0492933	0.6241029	0.9737861
DEP	348	0.6476779	0.1325647	0.2508404	0.9095316
BSIZE	348	31.25631	3.762313	17.01862	34.98866
GROWTH	348	0.0571667	0.0143919	0.0258	0.0708
INF	348	0.0553	0.0469567	0.0063	0.1858

Note: The authors compiled results from Stata software

This statistical result includes the variables' range, mean, and standard deviation. For the dependent variable representing operating efficiency, the mean ROA is 0.0189 showing large fluctuations in the data sample. At the same time, ROE averages 0.1017, reflecting relative stability. The NIM variable has a mean of 0.0385 from -0.078 to 0.435, indicating significant variation.

Regarding the independent variables, the CASH variable has a mean of 0.18. In contrast, the LDR variable has a mean of 0.8730 and a standard deviation of 0.1908, reflecting a wide dispersion. The LA variable has a mean close to 1 and a low standard deviation, indicating high uniformity. In contrast, the DEP variable has a mean of 0.65 from 0.25 to 0.91, suggesting significant variation. The BSIZE variable, measured by total asset value, has a mean of 31.26 and a standard deviation of 3.76, indicating substantial differences in size across firms. Regarding external independent variables, GROWTH has an average of 0.057 and a standard deviation of 0.014, indicating a relatively stable level of economic growth. However, INF has a significant standard deviation, indicating wide and uneven dispersion. The variable RISK is analyzed with values 0 and 1, with value 0 accounting for 66.67% and value 1 accounting for 33.33%.

Tab. 3 - Descriptive statistics for the binary variable shock in the economy. Source: own research

RISK	Frequency	Percent	Accumulated
0	232	66,67	66,67
1	116	33.33	100
Total	348	100.00	

Note: The authors compiled results from Stata software

Tab. 4 - Test the correlation between independent variables. Source: own research

	CASH	LDR	LA	DEP	SIZE	GROWTH	INF	RISK
CASH	1.0000							
LDR	-0.1542**	1.0000						
LA	-0.2403**	-0.2199**	1.0000					
DEP	-0.5251**	-0.3414**	0.3143**	1.0000				
BSIZE	-0.0069	-0.0388	0.1256*	0.0922*	1.0000			
GROWTH	0.0232	0.0087	0.0012	-0.0607	0.6044**	1.0000		
INF	0.3942**	0.1987	-0.2463**	-0.5286**	0.1172*	0.1105*	1.0000	
RISK	0.1545**	0.1157*	-0.0983	-0.1821**	-0.412**	-0.7241**	0.4226**	1.0000

** and * Correlation is significant at the 0.01 and 0.05 levels, respectively (2-sided).

Note: The authors compiled results from Stata software

The table 4 shows quite complex correlations between variables. Some variables are highly correlated with each other, while others are not. Generally, pairs of variables are at a low correlation level; no pair of variables is correlated above 0.8. Thus, this result can help determine the relationship between variables and create appropriate models for predicting future variables.

Tab. 5 - Multicollinearity test. Source: own research

Variable	VIF	1/VIF
RISK	4.64	0.215545
GROWTH	4.37	0.229016
INF	2.87	0.348657
DEP	2.19	0.456628
CASH	1.78	0.561664
BSIZE	1.71	0.584606
LDR	1.44	0.693949
LA	1.19	0.838918
Average VIF	**2.52**	

Note: The authors compiled results from Stata software

After variable selection, the FEM regression analysis model is determined to be the most suitable based on the results of the F test and Hausman test.

Tab. 6 - Model selection results. Source: own research

F-test (OLS - FEM)		FEM
F(28, 311) = 1.84	> 0.05	
Hausman test (FEM - REM)		FEM
Prob>chi ^{2} = 0.0000		

Note: The authors compiled results from Stata software

Tab. 7- Model testing results. Source: own research

Wooldridge test for autocorrelation	
Prob > F = 0.0110	< 0.05
Modified Wald test for heteroscedasticity	
Prob > chibar2 = 0.0000	< 0.05

Note: The authors compiled results from Stata software

After retesting the REM model and testing for autocorrelation and conditional heteroscedasticity, the GLS model was chosen to overcome this problem. However, the GMM model was more suitable after comparing the results from the GLS and GMM models.

Tab. 8 - Results of OLS, FEM, REM, GLS and GMM models with ROA. Source: own research

	ROA				
	OLS	FEM	REM	GLS	GMM
CASH	0.103***	0.118***	0.103***	0.0411***	0.0147*
	[5.03]	[4.28]	[5.03]	[2.88]	[1.72]
LDR	0.0404***	0.0484***	0.0404***	0.0218***	0.0265***
	[4.61]	[4.19]	[4.61]	[3.06]	[3.64]
LA	0.0973***	0.125**	0.0973***	0.0447*	0.161***
	[3.15]	[2.54]	[3.15]	[1.79]	[9.84]
DEP	0.0417***	0.0510**	0.0417***	0.0334***	0.0296***
	[2.68]	[2.01]	[2.68]	[2.59]	[2.93]
BSIZE	-0.00895***	-0.00962***	-0.00895***	-0.00908***	-0.00870***
	[-18.49]	[-19.50]	[-18.49]	[-43.47]	[-18.55]
GROWTH	-0.129	-0.0431	-0.129	0.0112	0.305*
	[-0.64]	[-0.22]	[-0.64]	[0.13]	[1.90]
INF	-0.0887*	-0.0784	-0.0887*	-0.0272	-0.0329
	[-1.77]	[-1.40]	[-1.77]	[-0.98]	[-1,11]
RISK	0.00394	0.00314	0.00394	0.00389	0.0147**

	[0.62]	[0.50]	[0.62]	[1.42]	[2.06]
L.ROA					1.127***
					[5.46]
Constant	0.141***	0.116**	0.141***	0.216***	0.0689***
	[4.05]	[2.34]	[4.05]	[7.87]	[2.88]
Observe	348	348	348	348	319
R squared	0.67	0.707			

Note: The authors compiled results from Stata software

ROA = 0.0689 + 1.127*L.ROA + 0.0147* CASH + 0.0265* LDR + 0.161* LA

+ 0.0296*DEP – 0.00870*BSIZE + 0.305*GROWTH + 0.0147*RISK

Tab. 9 - Results of OLS, FEM, REM, GLS and GMM models with ROE. Source: own research

	ROE			
	OLS	**FEM**	**REM**	**GMM**
CASH	0.0792***	0.0738***	0.0792***	0.0760***
	[4.40]	[2.94]	[4.40]	[3.46]
LDR	0.00959	0.00768	0.00959	0.0152**
	[1.25]	[0.73]	[1.25]	[1.97]
LA	-0.882***	-0.840***	-0.882***	-1,124***
	[-32.57]	[-18.65]	[-32.57]	[-11.49]
DEP	0.0227*	0.01	0.0227*	0.0601***
	[1.66]	[0.43]	[1.66]	[4.60]
BSIZE	-0.00508***	-0.00509***	-0.00508***	-0.00522***
	[-11.96]	[-11.25]	[-11.96]	[-15.42]
GROWTH	0.013	0.00816	0.013	-0.437**
	[0.07]	[0.04]	[0.07]	[-2.44]
INF	-0.053	-0.0552	-0.053	0.0231
	[-1.20]	[-1.08]	[-1.20]	[1.06]
RISK	0.00254	0.00256	0.00254	-0.0182**
	[0.45]	[0.45]	[0.45]	[-2.38]
L.ROA				-0.226**
				[-2.06]
Constant	1.022***	0.995***	1.022***	1.265***
	[33.42]	[21.93]	[33.42]	[12.42]

Observe	348	348	348	319
R squared	0.836	0.695		

ROE = 1.265 – 0.226*L.ROE + 0.0760* CASH + 0.0152* LDR – 1.124* LA + 0.0601*DEP

- 0.00522*BSIZE – 0.437*GROWTH – 0.0182*RISK

Tab. 10 - Results of OLS, FEM, REM, GLS and GMM models with NIM. Source: own research

NIM					
	OLS	**FEM**	**REM**	**GLS**	**GMM**
CASH	0.0674***	0.0844***	0.0747***	0.00674	0.0998***
	[3.16]	[3.02]	[3.27]	[0.45]	[6.86]
LDR	0.0406***	0.0464***	0.0426***	0.0188**	0.0186**
	[4.45]	[3.95]	[4.36]	[2.35]	[2.22]
LA	0.0393	0.0824	0.0539	0.00536	0.175***
	[1.22]	[1.64]	[1.49]	[0.17]	[9,70]
DEP	0.0459***	0.0576**	0.0500***	0.0384***	0.0540***
	[2.83]	[2,23]	[2.70]	[2.70]	[3.04]
BSIZE	-0.00766***	-0.00822***	-0.00792***	-0.00804***	-0.00777***
	[-15.19]	[-16.35]	[-16.07]	[-39.63]	[-14.47]
GROWTH	0.0452	0.107	0.0788	0.139	0.561***
	[0.21]	[0.52]	[0.39]	[1.60]	[4.48]
INF	-0.0636	-0.0453	-0.0581	0.00216	-0.117***
	[-1.22]	[-0.80]	[-1.12]	[0.08]	[-3.46]
RISK	0.0101	0.00908	0.00976	0.00770***	0.0230***
	[1.52]	[1.43]	[1.53]	[2.93]	[4.63]
L.NIM					1,460***
					[7.87]
Constant	0.163***	0.121**	0.150***	0.234***	-0.0225
	[4.49]	[2.40]	[3.79]	[7.07]	[-0.79]
Observe	348	348	348	348	319
R squared	0.579	0.628			

NIM = - 0.0225 + 1.460*L.NIM + 0.0998* CASH + 0.0186* LDR + 0.175* LA

+ 0.0540*DEP – 0.00777*BSIZE + 0.561*GROWTH – 0.117*INF + 0.0230*RISK

To ensure the robustness of the findings, the authors conducted various tests, such as the Arellano-Bond test, Hansen test, and Sargan test (see Table 3.10), which all gave consistent results. The model does not suffer from endogeneity problems and can deal with both endogeneity and exogenous factors.

Tab. 11 - Table of tests on instrumental variables and autocorrelation. Source: own research

	ROA	ROE	NIM	Results
Number of group	29	29	29	Number of groups > Number of instrumental: Accepted
Number of instrument	26	28	26	
Sargan/Hasan test	0.603/0.847	0.07/0.896	0.992/0.45	Sargan/Hansan test ≥ 0.5: Appropriate instrumental variable
Arellano-Bond (AR2) test	0.093	0.315	0.115	There is no autocorrelation

Note: The authors compiled results from Stata software

5   DISCUSSION

The regression results show that cash management and use are important factors for bank performance. When CASH increases by 1 unit, ROA increases by 0.0147 with a significance level of 0.1, ROE increases by 0.0760 with a significance level of 0.01, and NIM increases by 0.0998 with a significance level of 0.01. This means that high cash holdings may indicate a bank's careful management of assets and risks. It helps to respond quickly to customer needs, ensuring stability and attracting funds for society. These results are supported by many previous studies, such as Arif & Anees (2012), Dezfouli et al. (2014) and Mustafa (2020).

The results of Tables 8, 9, and 10 show that the Loan to Deposit Ratio (LDR) positively correlates with bank performance. When LDR increases by 1 unit, the bank's ROA increases by 0.0265, ROE by 0.0152, and NIM by 0.0186. This shows that, in Vietnamese banks, increasing the ratio of loans to mobilized capital can lead to growth and improved financial performance. High levels of LDR help banks increase Credit and boost sales and interest income. If a bank can extend Credit beyond its ability to mobilize capital from customers, this can lead to growth in sales and profits. The difference in research results compared to before may be due to the characteristics of banks in Vietnam. The study is supported by Wuave et al., 2020)

The Loan-to-Asset Ratio representing the bank's liquidity shows that total debt/assets have a positive relationship with ROA and NIM but a negative relationship with ROE at the 1% significance level. Specifically, when increasing 1 unit of LA, ROA increases by 0.161 and

NIM increases by 0.175, while ROE decreases by 1.124. This indicates that increasing debt to assets can improve return on assets and net profit margin, but reduce return on equity. High debt to assets also increases the risk of bad debt and can cause financial loss if not managed carefully, as failure to recover debt or unsecured assets can negatively affect the bank.

The ratio of customer deposits to total bank assets (DEP), has been shown to have a strong positive relationship with bank performance. As DEP increases, the bank's ROA, ROE and NIM all increase. This reflects that customer deposits are a stable and low-cost source of capital and help strengthen the bank's strength and reputation. Maintaining a high DEP level helps banks attract customers and increase profits, improves liquidity, and reduces risks in business operation.

Rapid growth in bank size (BSIZE) can negatively affect bank performance. When BSIZE increases by 1 unit, ROA decreases by 0.0087, and ROE decreases by 0.00522, which means an increase in asset size leads to a decrease in return on assets and equity. The reason may be increased operating costs, as the bank has to invest in systems, technology, staff, and branch network expansion. Risk management also becomes more complex with more loans and investments, leading to higher financial risks and more investment in hedging systems, increasing operating costs. In addition, when the scale of assets is significant, banks have difficulty finding new investment opportunities, leading to a decrease in the rate of return on assets and equity.

Inflation, which represents the depreciation of currency and increase in commodity prices, has a significant impact on the performance of banks, especially through the Net Interest Margin (NIM). When inflation increases by 1 unit, NIM decreases by 0.117 at the 0.01 significance level, indicating that inflation erodes bank profitability. To mitigate this impact, banks can focus on strategies such as increasing the number of borrowers, reducing operating costs, and adjusting lending terms for low-risk loans. Effective management of costs and revenues is important, especially when facing inflation risks. However, there is insufficient evidence to conclude that inflation significantly affects other financial indicators such as ROA and ROE.

High economic growth has a multi-dimensional impact on bank profitability. On the one hand, it boosts demand for loans and customers' ability to repay debts, leading to credit growth and revenue. On the other hand, if economic growth overheats, it can lead to an increase in risky loans and create a fiercely competitive environment in attracting customers, thereby negatively affecting profitability. Therefore, banks need to be careful in managing credit risks and developing appropriate competitive strategies to ensure sustainable development in the context of volatile economic growth.

In the context of the economic crisis and COVID-19 pandemic, the NIM and ROA of Vietnamese banks increased due to low interest rate policies that helped reduce capital mobilization costs, debt restructuring and asset management opportunities more effectively. However, ROE decreased because banks needed to increase equity capital to withstand the crisis, bad debt risks were higher, and risk provision costs increased. This reflects increased financial security but also reduced return on equity.

6 CONCLUSION

This study examines the relationship between liquidity and performance of Vietnamese commercial banks, using data from 29 banks from 2010-2021. Operating efficiency is measured by ROA, ROE and NIM; Liquidity includes the variables CASH, LDR, LA, ETA, and DEP, along with control variables such as BSIZE, GROWTH, INF, and RISK. The results show that most variables have a significant influence, except INF ROA and ROE. This study also shows

that conflicts in previous studies may be due to differences in liquidity, culture, income, and policy variable selection.

Banks must balance holding cash to increase liquidity and use capital for investment to optimize profits. Too much money can reduce operating efficiency by not being utilized for other profitable activities. Cash ratio adjustment and credit risk management policies are necessary to increase revenue and minimize risk. Furthermore, Increasing the credit/deposit ratio can increase profits, but careful risk management is required to avoid losses. Banks must establish effective risk management policies and train employees to improve management capacity. Besides that, Increasing asset size (BSIZE) can reduce returns on assets and equity due to increased operating and risk management costs and difficulties in finding new investment opportunities.

Moreover, inflation reduces net interest margin (NIM) and increases capital costs and credit risk. Banks need to manage interest rates, reduce costs and optimize risk management to minimize the impact of inflation. Finally, high economic growth can increase loan demand and revenue and create credit risk and interest rate competition. Banks need to assess and manage risks carefully and, at the same time, look for other business opportunities to diversify income sources.

However, this research has several limitations, including the incomplete number of participating banks and some factors representing liquidity variables, gender, and risk aversion of managers not considered. Future research can continue to explore these aspects to reach more precise conclusions.

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ECONOMIC AND INSTITUTIONAL FACTORS IMPACTING AFRICAN STUDENTS' PURSUIT OF HIGHER EDUCATION IN THE CZECH REPUBLIC

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Abstract

This paper aims to examine the economic and institutional factors that influence African students' decisions to pursue higher education in the Czech Republic. The study addresses a gap in the research on international student mobility by focusing on trends from Africa to Central and Eastern Europe. Utilizing a quantitative approach, the research analyses panel data from 52 African countries over the period 2013-2021, employing the Ordinary Least Squares (OLS) method with fixed effects. Key findings suggest that youth unemployment and corruption in the home country significantly impact student mobility, with higher youth unemployment and corruption correlating with fewer students studying abroad. Conversely, population size positively influences the number of students going abroad. The study concludes that students are primarily motivated by the desire to escape inadequate educational systems and socio-economic instability in their home countries rather than by economic conditions in the destination country. These insights can inform policy decisions related to international education and cultural exchange between African countries and the Czech Republic.

Keywords: *abroad, Africa, factors, motivation, students*

1 INTRODUCTION

The internationalization of higher education has become a global phenomenon, with an increasing number of students seeking educational opportunities abroad. While much attention has been paid to student flows between major educational hubs in North America, Europe, and Asia, less research has focused on emerging trends in student mobility from Africa to Central and Eastern Europe. The goal is to examine the growing phenomenon of African students choosing to pursue their university education in the Czech Republic (OECD, 2024).

This topic is of particular importance for several reasons. First, it sheds light on the changing dynamics of international student mobility, moving beyond traditional destination countries. Secondly, it offers insights into the economic and institutional factors that influence students' decisions to study abroad, particularly in a country that may not be an obvious choice for African students. Thirdly, understanding these trends can inform policy decisions both in African countries and the Czech Republic regarding international education, cultural exchange, and potential economic partnerships.

Every year, students from African countries come to the Czech Republic to study at universities, both in the capital and in the regions. In this research we want to investigate whether the economic situation in the home country influences the decision to travel to the Czech Republic for education. Existing research mainly reflects factors such as unemployment, political stability, distance or ease of administrative processes, cultural and language barriers at the individual level (Lovětínská, 2023). This paper will focus on the aggregate level and quantitative research will be conducted at the state level to examine the relationship between economic and institutional quality on the number of students going to the Czech Republic to study at university, according to available data between 2013 and 2021.

2 LITERATURE REVIEW

Many important factors motivate a growing number of African students to study abroad. The most important of these is the desire for higher education, since many people aim to get into reputable schools (Magbondé, 2021), research and English programs (Abdulai & Roosalu, 2020), and employment prospects in the industry (Liu et al., 2024) The possibility of better career opportunities is also a major motivator; abroad degrees often open doors to promising careers and global job marketplaces (Banda & Zungu, 2024). This is also indicated by the fact that youth unemployment is a general problem in African countries, with unemployment reaching up to 30% (Matsh, 2023a), while the average unemployment is around 7% (Statista, 2024). Another significant incentive is exposure to many cultures and international networks, which offer students a more comprehensive perspective, worthwhile relationships, and opportunities for personal development (Di Michele et al., 2024). Moreover, inadequate educational systems (Liu et al., 2024) and unfavourable socioeconomic conditions (Hodzi, 2020) in many African countries can motivate students to pursue education in more stable settings, guaranteeing continuous academic advancement. The educational systems in many African countries lag behind global standards, with limited access to higher education, making it difficult for many to achieve (Matsh 2023b). Even gaining admission to a university does not guarantee a quality education, as classrooms are often overcrowded, and the system lacks adequate adaptation to meet students' needs (Ezel, Arasli, 2021). As a result, many students seek higher education abroad in the hope of receiving a higher quality education. International education is also made more accessible by scholarships and financial aid from foreign governments and organizations, which enables African students to pursue their goals despite their economic situation (Gbollie & Gong, 2020). All these reasons point to a strong desire among African students to use the potential of international education to grow both personally and professionally.

2.1 Student barriers

As mentioned earlier, African students face several significant barriers in pursuing education abroad, with financial challenges being among the most prominent. The cost of studying abroad is a substantial burden not only for the student but also for their family. In many African cultures, extended relatives often contribute to covering these expenses (Mligo, 2021). Financial commitments start even before departure, as students must meet foreign university admission requirements and navigate the visa application process, which is another major obstacle. Obtaining a visa requires numerous documents, many of which involve considerable time and money, with no guarantee of success (Lovětínská, 2023).

Once students arrive in their host country, they face additional challenges, including language barriers, cultural adaptation, and social integration. Even when classes and communication occur in English, heavy accents can make understanding difficult (Hajar et al., 2024). Language barriers and the shock of adjusting to a new culture can lead to feelings of depression, stress, loneliness, and homesickness (Alasmari, 2023). Building a strong social network is crucial for international students, as friendships with peers help enhance their study experience and provide emotional support (Zhou et al., 2023). However, loneliness remains a common challenge, significantly affecting the mental health of many students in a new country (Backhaus et al., 2023).

3 METHODOLOGY

The goal is to assess how macroeconomic and institutional factors influence the number of students coming from African countries to the Czech Republic to study at universities. To show

first results on this topic and suggest future research in this area. There are two Hypothesis (H). H1: As the youth unemployment rate rises in the home country, the number of students moving from African countries to the Czech Republic to study at university increases on average. H2: The higher the percentile of the quality of institutions in the home country, the lower the number of students, on average, going from African countries to the Czech Republic to study at university.

The initial method is the Ordinary Least Squares (OLS) method in estimating panel data with so-called fixed effects (Wooldridge, 2012). There are fixed non-random and time (t) fixed individual unit characteristics (ai), thus we observe the variability of time-varying variables ($\beta`X`it$) for given African economies, i.e. some average effects within the countries of interest (i), all else equal, with uit being the error term (Equation 1).

$$Y_{it} = a_i + constant + \beta`X`_{it} + u_{it} \tag{1}$$

The tests used in the model estimation framework (Moshna, 2017) - Wooldridge test for the presence of autocorrelation in panel data with null hypothesis H0: No first-order autocorrelation is present. Wald test for the presence of between-group heteroskedasticity in panel data with null hypothesis H0: The units have the same error variance. The OLS joint F-tests of the full model for the named independent variables are joint F-tests with the null hypothesis H0: All estimated beta coefficients for the named independent variables in the model are equal to zero. An asymptotic test statistic is used for GLS estimates: chi-square with the same null hypothesis. Partial t-tests of the beta coefficients in the regression with the null hypothesis H0: the coefficient is equal to zero. These tests were based on a robust standard error of the HAC type, which attempts to compensate for problems related to the presence of heteroskedasticity and first-order autocorrelation.

The data used are from the OECD database - International Student Enrolment by Country of Origin 2013-2021 (OECD, 2024), World Bank database - Macroeconomic and Institutional Data 2013-2021. (DataBank, 2024)

The number of units was planned to total all 54 countries and the number of periods of 9 years but Eritrea does not have GDP values and Seychelles does not have unemployment rate values, so these were excluded, in total the panel is based on 52 countries: Algerian Democratic and People's Republic, Republic of Angola, Republic of Botswana, Republic of Burundi, Republic of Cameroon, Republic of Cape Verde, Central African Republic, Republic of Chad, Union of the Comoros, Democratic Republic of the Congo, Democratic Republic of the Congo, Republic of Benin, Republic of Equatorial Guinea, Federal Democratic Republic of Ethiopia, Republic of Djibouti, Republic of Gabon, Republic of Gambia, Republic of Ghana, Republic of Guinea, Republic of Côte d'Ivoire, Republic of Kenya, Kingdom of Lesotho, Republic of Liberia, Libyan State, Republic of Madagascar, Republic of Malawi, Republic of Mali, Islamic Republic of Mauritania, Republic of Mauritius, Kingdom of Morocco, Republic of Mozambique, Republic of Namibia, Republic of Niger, Federal Republic of Nigeria, Republic of Guinea-Bissau, Republic of Rwanda, Democratic Republic of São Tomé and Príncipe, Republic of Senegal, the Republic of Sierra Leone, the Federal Republic of Somalia, the Republic of South Africa, the Republic of Zimbabwe, the Republic of South Sudan, the Republic of Sudan, the Kingdom of Swaziland, the Republic of Togo, the Republic of Tunisia, the Republic of Uganda, the Arab Republic of Egypt, the United Republic of Tanzania, Burkina Faso and the Republic of Zambia.

Tab. 1 – Summary statistics of variables used for African countries, 2013-2021. Source: own research

Variable	N	Mean value	S.D.	Min	Max
Number of outgoing students	486	14,4	34,3	0,000	280
Real GDP	471	$4,77*10^{10}$	$9,47*10^{10}$	$2,44*10^{10}$	$5,18*10^{11}$
Real GDP (ln)	471	23,39	1,58	19,31	6,97
Unemployment rate	477	9,09	7,13	0,520	28,8
Unemployment – youth	477	17,9	15,7	0,670	78,8
Corruption	486	30,0	22,3	0,000	91,9
Voice & Accountability	486	31,3	19,9	0,483	79,1
Stability	486	29,3	21,1	0,000	88,2
Rule of Law	486	28,5	19,8	0,000	79,8
Polulation (mil.)	486	23,4	33,7	0,0899	213,
Distance	486	5661,0	1781,4	1738,7	8919,4

The most significant differences between African countries are the level of corruption, where the lowest value is 0 (Somalia, South Sudan) and the highest is 91.9 (Seychelles), which means that there are extreme differences in the set-up of the political system. Another variable with very different values is stability, which again shows the diversity of individual countries. Likewise, different numbers for Rule of Law, Voice & Accountability and Unemployment of youth.

4   RESULTS

Tab. 2 – Panel data regressions with fixed effects, unemployment rate, quality of institutions, distance, 52

countries. Source: own research

Dependent variable outgoing students	Model 1 Fixed effect	Model 2 Fixed effect	Model 3 Random effect
Konstanta	239,792 (277,061)	-14.5182 (232.144)	23,0220 (116,695)
Unemployment rate	-6,01009 (3,34374)		
Unemployment – youth		**-3.06410** (1.14906)	-0,734467 (0,635442)
Corruption		**-0.668453*** (0.248287)	-0,501088 (0,287924)
Voice & Accountability		-0.00722574 (0.303379)	-0,249861 (0,467636)

Stability		0.107930 (0.144220)	0,320138 (0,181519)
Rule of Law		0.649048 (0.455080)	0,927195 (0,694300)
Year 2014	-0,657482 (0,883652)	-0.950083 (1.34722)	0,467831 (1,20446)
Year 2015	-0,887322 (1,62133)	-1.02348 (1.73055)	0,637633 (1,65254)
Year 2016	0,339124 (2,97214)	1.13166 (2.97269)	4,51224 (3,65325)
Year 2017	2,03616 (4,27931)	2.83583 (4.24270)	7,19397 (5,20968)
Year 2018	-0,111701 (3,94093)	0.158279 (3.88875)	6,34354 (4,75746)
Year 2019	-0,390761 (3,50589)	-0.639209 (3.58617)	6,84213 (4,32839)
Year 2020	4,13047 (4,68280)	5.02958 (4.51242)	9,48597 (5,70291)
Year 2021	7,44515 (5,48100)	6.10579 (5.02596)	12,9741 (6,71133)
ln(GDP)	-10,0241 (11,6266)	1.00661 (10.1318)	-0,977765 (5,24258)
Population (mil.)	**2,60104*** (0,723705)**	**2.38110*** (0.598818)**	**0,733107*** (0,191227)**
Distance			-0,00142003 (0,00188978)
N	462	462	462
R-Squared	27,34 % (within)	32,92 % (within)	23,65 % (overall)
Model test	F=1,98796**	F=2,29988**	Chí^2=89,0666***
Autocorrelation (Wooldridge test)	Yes	Yes	Yes
Heteroskedasticity (Wald test)	Yes	Yes	Yes
Hausman test			Chí^2=20,1076***

Note: Robust standard errors for heteroskedasticity and autocorrelation (HAC) in parentheses below the coefficient, ** for p-value < 0.05, *** for p-value < 0.01.

Model 1 shows that unemployment is a statistically insignificant factor and is not related to the number of outgoing students. Model 2 suggests that if youth unemployment increases by one percentage point, the number of exiting students will decrease by 3.06 students on average, all else equal. H1 was not confirmed for partial youth unemployment either. Model 2 shows that if the percentile of perceived corruption increases by one percentage point, there will be 0.67 fewer students exiting on average, all else equal. The other observed indicators of institutional quality were not statistically significant and do not affect the number of students exiting. Thus, H2 was not confirmed.

The population factor was found to be statistically significant in all models. If the population increases by one million, the number of out-migrating students increases by an average of 2.38

students, all else equal (see Model 2). The effects of each year (2014-2021) also proved statistically insignificant, as did the logarithms of GDP and the model constant.

All models suffer from the problem of heteroskedasticity and autocorrelation. Their presence indicates a violation of the Gauss-Markov conditions. These problems have been partially treated by applying Robust Standard Error on Heteroskedasticity and Autocorrelation (HAC). Another possible solution would be to use AR(1) models (adding the past value of entering students to the right-hand side of the equation, i.e., between the other regressors).

5 DISCUSSION

Our research has revealed that the quality of domestic educational institutions serves as a significant motivator for students to pursue education abroad. Several factors contribute to this decision, including personal reasons where the choice of a specific institution abroad is influenced by close associates such as relatives and friends. Additionally, the perceived quality of domestic educational institutions and the broader socio-economic conditions within the home country play crucial roles.

Studies focusing on African students in China (Lei et al., 2021) and Nigerian students in Northern Cyprus (Ezel, Arasli, 2021) provide substantial evidence supporting these motivators. These studies highlight that students are often driven by the pursuit of higher quality education and better academic resources available abroad, which are perceived to be superior to those in their home countries (Okunola & Ikuomola, 2009). Moreover, these findings are corroborated by a questionnaire survey conducted at universities in Benin, which revealed that the quality of foreign institutions is a critical factor influencing students' choice of study destination. Beyond the quality of educational institutions, the preservation of democratic principles, such as an independent judiciary and low levels of corruption, also play a significant role in shaping students' decisions to study abroad. These democratic principles ensure a stable and conducive environment for academic pursuit, thereby making certain countries more attractive to international students. The results of our study further confirm that students' motivations to study abroad are more strongly influenced by the conditions in their home countries than by the economic situation in the destination countries (Magbondé, 2021). This suggests that students are primarily driven by a desire to escape inadequate educational systems and socio-economic instability at home, rather than being attracted solely by the economic opportunities abroad.

Additionally, our research has identified corruption as a pertinent variable influencing the decision to study abroad. High levels of corruption within the educational system and broader societal structures can significantly deter students from pursuing higher education domestically, thereby pushing them towards institutions abroad where they perceive a fairer and more transparent academic environment.

In conclusion, the decision of African students to study abroad is multifaceted, influenced by the quality of domestic educational institutions, personal connections, socio-economic conditions, and the presence of democratic principles in potential destination countries. This complex interplay of factors underscores the need for improvements in domestic educational and governance systems to retain talented students within their home countries.

The contribution of this research to science lies in its identification and analysis of the complex factors influencing African students' decisions to pursue higher education abroad. By highlighting the pivotal role that the quality of domestic educational institutions and socio-economic conditions play in shaping these decisions, this study expands the understanding of educational migration patterns. It offers valuable insights into how personal connections, such

as the influence of friends and family, and broader socio-political factors like corruption and democratic governance, intersect to drive students away from their home countries.

A limitation of this study is the significant variation in the economies, economic growth rates, and population composition across different African states. Africa is a diverse continent, with countries experiencing varying levels of economic development and stability, which means that the factors influencing students' decisions to study abroad may differ significantly from one country to another. Another limitation of the study is the relatively narrow focus on a limited number of factors. While key economic and institutional barriers are discussed, other important influences such as political stability, family expectations and regional differences in access to international programs were not extensively explored. Additionally, the study does not delve deeply into psychological factors, such as students' personal motivations, aspirations, or resilience, which can also play a crucial role in their decision to study abroad.

Expanding the scope of research to include a wider range of influences could provide a more comprehensive understanding of the challenges and opportunities African students encounter when pursuing higher education abroad. To gain deeper insights, it would be beneficial to extend this research to other countries. A comparative study of the identified variables across neighboring countries like Germany, Austria, Poland and Slovakia could reveal intriguing differences. This broader comparison could also highlight regional trends and lead to further focused research on how these factors vary across different European education systems, offering valuable perspectives for both policymakers and academic institutions.

6 CONCLUSION

The internationalization of higher education is a growing phenomenon, with African students increasingly seeking education opportunities in non-traditional destinations such as the Czech Republic. This study aimed to understand the factors driving this trend, focusing on macroeconomic and institutional determinants.

The analysis revealed that the quality of domestic institutions significantly influences the decision of African students to study abroad. Specifically, higher levels of corruption and youth unemployment in home countries correlate with lower numbers of students going abroad, contradicting the hypothesis that economic distress would drive more students to seek education overseas. The quality of institutions and broader socio-economic conditions in home countries emerged as critical motivators, emphasizing the need for better domestic education systems and stable socio-economic environments.

Moreover, the research underscores that the decision to study abroad is influenced more by the conditions in the home country than by the economic situation in the destination country. This suggests that improving educational infrastructure and socio-economic stability in African countries could reduce the need for students to seek education abroad.

In conclusion, the study highlights the importance of addressing domestic educational and institutional quality to manage student mobility effectively. Policymakers in both African countries and the Czech Republic can use these insights to foster international educational collaborations and create supportive environments for students, ultimately benefiting global educational exchange and economic partnerships.

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Appendix

Tab. 3: Summary of variable definitions. Source: own research

Variable name	Definition according to World Bank methodology
GDP (constant 2015 US$)	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 2015 prices, expressed in U.S. dollars. Dollar figures for GDP are converted from domestic currencies using 2015 official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used.
Unemployment, total (% of total labor force) (modeled ILO estimate)	Unemployment refers to the share of the labor force that is without work but available for and seeking employment.

Unemployment, youth total (% of total labor force ages 15-24) (modeled ILO estimate)	Youth unemployment refers to the share of the labor force ages 15-24 without work but available for and seeking employment.
Control of Corruption: Percentile Rank	Control of Corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Percentile rank indicates the country's rank among all countries covered by the aggregate indicator, with 0 corresponding to lowest rank, and 100 to highest rank. Percentile ranks have been adjusted to correct for changes over time in the composition of the countries covered by the WGI.
Voice and Accountability: Percentile Rank	Voice and Accountability captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. Percentile rank indicates the country's rank among all countries covered by the aggregate indicator, with 0 corresponding to lowest rank, and 100 to highest rank. Percentile ranks have been adjusted to correct for changes over time in the composition of the countries covered by the WGI.
Political Stability and Absence of Violence/ Terrorism: Percentile Rank	Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism. Percentile rank indicates the country's rank among all countries covered by the aggregate indicator, with 0 corresponding to lowest rank, and 100 to highest rank. Percentile ranks have been adjusted to correct for changes over time in the composition of the countries covered by the WGI
Rule of Law: Percentile Rank	Rule of Law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Percentile rank indicates the country's rank among all countries covered by the aggregate indicator, with 0 corresponding to lowest rank, and 100 to highest rank. Percentile ranks have been adjusted to correct for changes over time in the composition of the countries covered by the WGI.
Population, total	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. The values shown are midyear estimates.
International students, total	Total number of students enrolled in tertiary education programmes by country of origin (African countries) to country of destination (Czech republic).

