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Ayibami Paul ABOLADE – Abdulazeez Alhai SALAU – Kowo Solomon AKPOVIRORO

Abstract
The success of most businesses largely depends on owner's characteristics. This study examined entrepreneurial characteristics using risk-taking and proactiveness as a variable that explain performance. Schumpeter innovation theory was adopted as the study theoretical underpinning. The study adopted a qualitative method; non-probability sampling was adopted for the sampling technique using purposive sampling in selecting the six (6) clusters of rice farmer's in Kwara state as the study observation. Interview question was analyzed using thematic explanations through Nvivo 11. Findings from the study revealed that risk-taking, proactiveness has a strong influence on performance. Also insecurity and high rate of imported rice has contributed to the poor performance of rice farmers. The study recommends that rice farmers should be supported by the government most especially in tackling insecurity as this will enable farmers to be proactive and afford them the opportunity to be risk-takers.

Keywords: Entrepreneurship, Entrepreneurial characteristics, Performance

Jel classification: M0

1 Introduction

The business world has seen both successful and unsuccessful entrepreneurs emerge over the years. As a result, it has been determined that an entrepreneur's success is mostly determined by his personal traits. Being an entrepreneur is not an easy job, and success is not always guaranteed. For entrepreneurs to have some degree of success, a number of essential conditions must exist.

Small and medium-sized businesses have entrepreneurial traits and are crucial to the industrialization and economic progress of both developing and industrialized nations. Business groups also increase job opportunities, improve regional economic balance through industry dispersion, and generally support efficient resource usage, all of which are important for engineering economic development and growth. Agriculture has been one of the main streams of revenue for Nigeria aside crude oil, however, the sharp decline experienced in crude oil has led to economic hardship on citizens (Economic Recovery Growth, 2017).

The economic hardship one way or the other served as a wake-up call for individual and citizens. Most entrepreneurship spirit has been awakened as a result of low productivity, un-employment, and other economic distress.

Entrepreneurs' traits or characteristics is one among the major determinants of business performance, these traits have an influence over the business chance of survival and sustainability (Wickham, 2005)

Foremost of the entrepreneurial characteristics are the entrepreneur's demographic factors such as educational background, age and experiences which enhances the entrepreneurial competencies in management of successful business or ventures. The aforementioned traits have been the major focus of most writers of academic literature, however, this study approach entrepreneurial characteristics by exploring other variables such as risk-taking and proactiveness.

The basis for this is that the 65% of Nigeria population are youths between the age of 18-35, a reasonable percentage of these youths are University or Polytechnic while some are below (National Bureau of Statistics, 2021). Using this as a yardstick this study seeks to investigate the significance of risk-taking and proactiveness on rice farmer's performance, this owing to the fact that rice is one among the most consumed products in Nigeria. Therefore, what effect risk-taking and proactivity has on rice farmer's performance becomes a subject of debate for this study. However, this study was able to identify a gap in scope and methodology as most of the previous literatures has focused more on sectors like manufacturing, services among others and not agricultural sector. Also previous researchers adopted a quantitative study while this study adopted a qualitative approach.

2 Concept of entrepreneurship

Depending on the perspective, there are several points of view on the idea of entrepreneurship or entrepreneurs. Some of these viewpoints have their own legitimacy since they are based on linguistic factors, while others are legitimate because they are based on human traits or organizational factors (Adedayo, Salau, Abdulraheem, & Zekeri, 2020). The phrases entre, which translate to "between," and "prendre," which means "to take," are the linguistic roots of the term "entrepreneur." The phrase was used to describe someone who "undertake the risk" of serving as a middleman between dealers or initiating a new business (Barringer & Ireland, 2016).

According to the personal characteristics approach, being entrepreneurial is a quality or trait of a specific person who has the capacity to assume some or all of the risk. The psychological perception of people in various jobs and places is where this idea first emerged (Hussain, 2013; Kowo,2019). Identifying and defining the behavior pattern that separates one person from another in a spatial and temporal context and signals the sort of response to a specific event that may be highly essential is an important aspect of this interpretation. The third strategy adopts the stance that the organizational aspect of the firm influences entrepreneurship.

Certainty, trust, creativity, the need to protect against failure, and the need to lessen environmental ambiguity and diversity all serve as parameters or components of crucial success factors related to the execution of a specific strategy when the economic interpretation of entrepreneurship is taken into account. Given the aforementioned and notwithstanding the variations in definitions of entrepreneurship, there are several definitions that may be widely acknowledged (Al-Najjar & Al-Ali, 2006). Examining the position of Barringer and Ireland (2016), Hussain (2013), Al-Najjar and Al-Ali (2006) This study agrees that the process of developing something new and valuable through labour, investment of money, allocation of time, and tolerance for risk is referred to as entrepreneurship.

Hatten (2016) offers one of the more recent definitions of entrepreneurship that has gained widespread acceptance among academics and researchers, stating that "Entrepreneurship is the process of identifying opportunities for which marketable needs exist and assuming the risk of creating an organization to satisfy them." Entrepreneurship, according to Barringer & Ireland (2016), is the process through which people seize chances regardless of the resources they already possess, while bearing both the risk and the profit for their efforts. Longenecker (2017) described an entrepreneur as "the individual who relentlessly pursues an opportunity, in either a new or an existing firm, to produce value. The researchers summarize the procedural definition of entrepreneurship, in-line with the view of Al Nashmi, (2017) as a set of personal qualities that enable a person to seize opportunities and take risks in order to create successful projects that produce wealth, based on this and the context of the current study. It's difficult to launch a successful business because most decisions about how to build and run a company are personal choices that the entrepreneur makes by themselves.

Entrepreneurship is the link between practical resource usage and competence. Since entrepreneurial competencies are all that is communicated through entrepreneurship education curriculum (Gibson 2011). Young (1997) said that entrepreneurial education uses active learning to put entrepreneurial skills to use in real-world situations. Entrepreneurship, according to Audretsch (2007), is about change and the process of change, and entrepreneurs are change agents. This perspective is backed up by OECD (2000), which views entrepreneurs as agents of growth and change in a market economy and asserts that they work to hasten the creation, diffusion, and implementation of novel ideas.