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EXPLORING CHALLENGES IN SMALL FARM ENTERPRISES: EMPIRICAL INSIGHTS FROM A DEVELOPING COUNTRY CONTEXT

Maureen Lupunga Malesu, Pavel Syrovátka

Abstract

Small farm enterprises constitute a vital component of agricultural systems in most developing countries. They play a pivotal role in food security, employment generation, poverty alleviation, and rural development. However, these enterprises often encounter numerous challenges that hinder their sustainability and growth. This study employed a qualitative approach to delve into the multifaceted challenges faced by small farm enterprises within the context of a developing country. Utilizing semi-structured interviews, data was gathered from both farm owners and experts from the agricultural sector in Zambia. The study employed thematic analysis using Atlas.ti software to analyse the collected data. The findings indicate that challenges faced by small farm enterprises include limited financial resources, high cost of inputs, security concerns, inadequate government support and climate change. Additionally, the study uncovers the intricate ways these challenges interact and compound each other, creating a complex web of obstacles. Understanding these interconnections is essential for developing tailored interventions. The study proposes mitigation strategies that can inform policymakers and stakeholders, contributing to the development and sustainability of small farm enterprises in the developing context, particularly the SSA.

Keywords: *Agriculture; Challenges, Small farm enterprises, SSA, Zambia*

1 INTRODUCTION

Agriculture is regarded as the mainstay of most economies in developing countries as it contributes significantly to gross domestic product (GDP), export earnings, and employment (Langyintuo,2020; Malesu&Pavel,2024). For most of the developing countries, the agricultural sector is dominated by smallholder farms. Smallholder farms play a significant role by contributing to food security, improved livelihoods, and rural development (Aditya, 2016; Adobor,2020). As such smallholder farms have been acknowledged for their contributions towards poverty reduction and stimulating economic growth (Cherotich et al.,2018).

In the Sub-Saharan Africa (SSA), the smallholder farms can be argued to be the backbone of the rural economies employing the majority of the rural population, providing food security, incomes and improved livelihoods (Mwando, 2022; Kamara et al.,2019). Small farms produce approximately 80% of the food consumed in SSA (Kamara et al.,2019; Zerssa et al.,2021). Within the category of small farms are small farm enterprises that approach farming as their main occupation (Aditya ,2016). These Small farm enterprises are considered as economic engines that drive economic growth and reduce poverty in developing countries (Adobor,2020; Malesu &Pavel,2024). Despite their importance, research on the challenges faced by small farm enterprises is limited, especially in developing contexts such as SSA.

While the challenges faced by smallholder farms in developing countries have been extensively studied (Mpandeli and Mponya.,2014; Umar, 2015; Siamabele, 2019; Fan & Rue 2020), there is limited research focused specifically on small farm enterprises especially in the SSA context. Furthermore, existing literature has paid little attention to understanding how the various challenges faced by these enterprises interrelate and compound each other. Understanding these

interconnections is crucial for developing comprehensive strategies that can effectively support small farm enterprises in overcoming these multifaceted challenges in the developing countries, particularly the SSA where agriculture is the main economic activity.

It can be noted that the small farm enterprises differ from individual smallholder farmers due to their structured business operations and potential for significant economic impact (Adobor,2020). Challenges faced by these enterprises can threaten their viability (Fan & Rue, 2020). Therefore, enhancing the viability of small farm enterprises is necessary for poverty reduction and improved food security and nutrition (Fan & Rue, 2020). In view of the above reasons, this study seeks to answer the following research questions: What are the challenges faced by small farm enterprises in the SSA context, and how do these challenges interact and compound each other?

This study makes several significant contributions to the understanding and support of small farm enterprises in the developing context particularly, the SSA context. First, the study contributes through the understanding of the challenges faced by small farm enterprises, a segment that has received relatively limited attention in current literature. Second, the study offers a nuanced understanding of how these challenges interact and compound each other, creating a more intricate web of obstacles that has potential to hinder the growth and sustainability of small farm enterprises. This holistic perspective is crucial for developing effective, integrated support strategies. Third, the study provides recommendations that are designed to inform policymakers and stakeholders in designing interventions that address the specific needs of small farm enterprises, ultimately contributing to rural development and economic growth in SSA.

2 LITERATURE REVIEW

The sustainability and growth of small farms in the developing countries, particularly the SSA is crucial to the region's agricultural productivity and rural development. However, these small farms face a myriad of challenges that threaten their viability. This literature review explores existing research on the challenges faced by small farms particularly in the developing context.

Recent studies point out that One of the common challenges faced by smallholder farms is the impact of climate change (Arslan et al., 2015; Kurgat et al., 2020). Climate change is being experienced through high temperatures, prolonged droughts and floods (Ngoma et al.,2020). Climate change has a negative impact on productivity, food security and livelihood among smallholder farmers who often have no capacity for mitigating and adapting to the effects of climate change (Nuskiya,2019; Fan & Rue 2020).

Another challenge reported by previous studies relates to lack of access to finance (Makondo et al,2014; Kamara et al.,2019). Past studies explain that smallholder farmers who have access to adequate capital are able to produce quality products that meet market standards (Mpandeli and Mponya.,2014). However, most of the smallholder farmers struggle to obtain financing because they lack collateral, as they do not own physical assets (Kamara et al.,2019). Access to credit allows smallholder farms to meet their obligations during different stages of the production cycle (Khanal and Omobitan,2020). High cost of financing and lack of assets such as land ownership are some of the factors cited to contribute to difficulties in accessing financial services (Mpandeli and Mponya.,2014; Fan & Rue 2020).

High price of inputs has also been identified as one of the major challenges faced by smallholder farmers. A study conducted by Mpandeli and Mponya(2014) among smallholder farmers of Limpompo revealed that the farmers complained of high cost of inputs such as seeds, fertilizers and herbicides. To assist smallholder farmers with challenges relating to inputs, government

support through the provision of subsidies has been implemented across most of SSA (Umar,2015; Ricker-Gilbert,2020). However, subsidies have been reported to be inadequate (Umar,2015). Government support through provision of services such as extension support and subsidies play a positive role on the performance of small farms (Ragbir et al.,2014; Adobor ,2020). Other studies have highlighted challenges related to security such as theft (Mani et al.,2021; Marandure et al.,2020).

While existing studies provide valuable insights into the individual challenges faced by smallholder farms, there is limited research specifically addressing the challenges faced by small farm enterprises and how these challenges interact and compound one another. Our study aims to fill this gap by exploring the challenges of the small farm enterprises and the interconnected nature of these challenges.

3 METHODOLOGY

3.1 Study design & Sampling

The study was qualitative nature because the focus was on obtaining detailed information on topic at hand (Yoosefi et al.,2020; Levitt et al.,2018). The participants in this study included six small farm enterprise owners purposively selected. Purposive sampling technique was used in order to select the respondents with the most relevant experience and knowledge (Cresswell,2018). The respondents from these enterprise farm owners who had been farming for over 8 years. Additionally, three agricultural experts were purposively selected to provide additional insights on the subject due to their expertise related to small holder farming (Ritchie et al.,2013). The completion of 9 interviews led to the realization of data saturation, signifying that the information gathered had reached a point of redundancy, and no new themes or insights were emerging from subsequent interviews (Saunders et al.,2019).

3.2 Study Setting

This study was conducted in two districts in Zambia namely Chongwe and Chibombo. Zambia is an agrarian economy where a significant proportion of the agricultural sector is occupied by smallholder farmers (Ngoma et al.,2020). Zambia makes an idea study area because it shares many characteristics with other countries in SSA, including similar agricultural practices, climatic conditions, and socio-economic challenges. Conducting the study in Zambia allows us to draw upon the country's experiences, enabling us to extrapolate findings and provide valuable insights into the broader context of small farm enterprises across Sub-Saharan Africa and other developing regions.

3.3 Data collection and Analysis

Semi-structured interviews served as the primary method of data collection. This approach facilitated open-ended conversations, allowing participants to express their experiences, opinions, and perceptions regarding the challenges encountered in their small farm enterprises. The interviews were conducted face-to-face (Duarte Alonso and Kok, 2021). Consent was obtained from all the respondents before the interviews were conducted. Moreover, the respondents were all assured of anonymity and confidentiality (Saunders.,2019)   With the permission of the respondents, the interviews were recorded.

Data triangulation was attained through the deliberate inclusion of diverse respondents in our study namely farm owners and experts, along with review of relevant literature (Cottan et al.,2023; Saragih,2017). Thematic analysis was employed to analyze the data using Atlas.ti version 23 software.

4   RESULTS

4.1   Challenges

Five broad themes emerged from the analysis namely: limited access to financial resources, cost of farming inputs, Security concerns (thieves &bush fires), inadequate government support, and climate change.

Limited access to financial resources

Most of the interviewees complained about the limited financial resources encountered in their farm enterprises. The comments below illustrate this point:

"As for me, I would love to perform even better than this, but the challenge I face is capital. I have limited capital. With enough capital I would even be able to rent another field for my cultivation." (Farmer 1)

"I would have loved to get a loan but it is difficult." (Farmer 6)

The challenge regarding difficulties in accessing finance was also reported by one of the experts as follows:

"I would say the other challenge is the cost of finance, very expense for a farmer if they are lucky to even get credit, almost never existing to the farmers, banks fear them ,they have a history of credit, give them , you are done, so the farmer has an X behind them they these don't pay, So banks have agriculture specialist in there but they don't even tailor products for the small holder farmers."(Expert-NGO)

Previous studies have also reported the challenge of access to financial services for smallholder farmers (Kaido et al.,2020; Makondo et al.,2014). For instance, the Zambian Financial Sector Deepening Limited (FSD Zambia) (2021) revealed that a significant amount of credit allocated to the agricultural sector was in 2017 was in favor of the commercial farms over the smallholder farms. This was due to the concerns related to the inherent risks associated with providing financial services to the smallholder farms. This evident imbalance in credit distribution further substantiates concerns about the constrained access to financial services for small farms including small farms enterprises. To improve accessibility of financial services, the government must promote and implement policies aimed at financial inclusion for all types of farms including small farms enterprises. Government and the private should provide affordable tailor made financial services, for instance offering interest rate incentives. Additionally, government can provide financial institutions with incentives so as to encourage them to extend more financial services to this category of farms.

Climate change

Climate change was identified as a major challenge in this study. Some participants raised apprehensions regarding the impacts of climate change, with one individual explicitly stating that it had a detrimental effect on their agricultural output. For example one participant explained the following:

"It's climate change, you plan that when I plant this, I will harvest so much but because of the climate change, the rain pattern…" (Farmer 4)

Another participant complained that dealing with the effects of climate change was difficult.

"One of the challenges that we farmers face is climate change. If we experience floods in this area, we delay to plant, then there is lot of water. So, to manage the floods, we make drainages, however, it is not easy to fight nature." (Farmer 6)

Previous studies have stated that the agricultural sector is the most vulnerable to climate change and variability (Chisanga et al.,2022; Ngoma et al.,2020). Climate change can lead to decreased production and price variability (Nuskiya,2019). To counter the effect of climate change, scholars have proposed adoption of agricultural practices that mitigate the effects climate change, improve resilience and increase productivity (Arslan et al., 2015; Kurgat et al., 2020). As statistics clearly indicate a persistent and escalating trend of climate change (Ngoma et al.,2020; Atta-Aidoo et al., 2022), there is a critical need to provide support to small farm enterprises, enabling them to adopt climate-smart agricultural practices and enhance their overall sustainability. Government and stakeholder alike should intensify educational programs aimed at promoting and encouraging small farm enterprises on adoption and practice of smart agricultural practices. Concerted efforts from stakeholders are required to ensure the consistent provision of early warning systems to the small farms enterprises as this is likely to encourage them to practice climate smart agricultural practices (Ngigi et al.,2022). Furthermore, provision and promotion of weather index insurance to help the small farms enterprises mitigate financial losses due to climate change is necessary.

Security concerns

Security concerns, including theft and bush fires, emerged as significant threats to the well-being of small farm enterprises. Commenting on this issue, some participants reported the following:

"...When I came I found that my maize had been stolen ... The biggest challenge we had this year it's the thieves." (Farmer 3)

"...the other thing is safety. They steal a lot. I do not know if these people do not want to work because they think stealing is a solution. You have a big field of maize but that also is a challenge." (Farmer 4)

One of the participants revealed that the theft came from the farm workers.

"...Then also the same workers start stealing from you. This is what made us to start staying at the farm" (Farmer 5)

Another security concern that was raised by the participants was the aspect of bush fires.

"...you know it's very unfortunate, I do not burn, it was in the morning when it was windy, someone was passing and they just lit the fire and we just saw the big fire coming, we called people to come and quench but it was too windy and we just managed there." (Farmer 3)

"...if you do not harvest the crops early, they start burning the bush, I remember the other season I lost almost 10 hectares of maize due to fire (Farmer 4)

The instance of theft has also been consistently documented as a prevailing challenge faced by farmers in past studies. (Mani et al.,2021; Marandure et al.,2020). To mitigate the regular Farmers of thefts and bushfires, it is imperative to encourage small farm enterprises to invest in security systems. However, this may require finances. If the small farm enterprises have access to affordable financial services, then this would be possible. Another mitigation measure would be to develop community watch groups where the small farm enterprises work together and protect each other's properties.

Inadequate government Support

Participants consistently expressed dissatisfaction with the level of government support rendered towards the small farm enterprises. Generally, in Zambia, the government provides support to small farms in the form of a subsidy called Farmer Input Support Program (FISP) (Mason et al.,2013). Through the FISP program small holder farms receive farming inputs such

as seeds and fertilizer. However, some participants felt that the FISP was not adequate and sometimes it was actually delivered late. Below are some of the comments:

"I would advise that the government consider increasing the amount of FISP being given." *(Farmer 1)*

"...The government provides inputs through FISP but sometimes it is delayed. As for me I do not want to depend on FISP because sometimes you find that your name is missing on the list for FISP and also you have to share the FISP packs." (Farmer 6)

On the contrary some experts felt that subsidy was not necessary and that the funds allocated to FISP can be channeled towards other aspects such as research. The statement below illustrates this:

"...We can give as much for FISP but farmers for maize for example yield 1.5 tonnes, 2.5 tonnes there is nothing that is coming out, but why not invest in information and research that can move a farmer from 2.5 to 5 tonnes." (Expert NGO)

Another expert explained that government should not just focus on providing subsidized inputs but should also consider proving policies that motivate the farmers. Here is an excerpt from the expert:

"...When we say favourable environment we are not just talking about subsided inputs but also the policy, policy direction is important because the policy will guide the direction of the agricultural sector and also the performance" (Senior Agricultural officer)

Subsidy has long been implemented but challenges of inadequacy and late delivery have also been frequently reported. For instance, reports of late delivery were also reported by Pelletier et al. (2020). Following complaints regarding subsidy (FISP), the government should put in place a robust monitoring and evaluation mechanism that ensures continuous improvement of the program to the benefit of the small farm enterprises.

Cost of farming inputs

Some participants also expressed their concerns regarding the high cost of input. One participant commented that:

"Another challenge is the price of fertilizer. Last year we were buying at K,1200...So how will the farmer make a profit." (Farmer 1)

This concern was also echoed by the camp extension officer who said that:

"...small farms face high cost of inputs." (Camp extension officer)

The issue regarding farming inputs was also highlighted in Siamabele's (2019) study, where it was revealed that smallholder farmers in Mufulira experienced seasonal variations in the costs of input. Considering that these farms are financially constrained, the high cost of inputs presents a huge challenge for them and can also reduce their profit margins. Yet again it can be argued that access to affordable financial services is necessary for the small farm enterprises to help them easily acquire the much needed farming implements. Khanal and Omobitan (2020) assert that limited access to credit may lead to combinations of inputs that are not optimum thereby causing suboptimal productivity and outcome.

5   INTERCONNECTIONS OF THE CHALLENGES

Besides the challenges, our analysis also revealed the interconnected nature of these challenges and how they exacerbate each other as shown in figure 1. For instance, the lack of access to financial resources limits the small farm enterprises ' ability to implement climate-resilient

practices and their capability to invest in security measures, thereby increasing their vulnerability to climate change and security threats. Climate change has created risks and uncertainty, causing financial institutions to hesitate in providing financial services to small farm enterprise (FSD Zambia, 2021).

Without adequate financial resources, small farm enterprises find it difficult to invest in essential inputs, hindering their productivity and profitability (Khanal & Omobitan,2020). On the other hand, when the cost of farming inputs such as seeds and fertilizers rise, it strains the already limited financial resources of the small enterprises. The inadequacy of the government subsidies implies that small farm enterprises have to bear the full cost of farming inputs. As such, this is likely to reduce their profit margins and create financial instability. Additionally, inadequate government support may affect the small farm enterprise's capability to invest in climate smart agricultural practices.

In essence, the high cost of farming inputs, climate change, lack of access to financial resources, security concerns, and inadequate government support are not standalone challenges but rather interrelated factors that mutually reinforce each other. Addressing these challenges requires a holistic approach that considers their interconnected nature and seeks to develop comprehensive strategies that can effectively support small farm enterprises in overcoming these multifaceted obstacles.
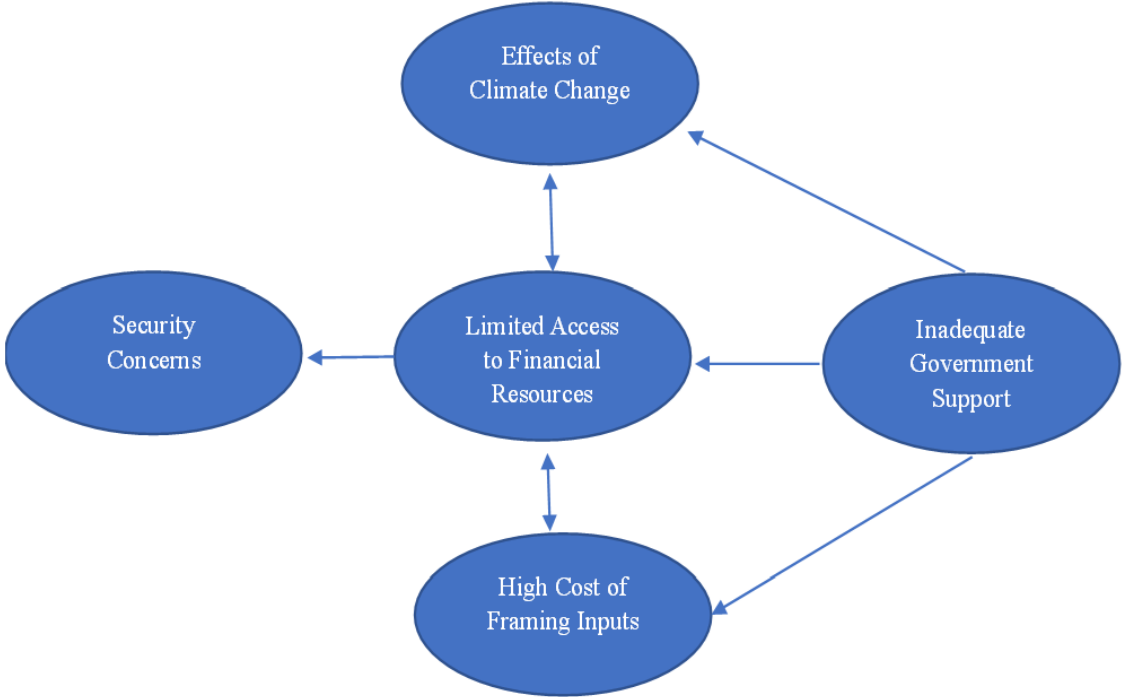
Fig. 1 – Interconnections of the challenges faced by the small farm enterprises. Source: own research

6   CONCLUSION

In this study, we have delved into the challenges faced by small farm enterprises in the context of Sub-Saharan Africa (SSA) and explored how these challenges interact and compound each other. The study used a qualitative method involving six small farm enterprises. In addition four experts from the agricultural sector were also included in the study.

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The common themes revealed by findings indicate that small farm enterprises grapple with limited access to financial resources, high costs of farming inputs, security challenges (theft and bush fires), the impact of climate change, and inadequate government support. Understanding these challenges is essential for formulation of tailor made interventions that can help the sustainability of these small farm enterprises.

In view of the identified challenges, we propose mitigation strategies, such as fostering collaborative efforts between the government and private sector to ensure the provision of affordable, tailored financial services for small farm enterprises. Moreover, providing incentives to financial institutions can encourage them to extend the much needed financial services to the small farm enterprises. Availability of financial resources can assist the small farm enterprises obtain farming implements and inputs. Small farm enterprises also require financial resources to help them address challenges brought by climate change. Furthermore, small farm enterprises also need financial resources to enhance their security systems around their small farms.

Future Research Direction

Based on the interconnected challenges faced by small farm enterprises, future research should prioritize developing and evaluating integrated support systems that address multiple issues simultaneously. Specifically, research should focus on creating comprehensive frameworks that combine financial services, government subsidies, and climate adaptation strategies to enhance the sustainability of small farm enterprises.

Additionally, this study serves as an initial exploration of the challenges faced by small farm enterprises. Future studies can consider undertaking a comprehensive case study focused on a representative agricultural entity providing a detailed analysis that could yield new findings and theories.

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COMMUNICATION OF UNIVERSITY SUSTAINABILITY TOWARDS GENERATION Z: A FOCUS GROUP DISCUSSION

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Abstract

This paper focuses on the communication of university sustainability towards Generation Z. The aim of the paper is to present the first part of a broader research that is realized at the Faculty of Multimedia Communication at Tomas Bata University in Zlín focuses on the communication of University Sustainability towards Generation Z. The first part of the research will include both qualitative and quantitative data collection, while the paper presents the results of qualitative research carried out through a focus group method. The aim of this part of research was to find out how students perceive the sustainability of universities and what are the key aspects of communicating this topic towards Generation Z. Qualitative research focusing on the behaviour of university students of Generation Z regarding the sustainability of universities was carried out through the focus group method, where 10 participants were involved. The result shows that Generation Z university students predominantly associate sustainability with responsible actions towards nature and the environment, emphasizing ecological practices, waste reduction, and material reuse. They highlight the essence of sustainability is preserving the planet for future generations and establishing processes that ensure long-term sustainability, both within companies and broadly across all sectors. In the field of communication, the research results found out that students prefer a neutral tone of communication using words that are not too complicated or extensive. Students also clearly agreed that the topic of sustainability should be communicated with respect. The students would also appreciate some form of enthusiasm for sustainability. It is possible to supplement the communication messages with a section on what has been achieved at the university in terms of sustainability, i.e. to communicate successes and positive messages. In the conclusion part of this paper is only outline of the future quantitative research that will follow on from the findings obtained through the focus group and based on the results of which a questionnaire survey will be carried out at universities in the Czech Republic.

Keywords: sustainability, university, Generation Z, communication, strategies

1 INTRODUCTION

Universities are perceived as key organisations that represent the development of human potential, which means that they are also a tool for promoting the sustainable development of society. Sustainable development is not only about the environment, but also about health and healthy lifestyles in the broadest context, physical activity, education and social responsibility. Key documents for the sustainability of universities are the OSN Sustainable Development Goals (hereinafter 'SDGs'), the Green Deal for Europe and, in the context of the Czech Republic, the Green Deal for the Czech Republic.

Supporting sustainability in the university environment is a hot and highly debated topic both at the level of scientific research and in practice. An example of practical implementation is the Aurora European Universities Alliance (Aurora, 2023), which aims to provide students with the skills and mindset to prepare, organise and implement change in society and to come up with innovations and solutions to problems that are perceived as very important by

contemporary society and that are in line with the desire to achieve environmentally, economically, socially and culturally balanced development. These are activities of universities both in the field of education and in the field of creative activity.

2   LITERATURE REVIEW

The key field of universities is education. The term 'Education for Sustainable Development' (ESD) is used to define sustainability education where students take responsibility for creating a sustainable society. According to Bone and Agombar (2011), students are becoming increasingly aware and concerned about issues of sustainable development, environment and climate change and this creates room for academics to incorporate sustainability into the curriculum. A specific form of ESD is the Education for Sustainable Development in Universities (ESDU), which according to QAA-HEA (2014) seeks to develop students' skills and abilities to face and contribute to global solutions, protect the environment, social and economic well-being (QAA-HEA, 2014).

ESDU is implemented not only through teaching and research, but also through strategic documents with emphasis on mission, vision and goals, university operations, sustainability assessments and audits, and communication with key stakeholders (Abello-Romero, Mancilla, Sáez, Ganga-Contreras a Durán-Seguel, 2023, Leal Filho, 2011; Müller-Christ et al., 2014).

Other terms mentioned in the literature on sustainable university development include 'green university' (Yuan et al., 2013), 'sustainable university' (Amaral et al., 2015) or ' sustainability of the university' (Isaksson a Johnson, 2013; Shi a Lai, 2013). 'Green university' and 'sustainable university' emphasise approaches that support sustainable university operations (Baerth, 2013; Kapitulčinová et al., 2018), and 'sustainability of university' refers mainly to models focused on sustainability evaluation. Alghamdi et al. (2017) a Kapitulčinová et al. (2018), discuss sustainability evaluation in universities and present different tools leading to ESDU improvement. Some tools are based on environmental aspects of university operations (for example Drahein et al., 2019, Suwartha a Sari, 2013) and others integrate academic, research and outreach aspects (for example AASHE, 2017). For instance, Hernández-Diaz, et al. (2021) state that most of the research focuses on the environmental aspect of university operations or on the teaching and research area but does not consider the whole system. Thus, in their article, they propose the concept of sustainability from the perspective of the whole institution based on the integration of two subsystems, academic and administrative.

Currently, the majority of students at universities are Generation Z. This generation falls into the category of millennials born between 1996 and 2010. They spend a lot of time on social media. They grew up in a time of financial crisis, the breakdown of the traditional family, and loss of security (Miller, 2018, Reisch, Eberle, Lorek, 2013). They refer to themselves as the first generation that does not know life without the internet, computer, phone, and wireless connections, the so-called 'digital natives' (Baldonado, 2018; Ozkan, Solmaz, 2015; Wiedmer, 2015). They have been learning English since childhood. Compared to other generations, they are innovative, purposeful and creative (Tulgan, 2013). They emphasize fair trade philosophy, i.e. wages, working conditions and the environment.

Therefore, the key question is how this generation perceives the issue of sustainability, because this generation is the one that will come up with new changes in society and will influence the future development of our planet in the coming years. Basic knowledge about the general behaviour of Generation Z in relation to sustainability is also key to understanding this generation's perception of the issue of university sustainability.

Few studies focus on Generation Z from a sustainability perspective, such as Brand at al., 2022, de Leeuw et al., 2015 and Su et al., 2019. Research on the sustainability (including environmental, social and economic dimensions) of Generation Z consumers has shown that, on the one hand, these consumers prefer retailers that help protect the environment and care about the welfare of employees (Dabija, Bejan, Puscas, 2020), while on the other hand, their sustainable food consumption is limited to eating seasonal and regional foods (Kamenidou, Mamalis, Pavlidis, Bara, 2019). Most of the studies on sustainable behaviour of Generation Z focus on food and clothing. Su et al. (2019) points out that the factors influencing purchase of sustainable food products vary depending on the level of environmental awareness of this generation. However, over the past few years, even members of Generation Z are evolving into responsible, independent consumers, according to Chaney, Touzani, and Ben Slimane (2017). This was confirmed in a study by Dabija (2018) within the clothing retail industry, which found that this generation has the strongest loyalty towards stores that focus on sustainable clothing. In contrast, a study by Pencarelli, Ali Taha, Škerháková, Valentiny, Fedorko (2020) found out that Generation Y has more sustainable habits than Generation Z. Recent research in the communications technology field has confirmed that younger consumer segments are willing to pay more for sustainable products with eco-brand and care a lot about the durability of smartphones (Bigerna, Micheli, Polinori, 2021). A survey conducted by Cone Communications (2017) adds that 9 out of 10 millennials, which includes Generation Z, are willing to replace a brand with one that stands for social responsibility. The organisation McKinsey (2023) states that one of the issues that Generation Z is most interested in is climate change. They often call for reform on a personal, public and global scale to avoid future catastrophe. Many members of Generation Z describe themselves as environmentally conscious and most of them expect to see sustainability commitments from companies and organizations. It can therefore be generally concluded that Generation Z, born into a globalised world, is not unconcerned about social issues and requires brands to behave sustainably, responsibly and ethically.

The next key question of Generation Z behaviour is the communication behaviour. Even though Generation Z consumers are relatively young, they are highly informed about the market, retailers and their offers due to the spread of communication technologies and social In terms of Generation Z communication, according to Kochová (2022), they can be found mainly on social networks such as Instagram, TikTok (which currently has 1.8 million Czech users, mostly aged 18-24), but also Twitter or Twitch (a streaming platform). To approach Generation Z on social media, it is first necessary to understand them and find the right tone of communication. Gen Z does not enjoy reading and its members are usually most interested in short videos. Cone Communications (2017) presents that this generation is much more likely to prefer videos (68% vs. 44% of the general population), pictures (56% vs. 42% of the general population) or stories (49% vs. 48% of the general population). Cone Communications has also identified a significant impact of education on the content preferences of Generation Z. Their findings indicate that college students show a higher preference for written articles (59%) compared to high school students (37%), and similarly, infographics are favoured more by college students (40%) than by high school students (20%).

A study by Elite Daily (2015) confirmed that millennials have strong brand loyalty when it is presented with quality products. But they are not influenced by advertising like the generations that came before them. Only 1 % of the 1,300 millennials surveyed in the Elite Daily study said that persuasive advertising would make them trust a brand more. Millennials don't believe advertising is authentic and 69% of Gen Z consumers avoid ads. According to Nielsen (2017), millennials have grown up with product reviews and social media as a medium for sharing opinions and are looking for information before committing to a purchase. Influencer marketing is a product of this generation's culture that values trusted recommendations. Social media is

one way of them expressing brand loyalty and support in the form of user-generated content that can then be reposted and shared. This direct engagement strengthens the relationship between the consumer and the brand.

Although there are several studies that address sub-parts of the issue at different levels, i.e. focus separately on the sustainability of universities and separately on the sustainable behavior of generation Z, the added value of the research will be filling the following research gaps in the literature:

- connecting the topic of sustainability of universities with the target group of generation Z,

- confirmation of the influence of the perception of the sustainable behaviour of generation Z on their approach to the issue of university sustainability,

- confirmation of the general communication preferences of Generation Z in relation to the topic of sustainability of higher education institutions towards Generation Z.

3 METHODOLOGY

In the introduction part, relevant literature has been discussed about sustainable university development, education for sustainable development and Generation Z and their perception of sustainability issue. The opinions and perceptions of the students have a crucial effect on future implementations. There are not enough studies addressing students' perspectives towards university sustainability and communication towards generation Z. The absence of such studies led the researchers to investigate it with the aim to contribute to the field. The current research, therefore, examined the thoughts and perceptions of college students toward the issue through a qualitative approach.

The aim of this research is to find out how students perceive the sustainability of universities and what are the key aspects of communicating this topic towards Generation Z.

Thus, the present study addressed the following research questions:

- What is the students' awareness of sustainability and sustainable behaviour?

- What are the areas of sustainable development for universities?

- Who should be responsible for the sustainable development of universities?

- What is the role of universities in sustainable development?

- How can the sustainability of universities be assessed?

- What is the role of students for the sustainable development of universities?

- How should be the universities sustainability communicated to Generation Z students?

Qualitative research focusing on the behaviour of university students of Generation Z regarding the sustainability of universities was carried out through the focus group method. This method was chosen, because in focus group discussions, unlike personal interviews, participants can think aloud and feel free to say what they think, discuss with the others about counterarguments and change their opinions as the discussion proceed like in informal life setting. The information obtained from focus group discussions is deeper than face to face interviews because of the social interaction among the participants.

In this focus group were used the Sustainable goals according to the OSN approach. The core Sustainable Development Goals, or goals for transforming our world, which were adopted as

the SDGs (Sustainable Development Goals OSN) officially adopted at the OSN Summit on September 25, 2015 in New York, include the following 17 goals: no poverty; zero hunger; good health and well-being; quality education; gender equality; clean water and sanitation; affordable and clean energy; decent work and economic growth; industry, innovation and infrastructure; reduced inequalities; sustainable cities and communities; responsible consumption and production; climate action; life below water; life on land; peace, justice and strong institutions; partnerships for the goals (OSN, 2015).

The researchers are aware of standards to be met to provide trustworthiness of a qualitative investigation. The focus group discussion was conducted under academic supervision. In the current research, the participants were chosen randomly and voluntarily, and the participants had given the chance to refuse to attend the study.

Data obtained from the face-to-face meeting were analysed through qualitative content analysis. In this analysis the text obtained from focus group was sorted into categories that represent similar meanings and the similar codes were brought together into the main categories. For to ensure credibility the direct excerpts are given.

Based on the literature search and the results of the focus group, statements will be defined to assess awareness of sustainability and sustainable behaviour, which will be used in the quantitative survey.

4 RESULTS

To understand the behaviour of university students of Generation Z regarding university sustainability and its marketing communication, a focus group was first conducted. The basic parameters of the focus group participants included:

- the participant belongs to generation Z

- the participant is currently studying at a university or college

- the participant is a student of the faculty in the field of marketing communication due to the focus on marketing communication

- the participant is willing to participate in the research and agrees to be recorded for research purposes

The focus group was conducted at the Faculty of Multimedia Communications with the students of full-time studies in the field of Marketing Communication. In total, 9 participants took part in the focus group. The Focus group itself took place in two separate meetings. The aim of the first meeting of Focus Group was to discuss key issues focusing on the behaviour of university students of Generation Z regarding the sustainability of universities - as described in the previous chapter, and in the second meeting students presented their idea of the "ideal sustainable university".