Like Drucker's perspective, Raimi and Towobola (2011) cited Hill and McGowan's opinion from 1999, according to which entrepreneurship is viewed as a process that involves an individual's or an individual's effort in locating feasible business prospects in a given context. Entrepreneurship, according to Aina and Salako (2008), is the willingness and ability of a person to look for investment opportunities and make use of limited resources to profitably exploit those opportunities.

Emmanuel et al. (2012) defined entrepreneurship as the process of creating something new with values and replacing the old way of doing things with new ways, by devoting the necessary time and effort, assuming the accompanying financial, psychological, and social risks, and reaping the benefits of financial and personal satisfaction and independence in contrast to Drucker's perception of entrepreneurship. Similar to this, Spinelli, Ferreira and Garcia (2004) saw entrepreneurship as the result of being imaginative and receptive to one's surroundings. Entrepreneurship, he noted, is a disruptive force that initiates the "creative destruction" process, which is the core of economic development. Entrepreneurship was described by Ogundele (2005) as the processes of an entrepreneur's emergence, behavior, and performance. He continued by saying that a focus on entrepreneurship is a focus on the steps used to start a new organization, how that organization behaves, and how well it performs in terms of profits generated. Therefore, for the purpose of this study, entrepreneurship is defined as the process of re-creating an existing idea which offers social and economic benefit through value addition.

2.1 Entrepreneurial Characteristics

According to Li and Jia (2015), although the term "entrepreneurship" is becoming more and more common, not all entrepreneurs are successful in their ventures. To succeed, they require a certain set of qualities. Numerous studies on entrepreneur traits have yielded conflicting conclusions on their influence on small businesses (Bouazza, 2015). One among entrepreneurial characteristic is the leadership ability of an entrepreneur to drive and develop his business to success even in face of challenges that affects business, (Abolade, Adebola & Lawal, 2022). Entrepreneurial characteristics are the personality traits and talents that make an entrepreneur competent and necessary for business success. As will be seen in the next subsections, the researcher in this study will draw on the key traits of entrepreneurs that have been employed by several researchers (Salau, 2019; Kowo, 2021). Three models were identified by Kaufmann and Dant (2015) when studying entrepreneurship. Trait, process, and activity models are included.

The trait model is a significant addition to the literature on entrepreneurship. Numerous studies have been done to examine the personalities of entrepreneurs. For instance, locus of control, self-confidence, the urge for achievement, risk-taking, and independence are considered to be drivers of entrepreneurship in the study by Sultan (2016). On the other hand, in Holienka's (2015) study, locus of control, the urge for achievement, risk-taking, independence, and innovativeness were employed as indicators of students' entrepreneurial traits. More than 18 personality traits and qualities related with entrepreneurs are listed by other authors. Although no one is "born" to be an entrepreneur, successful ones share certain traits and qualities (Barringer & Ireland, 2016). They include other traits like persuasiveness, self-assurance, initiative, tenacity, and vision, saying that

these traits emerge from a person's social environment and are developed through time (Alhaji, & Ismaila, 2019; Kowo, 2019).

The last presentation made it abundantly evident that the entrepreneur's personality and behavioral habits will contribute to the success of both his project and himself. According to the presentation, there is no comprehensive list of entrepreneurial traits that can be utilized to assess a person's personality and ascertain whether or not they possess these traits. It is challenging to provide a complete and precise picture of the traits and behavior of entrepreneurs because the findings of numerous researches reveal various and distinct features of the entrepreneurs. It is still up to the entrepreneur to identify the traits and actions that set him or her apart from others. Other new features may be produced based on fresh study in this field, in addition to the current traits and practices that the researchers have concentrated on (Al-Sheikh, Melham, & Al-Cakelike, 2009). The various traits of an entrepreneur include.

2.1.1 Risk-Taking

The primary characteristic of an entrepreneur has always been taking risks, and early entrepreneurship literature reflects this. The main factor that distinguishes business owners from employees is the risk and unpredictability involved in self-employment (Cantillon, 2008). While Lumpkin and Dess (2004) contend that when the risk's outcome cannot be known right away, corporations take measured risks to pursue business possibilities. The propensity of an entrepreneurial organization to invest resources in a venture or project when the outcome may be highly unclear or unknown is described as a risk-taking mindset by (Emmanuel, & Abolade, 2022).

According to Lumpkin and Dess (2006), businesses invest significant sums of money in projects with the goal of taking advantage of environmental opportunities and generating higher returns. A non-entrepreneurial company imitates competitors, innovates relatively little, and is very risk-averse (Miller, 2007). Positive risk-taking frequently results in business success. This explains why risk-taking businesses grasp market opportunities, generate greater returns on investments, and strike profitable marketing partnerships (Lumpkin &Dess, 2008). According to entrepreneurship experts, businesses with a stronger risk-taking performance relationship are drawn to investing in successful ventures only for performance reasons (Miller, 2009). A successful entrepreneur must be more than just self-employed; they must also be strategic and willing to take risks in all areas of their firm. Miller, (2008) and Lumpkin and Dess (2006) contend that opportunity capitalization, resource commitment, calculative expectation of rewards, and uncertainty are all components of risk-taking. Three different sorts of risk-taking are suggested by Baird and Thomas (2005) for entrepreneurial organizations: The first is the danger of taking out a large debt to finance a project. Heavy borrowing by businesses puts them under a lot of financial strain, which lowers their performance and profitability. A borrower's equity in the endeavor

may be diminished as a result of excessive borrowing that cannot be repaid, managerial changes made by the lender, a change in the organization's structure, the layoff of personnel, or other preferable alternatives. However, large companies and/or corporate institutions are frequently linked to this kind of risk. The danger connected with putting an excessive amount of resources into a specific project or venture is the second form of risk-taking. This kind of risk affects both corporate and small business operators. If the desired outcome is not achieved, a company may begin with limited resources for a particular project and add more resources as the project progresses. When resources are committed continuously, risk is increased, (Kuratko & Hodgetts, 2004)

The authors' final classification is the danger of forging ahead into the unknown. This is typical of businesses that invest money in research with the expectation that it would produce favorable results; if the outcome is the opposite, the investment is lost. This kind of risk-taking is common in the development of new products, the prospecting for crude oil, and technological and operational procedures, especially when market size is not taken into account before making the change.

2.1.2 Pro-activeness

The term "pro-activeness" describes the process of anticipating and responding to future needs by "seeking new opportunities that may or may not be related to the present lines of operations, introducing new products and brands ahead of the competition, and strategically eliminating operations that are in the mature or declining stages of life cycle" (Venkatraman, 2008). Being proactive entails spotting and assessing fresh prospects and keeping an eye on marketing trends (Kropp. et al., 2008). In other words, being proactive in business is taking action in advance of problems, needs, or change. In order to increase a firm's performance throughout its early stages of development, initiative is even more important (Coulthard, 2007; Hughes & Morgan, 2007). Proactive businesses recognize and act upon market signals (Hughes & Morgan, 2007). A proactive business seeks for opportunities, is forward-thinking and eager to launch new goods and services before rivals (Rauch. et al., 2009).

A business with strong proactive inclinations is more likely to be able to develop a new market niche, provide new products and services before rivals, and foresee changes in the market and customer needs (Lumpkin &Dess, 2005). Proactive businesses look for new opportunities that may or may not be related to their current business, launch new goods and brands before their competitors, and strategically shut down activities at the end of their life cycle (Venkatraman, 2009). A proactive business should take the initiative to build new markets, pursue new endeavors, provide new products and services, and predict challenges in the future. As a result, forward-thinking businesses become market pioneers and are rewarded with a competitive edge in the form of higher returns, wider distribution, and stronger brand awareness. Proactivity and performance have been linked in

previous research in a very good way (Lumpkin & Dess, 2005; Hughes & Morgan, 2007; Rauch, Wiklund & Frese, 2009). In a similar vein, this study viewed proactiveness, as the strategic thinking ability of business to sight future problems and provide solution for the cause of action without hindering performance.

2.1.3 Business Performance

Business performance is the degree of success or successes of the company during a specific time period (Hughes & Morgan, 2007). Performance of the business is essential to its development. If the company performs well, the objective of continuing to exist, to gain, and to thrive (growth) can be accomplished. The level of sales, level of profitability, return on capital, level of turnover, and market share achieved by a company can be used to measure its performance (Amber, 2017). measuring performance through measurement (Munizu, 2010) the, which includes three indicators: (1) Sales, sales are respondents' assessments of the performance attained based on comparing year-over-year sales growth, (2) Profits, or respondents' perceptions of the ability of the business to occasionally create profits, (3) Capital, capital is a respondent's view of occasional increases in venture capital. Empowering any strategic asset that is distinctively businesses and has the potential to thwart competitors can sustain business performance (Amit and Shoemaker, 2008).

Firm performance and product performance are two terms used to describe the way in which a company's success in the market and with its products is measured (Zhou. 2005) Performance can be judged by a company's sales, profitability, return on capital, turnover level, and market share, according to Wiklund, J., and Shepherd, D. (2005). Business performance can be gauged using seven metrics, according to Hilmi (2011): the quantity of complaints, return on investment, financial performance, sales growth, productivity, customer satisfaction, and employment satisfaction. Four stages can be identified in performance measurement: system design, implementation, use, and maintenance (Neely, 2007). Performance measurement is a procedure for gauging the efficacy and efficiency of action, according to Neely (2015). The input, output, or degree of activity of an event or process can also be measured as part of performance measurement (Radnor &Barnes, 2007). Despite the position of literature in presenting what performance is, this study defines performance as the overall achievement of both qualitative and quantitative objectives of firm.

2.1.4 Entrepreneurship Characteristics and Business Performance

Studies have given a lot of attention to the relationship between entrepreneur traits and business performance. According to studies (Erikson, 2012; Westerberg & Wincent, 2017), the performance of small and medium-sized businesses is significantly influenced by an entrepreneur's attributes, including demographics, background, personality traits, entrepreneur orientation, and readiness (SMEs) (Akanmu, Alhaji, Kowo, & Ajani, 2018). These elements that shape an

entrepreneur's personality and actions are essential internal characteristics that affect how well a company performs (Schreckenberg, 2016). It is evident that entrepreneur traits are numerous and varied. The disparities in viewpoint demonstrate the relevance and significance of entrepreneurship research. There are many different sorts of characteristics, including managerial, functional, integral, strategic, and dynamic ones that can be combined to create business capabilities intended to boost organizational performance (Abolade, 2020).

According to Shane, Locke, and Collins (2013), locus of control refers to how much people think their behavior or other personal traits influence their results. Adaptability, market knowledge, independent thinking, knowledge, energy, perseverance, the need for achievement, a dynamic leader, responding to the proposals, initiative, patience, forward-looking vision, and responding to criticism, according to Hornaday (2012), are the qualities necessary. Initiative, innovation, risk-taking, and responsibility are suggested by Kotelnikov (2010). In addition, Chell (2015) emphasizes opportunity recognition, independence, self-efficiency, social leadership, intuition, and future potential vision. Initiative, taking risks, independence, innovation and creativity, self-confidence, planning, developing relationships with others, and seizing opportunities are some of the recommendations made by Fuad El Sheek et al. (2009). Small business performance was divided into three types of antecedents in a different study by Cragg & King (1988); Rutherford & Oswald (2000): entrepreneur qualities, firm characteristics, and environmental variables. Therefore, this study agreed that entrepreneurial traits such as risk-taking and proactiveness are potential characteristics that influence business performance as a result of the fact that this factor most time are innate of most individuals.