The focus group used three specific methods of data collection:

A - group discussion of all participants

B - discussion in smaller focus groups (approx. 3 participants)

C - individual responses via Mentimeter, an online interactive tool that allows participants to engage with the research in an interactive way

a) The Focus Group scenario included the following areas:

b) Presentation of the project, confirmation of consent to recording

c) General knowledge of the issue - perception of sustainability, sustainable behaviour, comparison of generational behaviour in relation to sustainability, sustainable university, activities for sustainable development of universities - type of data collection A

d) Sustainable goals according to the OSN approach - introduction of concepts, interconnection of sustainable goals and university environment, responsibility for university sustainability, areas of university sustainability - type of data collection A

e) Team assignments - type of data collection B

    a. Prioritizing sustainable goals

    b. Communication of sustainable goals using keywords

f) Communication on sustainability in relation to Generation Z using the online interactive tool Mentimeter - appropriate communication channels, role of social networks, form of communication, tone of voice, advertising appeal, message, role of influencers - type of data collection C

g) Conclusion - discussion of research questions - type of data collection A:

    a. How should sustainability topics be presented to make them appealing and relevant to students?

    b. What can students do to make the university sustainable? How can they contribute to the sustainability of the university?

Focus Group Results

1. General perception of the issue of sustainability

Generation Z university students perceive sustainability mainly in relation to responsible behaviour towards nature and the environment, with an emphasis on ecology, reducing waste, reusing materials. There was also a statement that the core of sustainability is "making the planet for future generations". In particular, the key is to set up processes that help maintain sustainability both in companies but also in general in all aspects, so that it lasts for a long time. Sustainable behaviour, according to the target group, is behaviour that can be practiced/sustained in the long term. The key is to be aware of your behaviour and the subsequent impacts, e.g. disposable packaging - buying a new drink vs. putting water in your own bottle.

The perception of intergenerational sustainable behaviour was interesting: 'For example, a grandparent does things like when water is supposed to flow into the sink, he made it flow into a bucket and then flushes the toilet with it', 'Parents are more sustainable (not wasting food, throwing away waste) but they are not aware that they should be. On the contrary, our generation is aware of the importance of sustainability, but we are not doing it', 'As a generation we are worse off in terms of sustainability. It's not because they (parents and grandparents) want to live more sustainably, it's due to the economic side – they didn't grow up with a lot - Generation Z grew up with plenty. In former times, things didn't used to be available, the system was different, there was no inflation, they tend to do price comparison, but our generation has lived in that all our lives'.

Respondents also perceive the role of the university and the activities the university does for sustainable development. Bins for waste sorting, less lighting and heating in the case of non-class time, or the use of online environments were mentioned, and the sustainability of the materials used was emphasized in design-oriented courses. As the main role that should be played by the university in fulfilling sustainable goals, they suggest creating a separate field -

for example, sustainable management, supporting study programs and separate courses that consider sustainable development. They propose to set up a department to look after and promote sustainability and to spread this among students (water saving - investing in quality equipment – so that taps don't drip, etc.) security on campus (chips, cameras), etc. They see the biggest contribution of the university in the field of education, to provide wheelchair accessible entrances, to participate in the development of sustainable materials (nanotechnology), submission of bachelor and master theses only in electronic form. They also suggest creating apps to communicate what has been done, so that groups and individuals are motivated 'sort of like a running app – goals and rewards'.

According to the participants, sustainability should be the responsibility not only of university management, but of the university as an institution, including students. 'Everybody has a responsibility to make it work properly. It's up to the management to come up with ideas and how to implement sustainability in the university, but if the students don't want to do it, there's nothing they can do.'

According to the participants, it is possible to tell if the university is sustainable before entering, e.g. it has bike racks (generally offers shared transport), replaces paper brochures with a QR code at the Open Day with important information, mentions sustainability at the Open Day, bins for sorted waste in the corridors, water dispensers (e.g. refilling via an app – Lokni).

The discussion also included suggestions on how sustainability topics should be presented to make them attractive and relevant to students.

- 'For the people who communicate sustainability to really believe in it, and thus make it authentic. In practice: to show both in the home environment and in the school environment (Video presentations in a real environment) Not the usual reels where the lady walks around the school, but she also takes some longer shots of what she does at home, a vlog, her view on sustainability – a 'medallion'. Putting a real face on it – not just the acting one.'

- 'Getting professors (older generation) involved as well – passing on tips or showing how they do it.'

- 'Authenticity from teachers and professors – let's help each other. Let's show each other how to do it.'

- 'In the videos, the individuals who follow these things and it's not just for the video. For example, they really separate their waste. So that there wouldn't be a subsequent encounter with students, and it would be seen that it was just for a video, and they don't really do separation.'

- 'Make it clear and impactful. So that students don't have to read long texts/articles – summarized in one social media post on a chosen issue.'

- 'Text as a supplement – rather graphic / pictorial or video presentation, mainly short text – short, understandable.'

- 'Gen Z doesn't hold attention for long – short text is enough, long descriptions don't hold attention – if they're interested and want to find more information, they'll do it themselves. Which can be summarized in a post – a short message and here adds e.g. a link where they can find more information and study it more.'

Some participants had a positive perception of sustainability-themed games: 'They had a game at home, a board game, where they referred to sustainability themes (playfully healthy). It was quite interesting, there were tips and interesting facts. Problems were mentioned but there was

nothing in depth - it was still just a board game where you moved the figurine around.' 'Primary school competitions: who can bring the most paper (involving the whole family) - not applicable at university.' 'Digital games - apps - something along the lines of running apps.' 'Apps to collect points for sustainability - competition between faculties (like in Harry Potter). Award for most sustainable faculty.'

2. Prioritising the University's sustainability goals in relation to Generation Z

Prioritization of the university's sustainability goals was done through team tasks. For all groups, quality education dominated the top priority, which is unsurprising given the goal and target group of participants. The goals of Gender Equality (2x) and Decent Work and Economic Growth (2x) were also among the top 4 positions more than once. Decent work and economic growth is probably directly related to the level of education that universities provide. Equality between men and women is important on university grounds, but it is not at first sight connected with the goal of sustainability. In all cases, Life in the Water was the least perceived (it was ranked last or second to last).

3. Communication keywords

In general, it can be said that the most negative effects are caused by terms that are sceptical about the future, deny solutions or tend to lean towards catastrophic scenarios. On the contrary, terms associated with nature, positive futures and the human factor have a positive effect. These results were confirmed in another part of the research, which focused on tone of voice, appeals and message of communication, among other things.

4. University Sustainability Communication

A separate part of the research focused on the area of sustainability marketing communications for universities, see picture 2. Students would most appreciate communication through lectures, workshops, discussions and social media. On the other hand, printed materials, i.e. posters and leaflets, were least preferred. In terms of social media, Instagram was the clear choice, although other social networks were also mentioned. A certain surprise was that Tik-Tok was not mentioned even once. The form of communication via the UTB app and Telegram were also mentioned. Students would be most influenced by a combination of different forms of communication using videos, photos and personal communication. Interesting results emerged in the tone of voice category. Students would appreciate a combination of different tones that are in some consistency. It is possible to communicate in a serious tone but add humorous memes that at the same time do not offend but highlight sustainability issues but do not exaggerate the problems. Students prefer a neutral tone of communication using words that the student understands, are not too complicated or extensive, but it depends on where the communication message is coming from, whether from the students themselves or the university management. Students also clearly agreed that the topic of sustainability should be communicated with respect. Most of students would also appreciate that communication should include some form of enthusiasm. It is therefore possible to supplement the messages with a section on what has been achieved at the university in terms of sustainability, i.e. to communicate successes and positive messages. Appeals and message of communication were examined separately. The most popular appeals were activity, gratitude and responsibility. On the other hand, appeals of sadness, fear, obligation and guilt should be avoided. It is also important to direct the communication positively, i.e. instead of 'We wasted water last week' communicate 'How can the university save more water?' or instead of 'What gaps do we have as a university in communicating sustainability?' communicate 'What are we doing as a university to be sustainable?'. Message of communication followed up with positive tones and appeals: 'Hope', 'Let's come together, there is a solution', 'Nature was here for us, now we should be here for her', 'We are doing this for the future', 'We can fix some of this, we are not

all going to die here', 'We are not going to stop it, but with our collective efforts we can slow it down', 'Save the planet and make life better for us and our children', 'How can we get involved to make the world we live in sustainable?'.

The question of presenting sustainability through influencers has not brought clear results. While most students considered this form of communication to be positive, there was no clear opinion on whether influencers are trustworthy to communicate the topic of sustainability. Some students mentioned influencers who are dedicated to the topic of sustainability (@jsemvobraze, @greenpeace, @vlad_khilchenko, Rozárie Haškovcová), in general it was emphasized that influencers who live sustainably, promote a healthy lifestyle would be suitable for communicating the topic of sustainability (Jitka Nováčková and Kovy were mentioned).

The research findings of communication of sustainability of universities are graphicly presented in the next picture.
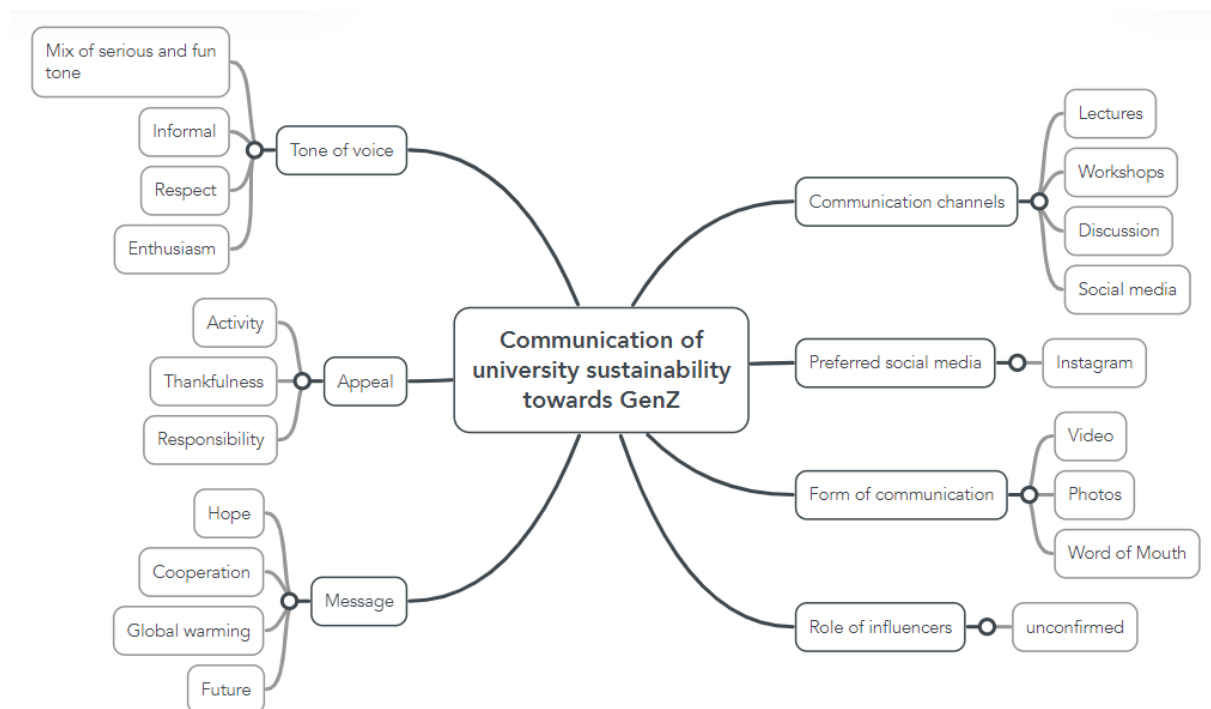
Fig. 1 – Communication of sustainability of universities. Source: own research

5   DISCUSSION

Students' awareness of sustainability and sustainable behaviour is a critical aspect of education. Research indicates that sustainability education significantly influences student's attitudes and behaviours towards sustainability (Badea et al., 2020). Engaging students in activities that promote sustainability awareness has been highlighted as important, as these activities have been proven to notably enhance student's awareness of sustainable living (Suna, 2023). Furthermore, universities play a key role in communicating sustainability messages to students, which is essential for promoting sustainable behaviours among them (Lertpratchya et al., 2017).

To effectively communicate the sustainability of universities to Generation Z students, it is crucial to consider their unique characteristics, preferences, and values. Generation Z, born between 1995 and 2010, is recognized for being tech-savvy, socially conscious, and environmentally aware.

This study confirms the research results of Godfrey and Feng (2017) that Generation Z students, as digital natives, prefer online platforms for information and engagement. Utilizing social media, university websites, and mobile apps to share sustainability initiatives, success stories, and opportunities for involvement can effectively reach and engage Generation Z students. Findings are also consistent with findings, that Generation Z responds well to interactive and visually appealing content. Using videos, infographics, and interactive tools to communicate sustainability efforts and their impact can capture the attention of Generation Z students and make the information more engaging and memorable (Godfrey and Feng, 2017). It is crucial that the tailoring sustainability messages must resonate with the values and interests of Generation Z students. Emphasizing the relevance of sustainability to their daily lives, future careers, and societal impact can motivate them to actively participate in sustainability initiatives (Kara and Min, 2023).

Students see the biggest contribution of the university in the field of education, thereby they support the claim (Balakrishnan's et al., 2021) that incorporating sustainability education into the curriculum and organizing awareness campaigns can enhance Generation Z student's understanding of environmental issues and sustainability principles. As the main role that should be played by the university in fulfilling sustainable goals, they suggest creating a separate field – for example, sustainable management, supporting study programs and separate courses that consider sustainable development.

The research results confirm the responsibility for the sustainable development of universities is a complex issue that involves various stakeholders within and outside the academic community. Students perceive the role of top management in the process of setting the tone for sustainability efforts within universities and emphasize that the management to come up with ideas and how to implement sustainability in the university. Leadership commitment is vital in driving sustainability practices and fostering a culture of environmental responsibility within the university (Nagy & Somosi, 2020). Students are key stakeholders in the sustainable development of universities too. Their engagement, awareness, and activism can drive sustainability initiatives on campus and influence institutional decision-making (Emanuel & Adams, 2011). Involving students in sustainability projects and providing opportunities for learning and action can enhance their commitment to sustainable practices (Mendiola, 2019).

6 CONCLUSION

This research confirms that students play a crucial role in the sustainable development of universities by actively engaging in sustainability initiatives and driving positive change within the academic community. Student's awareness of sustainability and sustainable behaviour is a multifaceted area that necessitates a holistic approach encompassing education, curriculum development, engagement in sustainability activities, and the promotion of sustainability messages within educational institutions.

The results of this research carried out using a focus group with university students of generation Z represent quality starting points for the next part of the research, namely quantitative research. The future quantitative research on the behaviour of university students of Generation Z regarding the sustainability of universities will be carried out by means of a questionnaire survey. For this quantitative research, 2 preliminary hypotheses are set:

- Generation Z students at Czech universities can be divided into different groups based on their level of sustainability awareness.

- The segments of Generation Z students at Czech universities in the field of sustainable university development will vary socio-demographically with respect to (a) gender, (b) size of residence and (c) area of study.

The target group of respondents for the research will be university students born between 1995 and Participation in the survey will be voluntary and respondents will be informed, among other things, about the purpose of the collection of personal data and how the information will be used. Approximately 500 respondents are expected to be recruited using the snowball or chain sampling method.

The researchers are also aware of the limitations of the research study carried out especially that the findings of a small sample of participants cannot be generalized to the other populations and situations. This is the reason why the second part of the research will be implemented. The starting points of the focus group study will thus serve not only as a basis for the implementation of quantitative research, but also as an observance of the principle of research triangulation, in this case a comparison of the results of the literary research, qualitative and quantitative research results.

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DISPARITIES IN HEALTHCARE ACCESS FOR VULNERABLE POPULATION

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Abstract

The work deals with contrasting the health economy and the health environment. Defines basic terminology such as vulnerable populations and vulnerability. The contribution aims to find out what relevant groups of people exist in the Czech Republic, to harmonize the definitions of the vulnerable population, and to find out what kind of access they have to health care.

A total of ten endangered groups of persons relevant to the Czech Republic were identified. Although the Czech Republic has optimal healthcare facilities, we have identified problematic potential needs that different groups may have.

We used a qualitative approach with a technique of content analysis and experts' opinions. A literature review was collected from Web of Science and selected opinions were divided into three groups based on expert profiles and areas of their work (economics, sociology, healthcare)

In the context of world literature, European countries have similar difficulties to the Czech Republic. It has been found that many people from the vulnerable group are afraid of seeking medical care because they believe that they will have high expenses for the subsequent treatment. Another reason may be the cultural context, different language, or specific needs of each community member. Founded groups were described and we also added other approaches (divided into 8 groups) to how we can view the vulnerability in the Czech Republic.

Keywords: disparities, healthcare, vulnerable population, barriers, needs, health economics

1 INTRODUCTION

Health Economics is part of healthcare that focuses more on the economic part of healthcare. It is very useful because we can manage not only the financial part of healthcare but the access and effectiveness of health services as well (Phelps, 2017). Health disparities are differences and gaps in health and quality of health care across racial, ethnic, and socioeconomic groups. It can also be understood as population differences in the presence of disease, health outcomes, or access to health care (Reilly, 2021). Another useful definition is provided by the Institute of Medicine, which suggests that health disparities are racial or ethnic differences in the quality of health care that are not due to factors related to access or clinical needs, preferences, and appropriateness of intervention (McGuire et al., 2006).

A fundamental part of the problem lies not only in the difference in access to health care for people of different ethnicities or cultures. The whole issue is now more elaborated and all endangered minorities belong to the "vulnerable population" group (Chumo et al., 2023). Recent studies focused in detail on defining individual categories of the vulnerable population. A major factor, according to the authors, is greater societal income inequality, which impacts those at the lower end of the income curve by increasing mortality and increasing the importance of an individual's situation. As a recommendation from multinational corporations, the WHO published a report on the social determinants of health can influence social policy and the use of public resources in Europe. Interventions target clinicians who are under-educated about the lives and concerns of vulnerable populations, including LGBTQIA+ people,

immigrants, prisoners, and families of patients with illnesses considered "incompatible with life"(Julmisse & Cole, 2024; Vasanthan et al., 2024; Waisel, 2013).

2 LITERATURE REVIEW

We identified two groups of our focus based on the literature in databases. The first is more focused on the variability of the vulnerable population and the second is the barriers connected with each of the vulnerable group.

2.1 Vulnerable population

The situation of healthcare access for vulnerable populations was the main topic in the USA during the date 2005-2010. These days, healthcare providers and researchers focus on defining the problem of disease spreading and bad health results. There was a high percentage of the incidences of death in the communities (Larson et al., 2007 Sudore et al., 2006; Tabaac et al., 2020). Based on the literature, the outcome is health care and access. Detailed analyses point to multiple factors operating during individual cases, which also implies that it is also about the quality of care provided to patients. Since there is still a small percentage of evidence studies that point to limited approaches and follow the entire spectrum of variables, it is very difficult to trace all relevant connections. However, the claim that the quality of the provided care depends on the price of the service is very often repeated (Julmisse & Cole, 2024; Tabaac et al., 2020; Vanderbilt et al., 2013). It is also known that there was a high prevalence of chronic diseases and comorbidities between 2000 and 2010, particularly among Hispanics and blacks aged 65 years and older. Thanks to this information, a detailed examination of the treatment regimen, which is determined by the doctor, took place. Doctors have been found to focus narrowly on medicine only. A possible solution is a targeted search for social determinants and a holistic linking of all factors, including biological and psychological dimensions (Vanderbilt et al., 2013). The population aged 65 years and over was considered vulnerable, and a little later people with chronic diseases in any age category were added. Since different needs have been recorded for each age category as well as the chronic disease itself, many researchers have taken on the goal of mapping other possible categories that are at risk. A few years later, other risk groups were discovered, including newborns and young children, pregnant women, and racially or culturally diverse individuals (Rami et al., 2023; Sklar, 2018). The beginning of the twentieth century also points to the medically disadvantaged, especially those with a mental handicap and persons with poor socio-economic characteristics (Bourgois, et al. 2017). We currently register more than 10 groups of vulnerable people, each of them having their own specific needs and looking for different professionals from the health environment. A very typical diverse group is the 2SLGBTQIA+ community, which has a very wide spectrum from typical examinations to atypical monitoring of hormonal conditions or preventive measures due to changes in the genitals or other specific needs (Christo et al., 2024; Lampe et al., 2024; Shi & Stevens, 2021).

2.2 Possible barriers

This concept of vulnerability is connected with the higher, than average risk of harm or neglect as well as health and social problems. Vulnerable populations frequently face barriers to access to healthcare, predisposing to acute or chronic illnesses and all these factors have an impact on quality of life. Barriers to healthcare services leave gaps and result in healthcare disparities (Murata & Kondo, 2020; Wayne, 2012). To track barriers, the baseline position of equal access was defined as "the possibility for everyone to use the same health services". As a standard indicator, the "delayed care" indicator was chosen, which is defined as: "a delay in visiting a specialist doctor, even though specific or non-specific symptoms of the disease are evident" (Caraballo et al., 2020; Mahajan et al., 2021).

Possible barriers include access problems caused by physical limitations, including availability of health facilities or personnel, distance to health facilities, and availability of transportation (Caraballo et al., 2020). The second aspect concerns access problems due to financial constraints, such as the cost of treatment (Murata & Kondo, 2020). The financial liquidation of some individuals or families after visiting a medical facility has resulted in a large number of concerns and psychological problems. Health economics deals with general socio-economic issues under the professional name of socio-economic status (SES). As already mentioned, in addition to these two aspects, there are also psychological barriers such as health illiteracy or distrust of medical systems (Caraballo et al., 2020; Mahajan et al., 2021; Murata & Kondo, 2020).

3 METHODOLOGY

The processing of the study uses qualitative principles in a combination of content analysis of the searched texts and expert opinions on the subject under investigation.

3.1 Objectives

The study aims to identify the world's vulnerable groups and select those relevant to the Czech Republic. Based on this information, we would like to reveal potential barriers to access to health care in the next stages.

3.2 Study design

The methodology of the first part of the study was inspired by the authors Muka et al. (2020), Page et al. (2021), and Scheidt et al. (2019), and was constructed in 17 steps as follows: defining a clinical question, preparing a search strategy, literature review, selection of studies, data extraction, quality assessment, data synthesis, reporting, presentation of results, searching and developing a stimulating discussion, creating appropriate conclusions, checking references, adding additional materials (if necessary), editing and peer review, processing feedback, finalizing the article and publication.

For the relevant data we used expert opinion from 9 persons (3:3:3 ratio)

3.3 Data collection and analysis

The clinical question was defined as follows: "*What are the vulnerable populations and what are their barriers in accessing health care relevant to the Czech Republic*?" The research question focuses in particular on socio-economic factors related to the accepted definitions and anchoring according to the direction of Health Economics. The question thus allows for examining individual vulnerable groups, and their barriers and to monitor possible interventions that are appearing in the world. The search was performed in the Web of Science database using selection criteria: selection of keywords (health economics, vulnerable population, barriers, needs), date of publication (range 2024-2019), publication must be in the Social Sciences Citation Index (SSCI) category, journal must be in Q1 – Q3 and we focused only on professional articles (conference contributions, reviews, etc. were excluded).

After the initial selection, an analysis of keywords, titles of papers, and abstracts took place. Within this section, both the relevance to the topic and the quality of the accepted study were evaluated. Data synthesis, reporting, searching for contributions to a stimulating discussion, and conclusions were also carried out. In the initial phase, a total of 113 studies found according to the above criteria were analysed. After selection, 12 relevant studies related to the target clinical question were included in the study. This was followed by the creation of initial groups of vulnerable individuals and the identification of possible needs and barriers.

This was followed by a control investigation using statistical data kept on the ÚZIS website and a qualitative investigation with experts from sociologists, health professionals, and economists. The main criteria for selecting an expert were: 1. to be in clinical practice for more than 5 years; 2. the main work should be related to health care; 3. practical experience with vulnerability and its problems. This part aimed to eliminate irrelevant groups and create an overview of representatives in the Czech Republic so that targeted, specifically focused research could be started. After the qualitative investigation, the data were summarized, connections were combined and groups of vulnerable persons relevant to the Czech Republic were created.

4   RESULTS

The results were categorized into 3 categories - economic view, sociological view, and healthcare view. All the identified groups of vulnerable people are presented in the table 1.

All the results focus in particular on the process of population aging and preparation for this difficult period. As the aim was to identify all possible vulnerable groups, our results focus on the enumeration of variables. They were also happy to provide statistical information regarding the aging of the population, which is already statistically known on the MPSV.cz Portal (2024). Although economics and sociology are trying to find relevant foundations, the visualization shows that in 2030, 77.7% of the population in the Czech Republic will be made up of people aged 0-64; 15.7% of the population will be made up of people aged 65-79 and 6.6% of the population will be made up of people aged 60 and over. In 2050, the percentages should rise even more to 19.8% for people aged 65-79 and 8.8% for people aged 80 and over (Csu.cz, 2013). This involves not only socio-economic issues but also the provision of relevant medical facilities or enough medical professionals, of which there is already a shortage in the Czech Republic.

4.1   Economic view

Based on the analysis of economic factors and vulnerable populations, 4 groups were identified. The first group is Low-income population, it means the individuals may face barriers to accessing healthcare due to financial constraints. The second group is made up of immigrants and refugees. It means they have different socio-economic and cultural backgrounds. The economic value is different based on the healthcare and economic system in the other countries they do not know. The third group consists of pregnant women and fetuses. Due to the potential impact of specific needs and during pregnancy, economic status will change rapidly. The last group is made up by unemployed people which are moneyless and their economic status is very low.

Finally, debates developed with three economists regarding possible additional categories or the exclusion of irrelevant data. All economists agree on the importance of an accepted politico-economic system that all citizens should follow. Out of the entire list of vulnerable groups, only these four categories are relevant for the Czech Republic.

4.2   Sociological view

Based on the analysis of social factors and vulnerable groups, 6 groups were identified.

The first are persons with a temporarily or permanently changed social role, e.g. pregnant women, pensioners, persons unable to work, or persons receiving social contributions for care, e.g. disability pension. The second group consists of homeless people who are intentionally or unintentionally exposed to a homeless life. The third group consists of people from 2SLGBTQIA+ communities who have specific healthcare requirements and needs specific to

the community they belong to. Here it is necessary to include all members of the community relevantly. The fourth group consists of mentally disadvantaged persons who are part of the social system and, as part of integration, jobs are created for such disadvantaged persons. The fifth participation is persons in custody, who like the right to freedom, and with that comes a different type of health care. The last group consists of immigrants who are part of the social system, but sometimes face various socio-cultural barriers that result in unequal access to health care.

Finally, we held discussions with three sociologists regarding possible additional categories and accepted classifications. All sociologists agree on the importance of individual groups and their unequivocal inclusion in the vulnerable population for the field of sociology. From the entire list of endangered populations, they consider these 6 listed groups to be relevant for the Czech Republic.

4.3 Healthcare view

Based on the analysis of health factors and vulnerable groups, 6 groups were also identified.

The first category consists of people of critical age, i.e. newborns, young children, and seniors (65+). These age groups are considered vulnerable especially because it is not possible to safely recognize specific needs in young children due to limited communication and a higher incidence of injuries due to age. In the same way, polymorbidity, accumulation of chronic diseases, development of geriatric syndrome, etc. occur in old individuals. The second group consists of chronically ill people who, due to their health condition, are forced to leave the standard system and focus more on the options that are available in connection with their health condition. The third group is made up of pregnant women who should follow the treatment regimen for the duration of the pregnancy, go for regular check-ups, and in some cases may be hospitalized. This is also related to the fourth group, which are women in their sixties, when women focus on the role of motherhood and face postpartum anxiety, fears, lactation psychoses, secondary injury, poor wound healing, etc. The fifth group consists of 2SLGBTQIA+ people who have specific care needs, especially trans women and trans men who choose to change their gender, which includes hormone therapy and surgical solutions. Also, subsequent lifelong dispensary. The last group consists of immigrants who have different demands for care and cultural specifics, e.g. with Islamists a woman must be examined by a woman, and in the presence of her husband, etc.

Finally, we held discussions with three health professionals regarding possible additional categories and accepted classifications. All representatives agree on the importance of individual groups and their unambiguous inclusion in the vulnerable population for the field of healthcare. From the entire list of endangered populations, they consider these 6 listed groups to be relevant for the Czech Republic.

Tab. 1 - Identification of vulnerable groups of people. Source: own research

Name of vulnerable group	Relevant area	Actual number of people in CR in 2023	Specific needs described
Low-income population	Economic	91 149	No
Immigrants and refugees	Economic Social Healthcare	141 263	Yes

Pregnant women and fetuses	Economic Social Healthcare	91 149	Yes
Unemployed people	Economic	263 228	No
People with changed social role	Social	Around 300 000	Yes
Homeless people	Social	Around 70 000	No
Older adults (65+)	Economic Social Healthcare	2 352 752	Yes
2SLGBTQIA+	Social Healthcare	Around 1 188 061	Yes
Mentally disadvantaged persons	Social	Around 300 000	Yes
Persons in custody	Social	19 768	Yes
Chronically ill people	Healthcare	2 528 581	Yes
Women 60+	Healthcare	Around 80 000	Yes

The numbers presented refer to the total number for 2023, which according to the CSU was 10 900 555. All the presented data were collected from the online documents (Csu.gov.cz, 2024a; UZIS, 2024; CSSZ, 2024; Vlada CR, 2024; Aaov, 2024; Tojerovnost, 2024)

5 DISCUSSION

The very problem of differences in access to health care is the different classification of the vulnerable population. As we have already stated, there are several ways to look at the whole concept. If we define "vulnerable population" as "Persons, particularly at risk of being unable to fulfil their basic life or needs", we can find a total of eight groups according to the focus of the research investigation and the angle of viewing the issue itself (Caraballo et al., 2020). We can use another classification of the vulnerability based on the health and social systems.

5.1 Cognitive and Communicative vulnerability

Cognitive or communication vulnerability occurs when either participant is unable to process, understand, appreciate, and reason through documentation of consent and/or explanation due to either a mental limitation or a language limitation (Adams et al., 2020; Caraballo et al., 2020; Christo et al., 2024). The vulnerable population does not always have to understand the meaning of individual measures or the treatment process, it is for these reasons that at-risk persons (children, pensioners, persons with cognitive disorders or mental deficits) are recommended to always have someone else with them, they receive educational materials in the form of brochures or leaflets and receive contact at the medical center so that in case of needs and

difficulties they can re-inform themselves about the correctness of the data or the correctness of the treatment regimen. From the findings of the author Petherbridge (2021), it is evident that every third person is cognitively or communicatively vulnerable, regardless of the environment in which we find ourselves (family and work).

5.2 Institutional vulnerability

Institutional vulnerability is defined as subjection to formal authority with the presence or absence of coercive attitudes (Adams et al., 2020). Examples include prisoners, relationships between students and professors, relationships between employees and employers, and between health professionals and patients (Christo et al., 2024). Persons from the vulnerable group may thus be under the influence of institutional formal or informal pressures, which shape their attitude towards possible treatment or seeking health care. It means, there can be institutional barriers occurred.

5.3 Deferential vulnerability

The deferential vulnerability occurs when individuals informally submit to an authority figure (Christo et al., 2024). Typical examples are victims of abuse, doctor-patient relationships, or husband-wife relationships. There are situations where one party may feel obligated to follow the advice of the other (Adams et al., 2020). This kind of vulnerability is not very typical in healthcare. A study by Matthews & Tobin (2016) shows that this can happen not based on a manipulative physician, but based on the health care system. The typical behaviour of patients is to be submissive and follow the orders given by the health professional without further rational considerations.

5.4 Medical vulnerability

Health vulnerability occurs when an individual's health condition can alter their ability to make rational and routine decisions (Christo et al., 2024). Persons under the influence of illness have an altered value system from that typically used with the primary goal of healing. When it comes to patients with a chronic disease, often all needs are not as important as medical rules. We want to use the example from the study Adams et al. (2020). They tested priorities of the patients during the Covid-19 pandemic. All of them wanted to be treated properly and all of the participants were scared about the pandemic situation. Reps et al. (2021) support the results of Adam et al. (2020). They confirm that health vulnerability is one of the main factors involved in the socio-economic growth of society and individuals. The biggest finding was recorded during the COVID-19 pandemic, which is the cause of many chronic diseases, lack of health care and possibly increased death from diseases, not just COVID-19.

5.5 Economic vulnerability

Economic vulnerability occurs when an individual's economic situation may make them vulnerable to the prospect of free medical care or payments for drugs or treatment (Christo et al., 2024). All persons should have equal access to health care and there should be no major differences in patient payments. In the Czech Republic, a legislative framework applies where at least one generic drug must always be available free. Other information about the actual situation and co-payment is monitored by Czech Statistical Office (csu.gov.cz, 2024b). In the current migration, the population of the Czech Republic is rapidly following, which increases the need for job opportunities, an increase in the difference in minimum wages, and an increase in medicine and treatment.

5.6 Social vulnerability

Social vulnerability occurs when participants are at risk of discrimination based on race, gender, ethnicity, or age (Caraballo et al., 2020). There are many approaches to eliminating social barriers in health care. Vulnerable persons have the opportunity to look for any health facility that is also specified for multicultural care. It also includes the specific communities as a 2SLGBTQIA+ or others (Tabaac et al., 2020). The social status of each person is important in relationship with the healthcare they need. Major citizens can reduce the chances to get proper care and it leads to missing care or to other issues (Christo et al., 2024). As a result of racial and cultural discrimination, measures are issued every year to help increase awareness of cultural differences and reduce racial, cultural, and social barriers. According to global surveys, minority societies such as different ethnic groups, Muslims, Jews or South American people are the most affected (Hnilicova, Dobiasova, 2012; Ramšak, 2020).

5.7 Legal vulnerability

Legal vulnerability occurs when participants do not have a legal right to health services or may fear that doing so may put them at risk of legal consequences (Christo et al., 2024). This aspect is more likely to be observed abroad, where the legal and health systems are different. As mentioned, the modern medium is inclined towards correct research and health care forms. Even so, there are mentions of improper behavior in the Czech Republic, which contradicts the rules of ethics and professional behavior (Ramšak, 2020).

5.8 Study vulnerability

Study vulnerability occurs when participants are made vulnerable by the design of the study (Matthews & Tobin, 2016). Generally, this category refers to participants who are deceived during the study or the nature of the study is not disclosed to the participant. In modern research, all study designs are well-designed and include potential biases. This means that all study rules are well described and follow global rules. Studies that violate the rules are not supported.

6 CONCLUSION

The study reveals relevant groups of vulnerable populations from an economic, social, and health point of view. After an overall summary, ten vulnerable groups were identified for the Czech Republic, which include the elderly, newborns and children, the chronically ill, low-income families, the homeless, pregnant and postpartum women, the 2SLGBTQIA+ community, the mentally disadvantaged, and people in custody.