2.2 Theoretical review

2.2.1 Schumpeter's Innovation Theory

The innovator Schumpeter (2004) emphasized the significance of innovation to the growth of businesses. According to Schumpeter (2003), "creative destruction" is a process that occurs when existing market structures are upset by the introduction of new products and services. This process transfers resources from existing businesses to upcoming ones, resulting in the establishment of new firms and the creation of wealth. Accordingly, Schumpeter refers to innovation as the particular tool of entrepreneurship, the process through which business owners exploit change to open new markets for their goods and services. In his 2010 book, Schumpeter underlined the importance of entrepreneurs as the driving forces behind creative destruction. He also emphasized the necessity of entrepreneurs searching tenaciously for sources of innovation and the traits that signal successful innovation chances. Entrepreneurial proactiveness, according to Barney (2012), is the ability of the business to foresee areas where goods and services are not available or new ones have become useful to consumers as well as areas where novel industrialization techniques that are unknown to others have become

possible. A proactive business leverages the past to challenge the present and forge its own proactive future by focusing on the present and the past (Osaze, 2003; Kowo, 2021). Entrepreneurship depends heavily on innovation because it is a component of economic growth in every nation. According to Ling (2008), the countries with the biggest economy share a strong commitment to innovation and research. According to Currie's (2008) research, innovation and entrepreneurial behavior are processes that are holistic, energetic, and fundamentally balanced to corporate sustainability and success in a constantly changing external environment.

2.3 Empirical review

The goal of a study by Murad and Rula (2015), titled The impact of the entrepreneurs' attributes on small company performance, is to find out how these traits affect the success of medical equipment supply companies in Jordan. Small businesses of organizations that supply medical equipment make up the majority in Jordan-Amman. The 66 organizations included in the study were surveyed, including the owners and managers. Data gathered via a custom questionnaire. To evaluate the hypotheses, statistical methods such descriptive statistics, the t-test, the ANOVA test, correlation, and multiple regressions were used. The findings demonstrate that the traits of entrepreneurs have an impact on small business success and that these traits are related to small business success. The empirical findings in this study generalized the term entrepreneurial attributes while this study specified the entrepreneurial traits to be risk-taking and proactiveness. However, the previous researcher adopted a quantitative method while this study adopted a qualitative method through interview.

Ajani and Oluyemi (2016) conducted a study utilizing the Yaba Local Government Area (L.G.A.) of Lagos State as the case study to investigate the impact of entrepreneurial qualities on the performance of small and medium-sized firms. The survey research design was chosen for this study, and 92 entrepreneurs engaged in a variety of business activities were the subjects. With the help of SPSS, the acquired data were analyzed using descriptive statistics. Simple regression was used to examine the assumptions that were developed. The findings indicated that the performance of small and medium-sized businesses in Nigeria is significantly influenced by an entrepreneur's qualities, entrepreneurial competency and orientation, and degree of education. Similarly, the findings of the previous study were based on quantitative analysis, while this study based its findings on qualitative analysis, also different variables were adopted in measuring entrepreneurial traits using competency and orientation, while this study adopted risk-taking and proactiveness, as such a gap in variable was established.

Another study was carried out in Sudan by Tariq, Zaroug, Mohamed, and Siddig in 2019. Its goal was to determine the availability of entrepreneurial traits among undergraduate students in a few universities in Sudan and Oman and to

determine whether these traits had a significant effect on the entrepreneurial intention of the students. Additionally, the study aims to compare how students in Sudan and Oman feel about starting their own enterprises (self-employment). Students from the University of Bahri, Sudan International University, and Dhofar University make up the study's sample (n = 574). The results show that among undergraduate students, the entrepreneurial qualities (desire for achievement, self-efficacy, and locus of control) have a statistically significant impact on their entrepreneurial intention. Owing to the previous study which elicit findings of entrepreneurial traits using under-graduate students, a gap in scope was established as this study focuses on established business owners in Agricultural sector.

A study by Wekesa, Maalu, Gathungu, and Wainanina (2016) titled "Effect of Entrepreneur Characteristics on Performance of Non-Timber Forest Products Small and Medium Enterprises in Kenya" noted that there is little research on the relationship between entrepreneur characteristics and performance of non-timber forest products small and medium enterprises, raising the question of whether the link is tenable with such businesses. In order to investigate the connection, a study involving 314 small and medium-sized businesses in nine Kenyan counties was carried out. The findings demonstrate that entrepreneur attributes such as age, managerial aptitude, professional experience, and interpersonal skills have a significant impact on firm performance. However, findings from this study relied on qualitative method, while previous study utilized quantitative, though both study adopted agricultural sector using Non-Timber forest product, while this study focused on rice farming.

3 Methodology

This study examined entrepreneurial characteristics and performance of rice farmers in selected clusters in Kwara State from rice farmer's association of Nigeria, (RIFAN). Non-probability sampling was adopted, using purposive sampling techniques in selecting six (6) cluster from the farm settlement location, 4 farmers were selected from each cluster of six, which was selected based on cluster activity, production capacity, years and experience of farmer and communication ability. primary data was utilized as source of data, interview was conducted as a means for data collection, qualitative analysis was utilized to determine the extent in which explanatory variables (proactiveness & risk-taking) affect the given variable (*performance*). The total interviewed participants were 24 in number and were grouped into four (4), for easy conduct of the interview process, the selected farmers were assembled for the interview on August 14th, 2022 which was the convenient and agreed date for the interview, the participants were orientated on the theme of the interviews and question prepared for the interview; (how has farmers risk taking & proactivity influence farmers performance output) the information obtained were transcribed and analyzed using (Nvivo 11).

4 Data analysis

This section discusses the data analysis using the interviewed information from the six (6) selected farmer's cluster of Rice Farmers Association of Nigeria, (RIFAN).

4.1 Hypothesis Testing: Farmer's Proactiveness, Risk-taking and Performance Output

4.1.2 Theme: In what way has famers entrepreneurial characteristics (Proactiveness & Risk-taking) influences farmers Performance (output)

Based on the interview discussions with six cluster participants of Rice farmer's association of Nigeria (RIFAN), relevant proactiveness and risk-taking information that relates to business performance, *(output)* emerged in (figure 4.1) as a way through which rice farmers can improve their rice production *(productivity).*
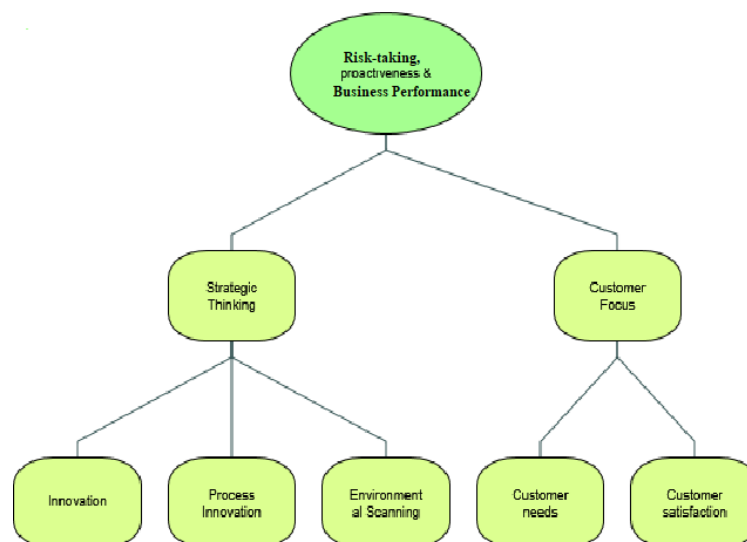
Figure 1 Thematic representation of proactiveness and performance

Source: Author's Field Survey (2022)

4.1.3 Innovation

Innovation is important because in this knowledge era, many businesses see it as a strong contributor and means for generating and profitable growth that will improve farmer's performance and competitiveness (Potters, 2009). Sustainable and profitable growth in an agribusiness requires sustainable innovation activities (Gupta, 2007) From a micro point of view, innovation is management discipline: it focus on business mission, searches for unique opportunities, determines whether they fit the business strategic direction, defines the measures for success, and continually reassesses opportunities (Lin & Chen, 2007).

FGD1, FGD2 and FGD3, identified strategic thinking, environmental scanning and innovation as key ingredient in facilitating business performance among rice farmers in the agribusiness. This suggests that business performs when

attention is given to strategic thinking and innovation through proactivity of the business owners. Thus, responding to how business performance can be achieved, cluster1 and 3 unequivocally agreed that strategic thinking, innovation and owner's proactivity will positively influence business performance thus:

> "*farmer's opined that with the rate at which the global environment is affecting businesses, rice farmers find it difficult to operates and compete with foreign products which is affecting their customers as a result of in-ability of farmers to utilized innovation in process and products which will enable the farmers meet up with the consumer's demand and expectations. However, only few farmers are able to survive and remain competitively active. Around march 2020, Nigeria experience the first phase of lockdown and movement restrictions, this period really affects and expose the farmers in-ability to commercialize the products as a result of farmers in-ability to innovate, as such farmers are not ready to take over-burden risk when they are challenged with high rate of insecurity and kidnaps this alone serves as hindrances to farmer's performance. In fact, most farmers are out of business the few ones that remain in business has only been able to demonstrate a high degree of risk taking ability in them. Their level of proactiveness has encouraged then to take risk within this dynamic complex agribusiness environment that is not suitable for farmers"* **(FGD1; FGD3).**

Similarly, Cluster FGD4 affirmed:

> "*the discussion of my colleagues from other cluster is absolutely true, farmers are facing a lot of challenges as a result of factors like high rate of importation of rice to Nigeria, there is no how we will be productive if we don't have proper support from the government, and even if you are ready to take the risk individually as a farmer you will be limited with the uncontrolled insecurity, farmers are been kidnapped, this restraining most farmers from commercial farming that will have allow us make use of innovation both in process and product as this will enable us to compete with foreign product. ."* **(FGD4).**

The cross examination through the interview conducted to the farmers of selected cluster, open up the position of the clusters in the discussion with regards to how entrepreneurial characteristics such as risk-taking proactiveness can aid business performance establishes the findings that strategic thinking, innovation and proactiveness are essentials for rice farmers performance, also government support in areas of insecurity leading kidnapping of farmers and support in reducing the high rate of rice importation is needed if farmers will be ready to take risk of commercialization.

However, strategic thinking attempts to develop in the participants the intention to perform environmental scanning that will lead to risk taking, innovativeness and proactiveness (Liñán, 2004).
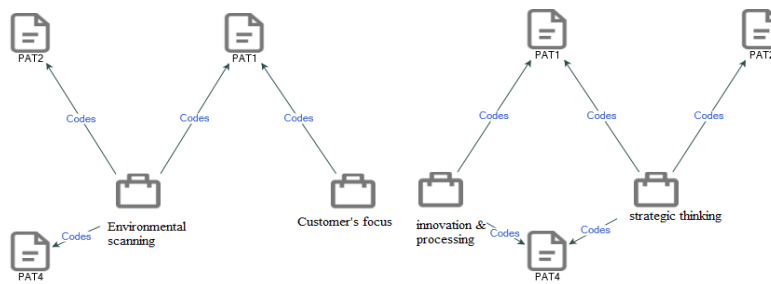
Figure 2 Thematic representations of the Farmer's Cluster Discussion

Source: Author's Field Survey (2022)

Findings, the study revealed that (proactiveness, risk-taking) has a great influence on business performance of farmer's in agribusiness, and other themes that emerged such as, strategic thinking, innovation and environmental scanning, government support, customer focus, are essential in predicting the performance of rice farmer's. however, from the findings insecurity is one among the factors that is affecting the entrepreneur in taking risk that will lead to business performance, this is attributed to the fact that farmers are unable to freely go to farm without the fear of being kidnapped, it is also evident that the farmer's need government support not only in tackling in-security but in terms of policy compliance that will protect the rice farmers of foreign importation of rice to the country.

Conclusion

The study concluded that entrepreneurial characteristics such as risk-taking, proactiveness has a strong influence on business performance, also strategic thinking is a major determinants of business performance as rice farmers are challenged with factors that limits performance such climate change, high rate of importation and insecurity. However, the ability of the farmers and cluster members to think strategically and conduct environmental scanning will also influence performance of the farmers. The study recommends that there should be consistent government support in terms of policy compliance that will reduce the importation of foreign rice to the country as this is a major factor affecting the performance of rice farmers, also there is need for urgent intervention from the government in tackling security challenges as this affects the farmers to take risk that will be profitable, it is also important that the government through their agencies make provision for farmers to enable them adopt process innovation as this will enhance their performance this is a veritable tool for the farmers to become productive. Largely, there is need for more farmer's clusters as this will encourage knowledge transfer and improve innovativeness of the farmers' through risk-taking and proactivity.