The study also provides a global perspective on defining vulnerable groups and areas from which the entire issue can be viewed. It is a cognitive and communicative area, institutional, deferential, medical, economic, social, legal, and study.

All the mentioned areas are relevant in the first analysis of defining the variables and anchoring the main parts of the further research investigations that will follow.

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THE DETERMINANTS OF STOCK PRICE OF COMMERCIAL BANKS IN VIETNAM

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Abstract

This study investigates the determinants of stock prices for commercial banks in Vietnam, utilizing panel data from 16 banks from 2011 to 2022. Employing various regression methods, including Pooled OLS, Fixed Effects Model (FEM), Random Effects Model (REM), and Feasible Generalized Least Squares (FGLS), we analyze the impact of macroeconomic and bank-specific factors on stock prices. The FGLS model, which addresses issues of autocorrelation and heteroscedasticity, is identified as the most suitable approach. Our findings reveal that GDP growth, equity-to-total-assets ratio, price-to-book ratio, and book value per share positively influence bank stock prices, while interest rates and net interest margin have a negative impact. Factors such as loan-to-deposit ratio, bank size, return on assets, and price-to-earnings ratio are found to be statistically insignificant. These results provide valuable insights for investors, policymakers, and bank managers in understanding the dynamics of bank stock valuations in Vietnam's emerging market context.

Keywords: Stock price, commercial bank, FGLS model, financial indicators.

1 INTRODUCTION

The stock market plays an undeniable role in the global financial system, not only as a trading venue but also as a crucial source of information for investors. In the stock market, stock price is a key indicator to assess a business's performance and investment potential. Fama (1970) posits that stock prices should reflect all available information about a stock. However, although this theory suggests that stock prices will reflect all relevant factors, including both micro and macro factors, empirical studies have shown that not all stock markets are efficient. This implies that information may not be fully reflected in stock prices, posing a significant challenge to the Efficient Market Hypothesis.

Commercial banks are financial intermediaries that play an essential role in the capital circulation of Vietnam's economy, operating as specialized enterprises in the monetary business. The main function of banks is to meet the credit needs of those lacking capital, thereby supporting economic development. Additionally, they contribute to managing the flow of money and goods, facilitating continuous business and production activities without interruption, thus enhancing economic efficiency. The banking system is a tool for implementing the monetary policies of the State Bank of Vietnam to maintain macroeconomic stability. In today's economy, banks act as the bloodstream of monetary circulation. If a bank fails, it can trigger a contagion effect, negatively impacting not only that bank but the entire banking system and the broader economy, leading to various other repercussions.

Vietnam officially joined the WTO on November 17, 2006, opening the economy to many opportunities while also facing numerous challenges, especially in the banking sector. During the period from 2011 to 2022, banking operations in Vietnam witnessed significant fluctuations. The government implemented policies to restructure the banking system, notably affecting the number of banks through mergers. Meanwhile, the period from 2019 to 2022, influenced by COVID-19, posed challenges and difficulties, with banks facing issues such as liquidity risk, interest rate risk, and rising bad debts.

Currently, banking stocks are an attractive investment channel, garnering particular interest from investors in the financial market. According to Ali (2022), the stock prices follow a random walk pattern and can-not be predicted easily to earn extra or abnormal returns. According to Bessis (2011), the randomness of investment returns includes both positive and negative outcomes. Moreover, although there was some of study about factors that affect stock prices before (Demir (2019); Goyal (2019); Farida, Putawin (2021) but there still limitations in research about external factors (Sari (2022), Suketsi (2021). In Vietnam, there is a lack of studies on the factors affecting stock prices in this sector. Given the current state and urgency of the topic, the research team decided to select the topic of "The determinants of the stock price of commercial banks in Vietnam" for study to develop an empirical model capable of predicting the impact level of identified factors on the market value of the stocks in the Vietnamese stock exchange. This research is inheritable and focuses on the gaps left by previous studies, aiming to add empirical evidence about the factors affecting the market value of banking stocks. The results of the research will contribute to providing important information, helping investors understand the factors impacting stock price and thereby assisting them in making reasonable investment decisions to minimize risks and increase the opportunity for expected returns in building and managing their investment portfolios.

2   LITERATURE REVIEW

Many studies and related papers have focused on the factors that influence the stock market value of banks. Khalayleh (2001) analyzed the relationship between accounting performance indicators and market performance in a sample of 40 listed companies in Amman, Jordan, from 1984 to 1996. The results of this study show a positive and significant relationship between the price of the stock and accounting performance indicators, such as the ratio of profit to total assets and profit on equity. The study also highlights the positive relationship between stock prices and banks' profitability. The rise in this ratio often means that the performance and profitability of commercial banks in business increase the stock's value and attract investors' interest.

According to Flamini et al.,(2009)the size of large commercial banks can create a higher competitive advantage over smaller banks in doing business in the market, resulting in higher levels of profitability. According to the study, the enterprise's size positively impacts the company's profitability. When a business has a positive trading outcome, this becomes an attractive signal for investors, promoting a rise in the price of the company's stocks.

Al-Shubiri (2010) focused on approaching and studying the sample selection of the 14 exchange commercial banks in the period 2005-2008. The study uses simple and multi-variable regression analysis methods to find relationships between microeconomic factors and stock prices. The results show a positive relationship between the market price of each stock and its net asset value. The market price of the share dividend ratio and gross domestic product have also been positively correlated. However, significant negative correlations were detected with inflation and borrowing interest rates, although not always significant in a specific number of years of the Amman Stock Exchange in Jordan.

Nisa et al., (2012) demonstrated a positive correlation between GDP and stock prices. By using the GMM methodology in researching factors that influenced the Pakistani stock market, Nisa and Nishat collected data from 221 non-financial companies out of a total of 654 listed on the Karachi Stock Exchange between 1995 and 2006. According to the study's findings, as GDP growth increases by 1%, CP prices will increase by 0.870 points. This demonstrates that GDP positively and strongly influences the stock price in the market studied.

In Vietnam, there is also a special interest in the topic of banks' stock market value, which attracts the attention of many researchers. Specifically, Dung (2015) has studied and analyzed factors that influence the price of common stock of commercial banks listed on the Vietnamese stock market. The results of the study determined that the rate of GDP growth, inflation rate, minimum capital security ratio, gross asset return rate, equity return, interest on stocks, bad debt rate, price on income coefficient, and credit-level growth rate did not significantly affect the price of banking stocks. Operating time, bank size, and the rate of deposit growth all have a significant impact on the stock price. Meanwhile, variables such as gross asset growth rates, equity growth rates and exchange rates have an inverse effect on the stock price, but the level of influence is not significant. Apart from that, bad debt, inflation, capital security, and GDP growth rates, although not statistically significant, have an inverse effect on stock prices.

Phuong et al.,(2020) focused on assessing the effects of interest rate and profit rate fluctuations on the stock value of Vietnamese commercial banks. The study analyzes this relationship using the OLS and GARCH estimation models. The results show that interest rate fluctuations have a negative impact on the stock value of banks. At the same time, the impact of ROA on bank stocks' value is greater than the interest rate. This suggests that ROA plays an important role in shaping the market value fluctuations of listed commercial bank shares.

Kieu & Nhien (2020) focused on analyzing factors affecting the market value of shares of commercial banks listed on the Vietnamese stock market from 2010 to 2018. The study's main objective is to identify and evaluate the important factors affecting the market value of banking stocks in the Vietnamese stock market to build an experimental model to predict the impact of the determined factors on the banking stock market value in the future. The results indicate that factors such as EPS, P/E, BM, GDP growth rate, interest rates, and bank size influence the stock price. The research has provided critical information that helps investors gain a better and more accurate insight into the market and make sound investment decisions in banking stocks.

3 METHODOLOGY

3.1 Hypothesis development

The research Nisa et al.,(2012) concluded that GDP positively affects stock prices, a finding also seen in a study by Adaramola (2011). Al-Shubiri (2010)discovered a positive relationship between GDP and stock price fluctuations when examining the factors affecting stock price volatility. We have hypothesis H1:

H1: GDP growth positively impacts the market value of commercial bank stocks.

Aurangzeb & Dilawer (2012) identified the factors affecting stock prices and pointed out that interest rates have an inverse correlation with stock prices. Other studies have also shown similar results regarding the inverse impact of interest rates on stock prices (Rahman et al., 2009; Sohail & Hussain, 2009). Based on the theory and research results mentioned above, the following hypothesis can be proposed

H2: Interest rates have a negative impact on the market value of commercial bank stocks.

Molyneux (1992) described that equity influences investor expectations of a bank, leading to the valuation of that bank's stock. Numerous empirical studies have shown that equity positively impacts the market value of commercial bank stocks, such as those by Sufian and Chong (2008) and Garcia-Herrero et al. (2009). We have hypothesis H3:

H3: The ratio of equity to total assets positively impacts the market value of commercial bank stocks.

Empirical studies show that lending activities positively impact the market value of commercial bank stocks (Gul et al., 2011; Trujillo-Ponce, 2013). Based on this foundation, the following hypothesis can be proposed:

H4: The loan-to-deposit ratio positively impacts the market value of commercial bank stocks.

Dietrich & Wanzenried (2011) observed that a high NIM ratio brings significant profits for banks but negatively affects their stock prices. If a bank faces substantial financial risks that are not accepted by the market, high margins can increase concerns and reduce investor confidence, leading to a decrease in stock prices. Based on this foundation, the authors propose the following research hypothesis:

H5: Profit margin has a negative impact on the market value of commercial bank stocks.

The study by Giang & Nhung (2014)showed that investment strategies based on the industry's P/E ratio yielded the best performance, while the P/B ratio did not achieve positive results despite applying different comparison criteria. However, when considering the predictive ability for stock prices, the P/E ratio did not show statistical significance, meaning it did not have predictive effectiveness. Conversely, the P/B ratio varied in the same direction as stock price fluctuations. Based on this foundation, the following hypothesis can be proposed:

H6: The P/B ratio positively impacts the market value of commercial bank stocks.

According to Flamini et al., (2009) larger commercial banks, they tend to have higher competitive capabilities than smaller banks in the market and often achieve higher profitability. Numerous studies also indicated that size generally positively correlates with the market price of stocks (Ramzan et al., 2013; Rjoub et al., 2017)(Rjoub et al., 2017). Therefore, we have hypothesis H7:

H7: The bank's size positively impacts commercial bank stocks' market value.

Nguyen et al., (2019) pointed out that the book value per share (BV) positively correlates with stocks' market value. Therefore, the research team proposes the following hypothesis:

H8: Book value positively impacts the market value of commercial bank stocks.

The study Abu Shanab (2008) pointed out a very significant positive relationship between the market price of stocks and ROA. The studies also yielded results similar to those of (Al-Khalayleh, 2001; Seftiana & Indarti, 2012). Overall, most studies emphasize the positive relationship between stock prices and ROA. Based on this foundation and the research results, the following hypothesis can be proposed:

H9: Return on assets ratio positively impacts the market value of commercial bank stocks.

Tandon & Malhotra (2013) demonstrated a positive relationship between a company's stock price and factors such as book value, earnings per share, and the price-to-earnings ratio. Another study Almumani (2014) indicated that the price-to-earnings ratio positively impacts banks' stock prices, showing a positive correlation between stock prices and the financial performance of the banking sector. Based on this foundation and the research results, the following hypothesis can be proposed:

H10: The price-to-earning ratio positively impacts the market value of commercial bank stocks.

3.2 Model

Based on the presented theories, as well as the results of empirical studies and the research hypotheses mentioned in Arshad et al. (2014), the research model proposed by the author is:

$$SP_{it} = \beta_0 + \beta_1 * GDP_{it} + \beta_2 * INT_{it} + \beta_3 * EQT_{it} + \beta_4 * LOAN_{it} + \beta_5 * NIM_{it} \\ + \beta_6 * PB_{it} + \beta_7 * Size_{it} + \beta_8 * BV_{it} + \beta_9 * ROA_{it} + \beta_{10} * PE_{it} \quad (1) \\ + \varepsilon_{it}$$

Here:

- SP_{it} is the market value of the listed Commercial bank stocks

- GDP_{it} is the economic growth rate;

- INT_{it} is the interest rate;

- EQT_{it} is the ratio of equity to total assets;

- $LOAN_{it}$ is the ratio of credit granted to total deposit;

- NIM_{it} is the profit margin;

- PB_{it} is the price-to-book ratio;

- $SIZE_{it}$ is the size of the bank;

- BV_{it} is the book value;

- ROA_{it} is the return on assets ratio;

- PE_{it} is the price-to-earnings ratio per share;

- ε_{it} is the error term of the model.

Tab. 1 – Summary of Independent Variables. Source: Conducted by the authors (2024)

Variables	Acronym	Formula	Sign of expectation
Market value of stocks	SP	The closing price of the stock on the last day of the fiscal year	
GDP Growth	GDP	The increase in the consumer price index from year t to t-1	+
Interest	INT		-
Equity ratio over total assets	EQT	Equity ratio/Total assets	+
Loan-to-depost ratio	LOAN	Total debt ratio/Total assets	+
Net interest margin	NIM		-
Price-to-book ratio	PB	Price index per book	+
Size of the bank	SIZE	The natural logarithm of total assets	+
Book value ratio	BV		+
Return on assets ratio	ROA	Profit after tax/Total assets	+
Price-to-earnings ratio	PE	Market value/Earnings per share	+

4 RESULTS

First, the study will compile and analyze all data using measures including the mean, maximum value, minimum value, and standard deviation of the variables in the model. STATA software will be used to perform the statistical analysis, and the detailed results between the dependent and independent variables in the study will be presented in the table below.

Tab. 2 – Descriptive Statistics Table of Variables. Source: Conducted by the authors (2024)

Variable	Obs	Mean	Std.Dev	Min	Max
SP	135	16.0504	14.3059	2.1047	80.0000
GDP	135	0.0585	0.0155	0.0258	0.0802
INT	135	0.0743	0.0198	0.0550	0.1360
EQT	135	0.0815	0.0275	0.0419	0.1639
LOAN	135	5.7710	5.4626	1.0729	27.3743
NIM	135	0.0347	0.0137	0.0160	0.0877
PB	135	1.6819	1.1293	0.7085	6.0515
SIZE	135	14.4985	0.3945	13.3933	15.2581
BV	135	15.1320	3.7150	10.5000	29.1180
ROA	135	0.0118	0.0077	0.0001	0.0316
PE	135	50.1623	151.7852	4.2414	1370.6300

The research team used STATA software to perform the statistical analysis. The results of this analysis include important parameters such as the number of observations, standard deviation, mean, maximum value, minimum value, and the price range between the dependent and independent variables. The detailed results are presented in Tab.2 of the study.

By analyzing the correlation coefficient, we can understand the extent and direction of the relationship between the dependent variable and the explanatory variables. Additionally, if the correlation coefficient value is high (e.g., $r > 0.8$), it may indicate the presence of multicollinearity in the regression model. The study will proceed to examine and analyze the level of correlation between the independent variables in the model to assess whether multicollinearity is present.

Tab. 3 – Correlation Coefficient Matrix Table. Source: Conducted by the authors (2024)

Variable	SP	GDP	INT	EQT	LOAN	NIM	PB	SIZE	BV	ROA	PE
SP	1										
GDP	0.032	1									
INT	-0.336	0.174	1								
EQT	0.046	0.144	0.044	1							
LOAN	0.021	-0.197	-0.153	-0.130	1						
NIM	0.027	0.181	0.043	0.599	-0.210	1					
PB	0.373	-0.040	0.139	-0.207	0.187	-0.168	1				

SIZE	0.594	0.021	-0.343	-0.224	0.065	0.107	0.425	1		
BV	0.733	0.094	-0.282	0.194	-0.040	0.284	0.168	0.667	1	
ROA	0.275	0.210	-0.081	0.583	-0.319	0.767	-0.096	0.282	0.513	1
PE	-0.142	-0.073	0.123	0.127	0.042	-0.152	-0.027	-0.382	-0.272	-0.336	1

Based on the observation of the correlation matrix of the three research models, we see that none of the correlation coefficients between pairs of variables exceed 0.8. This indicates that there are no signs of multicollinearity in the model, ensuring that the regression results are reliable and the variables in the model are appropriate.

To assess the impact of factors on the market value of listed commercial bank stocks in Vietnam, the study will conduct regression models with the dependent variable "SP" using three different methods: Pooled OLS, Fixed Effects Model (FEM), and Random Effects Model (REM). However, during the research process, the model experienced issues of autocorrelation and heteroscedasticity, identified through the Wooldridge and White tests. To address this issue, the research team decided to continue applying the Feasible Generalized Least Squares (FGLS) method in their study model. The results collected from the regression methods are summarized and presented in the table 4.

Tab 4 – Summary of Regression Model Results. Source: Conducted by the authors (2024)

	OLS	FEM	REM	FGLS
GDP	40.118***	30.319***	39.387***	31.702***
	4.9	5.12	4.91	10.04
INT	-176.351***	-119.473***	-163.147***	-116.794***
	-4.22	-2.66	-3.86	-4.41
EQT	15.697	-17.434	6.826	82.738***
	0.39	-0.41	0.16	3.04
LOAN	-0.049	0.075	-0.024	-0.063
	-0.34	0.52	-0.16	-0.75
NIM	-197.738**	207.477*	-195.550**	-128.863**
	-2.3	1.79	-2.20	-2.41
PB	3.762***	-22.799***	3.283***	3.879***
	4.89	-7.61	3.82	2.83
SIZE	0.021	16.975***	0.99	4.572
	0.01	3.23	0.28	1.62
BV	0.002***	0.001***	0.002***	0.001***
	8.23	-2.82	8.04	5.19
ROA	102.799	90.357	140.616	-28.863
	0.54	0.46	0.73	-0.28
PE	0.007	0.004	0.007	0

	1.27	0.97	1.28	-0.25
Constant	-15.284	-173.408**	-28.993	-74.984*
	-0.33	-2.23	-0.58	-1.9
N	135	135	135	135
R^2	0.714	0.782	0.782	0.782
Df_r	124	106	106	106

<center>* Significant at the 10% level ** Significant at the 5% level *** Significant at the 1% level</center>

The variables LOAN, ROA, and PE do not have statistical significance in all four models, while the variable SIZE only has statistical significance in the FEM model. The Generalized Least Squares (FGLS) model explains 78.2% of the factors influencing the market price of CP based on the research sample, with the remaining factors being explained by other variables outside the model. In this model, the dependent variable SP is statistically significant with independent variables such as GDP, INT, EQT, NIM, PB và BV. On the contrary, other variables such as LOAN, SIZE, ROA, and PE do not have statistical significance. Notably, in the Feasible Generalized Least Squares (FGLS) model, not only does it address the issue of varying variances effectively, but it also provides more statistically significant independent variables compared to the traditional Random Effects Model (REM), enhancing the accuracy and explanatory power of the model.

5   DISCUSSION

After conducting data preprocessing steps and analysis through STATA software, the research team conducted regression using methods such as OLS, FEM, REM, and FGLS to evaluate the impact of factors on the market value of commercial bank stocks in Vietnam. The results indicate that the FGLS method is considered the optimal choice, providing more reliable results than the other methods.

Therefore, in this study, the FGLS regression model will be chosen as the basis for the conclusions of the research "The determinants of the stock price of commercial banks in Vietnam" as follows:

$$
\begin{aligned}
SP_{it} = -1.90 &+ 10.04 * GDP_{it} - 4.41 * INT_{it} + 3.04 * EQT_{it} - 0.75 * LOAN_{it} \\
&- 2.41 * NIM_{it} + 2.83 * PB_{it} + 1.62 * SIZE_{it} + 5.19 * BV_{it} - 0.28 \quad (2) \\
&* ROA_{it} - 0.25 * PE_{it} + \varepsilon_{it}
\end{aligned}
$$

The evaluation of each factor affecting the market value of Commercial bank stocks in Vietnam is as follows:

GDP Growth (GDP)

The research shows that economic growth significantly increases the market value of Commercial bank stocks in Vietnam, with a 1% statistical significance level. This finding supports hypothesis H1 and aligns with studies by (Gul et al., 2011; Trujillo-Ponce, 2013; Isayas, 2022). Economic growth boosts demand for goods, services, and banking, leading to more efficient business operations, higher borrowing needs, better debt repayment, and enhanced bank profitability, increasing the market value of bank stocks.

Interest (INT)

<center>180</center>

The research shows that interest rates inversely affect the market value of Commercial bank stocks in Vietnam at a 1% statistical significance level, supporting hypothesis H2. This aligns with studies by Aurangzeb & Dilawer (2012). Higher interest rates reduce borrowing needs, particularly in loan-dependent industries, decreasing credit sales and bank profits, thus making bank stocks less attractive to investors.

Equity ratio over total assets (EQT)

The research shows that the equity ratio of Vietnamese commercial banks positively impacts their stock market value at a 1% statistical significance level, supporting the initial hypothesis. This aligns with studies by (Gul et al., 2011; Trujillo-Ponce, 2013; Jadah et al., 2020). A higher equity ratio indicates greater financial autonomy and operational safety, leading to higher profitability and compliance with Basel II capital adequacy requirements set by the State Bank of Vietnam.

Loan-to-deposit ratio (LOAN)

The research shows that the loan-to-deposit ratio of Vietnamese Commercial banks has an inverse but statistically insignificant impact on their stock market value, contrary to hypothesis H4 and previous studies by (Gul et al., 2011; Trujillo-Ponce, 2013; Jadah et al., 2020). Lending activities do not significantly influence stock market value despite generating interest income for banks.

Profit margin (NIM)

The research shows that profit margin inversely impacts the market value of Vietnamese commercial bank stocks at a 5% statistical significance level, supporting hypothesis H5 and aligning with previous studies. A high net interest margin indicates lower operational efficiency and poor cost control, negatively affecting financial development, investment, and economic growth. It also reflects higher banking risks (Claeys & Vander Vennet, 2008). If the high-profit margin results from increased credit risk management without stable profitability, it can concern investors and decrease stock prices.

Price-to-book ratio (PB)

The research shows that the price-to-book ratio (PB) positively impacts the market value of Vietnamese commercial bank shares at a 1% statistical significance level, supporting hypothesis H6 and aligning with previous studies by Giang & Nhung (2014). Banks with a high P/B ratio are more attractive to investors due to their growth potential and profitability, leading to increased market value of their shares.

Size of the bank (SIZE)

The research results have shown that the size of the bank positively impacts the market value of shares of Vietnamese commercial banks, but this effect is not statistically significant. Therefore, hypothesis H7 is rejected. SIZE does not affect the market value of shares of Vietnamese Commercial banks.

Book value of the stock (BV)

According to Tab.4, the book value (BV) of each share positively impacts the market value of Vietnamese commercial bank shares at a 1% statistical significance level, supporting hypothesis H8. This aligns with studies by (Zahir & Khanna, 1982; Nguyen et al., 2019). Banks with high BV have a solid financial foundation, attracting investors due to profit potential and stability, thus increasing the market value of their listed stocks.

Return on Assets ratio (ROA)

The research findings indicate that the income-to-total-assets ratio is not statistically significant in all four models. This contradicts the initial hypothesis and leads us to reject hypothesis H9. ROA does not impact the market value of Vietnamese Commercial banks.

Price-to-earnings ratio (PE)

The research findings indicate that the price coefficient on the profitability of a stock does not reach statistical significance in all four models. This is not consistent with the initial hypothesis, therefore the authors have grounds to reject hypothesis H10, that the P/E ratio does not impact the market value of Vietnamese banking stocks.

6   CONCLUSION

In the study "The determinants of the stock price of commercial banks in Vietnam ", the authors used panel data from 16 commercial banks representing the Vietnamese banking system over the period from 2011 to 2022, with a total of 135 observations. After estimating and testing the model's hypotheses, the authors decided to apply the research results from the Feasible Generalized Least Squares (FGLS) regression method to address the issues of autocorrelation and heteroskedasticity in the model.

The research results indicate that the stock price (SP) of listed commercial banks is influenced by various factors, including GDP growth (GDP), interest rate (INT), equity to total assets ratio (EQT), net interest margin (NIM), price-to-book ratio (PB), and book value per share (BV). GDP growth, equity to total assets ratio, price-to-book ratio, and book value per share all have a positive relationship with the market value of commercial bank stocks in Vietnam. Conversely, interest rate and net interest margin have an inverse relationship. This is consistent with the hypotheses and previous studies. Other independent variables in the model, although not statistically significant, partially show their direction of influence on the market value of stocks of listed commercial banks on the Vietnamese stock market.

This research support investors in recognizing the positive influence of GDP growth, equity to total assets ratio, price-to-book ratio, and book value per share on stock prices to make more informed investment decisions and being cautious during periods of rising interest rates because of the inverse relationship between interest rates, net interest margin, and stock prices advises caution.

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KNOWLEDGE MANAGEMENT IN NON-GOVERNMENTAL ORGANIZATIONS: A BIBLIOMETRIC ANALYSIS

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Abstract

This study aims to explore trends, patterns, and the intellectual structure of knowledge management (KM) in non-governmental organizations (NGOs) research. Through bibliometric analysis, it addresses key questions concerning publication trends, prominent journals, research areas, and future directions. The methodology includes performance analysis and science mapping, defining the research scope and employing bibliometric techniques such as author productivity, citation analysis, co-citation analysis, and source analysis. The results reveal 102 relevant publications from 75 sources with contributions from 255 authors. Key findings include the identification of top journals in KM within NGOs, namely the Journal of Knowledge Management, Knowledge Management Research and Practice, and the Journal of Information and Knowledge Management Systems. Additionally, co-cited articles by(Lettieri et al., 2004; Nonaka, 1994), along with foundational studies by authors such as (Huck et al., 2011; Rathi et al., 2016) were identified. Thematic mapping showed dominant themes such as partnership, sustainability, and organizational learning. The study also suggests further directions for KM within NGOs, particularly using AI tools in KM within NGOs.

Keywords: Knowledge Management, Non-governmental Organisations, Bibliometrics, R-package.

1   INTRODUCTION

Knowledge is the most valuable resource owned by individuals and organizations (Oktari et al., 2023), and the effectiveness of firms is associated with how they manage knowledge as a strategic resource (González-Illescas & Zaragoza-Sáez, 2023) Since numerous organizations are transitioning into knowledge-based entities, Knowledge and learning is described as the heart of international development practice (Miković et al., 2020), which leads to the effective knowledge management (KM) system in Non-governmental organizations (NGOs) becoming one of the main factors of flexibility and adaptability to changes in business conditions (Yousif et al., 2020).

As Learning and KM are crucial capacities for many NGOs (Hailey & James, 2002), studies in KM, targeting NGOs are scarce, as opposed to what is happening in the private and public sectors (Corfield et al., 2013; Oliveira & Pinheiro, 2021), and very little systematic research has reviewed the applicability of strategic management concepts within NGOs (Kong, 2007).

Since Literature reviews play an essential role in academic research to gather existing knowledge and to examine the state of a field, bibliometrics has become an essential tool for assessing and analyzing the output of scientists (Moral-Muñoz et al., 2020), yet, bibliometric applications in business research are relatively new (Donthu et al., 2021) and researchers in business, management and related disciplines continue to rely on cursory and narrative reviews (Linnenluecke et al., 2020).

As it makes no sense to do research and not to communicate the results, (Rousseau et al., 2018) this research tries to communicate the research in KM in NGOs by communicating the current publications and authors and mapping them in order to answer the following questions:

1. what are the publication trends and patterns in KM in NGOs research?

2. Which academic journals hold prominence in the field of KM in NGOs?

3. What is the intellectual structure of research on KM in NGOs?

4. What are the primary research areas and thematic focuses within the KM in NGOs?

5. What are the emerging research directions and what future research streams can be identified for KM within NGOs?

2 LITERATURE REVIEW

Knowledge is what emerges from processing and managing information, and knowledge is considered the highest level of information (Wolski & Gomolińska, 2020), While studying Knowledge itself is not a new research area, studying KM as a process Within business organizations is considered modern, And researching in KM also facilitates the understanding of knowledge (Michalová & Sieber, 2023).

It is considered that the first appearance of KM dates back to the year 1975 (Kuo, 2019) when a special issue of "Public Administration Review" 1975 included seven articles exploring various aspects of KM (Sabherwal et al., 2023). then, At the first American conference on artificial intelligence (Edward Freigne Baun) pointed out his famous phrase "Knowledge is Power" and since that time, a new field of knowledge was launched under the name "Knowledge Engineering" With its birth, a new job was created, namely "Knowledge Engineer" and some of Organizations started establishing knowledge management programs. After that and with the publishing of Nonaka and Takeuchi's seminal book "The Knowledge-Creating Company" knowledge takes on a dynamic nature as it is constantly moving within the organization. The third stage of knowledge management appears which be closer to the democratization and personalization of work and focuses more on heuristics known as tacit knowledge internalization (Dalkir, 2023; Kelly, 2018; Kuo, 2019; Tzortzaki & Mihiotis, 2014). Now KM is described as a dynamic social process which depends on organizational, technical, and personal dimensions.

Due to the various fields of academia delve into the study of KM, it has become difficult to determine a unified definition of knowledge management, as definitions differ from one researcher to another, depending on the discipline, theory, and application field.

The American Center for Productive Quality has defined KM as strategies and processes for identifying, obtaining, and using knowledge to help an organization compete (Huang et al., 2011), Al Ahbabi define KM as a set of processes that aims to provide the right information to the right person at the right time to improve business(Al Ahbabi et al., 2018). Grundstein define KM: as activities and processes that improve the use and creation of knowledge in the organization (Grundstein, 2012), Girard et al define KM: the process of creating diverse information and knowledge for sharing and investing in the organization (Girard et al., 2015).

KM in beginnings emerged as a managerial framework in the private sector (Corfield et al., 2013), aiming to make the enterprise act as intelligently as possible by realizing the best value of its knowledge assets (Wiig, 1997), and overcoming her knowledge gap by knowing what she wants to know(Sunassee & Sewry, 2002). As its association with diverse performance measures across businesses became apparent, KM's significance grew significantly (Zhang et al., 2022), This expansion transcended corporate boundaries, demonstrating its value across various sectors and industries(Ariffin et al., 2023; Fan & Beh, 2024). Notably, there has been a

noticeable surge in KM adoption within public and NGO sectors as well(Corfield et al., 2013), so in this study, we will discover the growth of KM studies in NGOs.

3 METHODOLOGY

Bibliometrics guiding articles show a similarity in the needed procedures for conducting the bibliometric research (Donthu et al., 2021; Gan et al., 2022; Linnenluecke et al., 2020; Zupic & Čater, 2015) and conducting our research we followed the steps that suggested by (Donthu et al., 2021)

Step 1: Define the aims and scope of the bibliometric study: the aim and scope of our research are defined by answering the main questions proposed in the introduction.

Step 2: Choose the techniques for bibliometric analysis: for answering the questions we chose, as our study aim is performance analysis and science mapping, we conducted an author productivity analysis and citation analysis, co-citation analysis, word analysis, and source analysis.

Step3: Collect the data for bibliometric analysis:

As a detailed review question can be easily translated into a search strategy (Hempel, 2020), after a preliminary search on Google Scholar, Scopus, and Web of Science and reviewing, previous bibliometric researches in KM (Akhavan et al., 2016; Kareithi & Lund, 2012), we identified essential keywords relating to KM in NGOs, depending on our research question and the most repeated fields and previous literature, we identify a group of keywords for finding all relevant studies as shown in table (1).

Tab. 1 – Research keywords. Source: own research

Knowledge Management Keywords	"knowledge management*" OR "tacit knowledge" OR "explicit knowledge" OR "knowledge sharing" OR "knowledge retrieval" OR "knowledge acquisition" OR "knowledge elicitation" OR "knowledge capture" OR "knowledge engineering" OR "knowledge organizing" OR "knowledge process" OR "knowledge creation" OR "knowledge transfer" OR "knowledge application" OR "knowledge audit" OR "knowledge base" OR "knowledge methods" OR "knowledge productivity" OR "knowledge quality" OR "knowledge foresight" OR "knowledge repository" OR "knowledge worker" OR "knowledge active forgetting" OR "knowledge asset" OR "knowledge culture" OR "knowledge society" OR "knowledge market" OR "knowledge broker" OR "knowledge-based organization" OR "knowledge performance" OR "knowledge education" OR "knowledge network" OR "knowledge strategy" OR "knowledge map" OR "knowledge model" OR "knowledge-based system"
Non-governmental organizations keywords	("NGO*" OR "Non-governmental organization*" OR "NPO*" OR "nonprofit organization*" OR "civil society organizations*" OR "community-based organizations*" OR "grassroots organizations*" OR "faith-based organizations*")

 We used Scopus and Web of Science, as the present document shows they are the main bibliographic databases used in bibliometrics analysis, (Moral-Muñoz et al., 2020) and they allow a search for publications with pre-specified keywords(Linnenluecke et al., 2020), then, we specified inclusion and exclusion criteria for making the process transparent The inclusion criteria were as follows: (1)papers were written in English, (2)no timeline was specified, and (3) the articles must be published in Journals (Books and conference papers and proceedings excluded). On 2 February 2024, we used the Scopus and Web of Science database's advanced search tool to look for relevant articles by using the search query depending on the specified keywords and inclusion criteria, as False positives' in the search process can occur (Linnenluecke et al., 2020), so we checked for duplicate records, and applying exclusion and inclusion criteria such as language, document type, and document source, retrieving the

screened records, and evaluating the quality of the documents using titles, abstracts, and keywords. After removing duplications and irrelevant papers, (102) relevant papers were finally included in this review.

Step 4: Run the bibliometric analysis and report the findings.

For applying the bibliometric techniques specified in step 2, the study runs bibloshiny which is an R-library created by (Aria & Cuccurullo, 2017).

4   RESULTS

Performance analysis

As shown in Table (2) The total number of related documents is 102, from 75 sources and 255 authors contributing to 95 articles and 7 review articles with an annual growth rate (of 7.2 %). The publication timespan begins in 2002 with works by (Hailey & James, 2002; Montgomery, 2002; Patel & Mitlin, 2002). The scientific productivity of authors was assessed based on the number of articles they authored and their total h-index, as illustrated in the table (3) and figure (1). The author's scientific output was evaluated using bubble size, color intensity, and timeline. The size of the bubble corresponds to the number of documents and citations, while the timeline is represented by a line. Table (3) shows that authors Kong E, Rathi D, Le Q, and Tuamsuk K have an equal number of publications, whereas author Given L has 3 publications and 129 total citations.