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About the authors

Ayobami Paul Abolade
Department of Business & Entrepreneurship
Kwara State University Malete, Nigeria

Abdulazeez Alhaji Salau
Department of Management and Accounting
Summit University Offa, Nigeria.

Kowo Solomon Akpoviroro
Department of Business Administration
Global Humanistic University Curacao
E-mail: kowosolomon@gmail.com Tel; +2347061251840

ONE YEAR AFTER THE END OF THE EUROPE 2020 STRATEGY - WERE THE R&D TARGETS REALITY OR FICTION?

ROK PO SKONČENÍ PLATNOSTI STRATÉGIE EURÓPA 2020 - BOLI CIELE V OBLASTI R&D REALITA ALEBO FIKCIA?

Emília DUĽOVÁ SPIŠÁKOVÁ

Abstract

The article deals with the issue of financing research and development from the point of view of fulfilling the target of the Europe 2020 strategy in the monitored area. It points to the differences in the funding of research and development activities in the member countries of the European Union from the point of view of the amount of expenditure per inhabitant and the share of expenditure on research and development in the country's GDP. The aim of the article is to point out the convergence, or the divergence of the countries towards the set target values, which will make it possible to evaluate the fulfillment of the target of the Europe 2020 strategy one year after its expiry. The article also includes an analysis and comparison of the structure of funding resources for the mentioned activities with a focus on fulfilling the partial target of the Europe 2020 strategy in the field of research and development.

Keywords: Research and development, expenditure, structure of GERD, target, Europe 2020

Abstrakt

Príspevok sa zaoberá problematikou financovania výskumu a vývoja z pohľadu naplnenia cieľa stratégie Európa 2020 v sledovanej oblasti. Poukazuje na rozdiely vo financovaní výskumných a vývojových aktivít v členských krajinách Európskej únie z pohľadu veľkosti výdavkov pripadajúcich na jedného obyvateľa a podielu výdavkov na výskum a vývoj na HDP krajiny. Cieľom príspevku je poukázať na konvergenciu, resp. divergenciu krajín k stanoveným cieľovým hodnotám, čo umožní zhodnotiť naplnenie cieľa stratégie Európa 2020 rok po skončení jej platnosti. Súčasťou príspevku je tiež analýza a komparácia štruktúry zdrojov financovania uvedených aktivít so zameraním na naplnenie parciálneho cieľa stratégie v oblasti výskumu a vývoja.

Kľúčové slová: výskum a vývoj, výdavky, štruktúra GERD, cieľ, Európa 2020

Introduction

The European Commission defined the targets of the strategy Europe 2020 on the 3rd of March, 2010. During the next decade the trade and economic policies of the European Union should be governed by the European Union. The strategy focuses mainly on employment and the environmental aspects of societal development. The target is not only to overcome the crisis but also to create intelligent, sustainable and inclusive growth.

The targets of the strategy were set by the European Union and they enable us to glimpse the overall direction for Europe up until 2020. They are defined as

interstate targets enabling the states to monitor their own progress. The targets are interconnected and they complement each other.

The main targets of the strategy Europe 2020 are shown in Table 1. The targets of the strategy are interconnected and they complement each other. The increase of the education level of the population leads to a higher rate of employment in the country, to a greater number of job opportunities and the greater competitiveness of the country.

Table 1 Target values in the strategy Europe 2020 for the European Union

Employment
- increase the rate of employment for the population between the age of 20 - 64 by 75%;

Research and development
- increase the investment into research and developmnet to 3% of GDP;

Climate changes and energy sustainablity
- lower the emissions of greenhouse effect gasses by 20% (or under some extended global agreements even by 30%) as compared to the level from 1990;
- obtain 20% of energy from sustainable sources;
- achieve 20% growth of effectivity in energy usage;

Education
- lower the rate of premature termination of school attendance to under 10%;
- have at least 40% of the population between the ages of 30-34 with tertiary education;

Fight against poverty and social exclusion
- lower the number of people under the threat of poverty and social exclusion by at least 20 milion.

Source: own processing based on European Commission, 2010

1 Theoretical background

Research and development represent systematic creative activity done with the purpose to increase the level of knowledge (including knowledge about mankind, culture and society) and to use this knowledge in the creation of new applications (OECD, 2015).

Law No. 172/2005 of the book of Law, about the organization of state funding for research and development defines basic terminology for research and development. Research is systematic, creative activity within the region of science and technology covering the needs of society and in the interest of knowledge.

It has two parts, the basic research and applied research. Basic research is aimed at the acquisition of new knowledge irrespective of its practical uses. Its task is to analyze properties, structure and relations in order to determine and test hypothesis, various theories or laws. On the other hand, applied research acquires

new knowledge applicable to economic, industrial and social practice. Its task is to determine how it is possible to utilize the discoveries and results obtained by basic research or how to find new ways and methods to achieve the already set targets.

Development according to the Law is systematic creative activity in the area of science and technology based on the utilization of knowledge and relations obtained by research. Or the utilization of knowledge sprang from the practical experience obtained when forming new materials, products, systems, methods and processes and their improvements (Law no. 172/2005 of the book of Law).

Under the term of expenditure on research and development we understand the overall amount of finances spent on activities connected with research and development within the land-area of that country during certain period, regardless of the source of this finances. They are so-called internal costs on research and development further divided into ordinary and capital. Ordinary expenditure is used on funding the activities of organizations and workplaces of research and development, the finances for tasks using the capacity of the organization or the workplace. Capital expenditure is the acquisition of long-term material and long term immaterial property (Statistical Office of the Slovak Republic, 2022).

The amount of expenditure on research and developmental activities can be followed using two summarizing indicators (Spišáková, 2010):

- GERD – Gross domestic expenditure on research and development - it is the overall amount of finances on research and development coming from own or foreign sources during a certain time period within the land-area of that country.
- GNERD – Gross national expenditure on research and development – it is the overall amount of finances of one country on research and development which happens abroad.

The total amount of finances on research and developmental activities is influenced by many various factors - but also this indicator influences a lot of variables, too.