Tab. 2 – Overview analysis. Source: own research

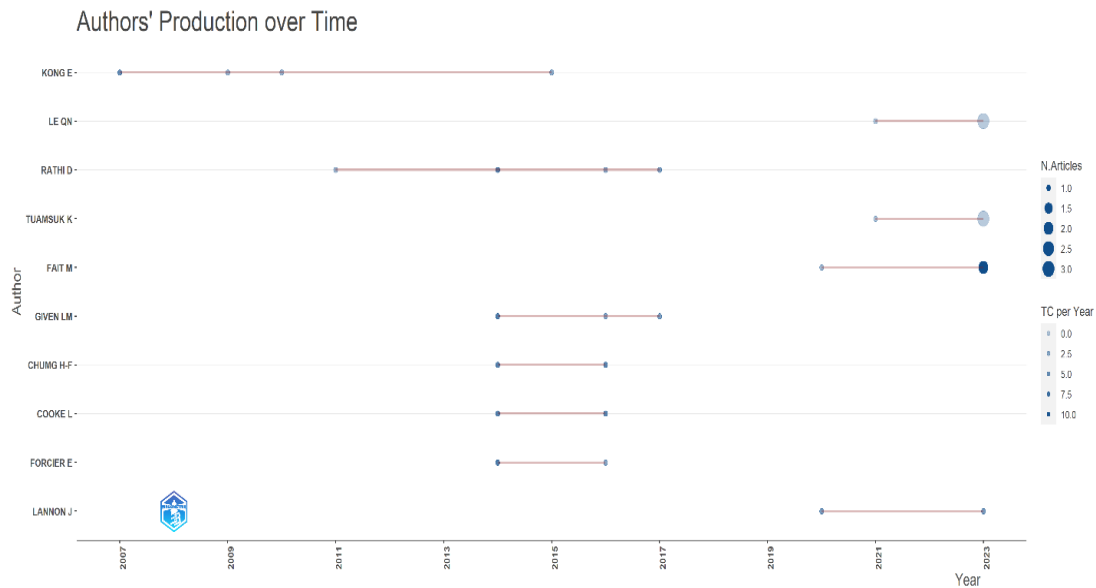| MAIN INFORMATION ABOUT DATA		AUTHORS	
Timespan	2002:2023	Authors	255
Sources (Journals, Books, etc)	75	AUTHORS COLLABORATION	
Documents	102	Co-Authors per Doc	2.75
Annual Growth Rate %	7.23	International co-authorships %	21.57
References	5386	DOCUMENT TYPES	
DOCUMENT CONTENTS		article	95
Author's Keywords (DE)	305	review	7

Fig. 1 – Authors Productivity over time. Source: Authors' clarification by Bibloshiny and based on Scopus and Web of Science data

Tab. 3 – Authors productivity. Source: own research.

Author	Num of publication	TC	Author	Num of publication	TC
KONG E	4	187	FAIT M	3	29
RATHI D	4	154	CHUMG H-F	2	122
LE QN	4	2	COOKE L	2	122
TUAMSUK K	4	2	FORCIER E	2	99
GIVEN LM	3	129	LANNON J	2	27

Sources Analysis:

To identify the most relevant journals in the field, we initially extracted the top 10 most frequent sources from our dataset. Subsequently, we evaluated the local impact of all sources, pinpointing the 10 higher local H-index journals -We used the local H index in sorting the journals instead of using the Total citations because some journals were cited many times just for 1 article, and that will be shown in the document analysis and shows the impact of the specific article, but for discovering the impact of the sources we preferred using a number of publications and local H-index-. Then Employing Bradford's Law as shown in figure (2), we categorized the local sources into zones based on their relevance to the documents, focusing on relevance, local impact, and Bradford's Law, we identified a final set of 13 journals that stood out as shown in the table (4):
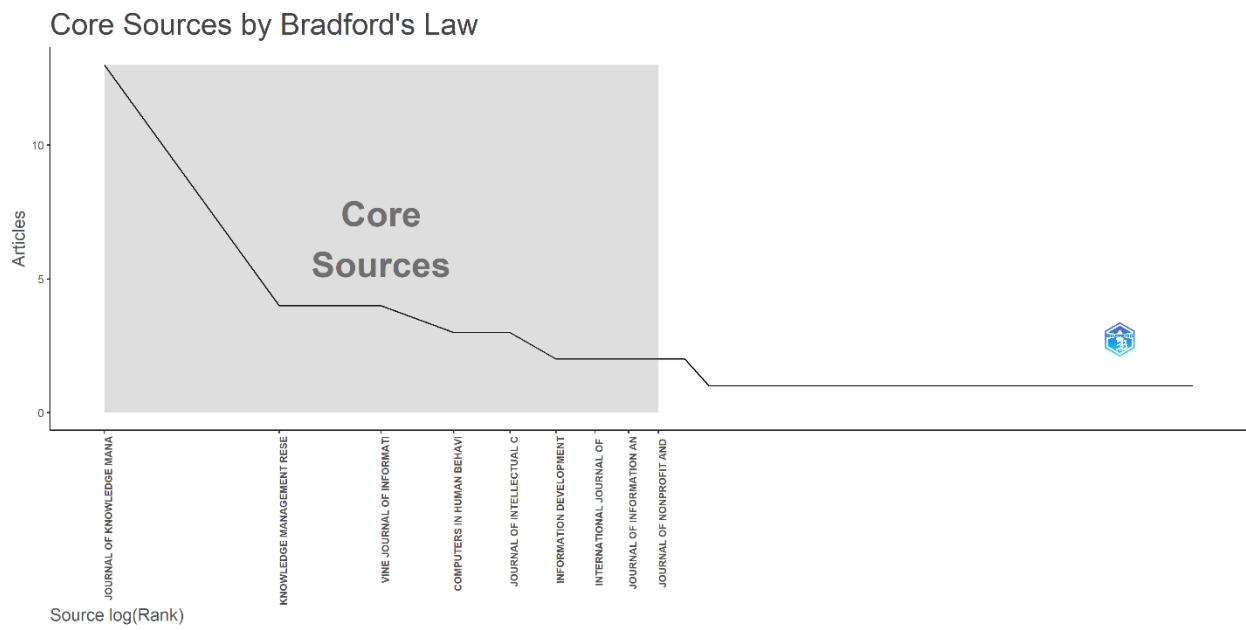
189

Fig. 2 – Core sources by Bradfords law. Source: Authors' clarification by Bibloshiny and based on Scopus and Web of Science data

Tab. 4 – Sources analysis. Source: own research.

Source	#Publications	L.H Index	Zone	G. H-index	SJR	Q
JOURNAL OF KNOWLEDGE MANAGEMENT	13	10	1	134	2.22	1
KNOWLEDGE MANAGEMENT RESEARCH AND PRACTICE	4	3	1	45	0.64	2
VINE JOURNAL OF INFORMATION AND KNOWLEDGE MANAGEMENT SYSTEMS	4	3	1	37	0.568	2
COMPUTERS IN HUMAN BEHAVIOR	3	3	1	116	2.464	1
JOURNAL OF INTELLECTUAL CAPITAL	3	3		105	1.582	1
JOURNAL OF NONPROFIT AND PUBLIC SECTOR MARKETING	2	2	1	37	0.346	3
VOLUNTAS	2	2	2	60	0.898	2
INFORMATION DEVELOPMENT	2	1	1	34	0.559	1
INTERNATIONAL JOURNAL OF KNOWLEDGE AND LEARNING	2	1	2	22	0.192	4
JOURNAL OF INFORMATION AND KNOWLEDGE MANAGEMENT	2	1	1	25	0.226	4
ADMINISTRATIE SI MANAGEMENT PUBLIC	1	1	2	18	0.478	2
ADVANCED SCIENCE LETTERS	1	1	2	30	0.126	4
AMERICAN REVIEW OF CANADIAN STUDIES	1	1	2	16	0.157	4

Note: # publications: number of publications. LH Index: local H-Index , G.H-Index: Global H-Index, SJR: SCImago Journal Rank , Q:Quartiles

4.1 Citation and CO-citation analysis:

Citation analysis is a fundamental instrument in the field of science mapping, operating on the principle that citations represent intellectual links between different publications, indicating how one publication refers to another. Moreover, co-citation analysis takes this methodology further by not only identifying significant works but also revealing thematic groupings within a specific field (Donthu et al., 2021)

Our study focused on the co-cited article pairs, as depicted in Figure (3). Among these pairs, the article by (Lettieri et al., 2004) on Knowledge Management in NGOs and (Nonaka, 1994)"The Dynamic Theory of Organizational Knowledge Creation" emerged as the most co-cited articles. Nonaka's work has garnered high co-citation rates across various studies on KM,

establishing it as a pivotal publication in the field. This finding is further supported by our citation analysis in table (5), which highlights the works of (Davenport & Prusak, 1998) and (Hume et al., 2012) as the most cited articles following Nonaka and Lettieri.
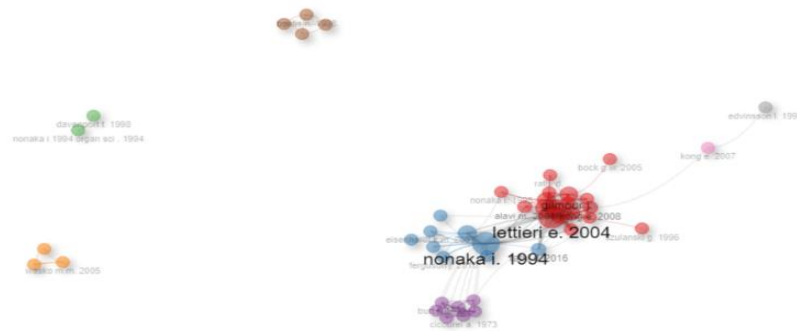

Fig. 3 – co-citation analysis. Source: Authors' clarification by Bibloshiny and based on Scopus and Web of Science data

To identify the foundational studies of KM in NGOs, we conducted a localized citation analysis, as presented in table (6). Here, we discovered that (Huck et al., 2011)emerged as the most cited article, closely followed by the contributions of (Rathi et al., 2014, 2016).

Tab. 5 – Most cited references. Source: Authors' clarification by bibloshiny   and based on Scopus and Web of Science data

Cited References	Citations
LETTIERI E., BORGA F., SAVOLDELLI A., KNOWLEDGE MANAGEMENT IN NON-PROFIT ORGANIZATIONS, JOURNAL OF KNOWLEDGE MANAGEMENT, 8, 6, PP. 16-30, (2004)	13
NONAKA I., A DYNAMIC THEORY OF ORGANIZATIONAL KNOWLEDGE CREATION, ORGANIZATION SCIENCE, 5, 1, PP. 14-37, (1994)	12
DAVENPORT T.H., PRUSAK L., WORKING KNOWLEDGE: HOW ORGANIZATIONS MANAGE WHAT THEY KNOW, (1998)	9
HUME C., CLARKE P., HUME M., THE ROLE OF KNOWLEDGE MANAGEMENT IN THE LARGE NON PROFIT FIRM: BUILDING A FRAMEWORK FOR KM SUCCESS, INTERNATIONAL JOURNAL OF ORGANISATIONAL BEHAVIOUR, 17, 3, PP. 82-104, (2012)	7
RAGSDELL G., ESPINET E.O., NORRIS M., KNOWLEDGE MANAGEMENT IN THE VOLUNTARY SECTOR: A FOCUS ON SHARING PROJECT KNOW-HOW AND EXPERTISE, KNOWLEDGE MANAGEMENT RESEARCH & PRACTICE, 12, 4, PP. 351-361, (2014)	7
GILMOUR J., STANCLIFFE M., MANAGING KNOWLEDGE IN AN INTERNATIONAL ORGANISATION: THE WORK OF VOLUNTARY SERVICES OVERSEAS (VSO), RECORDS MANAGEMENT JOURNAL, 14, 3, PP. 124-128, (2004)	6
HUCK J., AL R., RATHI D., FINDING KM SOLUTIONS FOR A VOLUNTEER-BASED NON-PROFIT ORGANIZATION, VINE, 41, 1, PP. 26-40, (2011)	6

HUME C., HUME M., THE STRATEGIC ROLE OF KNOWLEDGE MANAGEMENT IN NONPROFIT ORGANISATIONS, INTERNATIONAL JOURNAL OF NONPROFIT AND VOLUNTARY SECTOR MARKETING, 13, 2, PP. 129-140, (2008)	5
NONAKA I., TAKEUCHI H., THE KNOWLEDGE-CREATING COMPANY: HOW JAPANESE COMPANIES CREATE THE DYNAMICS OF INNOVATION, (1995)	5
RATHI D., GIVEN L.M., FORCIER E., KNOWLEDGE NEEDS IN THE NON-PROFIT SECTOR: AN EVIDENCE-BASED MODEL OF ORGANIZATIONAL PRACTICES, JOURNAL OF KNOWLEDGE MANAGEMENT, 20, 1, PP. 23-48, (2016)	5

To explore the broader impact of KM in NGOs across different disciplines, we examined globally cited documents. Our analysis, outlined in table (6), revealed that (Kong, 2007) (Oelze et al., 2016) (Wilson et al., 2010) were the most globally cited documents within our study database. These findings shed light on the significant influence of these documents beyond the realm of KM research.

Tab. 6 – the citation of local publications. Source: Authors' clarification by biblioshiny   and based on Scopus and Web of Science data

Most Locally cited Documents				Most Global cited Documents			
Publication	Year	TLC	TGC	Publication	Year	TGC	TLC
HUCK J, 2011, VINE J. INF. KNOWL. MANAG. SYST.	2011	9	25	KONG E, 2007, J. INTELLECT. CAP.	2007	94	5
RATHI D, 2014, J. KNOWL. MANAG.	2014	8	72	OELZE N, 2016, BUS. STRATEGY ENVIRON.	2016	82	0
RATHI D, 2016, J. KNOWL. MANAG.	2016	8	27	WILSON MG, 2010, IMPLEMENT. SCI.	2010	81	0
RATHI D, 2017, J. KNOWL. MANAG.	2017	6	30	RATHI D, 2014, J. KNOWL. MANAG.	2014	72	8
KONG E, 2007, J. INTELLECT. CAP.	2007	5	94	TATHAM P, 2011, DISASTER PREV. MANAG. INT. J.	2011	72	2
CORFIELD A, 2013, INT. J. PUBLIC ADM.	2013	5	39	JANSSON SM, 2010, QUAL. HEALTH RES.	2010	71	0

4.2 Word Analysis:

Most frequently used keyword:

The study employed the frequency of authors' keywords as the measure of word occurrence to identify the most used keywords in KM in NGOs research. The findings show that "knowledge management" emerged as the most frequently used keyword, occurring 60 times. Followed by "non-governmental organizations" and "knowledge sharing," with 27 and 16 occurrences, respectively, as detailed in Table (7). Additional keywords such as knowledge transfer, organizational learning, intellectual capital, knowledge creation, social capital, and international development were also utilized. However, for enhanced visualization of the

predominant topics within KM in NGOs, "knowledge management" and "non-governmental organizational" were excluded. The resulting word cloud highlighted keywords such as knowledge sharing, innovation, intellectual capital, and knowledge transfer, discernible by their varying thickness, as depicted in Figure (4).

Tab. 7 – words frequency. Source: Authors' clarification by bibloshiny   and based on Scopus and Web of Science data

Words	Occurrences	Word	Occurrences
non-governmental organizations	60	social capital	5
knowledge management	27	International development	4
knowledge sharing	16	capacity building	3
knowledge transfer	10	organizational culture	3
organizational learning	7	partnerships	3
intellectual capital	6	project management	3
knowledge creation	5	sustainable development	3

Fig. 4 – words cloud. Source: Authors' clarification by Bibloshiny and based on Scopus and Web of Science data

Trend Topics:

Furthermore, the study analyzed trending topics to uncover noteworthy patterns over time. From 2017 to 2022, "knowledge sharing" emerged as the predominant theme, as evidenced by Figure (5), Preceding this period, the years 2012 to 2016 were characterized by a focus on "knowledge transfer" as a trending topic, followed by discussions on "organizational learning" (2012–2015) and "intellectual capital" from 2009 to 2018. Additionally, other significant trended topics included "social capital" from 2019 to 2020 within the context of KM in NGOs research.
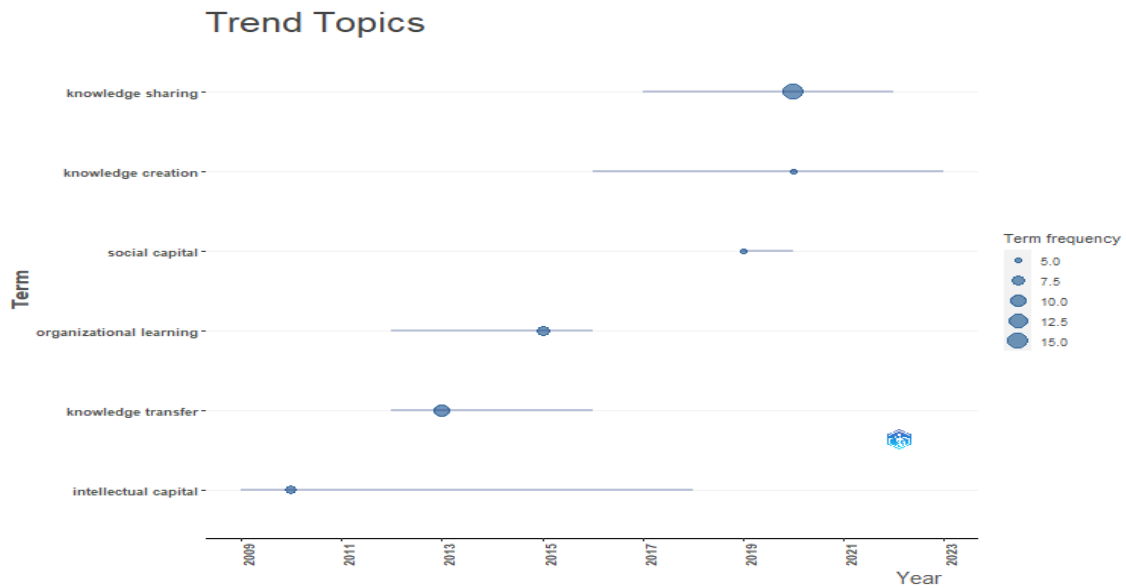
Fig. 5 Trend topic analysis. Source: Authors' clarification by Bibloshiny and based on Scopus and Web of Science data

Thematic Mapping:

Thematic mapping serves to condense the literature within a domain into four typologies of themes (Caust & Vecco, 2017). Themes positioned in the upper right quadrant exhibit high centrality and density, signifying their critical importance to the field. In our study, these themes encompassed "partnership," "sustainable development," "absorptive capacity," and "organizational learning," as illustrated in Figure (6). Themes situated in the upper left quadrant, characterized by low density and high centrality, are deemed niche themes. Examples in our study included "knowledge-sharing behavior" and "sense of well-being." Themes located in the lower left quadrant, with low density and centrality, represent emerging or declining themes, such as "project management." Lastly, themes in the lower right quadrant, featuring high centrality and low density, represent basic themes, including "knowledge sharing," "knowledge creation," "social service in NGOs," and "intellectual capital."
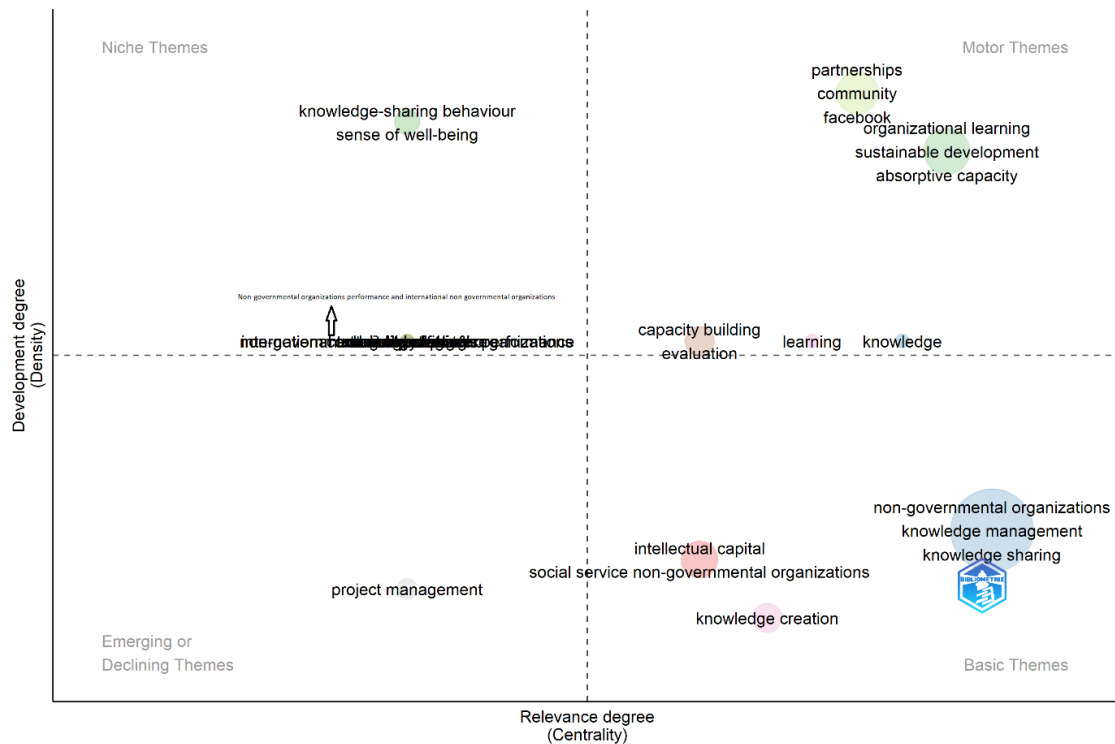
Fig. 6 – Thematic mapping analysis. Source: Authors' clarification by Biblioshiny and based on Scopus and Web of Science data

5   DISCUSSION

The total number of the analyzed documents is 102, which includes 95 articles and 7 review articles, the percentage of review articles is 6.8% which indicates more review articles in that field are needed.

The publications related to KM in NGOs just started in 2002, This indicates that studying KM in NGOs is an emerging field and in need of more research, The publications first started with (Montgomery, 2002) the author analyzed how NGOs view the Internet and how they are using it for Knowledge sharing, also (Hailey & James, 2002) discussed the importance of learning for NGOs, and how the organizational culture is affecting the learning process in NGOs.

The journals (Journal of Knowledge Management, Knowledge Management Research and Practice, and VINE Journal of Information and Knowledge Management Systems) were the most impactful in the field of KM in NGOs, which indicates that the journals of business management emerge as the most relevant sources, showcasing a lesser impact from NGOs and non-profit sector publications. This indicates a predominant academic focus on studying KM through the lens of business management rather than from the perspective of NGOs and non-profit sectors.

The author's performance analysis indicates that the most productive authors include (Kong E, Rathi D, Le Q, Tuamsuk K, and Given L, for the cited documents also show that (Among these pairs, the article by (Lettieri et al., 2004) on Knowledge Management in NGOs and (Nonaka, 1994)"The Dynamic Theory of Organizational Knowledge Creation" emerged as the most co-cited articles, then highlights the works of (Davenport & Prusak, 1998) and (Hume et al., 2012) as the most cited articles following Nonaka and Lettieri. For the local citation (Huck et al., 2011)emerged as the most cited article, closely followed by the contributions of (Rathi et al., 2014, 2016). Also KM in NGOs across impact different disciplines thorough the publications

of (Kong, 2007), (Oelze et al., 2016)m and (Wilson et al., 2010) were the most globally cited documents within our study database

The frequency analysis shows that the most frequent words were knowledge sharing, (knowledge transfer, organizational learning, intellectual capital, knowledge creation, and social capital) that indicate KM in NGOs had been studied from the perspective of an organizational process and there is no deletion in the technological and personal dimensions of this process, and that's was also clear even in the trend topic analysis which started with the topics related to organizational learning and knowledge transfer.

The theme analysis reveals that "knowledge sharing," "knowledge creation," "social service in NGOs," and "intellectual capital" serve as central themes for Knowledge Management (KM) in NGOs. These themes, along with "partnership," "sustainable development," "absorptive capacity," and "organizational learning," have garnered considerable attention in numerous publications, exhibiting high centrality and density in the theme analysis, indicating their significant importance to the field. We propose that further research should investigate these themes in diverse settings to gain a comprehensive understanding. Conversely, themes like "knowledge-sharing behavior" and "sense of well-being" exhibit low density despite their high centrality, suggesting they are niche themes that warrant theoretical exploration to advance concepts and integrate them into KM research in NGOs. Additionally, the theme analysis identifies "project management" as an emerging theme, requiring further development to explore how KM can enhance project management practices within NGOs.

Internet and Facebook are studied as tools for enhancing KM within NGOS, but there are not any studies about using AI in enhancing KM within NGOs, the studies also indicated some research about the Empowerment of Local staff and volunteers and that's reflex that NGOs include different staffing approaches (Volunteers, Local staff, and International Staff) and that's will encourage to conduct more research about the needed KM approaches and organizational culture that's suit the learning patterns of all kind of staff in NGOs.

6   CONCLUSION

The study examined the research in the field of KM in NGOs, suggesting a need for more comprehensive review articles. The rise in publications since 2002 highlights the field's early stage, indicating a necessity for further investigation. Notably, while journals in business management are prevalent, there is a lack of perspectives specifically focused on NGOs. Through productivity analysis, influential authors and co-cited articles are identified, while global citations underscore KM's interdisciplinary influence. Frequency and theme analyses highlight a strong emphasis on organizational processes in KM, yet there are noticeable gaps in technological dimensions and personal aspects. It is recommended that future research explore the role of AI in KM in NGOs.

Limitations:

This study did not include a country and affiliation analysis, also, the most recent publications may not be represented accurately as bibliometrics have not yet been calculated.

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METHODOLOGICAL RESEARCH FRAMEWORK ON THE PRO-ENVIRONMENTAL BUYING BEHAVIOUR OF GENERATION Z CONSUMERS IN THE GROCERY MARKET

Magdaléna Rybová

Abstract

This paper presents the design, structure and presentation of a PhD research on "The influence of consumer information on the pro-environmental buying behaviour of Generation Z in the food market". Specifically, it focuses on the pro-environmental purchasing behaviour of Generation Z with a focus on attitudes, subjective norms, perceived control and environmental concerns and the ability to positively influence these variables with respect to sustainability and circular economy issues through higher levels of awareness. The main objective of the research is to identify the influence of awareness levels on the pro-environmental food purchasing behaviour of Generation Z. The main objective is divided into a total of three sub-research objectives, which will be progressively fulfilled from the elaboration of a theoretical research to a combined quantitative and qualitative research. The quantitative research will focus on understanding the current state of pro-environmental behaviour of Generation Z in the food market. To identify the current state of the art, an application of the Theory of Planned Behaviour (TPB) will be presented, augmented by the new environmental paradigm of NEP. Furthermore, the planned survey procedure and evaluation through descriptive correlational research will be described. The qualitative research will be presented in a follow-up chapter and will explore the reasons and reasons why and to what extent information supply influences the attitudes, social norms, perceived control and environmental concerns of young Generation Z and what types of information and information sources influence the pro-environmental purchasing behaviour of Generation Z and transform their purchasing behaviour towards a pro-environmental inclination in their everyday food purchases.

Keywords: *consumer behaviour, pro-environmental behaviour, purchase decision, Generation Z, information influence.*

1 INTRODUCTION

Throughout human history, environmental impact has largely been a by-product of human desires for physical comfort, mobility, relief from work, power, enjoyment, status, personal safety and security, and the preservation of customs and technology (Stern, 2000).

As stated by Rahnama an Popkowski-Leszczyc (2022), the main cause of negative environmental impacts is human activity or consumer behaviour. Therefore, consumer behaviour in terms of what products they buy, how they use these products and what they do after using the product plays a key role in the development of a sustainable product system (Rahnama & Popkowski-Leszczyc, 2022). Therefore, there is a need to shift to more sustainable consumption patterns and it is important to increase people's environmental awareness and consciousness. As consumers, people can reduce their impact on the environment, contribute to environmental change and positively influence it through their purchasing decisions (Ishaswini & Datta, 2011; Geng et al., 2016). The research will focus on the Generation Z target group as this generation is at an age where they are establishing their shopping habits and coming to the forefront of the shopping market, as shown by GWI (2021) research. This focus

is also supported by a several of other authors within the literature review who state that Generation Z is more aware of sustainability and environmental responsibility issues.

Therefore, a number of researchers believe many of our environmental problems could be addressed by changing people's behaviour and have sought to develop practical methods to facilitate behaviour change (Steg & Vlek, 2009; Geng, et al., 2016) or to identify key factors necessary to promote pro-environmental lifestyles (Steg & Vlek, 2009; Geng et al., 2016; Canuel et al., 2014). The purpose of this research will be to identify the influence of information on pro-environmental consumer buying behaviour because the continuous development of social and digital media has not only changed people's communication style, but also influenced purchase-related decision-making processes and changed the digital marketing environment (Huo et al., 2021).

According to Akenji (2012), the transformation in lifestyle is primarily associated with shifts in consumer preferences and a notable increase in environmentally sustainable behaviours. Numerous scholars (Gansser & Reich, 2023; Kim & Hall, 2019) concur that proactive measures are essential to mitigate climate change, including waste reduction (Vorobeva et al., 2022), dietary modifications (Chen et al., 2019; Korkala et al., 2014), energy conservation, and resource preservation (Borgstede et al., 2013), in addition to the adoption of a fundamentally low-carbon lifestyle (Zeng et al., 2022; Rybova, 2023).

Gansser and Reich (2023) categorize interventions to address climate change into two primary approaches: alterations in human behaviour and the advancement of technological innovations. This recognition has already permeated societal consciousness (Kim & Hall, 2019) and is reflected in the research of von Borgstede et al. (2013), which revealed a shift in public opinion between 2005 and 2010. In 2005, the prevailing belief was that technological innovation was crucial for mitigating global warming. However, by 2010, a majority of people considered changes in lifestyle and consumption patterns to be more significant than technological advancements (Borgstede et al., 2013; Rybova, 2023).

2   LITERATURE REVIEW

Pro-environmental behaviour

The rise of pro-environmental behaviour over the past two decades is evidenced by a plethora of research indicating that consumers increasingly consider environmental factors when making purchases and consuming products (Rahnama & Popkowski-Leszczyc, 2022; White et al., 2012; Cheung & To, 2019). Additionally, consumers have begun to prioritize quality food intake and are more conscious about nutrition, health, and food safety (Ali et al., 2010). Similarly, consumers in developed countries increasingly favor specialized products marketed as organic, fair-trade, or locally grown (Garcia et al., 2020; O'Connor et al., 2017; Feldman & Hamm, 2015).

Due to growing awareness of the detrimental effects of environmental degradation on their quality of life, consumers are avoiding products they perceive as harmful to the environment (Beatson et al., 2020; Rahnama & Popkowski-Leszczyc, 2022), leading to pro-environmental purchasing behaviours (Ishaswini & Datta, 2011). Kollmuss and Agyeman (2002) define pro-environmental behaviour as actions that intentionally seek to minimize the negative impact of one's activities on both the natural and built environments. This definition is reinforced by Steg and Vlek (2009), who characterize pro-environmental behaviour as actions that either reduce environmental harm or yield positive environmental outcomes. In the context of the term "consumer," this definition highlights the individual's role as the final purchaser and user of a product or service, which extends to the processes of disposal or reuse (e.g., recycling, waste

minimization, disposal, and waste separation). Schultz et al. (2005) emphasize that environmental attitudes are significantly influenced by the perceived importance of environmental issues. They define environmental attitudes as "a set of beliefs, feelings, and behavioural intentions that an individual holds regarding environmental activities or concerns."

2.1 Pro-environmental food purchasing behaviour

The FAO (2010) defines sustainable diets as those that have a minimal environmental impact while contributing to food and nutrition security and fostering healthy lives for both current and future generations. These diets are characterized by their support for biodiversity and ecosystems, cultural acceptability, economic equity, and accessibility. They are also nutritionally adequate, safe, and healthy, while optimizing the use of both natural and human resources. Bussel et al. (2022) emphasize that this definition is complex, incorporating environmental, social, and economic dimensions. Consumers' food choices play a vital role in the shift toward more sustainable diets, highlighting the need to better understand how individuals conceptualize "sustainability" in relation to their eating behaviours.

Sustainable products provide environmental, social, and economic benefits (Meybeck & Gitz, 2017) while protecting public health and the environment throughout their life cycle, from raw material acquisition to final disposal (Gonzalez-Arcos et al., 2021). One critical aspect of sustainability is food production (Stein & Santini, 2021). Sustainable food production is defined as "a production method that uses processes and systems that do not pollute the environment, conserve non-renewable energy and natural resources, are cost-effective, safe for workers and consumers, and do not compromise the needs of future Generations" (Rahnama & Popkowski-Leszczyc, 2022). Thus, pro-environmental food purchasing behaviour can be defined as "choosing products created through sustainable food production."

2.2 Selected theories of consumer behaviour

Bamberg and Möser (2007) explain that theoretical models used to understand pro-environmental behaviour (e.g., the Theory of Planned Behaviour [TPB] and the Norm Activation Model [NAM]) reflect the widely held view that such behaviour arises from a combination of self-interest (minimizing personal risks or maximizing individual gratification) and altruistic concern for others, nature, or future Generations. Scholars focusing on self-interest are likely to adopt models based on reasoned choice (like TPB), while those emphasizing social motivations tend to use NAM models, where personal and moral norms directly impact prosocial behaviour.

The Theory of Planned Behaviour emerged as an extension of the Theory of Reasoned Action (TRA), which seeks to uncover connections between people's intentions and their actions (Concari et al., 2020). The central premise of TRA is that the stronger the intention to perform a given behaviour, the higher the likelihood that it will be enacted. Intention summarizes the motivational factors influencing behaviour. Motivational factors indicate a person's willingness to exert effort for a particular behaviour (Ajzen, 1991; Gansser & Reich, 2023).

According to TPB, behavioural intention comprises two components: attitude and subjective norm. The attitude component relates to the perceived outcomes of the behaviour and the evaluation of these consequences (Concari et al., 2020). In terms of climate and environmentally friendly behaviour, attitude refers to the evaluation of sustainable behaviour concerning environmental and climate impacts. If individuals believe that sustainable behaviour positively affects the environment, they will have a favorable attitude towards it (Gansser & Reich, 2023).

Subjective norm arises from normative expectations and the acceptance of these norms. It is defined by Ajzen (1991) as a social factor related to perceived social pressure to engage in or refrain from a particular behaviour. Gansser and Reich (2023) note that, in the context of pro-environmental behaviour, subjective norm reflects the respondent's social environment and attitudes towards environmentally friendly practices. If the respondent's social surroundings view eco-friendly behaviour positively, this can influence and support the individual's mindset.

The TRA theory is termed "reasoned" because it assumes that individuals have reasons for their behaviour, actions, and evaluations of consequences (Concari et al., 2020). However, it assumes that behaviour is performed consciously and voluntarily, allowing individuals to choose whether or not to engage in a behaviour. Nevertheless, behaviour also depends, at least partially, on non-motivational factors such as opportunities and resources, including money and skills (Ajzen, 1991; Gansser & Reich, 2023). Consequently, TRA was extended into Ajzen's (1991) Theory of Planned Behaviour.

TPB explores the factors influencing behaviour change and intention to change behaviour, with intention being central to the model (Ajzen, 1991). Therefore, TPB represents a significant advancement over TRA by incorporating what is known as perceived behavioural control, a psychological factor related to an individual's perception of their ability to act (Barr, 2004). According to Ajzen (1991), perceived control refers to how easy or difficult individuals perceive a given behaviour to be, based on past experiences and anticipated challenges. In the context of pro-environmental behaviour, perceived control assesses how manageable respondents find environmentally friendly behaviours. If individuals perceive sustainable practices as challenging, they are less likely to engage in them. Conversely, if they view eco-friendly actions as easy to integrate into daily life, they are more likely to adopt them (Gansser & Reich, 2023).

2.3 The New Environmental Paradigm (NEP)

While TPB is a widely used model for understanding environmentally friendly thoughts and actions, Gifford and Nilsson (2014) criticize it for excluding a range of relevant social and personal factors that significantly influence intentions regarding pro-environmental behaviour. As a result, the basic model requires expansion to incorporate environmental concern (EC) or "environmental concern" (Schultz, 2001; Schultz et al., 2005; Weber et al., 2020), along with other influencing factors, namely NEP factors (Dunlap et al., 2000).

Schultz et al. (2005) note that ECs differ from environmental attitudes in that ECs encompass "affects associated with environmental problems." Brieger (2018) defines EC as an individual's awareness of the value of protecting the environment and their willingness to participate in such protection. Liao et al. (2020) further summarize EC as a specific attitude towards environment-related activities or issues.

Schultz (2001) posits that the consequences of pollution should be viewed at different levels, forming the basis for beliefs in environmental justice and influencing pro-environmental behaviour. The first level is individual self-interest, where personal stakes motivate pro-environmental actions (Schultz et al., 2005; Weber et al., 2020). The second level focuses on altruism, where altruistic norms activate awareness of the consequences of one's actions for others, along with a sense of personal responsibility. Finally, the biospheric level considers the well-being of plant and animal life.

In their research, Nguyen et al. (2017) reference Schwartz's (1992) theory of human values, which identifies a typology of environmental values: altruistic (concern for the well-being of people), biospheric (emphasizing environmental quality), and egoistic (focused on maximizing personal outcomes). These values influence individuals' evaluations and perceptions of

behaviour importance, subsequently shaping pro-environmental actions. DeGroot and Steg (2008) found that individuals with higher egoistic values are less concerned about environmental issues related to energy use. Conversely, consumers who strongly endorse altruistic and biospheric values tend to be more aware of environmental issues (Stern, 2000; De Groot & Steg, 2007) and develop positive beliefs about how environmentally friendly behaviours can protect the environment. Van der Werff et al. (2013) conclude that consumers with strong biospheric values often choose sustainable products regardless of price.

2.4 Information and knowledge

Numerous scholars contend that, since the early 2020s, digital media has emerged as a primary source of information (Akdim et al., 2022; Alzaidi & Agag, 2022), with billions of individuals globally participating in social media, which is now regarded as "one of the defining technologies of our time" (Appel et al., 2020; Arora et al., 2019; Fernandes et al., 2022). As Asamoah and Sharda (2020) observe, traditional media no longer hold a dominant position in information dissemination; rather, digital media and social platforms enable more efficient information flow and exert greater influence on ordinary users. The proliferation of social media has not only altered communication methods but also had a significant impact on consumer decision-making processes, thereby transforming the digital marketing landscape (Huo et al., 2021). According to rational choice theory, information is integral to shaping consumers' environmental attitudes and behaviours, with decisions being based on the information accessible to individuals. As new information is processed, individuals' cognitive bases for behaviour shift, ultimately influencing their attitudes, intentions, and environmental actions (Lorenzoni et al., 2007; Lane & Potter, 2007).

2.5 Generation Z and information resources

Generation Z is increasingly recognized as one of the most significant consumer segments in contemporary markets. Research conducted by GWI (2021) indicates that this demographic is expected to comprise approximately 40% of the global population by 2026, possessing a purchasing power of $44 billion and influencing household expenditures to the tune of $600 billion. In contrast to prior generations, such as millennials and Generation Y, members of Generation Z have grown up in a digital era where technology, particularly the internet and social media, plays a central role in their daily lives. This distinction sets them apart from other consumer cohorts, as they predominantly seek information and entertainment through digital platforms (Serravalle et al., 2022; Turner, 2015). Djafarova and Bowes (2021) describe Generation Z as "digital natives," having been raised in an environment of technological innovation and relying primarily on social media for information, which significantly impacts their decision-making processes. Dimock (2019) further observes that Generation Z is defined by its continuous internet connectivity, a characteristic that differentiates them from previous generations.

According to Blocksidge and Primeau (2023), Pew Research defines Generation Z as individuals born after 1996, characterized by their constant access to the internet, which enhances their capacity for communication and information acquisition. White (2017) situates Generation Z within the cohort born between the mid-1990s and the early 2000s. However, there is some variation in the exact delineation of the generational boundary, with Grigoreva et al. (2021) defining Generation Z as those born between 1996 and 2012, while Pham et al. (2021) suggest a range extending from 1995 to 2003.

Regarding consumer behaviour, Kotler et al. (2021) assert that Generation Z exhibits greater financial awareness, responsibility, and a heightened concern for social and environmental issues compared to earlier generations, such as Generation Y and Generation X. Furthermore,

Generation Z is particularly confident in its ability to instigate change through everyday purchasing decisions. Turner (2015) highlights that, unlike previous generations, this group places significant emphasis on realism and demonstrates a strong social conscience and environmental sensitivity. They are the first generation to actively seek to improve quality of life in alignment with the principles of sustainable development. This perspective is echoed by Dabija et al. (2019), who argue that Generation Z is motivated by a vision of global improvement. Consequently, these consumers expect brands to exhibit social responsibility, showing awareness of the environmental impact of their purchasing decisions and anticipating ethical behaviour from corporations (Rybova. 2023).

3 METHODOLOGY

3.1 Research objectives and research questions

This paper focuses on a contemporary topic, which is the buying behaviour of young people in the food market. As mentioned above, the research will be oriented towards Generation Z, for the reason that Generation Z is currently at a stage in a person's life in which attitudes, subjective norms and habits that accompany them throughout their lives are being formed.

The theoretical section further emphasizes that a number of scholars have highlighted the inevitability of a significant transformation in consumer lifestyles due to growing environmental concerns. This transformation is expected to primarily involve shifts in consumption preferences, along with a marked increase in environmentally sustainable behaviours (Cherian & Jacob, 2012; Akenji, 2012). These changes are observable across various sectors, including alterations in purchasing behaviours and patterns of food consumption (Chen et al., 2019; Korkala et al., 2014). The food that is purchased and consumed has a considerable environmental impact, as its entire lifecycle encompassing production, processing, transportation, and disposal not only contributes to global greenhouse gas emissions but also results in water and soil contamination, the degradation of food quality, and a range of other environmental consequences. Thus, by choosing the food we purchase, we can directly influence the environmental consequences of our actions, also for this reason the main aim and sub-objectives of the research are focused on the young Generation Z. Because they are the most likely to change their attitudes and buying behaviour and can pass this knowledge on to the next as yet unnamed Generations.

The main objective of the research is to identify the influence of awareness on the pro-environmental food buying behaviour of Generation Z through a combination of quantitative and qualitative research. To research the topic, sub-research questions were formulated with the research objectives listed below:

RQ1: How can the pro-environmental food purchasing behaviour of Generation Z be characterised?

RG1: To analyse the pro-environmental buying behaviour of Generation Z in the food market.

RQ2: What information sources influence the pro-environmental food purchasing behaviour of

Generation Z?

RG2: Identify the influence of different types of information sources on Generation Z's pro-environmental grocery shopping behaviour.

RQ3: How do consumer awareness levels influence the pro-environmental food

buying behaviour of Generation Z?

RG3: Identify the influence of level of consumer awareness on the pro-environmental food buying behaviour of Generation Z.

3.2 Research gap

As highlighted in the literature review, research on pro-environmental purchasing behaviour began to rise gradually in the early 2000s, with increasing interest in this area of study over time. A considerable portion of the existing literature addresses all four life domains concurrently, with many studies predominantly employing quantitative research methods. As a result, the focus of the present study will be specifically on the domain of food consumption, utilizing a mixed-methods approach that integrates both quantitative and qualitative research methodologies.

In terms of further specification of the content of the research topic, this research will be based on two theories, namely the theory of planned behaviour augmented by the new environmental paradigm.

The research gap is further identified by focusing on the Generation Z consumer segment. According to the characteristics of each author, it is Generation Z that is the first Generation to be aware of the consequences of their actions on environmental issues.

The subsequent focus of the topic on the influence of Generation Z information is also a trending topic at the moment, as the expansion of digital media has changed the ability to search for information and it is the younger generations who come into contact with this digital information in the media the most.

3.3 Methodology

The research will be handled through a combination of quantitative and qualitative research. Whereby, the theoretical basis of the literature search will be followed by quantitative research, this quantitative research will be primarily developed to understand and analyse the pro-environmental buying behaviour of Generation Z in the food market. As it will involve collecting data from the respondents in a given sequence starting from the knowledge of the current state - their attitudes, social norms, perceived control and environmental concerns. Through defining the sources of information, sourcing of information to the level of awareness of the respondents. With the final stage focusing on the influence of information sources on the individual factors, (attitudes, social norms, perceived control, environmental concerns), that influence intention leading to the food behaviour of consumers meeting the conditions of the defined Generation Z group. In the figure below, the structure of the subsequent steps can be seen:
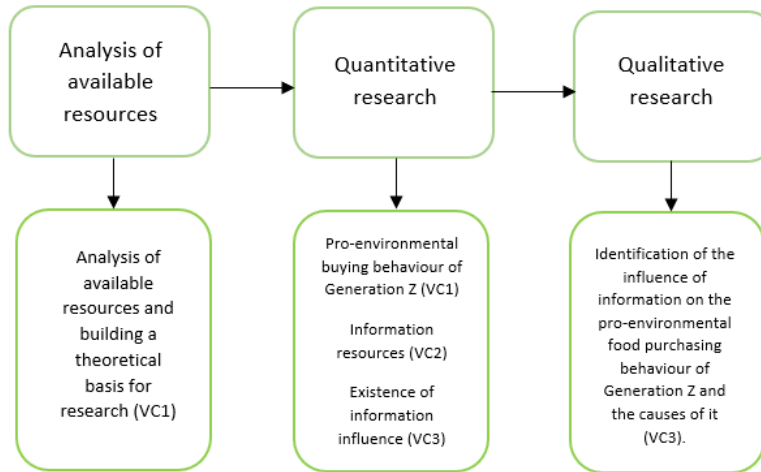
Fig. 1 - Flowchart of the solution process. Source: own research

The solution process and a more detailed explanation of the steps and outcomes of the quantitative and qualitative research is described below:

3.4 Analysis of available resources

At the initial stage, the theoretical basis of the research will be provided by a literature search, while an analysis of available relevant sources related to the research topic of pro-environmental behaviour of young Generation Z in the food market will be conducted. The analysis of the available sources will serve as the basis of theoretical knowledge for the development of the research part of the research and will also provide a critical overview of the current knowledge on the topic.

3.5 Quantitative research focusing on the pro-environmental purchasing behaviour of Generation Z

The second part of the research structure will deal with quantitative research aimed at understanding the current state of pro-environmental purchasing behaviour of Generation Z in the food market. The Theory of Planned Behaviour (TPB) will be applied to identify the current state of the art, which is used to define the factors that play a primary role in behaviour change and behavioural intention. It specifically classifies these factors into three groups: attitude, subjective norms and perceived control. This theory will be extended within the research to include the New Environmental Paradigm (NEP) theory in order to fully apply the theory of planned behaviour to the issue of pro-environmental behaviour. Because it extends this basic theory to factor in environmental concerns, based on consumers' altruistic, egoistic and bio-spheric values. A diagram of the TPB theory extended with the factors of the new environmental paradigm is shown below.
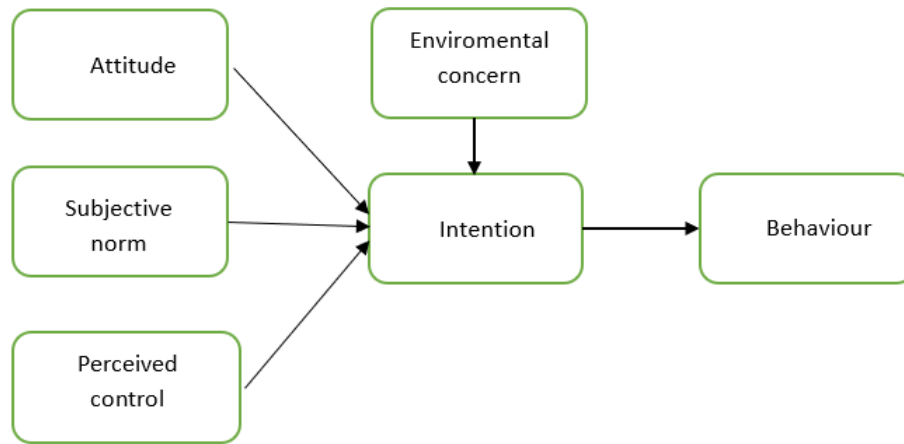
Fig. 2 - Schematic of the TPB theory augmented with the factors of the new environmental paradigm. Source: own research

3.6 Purpose

The purpose of this research section will not only be to analyse pro-environmental food purchasing behaviour, but also the issue of Generation Z's use of different types of information sources in order to define exactly how and where Generation Z obtains information and acquire its knowledge about the food it buys, food production and topics related to the food industry. Another point of interest for this research will be to determine how much time respondents spend looking up information or expanding their knowledge about the foods they consume on a daily basis, or whether this information influences their behavioural purchase intentions. Among other things, the questionnaire survey will also focus on whether consumers with a higher level of awareness and willingness to seek information about the food they consume, show stronger pro-environmental behaviour traits or tend to make purchases consistent with pro-environmental intentions.

3.7 Data collection

This quantitative research will be carried out in the form of a questionnaire survey, among a segment of respondents meeting the conditions for inclusion in Generation Z, including conditions of difference regarding socio-demographic characteristics (occupation, education, gender, marital status). The questionnaire survey was chosen because this part of the research will focus on obtaining not very comprehensive information from a relatively large number of respondents.

The data collection will take place in digital form. (In the online environment by email communication or using social networks). The form of data collection was transferred to the online environment, the reason for this is the key segment of consumers addressed is the Generation Z for communication in the digital environment, since it's a daily affair and is assumed that the higher return rate and interest in completing the questionnaire among the younger Generation. The survey will predominantly use the Likert five-point scale method of questionnaire design, which has the advantage of identifying not only the content of the attitude, (am I or am I not in favor), but also its strength (how much they are or not in favor). The questionnaire survey is also suitable for other surveys where statistical evaluation of the results is envisaged, which will be explained in more detail in the following chapter.

3.8 Evaluation

Through descriptive-correlational research, it will be investigated whether there is a significant relationship between the level of awareness and the factors influencing the intention of pro-environmental food purchasing behaviour. Descriptive research will be used to analyze the current situation, providing a basic picture of selected aspects of the issue under study in the period and describing phenomena that are relevant for decision-making. Furthermore, correlational research will examine the relationship (dependence or independence) between two or more variables.
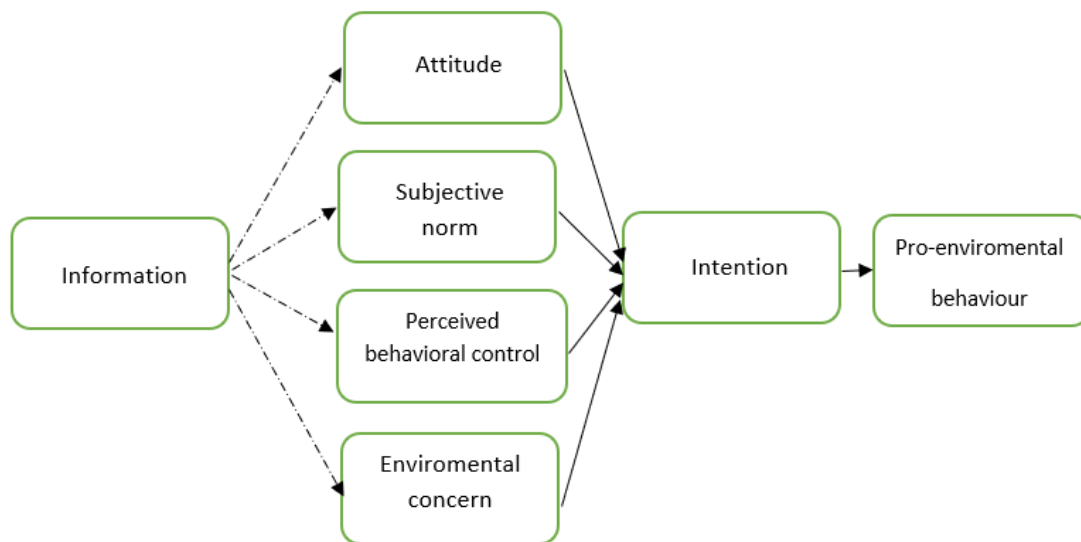

Fig. 3 - Influence of the information which determinants the pro-environmental behaviour. Source: own research

The mathematical formulation of the systematic aspects of statistical dependencies, this will be done through regression and correlation analysis. While the regression analysis will deal with unilateral dependencies, a correlation analysis will be developed to look for the association or interaction between two variables and the strength of the relationship, (As part of the statistical hypothesis testing). T-test and F-test will be used for statistical verification of the model to test the statistical significance of the regression model, or whether the model is conclusive with its parameters. In the statistical part, the following hypotheses will be tested:

H1: The level of awareness of Generation Z consumers about food has a positive effect on their attitudes, and towards pro-environmental behaviour in relation to food purchasing.

H2: Generation Z consumers' level of awareness about food have a positive effect on their subjective norms towards pro-environmental behaviour in relation to food purchases.

H3: Generation Z consumers' level of awareness about food have a positive effect on their perceived control towards pro-environmental behaviour in relation to food purchases.

H4: The level of awareness of Generation Z consumers about food influences their environmental concerns leading to pro-environmental behaviour in relation to food purchases.

The advantage of a questionnaire survey is that it can also anonymously investigate phenomena that are completely inaccessible to direct observation (attitudes, wishes, feelings of respondents, etc.), but in a questionnaire survey there is no direct interaction between interviewer and respondent, where the data are only strict records of predefined answers. Thus, it is devoid of observations of the respondent's behaviour or answers to additional questions. Therefore, this quantitative research will be followed by a qualitative research that will deepen the results of the quantitative research and fulfill the main objective of the research.

3.9 Qualitative research on the impact of awareness of Generation Z

The quantitative research strand will be followed by qualitative research that will explore the reasons

why, as well as the information supplied has different effects/influences the attitudes, social norms,

perceived control as well as environmental concerns of young Generation Z and different types of information sources or information that influence the pro-environmental purchasing behaviour of Generation Z. This can transform their purchasing behaviour towards a pro-environmental proclivity in their everyday food purchases. The intended qualitative research will have several parts and will be conducted with a total of 15 representatives of Generation Z.

First, participants will be divided into 3 basic groups according to their tendency towards three different forms of value attitudes based on the environment, (Values testing in the form of a short test), according to the environmental concerns defined by the new environmental paradigm that divides society into altruistic, egoistic and biosphere-oriented consumers.

In the next phase, a presentation with relevant basic information about the food that they buy on a daily basis will be presented to participants divided into groups. (According to the new environmental paradigm). The presentation will cover information on the production of each food group, the farming system and the impact of these two variables on food quality; but also on product price comparisons, shopping inconvenience, environmental impacts and human health implications. The presentation will be followed by a guided group discussion using the focus group method to discuss the issue and observe the change in consumer buying behaviour.

This will be followed by structured interviews with all participants in each group, which not only the respondent's purchasing behaviour, but together with their knowledge, preferences and use of information sources will be revealed, but also their attitudes, subjective norms and awareness of perceived behavioural control. Hence, the theory of planned behaviour will be applied here, which according to its author Ajzen (1991) is used to explore the factors behind behaviour change and behavioural intention. Since the intention to change behaviour plays a central role in the theory of planned behaviour, factors influencing this theory must also be considered.

In the final stage of the structured interviews, focus group questions after being discussed will be presented to participants to explore change in participants' attitudes, subjective norms, perceived control or environmental concerns in their behaviour, as well as looking at intended change in purchase behaviour, preferences and purchasing decisions.

Thus, this qualitative research will explore the understanding of pro-environmental buying behaviour among the young Generation Z, and observe changes in this buying behaviour, in specifically its factors, and what causes the change in intentions following an increase in the level of awareness of food purchasing. For greater clarity, the different phases of the qualitative research are illustrated in the diagram below:
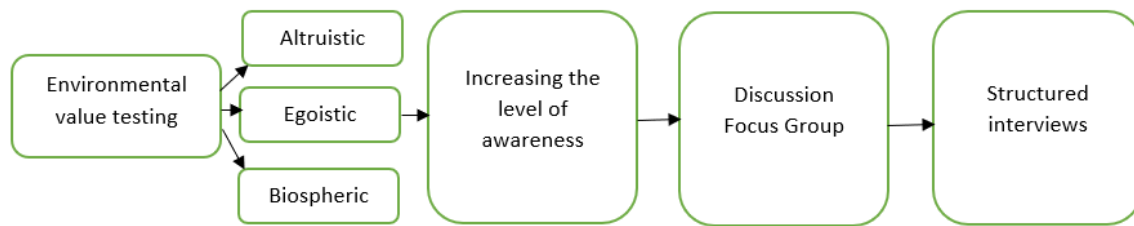
Fig. 4 - The different phases of qualitative research. Source: own research

4 CONCLUSION

The objective of this paper was to provide an overview of the literature review, conceptual framework, and methodology pertaining to the study of the influence of information and knowledge on pro-environmental consumer purchasing behaviour within the food market, particularly among Generation Z consumers.

The next stages of the research will include the dissemination of the preliminary results from the quantitative study, starting with the design of the survey instrument and the subsequent data collection process. This quantitative study will not only provide the necessary data and backround for further qualitative research, but will also be a publication activity necessary for the research and will complement the literature search, e.g. in the area of information, types of information sources or other areas. After these two phases have been carried out, the core part of the qualitative research will follow, which will fulfil the main objective and confirm or refute the defined hypotheses.

As far as the topic is concerned, as already mentioned in the literature search, the consequences of human activity are manifested in the environment, climate change and the entire ecosystem of the planet. As many authors realize (Rybova, 2023), the time is coming for a change in consumer lifestyles - Cherian and Jacob (2012) identify several areas undergoing significant change, including waste reduction (Vorobeva et al., 2022), energy conservation, and resource management (Borgstede et al., 2013), changes in dietary habits (Chen et al., 2019; Korkala et al., 2014), as well as the transition toward a fundamentally low-carbon lifestyle (Zeng et al., 2022). Furthermore, a shift in consumer preferences towards more environmentally sustainable behaviours is becoming increasingly urgent (Akenji, 2012). In light of these trends, the research is expected to play a key role in enhancing awareness of environmental challenges and promoting pro-environmental attitudes, particularly among younger generations.

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GROWTH AND CHANGING DISTRIBUTION CHANNELS IN THE GERMAN LIFE INSURANCE MARKET

Branislav Slobodník

Abstract

In the insurance sector, the distribution channels that facilitate the efficient distribution of insurance products and services are of paramount importance. The dynamic development of the life insurance market is giving rise to significant changes in distribution channels, which are having a profound impact on the manner in which insurance companies communicate with customers and provide them with products. The objective of this study is to identify and analyse the changes in distribution channels in the German life insurance market over the period 2009-2022 in terms of premiums written. The distribution channels in question are individual agents, brokers, bancassurance and direct sales. The analysis of changes in each channel in terms of premiums written and their examination over time represents an essential element in the assessment of the evolution and adaptation of these channels within the German life insurance market under study. The examination of performance in relation to selected premiums of German life insurance companies was calculated using a compound annual growth rate (CAGR). A two-way ANOVA was employed to conduct a more detailed analysis of the performance of the different distribution channels. The data was subjected to analysis over a period of thirteen years, from 2009 to 2022. The results of the study delineate the alterations in the utilisation of distribution channels within the German life insurance market, particularly in the context of life insurance. It is evident that two distribution channels, namely the individual agent and the broker, have demonstrated a notable performance.

Keywords: insurance, distributional channel, life insurance

1   INTRODUCTION

The insurance industry and the insurance market are in a period of significant change. Traditional insurance companies, together with new insurance concepts in the financial market, are considering how to adequately respond to the future of insurance and adapt to the changing distribution channels in the insurance industry (Albrecher et al., 2019). One of the most effective modern ways of developing the insurance market is the application of optimal distribution channels in the activities of insurance companies distribution channels in the activities of insurers. In the literature, the issue of the use of new distribution channels in insurance marketing, as well as the use of traditional distribution channels, is practically absent.

By definition, insurance distribution is the sale, offer for sale, advice or underwriting of insurance by any other means. (Braun & Schreiber, 2017) Singh (2015) argues that this aspect of insurance also applies to the sale of insurance products through websites, including comparison websites, if they allow the conclusion of an insurance contract. The focus is on the potential for insurance expansion through distribution channels and increasingly easy to understand products.

The insurance market is currently experiencing intense competition, requiring insurers to adopt strategies that will enable them to retain existing customers while attracting new ones. This objective is shared by most insurers as they seek to improve customer retention and increase revenues. While there are significant benefits for insurers in adopting multi-channel distribution strategies, they also present some challenges. In particular, several previous studies (Webb,

Hogan, 2002) have found that both intra-channel and inter-channel conflict can have different effects, both positive and negative, on the performance of distribution strategies.

Dumm (2013) reports that the most prevalent channels utilised by providers encompass internet-led channels, insurer-led channels, agent-led channels, broker-led channels, and other cyber-intermediary channels, including telephone and television stations. New, previously unrecognised distribution channels, such as robo-advisors or chatbots, have since been identified (Pisoni, 2022).

There has been a recent tendency towards technological innovation in the insurance industry. The distribution channels in the insurance market are currently undergoing significant regulatory and technological changes. The adaptation of legislation to this new environment considers the integration of intermediaries and technological advances that effectively reduce the time and cost of meeting consumer demands.

The objective of this study is twofold: firstly, to address a gap in the existing literature on the subject, and secondly, to identify changes in distribution channels within the insurance industry. Furthermore, the study will examine the growth of selected distribution channels within the German life insurance market over the period 2009-2022. The following is a description of the structure of the paper. The second section presents a review of the literature, followed by the identification of the hypotheses that the study investigates and the research methodology. Subsequently, the empirical analysis of the data is discussed, wherein the performance of the distribution channels under examination is evaluated using the compound annual growth rate (CAGR) and the log-linear regression model. Furthermore, a comprehensive and detailed explanation of the performance of the distribution channels is provided using two-way analysis of variance (ANOVA) and post hoc analysis. The ultimate conclusions of the study will offer invaluable insights into the crucial role played by the insurance industry's distribution network in facilitating its significant expansion.

2   LITERATURE REVIEW

Insurance companies in the financial market act as financial intermediaries, facilitating the transfer of risk. However, the distribution of insurance products is conducted through a number of distribution channels (Cummins & Doherty, 2006). The functioning of distribution channels is of great importance, as they play a pivotal role in the success and longevity of any organisation (Rao, 2006). There is a substantial body of research indicating that in the life insurance industry, intermediation channels serve as a vital conduit between insurers and consumers (Etgar, 1976). These channels are considered to be of great importance, as they facilitate the link between consumers who are interested in purchasing insurance products and insurers who are seeking to sell these contracts or products (Cummins and Doherty, 2006; Parekh, 2011). Their role as intermediaries between buyers and sellers (Parekh, 2011) involves undertaking market research in order to match the needs of all parties involved, thereby assisting their customers in selecting from a range of competing offers (Cummins and Doherty, 2006).

Insurance contracts between consumers and insurers are primarily concluded through the intermediary services of insurance brokers and agents (Marano, 2021). IBIS World (2021) reports that there are more than 1.2 million independent insurance brokers and agents worldwide. These are primarily engaged in the sale of life insurance products. Gulati and Jain (2011) identified the role of distribution channels as a significant factor in the substantial growth of the insurance industry. The significance of distribution channels for life insurance products is that the delivery of these products to consumers is based on the use of different distribution

channels (Rao, 2006). Figure 1 provides an interpretation of the distribution channels used in the sale of life insurance products.
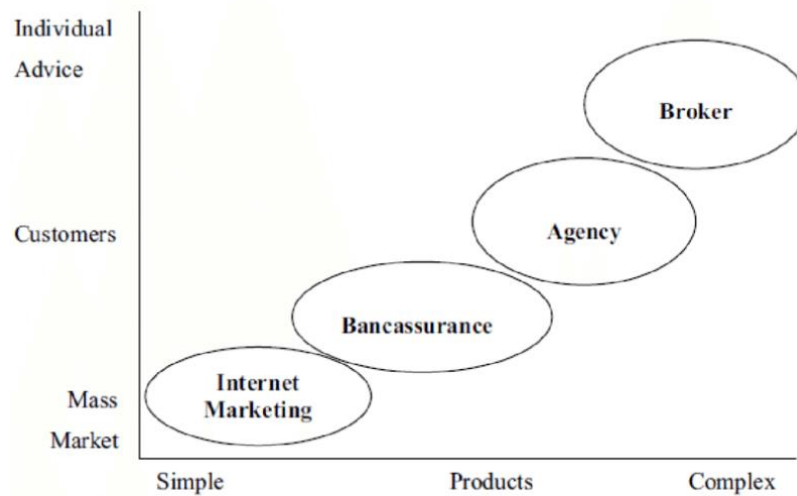

Fig. 1 - The role of distribution channels in the purchase of life insurance products. Source:

shodhganaga.inflibnet.ac.in

Figure 1 illustrates the distribution channels utilized for the sale of life insurance. In addition to the conventional method of selling life insurance, which encompasses direct sales, insurers employ a range of distribution channels, including individual agents, corporate agents, brokers, bancassurance companies, and insurance companies.

1. In the context of insurance companies, direct sales are defined as the generation of sales through the efforts of employed staff. It is incumbent upon direct sellers to introduce initial products to the local market. This entails additional expenditure and a relatively modest volume of premiums. (Zweifel, 2022) This distribution channel presents challenges for insurance companies in terms of monitoring effort and performance, particularly in comparison to brokers and individual agents.

2. In the insurance industry, an individual agent is a certified individual who sells insurance products on behalf of an insurance company (Cummins & Doherty, 2006). They receive a commission from the insurance company for each insurance product sold. In comparison to other distribution channels, individual agents enable insurance companies to rapidly attain a profitable premium volume within the local market (Zweifel, 2022). The distinction between an individual agent and an exclusive agent is that the latter is regarded as an employee of the insurance company, tasked with the sale of insurance products on behalf of the company itself. Nevertheless, this channel is not as prevalent among insurers and customers as the other channels.

3. Exclusive agent is more prevalent in the USA than on the European continent. As exclusive agents trade on their own account, they are required to maintain equilibrium between additional income and marginal costs (Zweifel, 2022).

4. Bancassurance represents a significant channel within the insurance sector, characterised by a collaborative relationship between banking and insurance entities. In this context, insurance products are marketed and sold through banking networks (Reddy et al., 2004; Aggarwal, 2004; Ku et al., 2009; Fan and Cheng, 2009). European insurance markets have been observed to exhibit unusual phenomena, including a correlation between bancassurance and alternative distribution channels (Rubio-Misas,

2021). Furthermore, it is regarded as an emerging and lucrative channel in terms of its growth and productivity. Furthermore, in addition to leveraging the bancassurance channel, life insurers are adopting a multichannel distribution strategy as a means of ensuring their continued success and competitiveness within the industry. They can expand their market share through the careful management of customer relationships. The advantage of this distribution channel can be seen in the reduction of costs for banks and insurance companies, as well as the reduction of costs that these institutions would otherwise have to spend on independent agents and brokers (Zweifel, 2022).

5. In the context of insurance, the term "broker" is defined by Zweifel (2022) as an agent of an insurance group. It engages in negotiations with insurers with the objective of consulting on premiums, examining coverage, and investigating claims. The broker may receive remuneration from the insurer in the form of a commission, but is ultimately accountable to the intermediary group. Despite acting as an agent of the intermediary group, the broker is permitted to offer insurance policies from a range of insurance companies (Zweifel, 2022).

6. Direct media or internet sales represent a distribution channel utilised by a diverse range of organisations, including insurance companies, newspapers, radio, television, telephone, internet and mail services. The distribution channel offers the advantage of significant expansion in both the local and national markets (Zweifel, 2022). Furthermore, the insurance company is not required to monitor the sales of the agents. The disadvantage of this distribution channel is that it is expensive to operate. It is most suitable for the sale of standardised insurance products, where the risks involved are relatively straightforward. However, new electronic media are emerging which offer low-cost alternatives, potentially reducing the cost of direct sales in the future.

As evidenced by extant literature, a significant consequence of alterations in distribution channels is the advent of digitalisation. The digitalisation of distribution channels allows insurers to reduce interaction time, thereby improving efficiency through cost reduction and more effective pricing (Cappiello, 2021). Insurers have been relatively slow to respond to the advent of digitalisation and to embrace the potential benefits of digital transformation. Nevertheless, the insurance industry is currently making significant investments that are leading to a profound change that permeates corporate culture, products, processes, data management and customer relationships (Albrecher et al., 2019). Recent surveys report that consumers do not seem ready to abandon traditional insurance providers, as they consider them more trustworthy when it comes to safety and fraud protection, while placing a high value on brand reputation and personal interaction (Capgemini and Efma, 2019).

A review of the existing literature reveals a paucity of studies that have sought to assess the performance of distribution channels. As Govardhan (2008) asserts, the success of a firm's growth is contingent upon the efficacy of its distribution channels. The study revealed that each distribution channel demonstrates optimal performance in a manner that is distinct from the others. Parekh (2011) and Bashir et al. (2013) concurred that in order to attain a sustainable long-term competitive advantage within the business environment, insurance companies must restructure their strategies. They proposed the introduction of innovative and alternative channels with the objective of exploiting untapped market potential and ensuring market sustainability. It would be prudent for insurers to consider adopting channels that prioritise superior customer service and demonstrate a comprehensive understanding of customer needs. Baradhwaj (2013) posits that distribution channels are regarded as a vital element within the insurance sector, and that insurance companies must adhere to specific guidelines in order to maintain their position in the market.