Figure 1 shows factors depending on the expenditure on research and development. Their extend is influenced by many newly-formed innovative projects, by new or already existing jobs in connection with the research and development department, by the number of university graduates with the technical or scientific knowledge. Innovative and successful projects influence 'high' technologies exported aboard and the increase of competitiveness of a country to enable the start of something new and unique as well as new job opportunities. University graduates are an asset for innovative projects, sometimes even their very source (DUĽOVÁ SPIŠÁKOVÁ, E. et al., 2017).
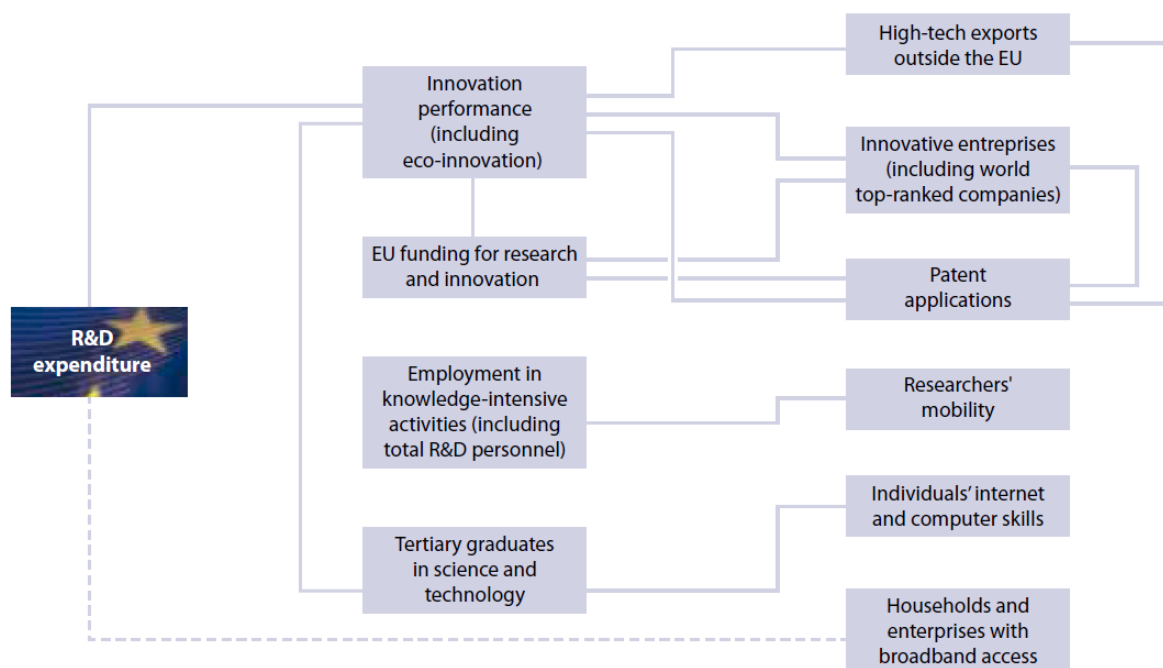
Figure 1 Indicator of expenditure on research and development and factors influencing and influenced by it

Source: DUĽOVÁ SPIŠÁKOVÁ, E. et al. (2017)

Research and development have gradually become the motivating force of success behind most of the business activities and many sectors. Activities connected with them are deemed difficult and risky because for example some new technologies cannot be transposed into specific products or services or they are a market failure. The increase of competitiveness in a business contributes to the general increase of competitiveness of the whole economy but they require specialized knowledge and skills from the employees working in this area.

The size structure of businesses in the European Union is dominated by mostly small and medium business. Financial reasons are often quoted by small and medium businesses as the deterrent an innovative approach. The area of innovations is mostly covered by large companies commanding sufficient capital. Although the small or medium sized business on their own are not capable of supporting and funding research and development from their limited resources - but by creating a cluster they can contribute towards mutual research and development, reap the beneficial results and compete against even large companies (Burger, 2016). If several individual sectors join together, they acquire a greater sum of finances which can be invested better. This step would lead not only to the increase of productivity of individual countries but also of the European Union as a whole.

2 Structure of expenditure on research and development according to sectors

It is necessary to divide subjects in economics into sectors in order to simplify the acquisition of information, the description of the flow of finances on research and development from individual institutions, to be analyzed and the succeeding interpretation of the discoveries in the monitored area. There are two main and three adjacent sectors. Among the main ones belong the business and state/public sector and among the adjacent are private non-profit sector, university sector and the rest of the world.

The business sector encompasses firms, institutions and organizations focusing on the production of products and services with the purpose of the sale to the general public. It consists mostly of private companies but not private institutions with the purpose of offering the services of tertiary education.

Into the state sector belong 'all organizations, offices and other authorities offering - but are not selling - ordinary services other than the tertiary education that could not otherwise be profitably or economically offered. Also the services under the government of a state and the economic and social policy of society' (OECD, 2015). In this group do not belong public companies because they already are a part of the business sector because they produce and offer products and services like the private companies - only their sale price does not cover the production costs.

The private non-profit sector contains private nonprofit organizations of the non-market character with their primary purpose being the offering of services to households either for free of for low economically indifferent prices. Into this group also belong private individuals and households.

Into the university sector belong universities, technical colleges and other institutions of the post-secondary education, research institutions in the country, so-called experimental stations and clinics under the authority of universities and colleges (OECD, 2015).

3 Results

It is not appropriate to compare the development of the total amount of expenditure on research and development (R&D) in various large countries, therefore the results of this article are more oriented towards ratio indicators. This is specifically the share of R&D expenditure in relation to GDP, the share of R&D expenditure per inhabitant (Figure 2) and also the structure of expenditure in terms of funding sources (Figure 4). The highest expenditure on R&D activities per inhabitant was reported by Sweden in 2021, at the level of 1 737.4 €. Compared to 2011, expenditure in this country increased by 124.33 %. In 2021, Denmark, Austria, Belgium, Germany, Finland, Luxembourg and the Netherlands also reported expenditure above 1 000 € per inhabitant.