As can be observed in the aforementioned example, there is a notable lack of attention paid to changes in distribution channels. Bawa and Chattha (2016) conducted a survey of the performance of intermediation channels in the Indian life insurance market, including individual agents, corporate agents, bancassurance, brokers and direct sales. The performance of distribution channels in the Indian life insurance market was examined using two-way variance and through compound annual growth rate (CAGR), employing a log-linear regression model. The findings of the study indicate that the individual agent channel demonstrates the most effective performance in terms of business generation. However, ensuring the continued efficiency of each channel represents a significant challenge for the insurance industry. In order to address this gap in the literature, this study has sought to examine the utilisation of distribution channels in the German life insurance market. This market, situated within the broader European context, is subject to a distinct set of regulations and influences, which differentiate it from the Indian insurance market. The findings of this study will contribute to the understanding of the role played by the distribution network in the German insurance market in facilitating the significant growth of the insurance sector.

3 METHODOLOGY

The relationship between distribution channels and premium levels in the insurance industry has been the subject of interest in various studies. Miller and others (2018) investigated the influence of distribution channels on premium levels and identified evidence indicating a notable correlation between specific distribution channels, including online platforms and agent-assisted sales, and changes in premium levels. However, Chen and Wong (2016) reported findings that were contradictory to those of Miller and others (2018). They suggested that while some channels showed a significant impact on premium levels, others showed minimal or no impact. This implies a lack of statistical significance between premium changes across different distribution channels. Bawa and Sattha (2016) measured alterations in distribution channels within the Indian life insurance market, with a focus on premiums collected by insurers and the number of policies issued. The findings indicate that changes in distribution channels in the Indian life insurance market are not influenced by the premiums received by insurance companies.

In light of the aforementioned studies, the objective of this research is to ascertain whether the distribution channels employed have a notable impact on the premiums charged within the German insurance market. The lack of statistical differentiation between channels in terms of premium levels would be in alignment with the findings proposed by Bawa and Sattha (2016), thereby supporting the null hypothesis.

H1: There are no statistically significant differences in life insurance premiums related to different types of distribution channels.

The insurance literature has examined temporal changes and their relation to the level of premiums. In a longitudinal study conducted by Johnson et al. (2017), premium fluctuations across time were examined, and substantial differences in premium levels over successive years were identified. In contrast, Smith and Brown (2019) presented results that were inconsistent with those of Johnson et al. (2017), suggesting minimal to no statistical significance in premium variation related to different time intervals.

Should the analysis fail to identify any statistically significant differences in premium levels over time, this would corroborate the findings put forth by Bawa and Sattha (2016) and lend support to the null hypothesis, which posits that there is no statistically significant variation in premium levels over time.

H2: No statistically significant differences in life insurance premiums were identified in relation to the specified time period.

4 RESULTS

The findings are divided into two parts. The first part presents the performance growth, which is quantified by the percentage difference of the channels under study to the industry, represented by the compound annual growth rate (CAGR). The following section focuses on examining and comparing the differences in performance of each channel over time from 2009 to 2022. This is achieved through two-way analysis of variance (ANOVA) and subsequent Post Hoc tests.

In order to ascertain the growth in the performance of distribution channels over time, a statistical procedure has been devised based on the findings of the study into performance in the Indian life insurance market. In accordance with the equation $Y = ab^t$, where Y represents the variable of interest, Once the logarithm has been calculated, it must be transformed into $\log Y = \log a + t * \log b$. In order to ascertain the compound annual percentage growth rate (CAGR%), the antilogarithm formula $(\log b - 1)*100$ must be employed. In this context, the term 'log Y' denotes the parameter for which the CAGR is calculated. The constant 'a' represents the value of the parameter over time, while the time period is represented by 't'. The regression coefficient is represented by 'log b'.

Figure 1 illustrates the expansion of distribution channels in the German life insurance market, as indicated by the annual percentage growth rate from 2009 to 2022. The selected years were chosen on the basis of the availability of data on the Insurance Europe portal. From the chart in question, it is evident that there has been an overall decline in direct sales, with a reduction of -74.6%, and in the development of the bancassurance distribution channel, with a decrease of 13.44% over the period under review. The calculation demonstrates that the distribution channel in the German life insurance market is being utilized with decreasing frequency, while the Bancaassurance distribution channel is gaining prominence and can be considered to be replacing it. The 10-year observation period reveals a decline in the performance of both the individual agent and broker distribution channels. Even in 2009 and 2017, the individual agent distribution channel exhibited a negative decline in performance.
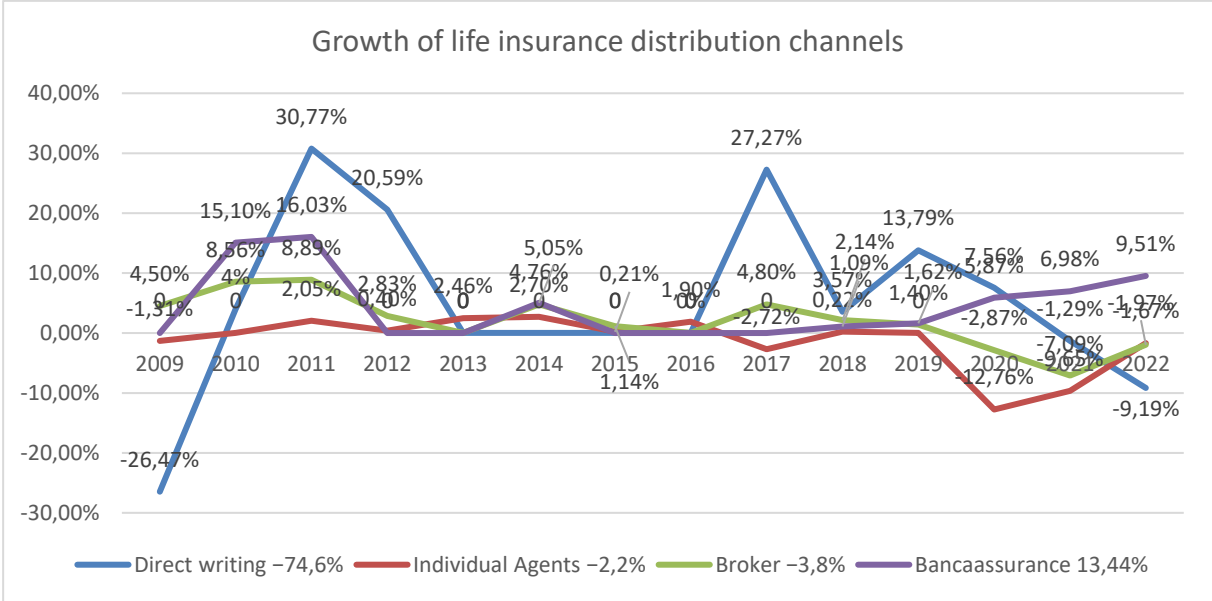

Fig. 2 - Growth of life insurance distribution channels in the years under review, Source: own elaboration based on data from Insurance Europe

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4.1 Performance of distribution channels

The Chart 1 above illustrates the performance of distribution channels in the German life insurance market using the CAGR indicator. In order to gain a comprehensive understanding of the performance of the distribution channels, an in-depth analysis of the data of all German insurance companies operating in the German life insurance market for the period 2009 to 2022 was conducted. The results of the analysis in Table 1 show clear differences in the performance of the different channels. A two-way analysis of variance (ANOVA) was used to assess whether these differences were statistically significant. In this analysis, channel and period are treated as independent categorical variables, while premium written is treated as the dependent continuous variable.

Tab. 1 - Performance - GWP per change of distribution channels for life insurance in the German insurance market. Source: own research

Dependent Variable	Source	Sum of Squares	Df	Mean Square	F	Sig.
Premiums	Corrected Mode	683.20	9	18.92	21.299	9.29
	Intercept	11930.29	1	10637.2	.00072	.000
	Channel	129.28	5	32.54	.0478	.000*
	Time	3.82	5	0.272	.0200	0.210
R Squared = . 394						
Kolmogorov-Smirnov = .122 Shapiro-Wilk =.108						

As evidenced in Table 1, the F ratio is markedly significant (as indicated by a p-value less than 0.05) in the context of the channel. This suggests that the mean values of the premiums written (the dependent variable) vary according to the category of channel in question. Conversely, no discernible difference was identified with respect to the time category under examination ($p = 0.210$, which exceeds 0.05). In light of the aforementioned analysis, H1, which stated that "There are no statistically significant differences in life insurance premiums related to the different types of distribution channels," is rejected. Conversely, H2, which stated that "There are no statistically significant differences in life insurance premiums related to the time period under study," is accepted. This implies that the differences between channels for the premium variable are significant.

4.2 Post hoc analysis

A two-way analysis of variance (ANOVA) is employed to ascertain whether there are statistically significant discrepancies between the means of two or more independent (unrelated) groups. As posited by Bawa et al. (2016) and Field (2005), who employed a comparable analysis to assess channel performance, a post hoc test is advised to identify specific categories of channels that diverge from one another.

Table 3 presents the results of the post hoc Tukey's HSD test, which demonstrates the significance of univariate F-values in pairwise comparisons between channels.

Tab. 2 - Tukey's HSD Post-Hoc Tests for Prescribed Premiums, Source: own research

Dependent Variable	(I) channel	(J) channel	Mean Difference (I-J)	Sig.

Premium	**Direct selling**	Broker	-6.283	.673
		Individual agent	-8.022	.286
		Bancassurance	-1.902	.001*
	Broker	Direct selling	2.998	.000*
		Individual agent	.099	.000*
		Bancassurance	1.039	.001*
	Individual agent	Direct selling	4.872	.000*
		Broker	2.982	.000*
		Bankaassurance	1.938	.000*
	Bancaassurance	Direct selling	-8.937	.218
		Broker	9.229	.003
		Individual agent	-1.938	.001*

Significance is at the 1% level. A minus sign indicates that group I is less significant than group J

The statistical test provides a means of determining the significance values for each group in the channel comparison. The analysis demonstrates that the channels exhibiting a statistically significant discrepancy are those pertaining to the individual agent and broker. With regard to performance, the mean difference indicator demonstrates that the individual agent and broker channels demonstrably outperform the other channels, as evidenced by the positive values.

5 CONCLUSION

The effective management of the distribution network is a critical factor in achieving optimal results for a thriving business. The objective of this study was to identify alterations in the distribution channels (comprising individual agents, brokers, bancassurance, brokers and direct sales) within the German life insurance market, with a particular focus on premiums written between 2009 and 2022.

The study finds that all distribution channels are used in the German life insurance market. The study also shows an increase in the use of the bancassurance channel compared to other channels. The use of the direct sales channel shows a sharp decline over the 10-year period. We assume that this is due to the use of the bancaassurance channel, which has largely replaced this channel. It is clear that there has been a significant shift in the use of distribution channels in the European insurance industry. A more detailed analysis of the data shows that the compound annual growth rate changes from year to year. The decline can be seen in the decrease in the use of the individual agent channel (-2.2%) and the broker channel (-3.8%). The big upturn is in the performance of these distribution channels, which research has shown we consider to be the best performing. This is in line with the findings of the study Performance evaluation of the intermediary channels of life insurance industry in India, which also found the individual agent channel to be the best performing. The empirical evidence of the study shows that there are noticeable differences in terms of the premium variable for different categories of distribution channels, but no difference was found in terms of time period. This implies that there are many differences in the performance of each channel.

The traditional channels of distribution, such as individual agents and brokers, are encountering challenges from the emergence of new channels, including direct-to-consumer sales models, online aggregators and partnerships with digital platforms. This transformation is being driven by three key factors: technological advances, changing consumer preferences and regulatory developments. The limitations of the study are evident in the temporal constraints of the data set, which encompasses the pre-pandemic years of 2009-2022 and thus fails to account for the impact of digitisation and online sales. The advent of Insurtech and an array of digital applications has rendered it increasingly challenging to ascertain the number of insurance products sold through disparate distribution channels. It is imperative that future research delve into the impact of digitalisation on distribution channels within the insurance industry.

Singh et al. (2011) and Bashir et al. (2013) have identified the necessity for insurance companies to modify their distribution strategies by incorporating innovative and alternative channels in order to capitalise on the untapped potential in emerging markets. The authors underscored the significance of an integrated multichannel approach for achieving customer satisfaction and fostering profitable growth (Kasturi, 2006). This approach allows the company to provide innovative and bespoke products via different channels, thereby meeting customer needs. Furthermore, the insurance market offers potential for enhanced market penetration and accessibility through the diversification of distribution channels.

In order to capitalise on the advantages afforded by the latest distribution channels, insurers must adapt their existing strategies to encompass these new avenues. However, this must be done in a way that effectively manages the inherent complexities associated with multi-channel distribution. Individual agents and brokers are compelled to redefine their value proposition and enhance their digital capabilities in order to maintain competitiveness in an evolving environment. Conversely, consumers stand to gain from enhanced convenience, transparency and the ability to tailor products to their specific needs. However, they must also navigate a wider range of options.

Acknowledgement

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LINKING THE AAKER MODEL OF BRAND EQUITY WITH THE SEW MODEL (SOCIOEMOTIONAL WEALTH) IN FAMILY BUSINESSES

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Abstract

The aim of this paper is to define an approach to the development of family businesses in different industries by linking Aaker's brand equity model and the SEW model. Family businesses have specific characteristics that influence their strategy, values, and goals. Linking the emotional side of the family with the rationality of the business presents a unique challenge and scope for academic research. This article focuses on the family construction business, the family gastronomy business, and the family winery. Primary research was conducted using a qualitative method through a comparative study of these selected family businesses. The methodology involves data collection through semi-structured interviews. The interviews were based on a questionnaire filled in by the business owners, who were then interviewed. An analysis of the current state of scientific knowledge revealed that family businesses have specific needs and challenges that require a tailored approach to brand and socio-economic wealth development. Research findings show that linking Aaker's brand equity model with the SEW model can make a significant contribution to the development of family businesses. Case studies of individual companies showed how these models influenced their strategies and goals. Comparative analysis revealed differences and similarities between the construction, hospitality, and wine industries in the context of family businesses. In conclusion, this article provides new insights into the development of family businesses and offers practical implications for their future growth and success. Combining the emotional and rational sides of entrepreneurship can give family businesses a competitive advantage and promote their long-term success.

Keywords: family businesses, brand equity, socioemotional wealth, building industry, gastronomy, wine industry introduction

1 INTRODUCTION

Family businesses play a key role in the global economy and contribute to economic growth and stability. These businesses have specific characteristics that influence their strategy, values, and objectives. One of the main issues in family business is the intertwining of the emotional side of the family with the rationality of the business, which creates a unique context for scholarly research (Astrachan & Shanker, 2003; Miller & Le Breton-Miller, 2005).

The aim of this paper is to define an approach to family business development by linking Aaker's brand equity model (Aaker, 1991) with the SEW (Socioemotional Wealth) model (Gómez-Mejía et al., 2007). Aaker's brand equity model focuses on the value of the brand and its influence on customer behaviour, while the SEW model emphasises the emotional side of family business ownership and its long-term goals. A company's brand is, in layman's terms, what people think and feel when they hear the name of your company. It is a combination of how a company presents itself in the marketplace, what it offers, its image and its reputation. It is the promise a company makes to its customers about what they can expect when they buy its products or services. A good example of a brand can be Coca-Cola. When you hear the name, you immediately think of sweet fizzy lemonade, a red logo, and maybe commercials full of joy and friendship. Many people think especially of Christmas. So a brand is something that makes

your business unique and sets it apart from the competition. Other authors also confirm that brand image is the perception of a brand shaped by associations in the minds of customers. A strong brand image can differentiate a firm from competitors, increase customer satisfaction and potentially lead to higher customer loyalty. authors (Master of Management University of Lampung, Bandar Lampung, Indonesia et al., 2024). Aaker's brand equity model is a way to understand and measure a firm's brand equity.

Linking these two models can offer new development opportunities for family businesses. Family businesses are often in a situation where they have to balance between emotional attachments and rational decision making, which affects their strategic goals and direction (Berrone et al., 2012). This paper focuses on three family businesses from different industries - building, gastronomy and wineries - and analyses how the link between the Aaker model and the SEW model can contribute to their development.

The primary research involves qualitative methods, specifically a comparative study of selected family businesses. The results of this study provide new insights into the specific needs and challenges of family businesses and offer practical implications for their future growth and success. The study was conducted through semi-structured interviews. A questionnaire was presented to the business owners, whose responses were subsequently consulted. The responses were consequently analysed.

2   LITERATURE REVIEW

Aaker's brand equity model is one of the most widely recognized models for understanding and measuring brand equity. This model, developed by David Aaker (1991), identifies four main components that contribute to overall brand equity. These components are: brand awareness, perceived quality, brand associations, and brand loyalty.

1. Brand awareness refers to how well people know your brand and how easily they recall it. It is the cornerstone of brand equity because if customers do not know your brand, they cannot prefer it over others. High brand awareness means that the brand is recognisable and easy to remember. For example, the brand "Nike" is immediately associated with sports shoes and clothing, which indicates high awareness.

2. Perceived quality reflects how good people consider your products or services to be. It is a subjective evaluation that influences their willingness to pay a higher price for your product compared to competing offers. High perceived quality can be the result of actual quality, but also of effective marketing and brand attributes. For example, BMW cars are often perceived as high quality and luxurious, which attracts customers who are willing to pay a premium.

3. Brand associations include all the thoughts, feelings and experiences that customers have in connection with your brand. These associations can be positive, such as trust and innovation, or negative, such as poor quality or unreliability. Strong and positive associations can increase brand equity by creating emotional connections with customers. For example, the Apple brand is often associated with innovation, simplicity and modern design, which strengthens its position in the market.

4. Brand loyalty refers to how loyal customers are to your brand and how often they purchase your products again. Strong loyalty means that customers prefer your brand over others, even when new options emerge. This can lead to repeat purchases and a steady income. For example, many people still buy Coca-Cola even when there are many other sodas on the market, which indicates high brand loyalty.

Together, these four components create overall brand value that can bring greater success, higher profits, and a stronger market position to a company. High brand equity can improve a firm's ability to attract new customers, retain existing customers, and differentiate itself from competitors. Beyond the four main components that contribute to brand equity (customer loyalty, brand awareness, perceived quality, and brand association), Aaker mentions a fifth component, namely other brand-related assets. This component is often overlooked, even though it plays a key role in overall brand value. The main elements of this component are legal protection, which includes patents, trademarks and copyrights that protect unique aspects of the product or service. These legal instruments ensure that the brand has the exclusive right to use its innovations and identifying features, preventing competitors from copying them. In addition, trade secrets, which apply to information that is not patented but is protected as a trade secret. Distribution channels, which include relationships with distributors and retailers. Strong and long-lasting relationships with distribution partners can significantly increase brand value. This collaboration ensures efficient distribution of products and better availability to customers. Equally important are exclusive agreements. Partnerships with key retail chains or distributors can ensure preferential treatment and more advantageous market positions. Other elements are alliances and partnerships (alliances with other brands or organisations can bring new markets, technologies or resources to a brand. These partnerships often lead to synergies that increase the value of the brand, and partnerships with universities or research institutions can also bring innovation and new technologies that increase the brand's competitiveness). Other elements are financial and knowledge assets.

Kim and Ko (2012) examined the impact of social media on brand equity in the fashion industry, while Keller and Lehmann (2006) analysed the dynamics of brand equity in the global market. Since 2014, research in brand equity has focused on the extension and application of Aaker's model in different contexts such as digital marketing, social media and international markets.

The authors Nowak et al. (2006) point out the key factors for brand equity.

- **Customer satisfaction**: high levels of customer satisfaction are directly correlated with increased profitability and customer loyalty.

- **Product quality**: perceived wine quality is the strongest predictor of brand equity.

- **Service quality**: Consistently good service is essential; staff must always be friendly and efficient to create a positive customer experience.

- **Fair pricing**: Perceptions of fair pricing have a significant impact on brand value. Pricing strategies should reflect value without being too high or low.

- **Customer commitment**: A sense of belonging and emotional connection to the winery can foster long-term customer commitment.

There are several interpretations of the sources of brand value. The article Evaluating Aaker's sources of brand equity and the mediating role of brand image (Gill & Dawra, 2010) focuses on David Aaker's evaluation of sources of brand equity and the role of brand image as a mediator between brand awareness and brand equity. It explores different dimensions of brand equity and attempts to measure them in the context of the toothpaste industry.

The main points are as follows:

1. Defining brand value: brand value has been defined in various ways. Aaker defines it as the set of assets associated with a brand name and symbol. The paper discusses various approaches to measuring brand value, including psychological and market-behavioral methods.

2. Aaker's sources of brand equity: Aaker proposed that the key dimensions of brand equity are brand loyalty, perceived quality, brand association, and brand awareness. This paper tests these dimensions using regression analysis and conjoint analysis.

3. Brand image as a mediator: the study found that Aaker's dimensions alone cannot fully explain brand equity. The paper proposes that brand image plays a mediating role between brand awareness and brand value. Thus, brand awareness leads to brand image, which in turn contributes to brand value.

While Aaker's brand equity model provides a comprehensive framework for understanding and measuring brand value, Socioemotional Wealth (SEW) is a concept that explains how family ownership and management of businesses influences their strategic decisions and behavior. This model was introduced by Gómez-Mejía et al. (2007) and highlights that family businesses often prioritize socioemotional values over purely economic goals. The SEW model includes several key dimensions that affect family businesses:

1. **Family control and influence**: family businesses seek to maintain control and influence over the firm to ensure continuity and preserve family values and traditions (Berrone et al., 2012).

2. **Family-firm identity**: family members often associate their identity with the firm, which increases their emotional investment in the business and influences their decision-making (Gómez-Mejía et al., 2011).

3. **Family-firm ties**: Strong personal and emotional ties between family members and the firm can lead to decisions that prioritize family values over economic interests (Cennamo et al., 2012).

4. **Emotional attachment**: family members' emotional investment in the firm may influence their willingness to take risks and their commitment to maintaining family ownership of the firm (Debicki et al., 2016).

5. **Dynastic continuity concerns**: family businesses often have a strong desire to keep the firm family-owned for several generations, which affects their strategic decision-making and long-term plans (Chrisman et al., 2012).

This model is critical for understanding decision making in family firms because these firms often make decisions that are not only economically motivated but also influenced by their socio-emotional wealth. (Chaudhuri et al., 2022) An overview of how the approach to this model has evolved is provided by an article entitled "Future Perspective of Socioemotional Wealth (SEW) in Family Businesses" (Smajić et al., 2023) provides an overview of the evolution and importance of the concept of socioemotional wealth (SEW) in family businesses from its inception in 2007 to 2021. The article focuses on a systematic review of the literature on SEW, analysing the evolution of the concept and its key roles in family businesses. The main ideas are the evolution of the SEW concept, where wealth refers to the non-financial objectives of family firms that satisfy the emotional needs of the family, such as identity, influence and dynastic succession. This concept has become important in family firm research. The authors here confirm the claims of many other authors that SEW has become a key factor that distinguishes family firms from non-family firms. They pay more attention to non-financial objectives that may influence their decision making and overall strategy. The research by Smajic et al, also points out how there has been an increase in research on SEW over the years, which includes different methodological approaches such as citation analysis, network analysis and content analysis. The research focuses on the diverse factors that influence socio-emotional wealth and its impact on family firm performance. The paper explicitly focuses on family firms because SEW is a specific concept that is exclusively concerned with family firms and their

unique non-financial objectives. An often cited area that directly affects SEW values is innovation. This idea is supported, for example, by authors Flen Rossi & Rojas-Vallejos (2024). SEW includes non-financial aspects such as family identity, emotional ties and dynastic succession that influence decision making and the ability to innovate in family firms. Innovation is a key factor for the long-term success of family firms. The study shows that SEW can either promote or hinder innovation depending on how family values influence perceptions of the risks and rewards of innovation.

Since 2014, research on the SEW model has focused on a deeper understanding of its various dimensions and their practical implications for family businesses. For example, Hauck et al. (2016) examined how SEW affects strategic decision-making in the context of intergenerational transmission of family businesses. Berrone et al. (2015) extended the original concept of SEW to include additional dimensions such as preserving family name and reputation, which is crucial for the long-term success of family businesses.

The SEW model provides a useful framework for understanding how family values and emotional ties influence strategic and managerial decision making in family businesses. This model is key to identifying the specific challenges and opportunities that family businesses face and offers valuable insights for their development and growth.

Family businesses have specific characteristics that influence their strategy, values and goals. The combination of Aaker's brand equity model and the SEW (Socioemotional Wealth) model provides deeper insight into how family businesses build and maintain their brand while preserving family values and emotional ties.

It is also interesting to see how these two models are linked in different market sectors. In gastronomy, family businesses can benefit from the link between the Aaker model and the SEW model by using family recipes, traditions and stories to strengthen the brand. High perceived quality and strong associations with family values can attract loyal customers. (Miller & Le Breton-Miller, 2005) Emotional ties and family identity can be key to building a unique dining experience. In the construction industry, family-owned businesses can leverage long-term experience and craftsmanship to enhance perceived quality. Family control and influence can ensure high levels of trust and reliability with customers. Strong brand associations based on family values can promote customer loyalty and repeat business. Winery is often associated with family traditions and history, which can provide a strong foundation for brand building. The high perceived quality of wine, linked to family values and traditions, can attract customers looking for authentic and quality products. Brand loyalty can be reinforced by the strong personal ties and emotional stories associated with family winery.

The combination of Aaker's brand equity model and the SEW model gives family businesses a unique advantage. The combination of a strong brand and the retention of family values can contribute to the long-term success and growth of family businesses in a variety of industries.

2.1 Challenges and opportunities for family businesses

Family businesses face several key challenges in trying to link Aaker's brand equity model and the SEW model:

1. **Preservation of family values**: Maintaining family values and traditions while building a modern and competitive brand. (De Massis et al., 2015)

2. **Balancing emotional and economic goals**: family businesses must strike a balance between preserving socio-emotional values and achieving economic goals. (Gómez-Mejía et al., 2007)

3. **Transfer of knowledge and skills**: Effective transfer of knowledge and skills between generations is key to maintaining quality and brand reputation. (Cabrera-Suárez et al., 2001)

4. **Innovation and growth**: Innovation and growth must be managed to be consistent with family values and traditions (Chrisman et al., 2005).

On the other hand, combining these two models offers unique opportunities for family businesses:

1. **Stronger brand**: leveraging family values and traditions can strengthen brand awareness and create strong emotional connections with customers (Micelotta & Raynard, 2011).

2. **Customer Loyalty**: Emotional connections and authenticity can increase customer loyalty and encourage repeat purchases. (Orth & Green, 2009)

3. **Competitive advantage**: The combination of strong brand equity and SEW can provide family businesses with a competitive advantage in the marketplace. (Zellweger et al., 2012)

The analysis of the current state of the art shows that the combination of Aaker's brand equity model and the SEW model can make a significant contribution to the development of family businesses in different sectors. These models provide a theoretical framework for understanding how family values and emotional ties can be used to build a strong brand and achieve long-term success.

3 METHODOLOGY

This research was designed to be qualitative in order to gain an understanding of the specific characteristics and challenges faced by family businesses in three distinct sectors: construction, gastronomy and winery. The sample included three family businesses, one from each sector. The main method of data collection was semi-structured interviews, which allowed for both standardised and individual information to be obtained from the research participants. First, a questionnaire was emailed to respondents, which they completed independently and returned to the author. Afterwards, telephone interviews were conducted with the respondents, which were not recorded, but the author took notes directly on the questionnaires based on the findings and additional information. To ensure anonymity and ethical fairness, identification of respondents was removed and responses were analyzed under anonymous labels. The selection of family firms was based on the following criteria: one of the authors knows the firm personally, the management of the firm remains in the hands of the family, at least two generations actively involved in the management of the firm. Firms from different sectors were selected to ensure a diversity of sectoral experience. Knowing the owners personally was one of the criteria for the reason that this is sensitive company data, and in a friendly conversation the author will learn more than with a complete stranger. Methodological triangulation was used to increase the validity of the data. In addition to the interviews, secondary data sources (e.g., company reports and publicly available information) were analyzed to help corroborate respondents' statements.

3.1 Data collection

Data was collected through semi-structured interviews, which allowed flexibility in the questions and enabled respondents to express their views and experiences in detail in their own words. Prior to the interviews, the business owners completed a questionnaire, which served as

the basis for the interview. The questionnaires were sent by email, and the interviews were subsequently conducted by telephone.

Family businesses in the food service, building and wine sectors were chosen for the comparative study for several reasons. These sectors provide diverse contexts and allow for a deeper understanding of how family values and brands operate in different business environments. Culinary businesses often build on family recipes, traditions and stories, which are strongly linked to the emotional values of the family. This aspect is key to understanding how the socioemotional wealth (SEW) model affects business. At the same time, restaurants and other foodservice businesses often rely on strong brand awareness and high quality, which is consistent with Aaker's brand equity model. Customer loyalty in the foodservice industry can be very strong if a business offers a unique experience and quality products. (Kotler et al., 2022) Construction businesses often emphasize quality and craftsmanship, which is key to perceived brand equity according to Aaker's model. Customer trust and long-term relationships are key in this industry. Family businesses can benefit from personal relationships and trust, which supports the SEW model. The construction industry often involves the transfer of skills and knowledge between generations, which promotes the preservation of family values and innovation. (Xiong et al., 2015) Wine businesses often build on long-term tradition and family values, which is directly in line with the principles of the SEW model. Wine quality and brand reputation are key factors for the success of wine enterprises, which is in line with Aaker's brand equity model. Wine businesses can create strong emotional connections with customers through stories of family history and tradition, which fosters customer loyalty. (Forbes et al., 2009)

3.2 Data analysis

The authors chose a qualitative content analysis to analyse and evaluate the responses of three family businesses (gastronomy, winery, construction). This method allows for an in-depth examination of the textual data, which in this case is useful for understanding the specific characteristics and challenges that family businesses face when combining Aaker's brand equity model and the SEW (Socioemotional Wealth) model.

This method involves the following steps:

1. **Coding**: identifying key themes and categories in the responses.
2. **Thematic analysis**: Identify major themes and patterns in responses.
3. **Comparative analysis**: Comparing responses between companies and identifying similarities and differences.
4. **Integration with theoretical models**: linking findings with Aaker's brand equity model and the SEW model.

The questionnaire included a cover letter explaining why the firms were approached, the purpose of the questionnaire, and an explanation of the Aaker and SEW model.

The questions were developed based on the findings of the literature search, with Aaker's model of branding on one side and the values of the family business within SEW on the other. Aaker's model is associated in the literature with topics such as sustainable brand building or stakeholder influence analysis (Winit et al., 2023). It explores different models to achieve sustainability through brands. The analysis focuses on marketing strategies, brand management and influence on customer behaviour. More broadly, the literature (Parris & Guzmán, 2023) discusses three of the most important concepts in 21st century branding - brand equity, brand loyalty and brand image. Brands are increasingly perceived as dynamic and evolutionary concepts that must reflect social and environmental concerns. Brand equity, brand loyalty and

brand image are multidimensional concepts that are both independent and interrelated, and research in this area points to their complex evolution.

SEW is defined as the emotional wealth of family firms, which includes family control, family members' identification with the company, social ties, emotional connections, and dynastic succession. SEW can have both positive and negative effects on firm performance. How socio-emotional wealth affects family firm performance is a frequent topic of research, focusing on how this relationship remains complicated and mixed. (Smajic et al., 2024) The paper argues that there are various theories on how SEW affects family firm performance, including agency theory, prospect theory and behavioural theory. Each theory examines how firms perceive risk and profits as a function of emotional wealth. A very interesting aspect is the results of studies that show mixed results on whether SEW contributes to better firm financial performance. Some studies show that SEW can bring stability and long-term sustainability, while others suggest that over-protection of family interests can limit growth and development. Blending these basic findings, the following questionnaire was developed to test the theories found, on the one hand, and on the other hand, to understand the functioning of family firms in terms of combining Aaker's model with the SEW model in order to develop these family firms.

3.3 Questions for the questionnaire

1. What are the core values and goals of your family business?

   - This question aims to understand the core values that drive the business and what long-term goals the family business has set.

2. How do you try to build and maintain your company's brand??

   - A focus on the strategies and tactics the business uses to create and maintain its brand, including the use of marketing tools and approaches based on Aaker's brand equity model.

3. How does family ownership and management affect your decision making in the company?

   - This question explores the influence of family relationships and values on strategic decisions and day-to-day management of the business, in line with the concept of socioemotional wealth (SEW).

4. What are the main challenges and problems you have experienced when trying to align family values and business goals?

   - Identifying the conflicts and challenges that arise when trying to connect the emotional aspects of the family with rational business decisions.

5. What strategies and practices you use to ensure the long-term sustainability and growth of your business?

   - A question focused on the long-term growth and sustainability strategies the company is implementing, including how it uses a combination of brand equity and SEW to achieve these goals. In other words, whether the family-oriented nature of the business is reflected in branding from a strategic perspective.

4 RESULTS

Based on the content analysis, the following conclusions were reached. The questionnaire explored 5 areas, under 5 questions. The results of the examination in three different sectors are as follows.

Gastronomy

1. Core values and objectives:
   - Quality, reliability and innovation.
   - Emphasis on freshness and palatability of food.
2. Brand building:
   - Consistent food quality and excellent customer service.
   - Active communication on social media and participation in local events.
3. Impact of family ownership:
   - Reflects family values and traditions in daily activities.
   - Emphasis on long-term relationships and customer satisfaction.
4. Challenges:
   - Balance between maintaining family values and the need for innovation.
   - Balancing personal and professional life.
5. Strategies for sustainability:
   - Investing in innovation and employee training.
   - Preserving family culture and traditions.

Construction industry

1. Core values and objectives:
   - Quality, honesty, reliability and personal approach.
   - The long-term goal is to pass the company on to the next generation.
2. Brand building:
   - Reputation and personal recommendation.
   - Investment in quality materials and employee training.
3. The influence of family ownership:
   - Strong emphasis on long-term perspective and personal commitment.
   - Family cohesion influences strategic decisions.
4. Challenges:
   - Balance between quality and efficiency.
   - Succession planning and separation of personal/family life from work life.
5. Strategies for sustainability:
   - Focus on quality of work and customer satisfaction.

- Investing in training and innovation..

Winery

1. Core values and objectives:

   - Priority on a home-like and friendly environment for customers.

   - Open and wheelchair accessible.

2. Brand building:

   - Good feedback and personal recommendations.

   - Promotion on social media and advertising by internet famous people.

3. Influence of family ownership:

   - Conflicts between generations that are resolved through communication and compromise.

   - Family relationships influence strategic decisions.

4. Challenges:

   - Finding common ground between generations.

   - Communication and compromise among leaders.

5. Strategies for sustainability:

   - Personal and open approach to customers.

   - Creating a friendly atmosphere and making personal contacts.

In summary, the emphasis in gastronomy is on quality, reliability and innovation. The brand is built through consistent quality and excellent customer service. Family ownership influences decision making and strategy, with the main challenge being to align family values with business objectives. The construction company focuses on quality and integrity, with the long-term goal of passing the business on to the next generation. The brand is built on reputation and personal recommendations. Family ownership brings a long-term perspective, with the main challenge being to maintain a balance between quality and efficiency. The winery emphasises a friendly and homely environment. The brand is built on good feedback and social media promotion. Family ownership influences strategic decisions, with the main challenge being to find common ground between generations.

5 DISCUSSION

Our empirical findings support the theory of the link between family firms' emotional values (SEW) and branding (Aaker's model) and that this link plays a key role in the long-term success of these firms. The analysis of the responses of three family businesses shows that linking Aaker's brand equity model and the SEW model can significantly contribute to the development of family businesses in different sectors. Common features such as an emphasis on quality and a personal approach to customers, together with the influence of family ownership on strategic decisions, show that family businesses can use their specific characteristics to build a strong brand and achieve long-term success. Differences in marketing strategies, challenges, and strategies for sustainability and growth reflect the specific needs and contexts of each sector. All businesses emphasise quality and a personal approach to customers as key success factors. Family ownership influences strategic decisions and brings specific challenges such as aligning

personal and business goals. Linking Aaker's brand equity model and the SEW model shows how family businesses can use their specific characteristics to build a strong brand and achieve long-term success.

Looking at the comparison of responses more specifically, here are the main commonalities and differences defined on the basis of the responses, compared by sector.

Common characteristics

1. Focus on quality:

   - **Gastronomy**: the bistro places great emphasis on the quality of food and beverages, which is the core value of the business. All dishes are prepared with love and attention to detail, ensuring a high level of customer satisfaction.

   - **Construction**: the construction company focuses on providing high quality services in the field of installation of ventilated facades. Investment in quality materials and staff training ensures high standards of work.

   - **Wineries**: the quality of wine and service is crucial for wineries. The winery strives to ensure that customers feel comfortable and enjoy quality wine in a friendly environment.

2. Personal approach to customers:

   - **Gastronomy**: the bistro strives to create a pleasant atmosphere where customers feel comfortable and like to come back. The founders are personally involved in the operation and interact with customers, which strengthens relationships.

   - **Construction**: a personal approach to customers is key for a construction company. The firm strives to build long-term relationships with clients and provide comprehensive solutions that meet their needs.

   - **Winery**: the winery focuses on an open and friendly approach to customers. A family atmosphere and personal contact with customers are at the heart of their strategy.

3. Family ownership and its influence on strategic decisions:

   - **Gastronomy**: family values and traditions are the basis of the bistro's decision-making and strategy. This approach helps in strategic decisions and day-to-day operations

   - **Construction**: family ownership brings an emphasis on long-term perspective and personal commitment to the success of the company. Decisions are influenced not only by economic considerations, but also by the impact on the family's reputation.

   - **Winery**: intergenerational conflicts and family relationships influence strategic decisions. Communication and compromise are key to aligning family values and business goals.

Differences

1. Marketing strategy:

   - **Gastronomy**: the bistro uses modern marketing tools such as social media and participation in local events to build and maintain its brand.

- **Construction**: a construction company relies primarily on reputation and personal recommendations. A recent website redesign aimed at showcasing successful projects is helping to attract new customers.
- **Winery**: the winery emphasizes personal recommendations and promotion through social media and advertising by well-known internet personalities.

2. Challenges in balancing family values and business goals:

- **Gastronomy**: the challenge is to find a balance between preserving family values and the need for innovation and growth. It is also important to balance personal and professional life.
- **Construction**: the challenge is to maintain a balance between quality and efficiency. Succession planning and preparing the next generation to take over the company takes time and expertise.
- **Winery**: the main challenge is to find a common language between generations. Conflicts between father and son lead to compromises that are necessary to keep the company running.

3. Strategy for sustainability and growth:

- **Gastronomy**: investing in innovation, developing new food and services, and training employees are key to long-term sustainability and growth.
- **Construction**: focus on quality, customer satisfaction and investment in training and innovation in technology and materials ensure long-term stability and growth.
- **Winery**: a personal and open approach to customers, creating a friendly atmosphere and establishing personal contacts are key to long-term sustainability and growth.

These conclusions are largely confirmed by authors such as Danny Miller and Isabelle Le Breton-Miller (2005), who argue that the success of family firms lies in the following aspects. Family businesses tend to focus on long-term goals and maintain a consistent strategy that carries over generations. This includes deep investment in core competencies and maintaining a strong corporate culture. Successful family businesses build a strong internal culture based on values and principles that motivate employees and encourage collaboration and initiative. This cohesive community helps reduce bureaucracy and increase employee engagement. Family businesses often build long-term, beneficial relationships with external partners such as suppliers and customers. These relationships are based on trust and ethics, leading to customer loyalty and better access to resources. Family business leaders often have greater freedom to make bold and innovative decisions because they are not under pressure from short-term financial goals. This allows them to respond quickly to market opportunities and threats.

In relation to previous research, the authors' findings are consistent with research by Berrone et al. (2012), who also identified that family firms tend to prioritize emotional ties and long-term goals over short-term economic benefits. Similar to our study, research by Gomez-Mejia (2007) confirms that family values and emotional ties have a major influence on strategic decision making in these firms.

6 CONCLUSION

This paper focused on exploring the link between Aaker's brand equity model and the SEW (Socioemotional Wealth) model in the context of family businesses in three industries: catering, construction and wine. The main objective was to define an approach to the development of these businesses with regard to the specific characteristics that influence their strategy, values and objectives.

The results of this study suggest that the combination of Aaker's brand equity model and the SEW model provides family firms with a powerful tool for long-term growth and sustainability. Aaker's model focuses on building brand equity through key factors such as brand awareness, perceived quality, loyalty, and brand association, while the SEW model emphasizes family emotional values, long-term goals, and strategic decisions influenced by family ties. Linking these two models gives family firms a unique competitive advantage because it combines the rational and emotional aspects of business. Family firms can use the Aaker model to strengthen their brand while using the SEW model to maintain strong family ties that foster customer loyalty and ensure the long-term stability of the business.

The main findings are:

1. Focus on quality and personal approach to customers: In all three sectors studied (gastronomy, construction, winery), the emphasis was on quality and a personal approach to customers as key success factors. These elements are not only the basis for building a strong brand, but also reflect the family values and traditions that are integral to family businesses.

2. The impact of family ownership on strategic decisions: Family ownership plays a significant role in the decision-making and strategy of all three businesses. Family values, long-term perspective and personal commitment to the success of the business are key factors that influence their decision-making. This influence is consistent with the SEW model, which emphasizes the importance of emotional and socioeconomic ties in family businesses.

3. Specific challenges and strategies for sustainability: Each industry faces specific challenges in aligning family values and business goals. In gastronomy, the challenge is to find a balance between preserving family values and the need for innovation and growth. Construction businesses face challenges related to maintaining quality and efficiency, while wineries face challenges related to communication and trade-offs between generations. For sustainability and growth, it is important for family businesses to invest in innovation, employee training and preserving the family culture.

The research results show that linking the Aaker model with the SEW model can make a significant contribution to the development of family businesses. Aaker's brand equity model provides a framework for understanding and measuring brand equity, while the SEW model emphasizes the emotional and socioeconomic ties that are key to family businesses. Combining these two models can help family businesses better understand and leverage their specific characteristics to build a strong brand and achieve long-term success.

Family businesses should use family values and traditions to strengthen their brand and create strong emotional connections with customers. Investing in quality, innovation and employee training is key to sustainability and growth. Family businesses should also pay attention to succession planning and aligning family values with business goals. Future research could further explore how specific factors of the SEW model influence different aspects of Aaker's brand equity model in different industries. It would also be useful to examine how family businesses in different cultural and geographic contexts use the interplay between the two

models to achieve success. This research could provide new insights and practical recommendations for family businesses around the world.

In conclusion, based on this research, it can be confirmed that linking Aaker's brand equity model and SEW model is an effective tool for family business development. The combination of a strong brand and the preservation of family values can give family businesses a competitive advantage and promote their long-term success. This article provides new insights and practical implications that can help family businesses to better develop and grow.

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REDEFINING HEALTHCARE DELIVERY IN THE DIGITAL AGE

David Šimek

Abstract

The study comparing traditional in-person examinations to digital remote examinations for pregnant women revealed that digital examinations can effectively provide quality care while reducing time and costs. These findings hold significant implications for the future of healthcare, demonstrating the potential of digital technologies to enhance efficiency and accessibility of care. The study evaluated women's satisfaction with receiving prenatal care from the convenience of their homes.

Keywords: Time-saving, Patient, Effectiveness, Cost-benefits, Pregnancy, Electronic health care, Digitalization Efficiency, Healthcare, Maternity, Care, Information Technology, Digital, Covid-19, Time, Cost

1 INTRODUCTION

The positive effects of global health care digitalization have been recognized by many countries worldwide, as can be read from the quoted text below in the literature review. According to the comments from some members of the Czech statistical office, the digitalization of health care is a logical consequence of the penetration of information technology into most fields of human activity, and medical informatics is meeting this irreversible trend. The introduction of these technologies in health care can improve the quality of care, reduce the cost of treatment and support independent living, even in remote locations. A prerequisite for success is guaranteeing the individual's right to securely store personal health information in a healthcare system that is accessible online.

In 2020, the COVID-19 pandemic emerged on a global scale, resulting in huge expenditures by national governments and, in a way, testing the readiness of hospitals, but the spending intended for computerisation was not always used effectively during this time. After the COVID-19 trial, there is a much greater willingness of health service organisations to computerise healthcare, as can be inferred from the post-covid discussions of leading czech physicians.

If home telemonitoring allows high-risk pregnant women to remain at home, significant budgetary savings are likely.(Buysse et al., 2008) The main motivation of this article is to clarify whether home telemonitoring can save time and space in the case of non-risk patients which can afterwards help to define the possible effective use of these savings for the organisation, for example in the case of high-risk patients.

I expect that by computerizing selected antenatal care, there will be significant time savings not only on the side of doctors and nurses, but also on the side of patients. This streamlining can translate into positive benefits not only for both of these parties, but also for other providers of the same services. This article is not primarily concerned with time savings on the part of patients, as the time used by a given patient to travel to a medical facility may vary considerably depending on the type of transport, the distance from the medical facility, and perhaps also the physiological preferences of the patient herself. The time that a patient can save by waiting in the waiting room for an examination can also be highly variable, and so only a questionnaire method is included in this paper to investigate patient satisfaction with a given form of online examination provision, as described in the research design section.

This study is one of the first attempts to compile possible time and space savings of health care providing organization in relation to their digitalization using the case of one of the largest providers of antenatal services in the Czech Republic.

The paper is organized as follows. In Section 1, I provide a basic introduction to the setting, state and describe my motivation, and develop my hypotheses. In Section 2, I introduce the reader to a literature search on the computerization of healthcare around the world and its benefits. In Section 3, I discuss the design of my research and the methodology used, specifying the data sources, sampling method, and other statistics. In Section 4, I present the findings of the empirical investigation and conclude with a summary in Section 5.

2   LITERATURE REVIEW

This section reviews relevant up-to-date research in the field of distance care of pregnant patients and it´s digitalization progress in the countries around the world. This literature review concludes approaches and effects of telemonitoring costs and benefits both in modern countries and undeveloped countries and brings possible paths for small countries like Czech Republic in health care digitalization.

The use of telehealth in obstetrics and gynaecology has become increasingly important with the increased use of mobile apps and the move towards online audiovisual communication between doctors and patients. Already in 2014, there were almost 2000 obstetric apps (Farag et al., 2014), and in 2015, the IMS Institute for healthcare informatics found that apps for pregnant or gynaecological patients accounted for 7% of total health apps. Specific examples in the care of pregnant patients (DeNicola et al., 2020) are virtual consultations with specialists, remote monitoring of ultrasound records, bladder diary records, postnatal blood pressure monitoring, provision of abortive medication through an online environment or fertility mapping.

Summary of the benefits of telemedicine telecare - evidence from studies

Findings from a systematic review (DeNicola et al., 2020) suggest that the use of telephone text communication could help to reinforce the maintenance of healthy habits during pre- and postnatal care, such as non-smoking, breastfeeding and adherence to contraception. In the high-risk pregnancy group, it was found that in-person data entry and transmission via remote monitoring led to a reduction in patients scheduling outpatient appointments for gestational diabetes or hypertension. Telemedicine also allowed early access to medication in the event of a decision to terminate the pregnancy. The safety and efficiency of health services has equalled that of in-person care.

Another systematic review (Heuvel et al., 2018) on eHealth technologies in perinatal care from PubMed and EMBASE databases provided studies that were divided into multiple domains: eHealth information and use, lifestyle (pregnancy weight gain, exercise and smoking cessation), gestational diabetes, mental health, low- and middle-income countries, and telemonitoring and teleconsultation.

The 2016 review (Heminger et al., 2016) summarises studies conducted on SMS programmes and mobile apps for smoking cessation in pregnancy. Women participating in SMS programmes reported relatively high abstinence rates - 38% in the first week and 54% in the second week. Biochemically confirmed abstinence rates were 12.5% for participants, compared to 7.8% for controls.

Another demonstration project, MiBebe (Tapia-Conyer et al., 2015) describes the possibility of a wireless maternal and fetal monitoring system being used to improve perinatal care in rural areas in Mexico. In a group of 153 high-risk pregnancies, remote monitoring resulted in

significantly increased adherence to antenatal visits in 74 patients, with no adverse health outcomes, compared with in-person care. A pilot study of Marko et al. (2019) described an alternative prenatal care plan involving an integrated technology platform (mobile app, wireless scale, and blood pressure cuff) that resulted in a 43% reduction in outpatient visits (8 versus 14 visits). Remote monitoring and consultation can potentially reduce the number of outpatient visits, whether for antenatal consultation or hospitalization for clinical reasons (gestational diabetes, fetal growth restriction). (Kerner et al., 2004) A cost-effectiveness analysis model at a teaching hospital (Ghent, Belgium) predicted a cost reduction of 145 822 euros per year achieved by introducing home monitoring for high-risk pregnancies.(Buysse et al., 2008)

Digitalization in Czech health care organizations

According to the analysis of information technologies in the health care system in the Czech Republic published on 15 December 2021 by the Czech Statistical Office, although the majority of doctors have a computer in their offices, only 10% of them use the possibility of keeping medical records in fully electronic form. Almost three quarters of doctors (69%) still prefer to use a computer combined with "traditional" paper-based documentation. The situation is paradoxical in the case of dentists; on the one hand, they are still the most likely of all physicians to keep documentation only in paper form (26%), but they are also the most likely to keep documentation entirely electronically (17%). According to this analysis, gynaecologists use selected functions of their medical e-systems for prescription of medicines 82% of the time, for laboratory results 64% of the time and for drug interactions 42% of the time.

In 2020, according to a survey by the Institute of Health Information and Statistics, only 17% of all practices offered online consultations with a doctor or healthcare facility via their website, but this is 10 percentage points more than in 2010. On-line consultations were mostly offered by gynaecologists (32%).

Factors impacting the application of digitalization in antenatal care

Limiting factors such as lack of access to medical care, lack of health facilities and poverty can cause delayed recognition of warning signs during pregnancy.("Maternal mortality," n.d.) A study of women in Tanzania (Masoi and Kibusi, 2019) showed a significant increase in knowledge of warning signs during pregnancy in mothers (vaginal bleeding, fever, swelling, discharge) or in newborns (blue baby, reluctance to suck, increased or decreased temperature) among women who received intervention through remote contact with physicians. Outcome was linked to higher socioeconomic status and mobile phone ownership.

Another study from a slum area in India (Murthy et al., 2020) showed that a long-term intervention in the form of voice messages increased mothers' knowledge and action in the health sector - mothers were more likely to accept the tetanus vaccine, and contacted their doctors immediately when vaginal bleeding occurred.

It turns out that the method of distance interventions through voice/text/video messages with practical information about risks in pregnancy and consequently in newborns helps patients in agricultural, slum and urban areas. The intervention subsequently has an impact on mothers' compliance to visit health facilities for postnatal care.(Chowdhury et al., 2019)

Following the adoption of the COVID-19 model, the study of Peahl et al. (2021) realized in selected US hospitals shows that the weekly volume of prenatal care visits at the institutional level decreased by 31.6%, from 1,051 visits in the week of December 16, 2020 to 719 visits in the week of June 28, 2020. During this time, the number of virtual visits also increased from 101 to 239 (136.6%). Overall, many patients and almost all providers reported that the COVID-19 model of prenatal care improved access to prenatal care (68.8% of patients, and 96.1% of providers).

In text responses, patients and providers reported positive experiences with accessibility; virtual visits removed traditional barriers to accessing care, such as employment, child care, travel time, and clinic inefficiencies. Negatives included barriers to providing care to groups with lower socioeconomic status - the ability to afford home devices and access to reliable smart devices and the internet were seen as important barriers to equity.

Although there are a number of potential uses for telemedicine in obstetrics, the uptake of these technologies is minimal. Limiting factors include high upfront costs, limited Internet access in rural areas, and inconsistent reimbursement requirements across state Medicaid programs and commercial insurance plans. While some medical practices provide home monitoring devices to patients free of charge, others require patients to purchase the device, which presents a barrier for low-income patients (this may include purchasing a scale, blood pressure cuff, fetal Doppler monitor, and glucometer, as well as access to a smartphone or computer with reliable internet).

3 RESEARCH DESIGN

In this research, a data envelopment analysis will be applicated. It enables to determine the effectiveness ratio for patients who received a physical exam and patients who used the digital remote exam option. The analysis is based on data measuring inputs and outputs over the 3 months of 2023. The sample includes women undergoing screening in the last month of a risk-free pregnancy. The actual data collection was based on the measurement of the time taken to physically check the patient, where a hospital staff member has to go through the necessary stages of the checking process with the patient step by step. This checking time was monitored, averaged and supervised, based on a set methodology. The data of individual workers or patients is very sensitive as it relates to medical care and needs to be anonymised as much as possible. I understand, however, that despite efforts at transparency, this may be the limiting factor of this article.

In the second phase, women in the last stage of pregnancy were given the option of having physical examinations instead of commuting to the hospital online from their safe environment. Thus, by measuring the time taken to complete each stage of the check-up, the data collection from the app can be compared to the time taken to complete the physical check-up. It should be added that the woman must agree to the process in writing. The data from the online screening of women who consented to this type of screening was collected over a period of 3 months in 2023 and it must be said that the small sample size may also limit this research, however, the satisfaction of women with the screening alternative clearly indicates that it is a more efficient method not only for healthcare providers but also for the patients themselves.

The aim of this analysis is to determine whether the efficiency of checking in patients will be increased - saving time for the hospital and therefore the examining physician and increasing the space for checking in, for example, at-risk patients or more non-at-risk patients. The resulting time will be recalculated using a cost-effectiveness analysis on the real wage costs of the attending physicians. It allows to confirm or refute the hypothesis that the introduction of the digital application benefits the selected entity and, if so, quantify how much. The indicative calculation of labour cost savings suggests a possible scope. It should be said that the wage costs of staff at individual maternity hospitals can vary significantly, and so this costing is only a supplement to that article.

In order to confirm or refute the hypothesis whether the overall satisfaction of patients who use online forms of examination is higher or lower than that of patients who physically attend the health facility, the questionnaire survey was realized. Patients who undergo online examinations and those who undergo physical examinations same questionnaires were addressed by the questionnaire.

The questionnaire survey contains 21 questions divided into 4 groups of topics - availability, accessibility, information sharing and sufficient time - which were designed to address patients' overall satisfaction with the form of antenatal care provided. A total of 15 patients who had undergone a remote form of examination were selected and completed the questionnaire online in the weeks following delivery, answering each question on a scale of 1 to 10 (disagree to agree). A total of 15 patients who had undergone a standard physical examination in the antenatal clinic were selected as a control sample. The total collection and evaluation of the questionnaires took approximately 6 months.

The questions were analyzed using simple statistical tools such as min, max, median, average and modus.

Table 1 below shows the number of non-risk patients in the selected three months in 2023, who were admitted by the maternity hospital for antenatal care. The table below shows the total number of non-risk patients, the proportion who used the online form of examination during the period and also the total number of examinations in the month. Prenatal care includes a total of four physical examinations during the last month before birth. The table also shows how many checks were performed in each month.

Tab. 1 – The number of patients and exams. Source: own research

	Month 1	Month 2	Month 3
Number of non-risk patients	481	426	508
Number of patients not using online services	450	382	452
Number of patients using online services (sample)	31	44	56
Number of exams in the last month of pregnancy	1924	1704	2032

During the months of follow-up, a sample of an average of 10% of non-risk patients was selected from each population to be offered an online service option to improve the efficiency of the services provided by the maternity unit.

When consent is given, the patient is provided with instructions to successfully complete an online questionnaire where the patient enters the results from the home visit. This check includes a bladder status check, blood pressure check, weight measurement, and determination of current physical condition. The patient enters this information into an app that she downloads to her PC or mobile phone, for which she receives login details, on a pre-arranged exact date that the app notifies the patient of. The results are available to the investigating staff immediately after dispatch in a clearly interpretable form. The patient is given a precise time when to complete the online check and is clearly told what to do step by step. The application is fully intuitive and simple to use.

4   RESULTS AND DISCUSSION

If we go by the information from the maternity clinic, where the examining physician can manage an average of 3 physical examinations within 1 hour, this means that the average time for one examination is 20 minutes. Thus, with an 8-hour working time, a doctor would manage 480 examinations in one month (calculated over 20 working days), which corresponds to 9,600 minutes and therefore a normal working time of 160 hours. The number of inspections carried out in each month shows that at least 4 people with 160 hours of work per month must carry out the inspections. Full use of working time in 2023 is idealistic, so the results should be viewed with a reserve of between 10 % and 20 % of the total time savings. This reserve stems from discussion with experts who are themselves in leadership roles in organisations involved

in the provision of obstetric care and have themselves provided or researched the care reported in this article.

From the observed sample of patients - 31 in month 1, 44 in month 2 and 56 in month 3 - it was found that the average time taken to explain the online form of medication and to provide consent increased by 5 minutes per patient. This makes the introduction of online care inefficient for the first check, which must always be physical. Therefore, if the examining physician performs the same number of examinations during a month, i.e. 480, the time will increase to 12,000 minutes and therefore 200 hours of working time.

The results from an online examination performed by a patient who enters the results into the app and the examining physician then analyses and interprets them are more positive. The average time for a physician to enter input data into the app and then analyse the output data entered is reduced to 15 minutes in the online check form. This is the second check out of four scheduled. If the examination is performed on-line in the second week, the time of the examining doctor is then reduced by the time he had to spend in the first check to explain the on-line collaboration with the patient, and therefore there is no increase in efficiency on the part of the obstetrician after the second check.

The table 2 below shows the total time required for the online examination in minutes, the number of monthly examinations, the recalculated time required for each examination, the time savings/allowance after each examination also converted into hours and days, the average monthly salary of the examining physician, and the estimated cost savings per month. It shows the pessimistic scenario that, when the third examination is performed by the patient on-line from the home environment in the penultimate week of pregnancy, the time taken by the examining physician to interpret the data and compare it with the data from the second examination is the same as after the second examination, i.e. 15 minutes per patient. After the third examination, the space of the maternity ward is increased by a total saving of 2,400 minutes, i.e. 40 working hours per examining physician.

Tab. 2 – The total time required for the online examination, number of exams and wage. Source: own research

Time in minutes of the 1st on-line exam	12000
Number of exams per month	480
Time per first exam in minutes	25
Time in minutes of the 2nd on-line exam	9600
Number of exams per month	640
Time per second exam in minutes	15
Increase of minutes after first exam per month in minutes	2400
Decrease of minutes after second exam per month in minutes	2400
Increased time frame after third exam per month in minutes	2400
In hours	40
In days	5
Average wage per examiner per month	60000
Estimated savings per examiner per month	10000

If the factor that the examining physician already knows how to use the application, knows his/her patient and the results do not go beyond the reference limits is taken into account, the estimate of time saved is between 10 and 15 minutes per patient, which still significantly increases the space of the obstetric unit compared to the pessimistic option presented here.

As a direct result of the time savings, the average salary saving of the examining physician is taken as the average salary saving for a 40-hour week, and the monthly savings to the organization could create a space of 2 months' salary in one year, or 1/6 of the salary savings per month, using home monitoring of patients in this pessimistic option.

The table below provides a measure of the time in physical examination and on-line examination taken for the individual examinations of patients in the last 3 weeks before the final week of their pregnancy and the difference between these types of examinations. The table also includes the time re-calculated by all exams during the month and re-calculated number of necessary full time workers per month. Finally the table includes time effectivity normalization calculation.

Tab. 3 – Measure of the time in physical and on-line examination. Source: own research

	Physical examination	On-line examination	Difference
Time of the 1st exam in minutes	20	25	-5
Time of the 2nd exam in minutes	20	15	5
Time of the 3rd exam in minutes	20	15	5
Total time per 3 exams in minutes	60	55	5
Time per all exams in a month in minutes	28800	26400	2400
Time per all exams in a month in hours	480	440	40
Number of necessarry full time workers per month	3	2,75	
Time effectivity normalization (1)	0,050000	0,054546	

If we consider time as an output, this time is 9,600 minutes per month for standard face-to-face prenatal health care, because check-ups 1, 2 and 3 take 20 minutes each and one doctor performs 480 check-ups per month and these check-ups are performed by 3 doctors; for check-ups after the introduction of distance check-ups 2 and 3, this time is 2,400 minutes less, the so-called saved time. As an input we use the number of checks, which in our case will be constant at 480/month/1 doctor and the checks are carried out by 3 doctors. The result is the already mentioned time efficiency of 5 minutes per examining physician and one check performed after the introduction of distance checking No.2 and No.3. Normalizing the efficiency, we obtain a coefficient of 0.054546 (1/18,333) for 18 minutes and 20 seconds after the introduction of the distance form of care and a coefficient of 0.05 (1/20 minutes) for 20 minutes. With a numerator of 0.05 and a denominator of 0.054546, we get a result of 91.6%, which tells us that the "standard model of prenatal checks" method is only 91.6% effective. This means that it would have to reduce its inputs to 91.6% of the original inputs to be efficient.

In the given model used to analyse the data envelope and its application in evaluating the efficiency of gynaecological services provided, we consider only one input and one output. Thus, the efficiency is determined by the relationship 1.

If we consider averages in this model, the health care provider saves one-sixth of the labour costs of one examining physician in one month. Thus, in one year, the savings in wage costs are equivalent to two months of the average examining physician's wage with four full-time examining physicians.

Table 4 and table 5 presents the results of the questionnaire survey comparing the selected sample and the control sample for all 21 questions measuring satisfaction (where a value of 10 indicates the highest level of satisfaction and a value of 1 the lowest level of satisfaction) with the form of antenatal care, which are separated into the 4 blocks mentioned above in the research design section. The table 4 contains the minimum and maximum values measured for the questions on a scale of 1 to 10, the median, mean and mode for the main sample and an equal number of control sample by individual rows defined for each question falling under 4 mentioned cathegories. Table 5 provides an analysis of the difference between the online main sample and the control sample for all questions included in the 4 selected categories.

Tab. 4 – Results of the questionnaire survey. Source: own research

Sample MIN	Control sample MIN	Sample MAX	Control sample MAX	Sample Median	Control sample Median	Sample Average	Control sample Average	Sample Modus	Control sample Modus	4 Blocks
8	6	10	10	10	10	9,6667	8,6667	10	10	Information sharing
8	8	10	10	10	9	9,8667	9,2667	10	9	
9	7	10	10	10	10	9,9333	9,4000	10	10	
8	7	10	10	10	9	9,8000	8,7333	10	10	
8	8	10	10	10	9	9,8667	9,3333	10	10	
9	8	10	10	10	10	9,9333	9,2000	10	10	
7	8	10	10	10	9	9,8000	9,0000	10	8	
7	8	10	10	10	10	9,7333	9,4667	10	10	
8	8	10	10	10	10	9,8667	9,5333	10	10	
1	2	10	10	10	6	8,7333	6,8000	10	5	Sufficient time
1	1	10	9	1	3	2,8667	4,2000	1	3	
8	7	10	10	10	9	9,8000	8,6000	10	10	
1	7	10	10	10	7	9,3333	8,4000	10	7	
1	1	5	8	1	1	1,2667	2,2000	1	1	Accessibility
1	1	8	8	1	3	1,4667	3,4000	1	1	
1	1	6	7	1	1	1,3333	1,8667	1	1	
1	1	10	4	1	1	1,7333	1,8000	1	1	
1	5	10	10	10	10	8,6667	8,6667	10	10	Availability
1	5	10	10	10	10	9,4000	8,8667	10	10	
1	6	10	10	10	7	9,0000	8,0000	10	7	
2	5	10	10	10	8	9,2667	8,2667	10	10	
2	5	10	10	10	9	9,2667	8,1333	10	10	

Difference online / present					4 Blocks
MIN	MAX	Median	Average	Modus	
2	0	0	1,0000	0	Information sharing
0	0	1	0,6000	1	
2	0	0	0,5333	0	
1	0	1	1,0667	0	
0	0	1	0,5333	0	
1	0	0	0,7333	0	
-1	0	1	0,8000	2	
-1	0	0	0,2667	0	
0	0	0	0,3333	0	
-1	0	4	1,9333	5	Sufficient time
0	1	-2	-1,3333	-2	
1	0	1	1,2000	0	
-6	0	3	0,9333	3	
0	-3	0	-0,9333	0	Accessibility
0	0	-2	-1,9333	0	
0	-1	0	-0,5333	0	
0	6	0	-0,0667	0	
-4	0	0	0,0000	0	Availability
-4	0	0	0,5333	0	
-5	0	3	1,0000	3	
-3	0	2	1,0000	0	
-3	0	1	1,1333	0	

I consider the median to be the most conclusive indicator. For two questions, the difference between the sample and the control sample comes out to 1.93, which I consider a significant difference. The first question with this difference is included in the "Sufficient time" section and is "I had as much time as I needed with my prenatal care provider." and the second is contained in the "Accessibility" section and reads "I was rushed during my prenatal care visits"

The findings suggest that the first difference may indicate patient satisfaction in knowing that when they are online, there is a "constant connection" between them and the provider as opposed to the physical form where the patient is limited by the doctor's time in the hospital. The second question directed at availability is very much related to the first one, since with the online form of the examination the doctor has the possibility to react immediately and at any time to the inputs received.

In the accessibility section, it was confirmed in all but one of the samples that the patients examined online did not experience any rush from the medical staff. Patients were also not afraid to ask the care providers any questions during the online method. This concern is perceived more during the physical examination. However, in the sufficient time section, the sample of patients examined online confirmed that the healthcare provider always had time to answer their potential questions and space to listen to them.

In terms of information sharing, in all questions asked, the online examined patients expressed a higher level of satisfaction than the control sample. For example, the question expressing the largest difference for the mean is asking how patients perceive the sufficiency of the examination in a given form, as well as the question asking if the patient was given sufficient information about prenatal tests and procedures.

The result for the question in the availability section asking if the patient could contact her doctor if needed is also interesting - the higher rating comes from the online method. The on-line form of communication has the advantage that the patient can communicate with the doctor

in real time. If the control sample did not use the app, connecting with the doctor could be perceived as less accessible and more difficult.

5 CONCLUSION

The study's findings have implications for the future of healthcare, as they suggest that digital technologies can be used to improve the quality and efficiency of care.

The findings of this study suggest that digital remote exams could be a more efficient and effective way to provide prenatal care.

In terms of reflecting on the theoretical and practical contributions of this thesis, I would like to state that the study contributes to the debate on whether the digitisation of healthcare should be increased and what aspects of this digitisation can accompany it in a specific healthcare sector. It can certainly support the decision-making of doctors, managers and others on what to promote in this segment and what direction to take in the use of resources. In practical terms, it shows what scope healthcare professionals can use to focus on more complicated cases, for example.

In this way, the patient's own activity is transferred to the patient, who can undergo the examination in the comfort of her own home, without having to waste time and spend the psychological burden of commuting to the maternity hospital, where she often spends a long time waiting for the examining doctor in the waiting room and then undergo the examination in an unnatural environment. Another great benefit is that the examining doctor has the entered results clearly processed in the app and can decide on the subsequent procedure immediately. Thus, it can be concluded that the online method is efficient as it consumes fewer inputs. I perceive the contribution of this paper to be particularly enhanced at a time when the population per physician in the Czech Republic is above 200 and the provision of health services is poorly available.

The major limitations of the research might be seen in a small sample of pregnant women or in an anonymisation of information provided but the topic includes very sensitive work with data collecting.

Another limitation for the evaluation of the survey was also related to the data collection. As the data is about people and is from a health setting, the data coming from the surveys had to be fully anonymised, which took extra time for its collection. Another limitation is the fact that some questionnaires were not submitted or even though they are built very user-friendly, they were submitted incomplete and therefore could not be included in the evaluation of the survey and its results.

This study undoubtedly has limitations, such as the number of samples, but these limitations may be overcome in follow-up research. Another limitation may be the perceived applicability of the research results, as it is because of the small sample size that the results cannot be related to different population sizes through direct proportionality.

It should also be noted that the cost and time aspects may vary between different obstetric care providers.

I also perceive that this study could be much broader in scope and could include more sophisticated methods included in the questionnaire survey, where the cost side of patients could be analysed, aiming for example at the average cost of travelling to the maternity hospital, or even a costed recalculation of the time wasted for travelling and waiting in the waiting room.

All these limitations, however, reinforce the desire to continue the research.

The results of the questionnaire survey contributed to the study as a very good indication that women undergoing the online form of examination are not less satisfied with this hybrid type of examination. As the author of this article, I am aware that the sample of this study is not comprehensive, but I will try to follow up on this research.

Combined with the cost side of providing antenatal care, the results of the survey are a great sign that hospital owners and similar providers of these services will be well on their way if they try to digitise at least some of the services they provide, even where this may seem impossible at first glance.

This article is intended to serve as one of the initial insights into the economization of health care in the Czech Republic and the associated impact of digitalization, and I expect that I will continue to monitor the developments and that new articles will follow in the later period, which will expand, deepen and analyse the topic in more detail, including in collaboration across universities and individuals.

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