On the contrary, at the end of the ranking is Romania, with expenditures of less than 60 € per inhabitant, and Bulgaria with expenditures of less than 80 € per inhabitant. It is necessary to point out the fact that in Bulgaria the monitored indicator increased by 266.44 % over the period of 10 years. Fourth from the end is Slovakia with expenses of 168.2 € per inhabitant. The largest increase in the volume of financial resources was recorded in Austria (461.7 € per inhabitant) and in Germany (415.1 € per inhabitant). However, the highest percentage increase occurred in the case of Poland, where expenditures increased almost threefold. Bulgaria followed him.

Luxembourg is among the countries that show higher expenditures on R&D activities, but it is the only country in the European Union in which the share of expenditures per inhabitant decreased by almost 70 € per inhabitant between 2011 and 2021. This represents a decrease of 5.56%.
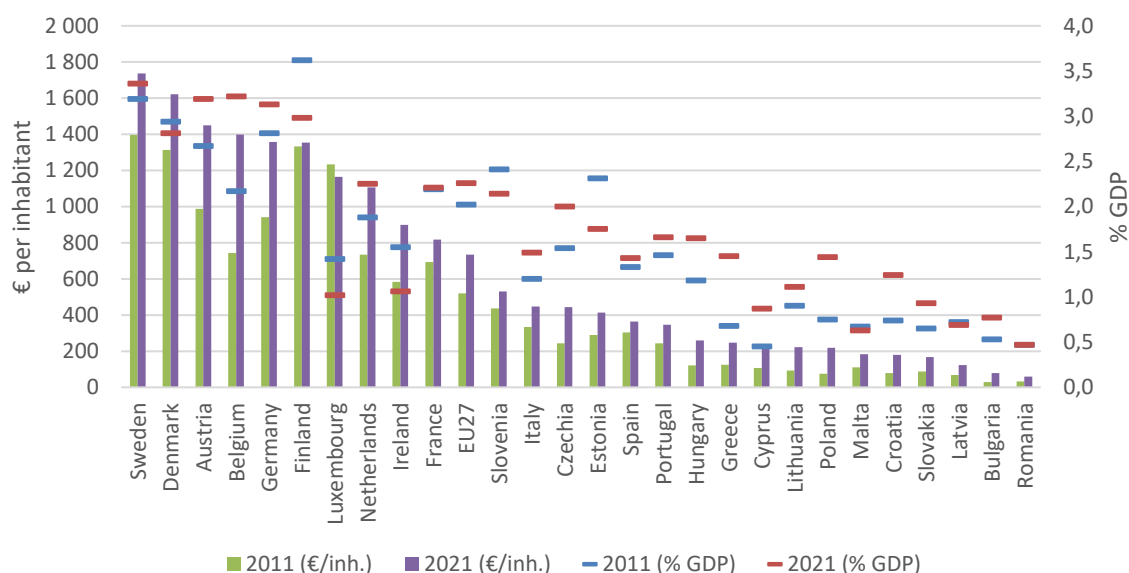
Figure 2 Expenditure on research and development per inhabitant and as a % of GDP

Source: Own processing based on data from Eurostat, 2022

In addition to comparing the amount of expenditure on R&D per inhabitant in individual member countries in 2011 and 2021, figure 2 also pays attention to the comparison of an important indicator from the point of view of achieving the target of the Europe 2020 strategy. It is the share of R&D expenditure in the country's GDP. The highest value of the monitored indicator was achieved in 2021 by Sweden, namely 3.36%. Belgium, Austria and Germany also spent more than 3% of GDP on R&D activities. On the contrary, the smallest share was shown by Romania, Malta and Latvia. Romania is the only member country where, when comparing the years 2011 and 2021, there was no change in the monitored indicator, and the share of R&D expenditures in the country's GDP was 0.47 %.

It is possible to assess negatively the changes that occurred in several member countries during the monitored period. These are specifically countries such as Latvia, Denmark, Malta, Slovenia, Finland, Estonia, Luxembourg and Ireland, in which the share of expenditure on R&D activities decreased in 2021 compared to 2011. In Ireland, the drop was the most pronounced, by 31 %. On the other hand, in Greece the value of the monitored indicator increased by more than 200 % (2.13 times), in Cyprus by 193 % and in Poland by 192 %.
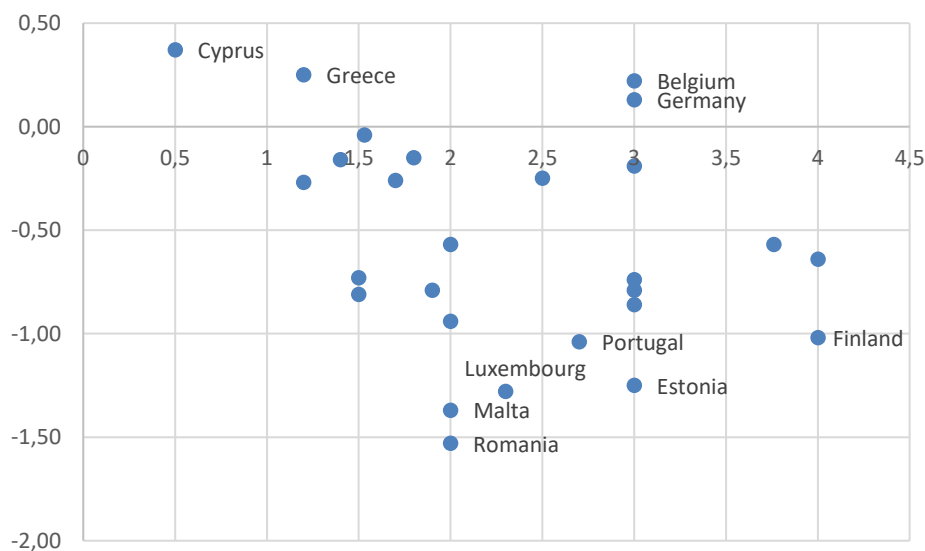
Figure 3 Distance from target values in 2021

Source: Own processing based on data from Eurostat, 2022

Changes in the indicator expressing the share of expenditure on R&D activities in the country's GDP contributed to gradual convergence in some countries to the target value set as part of the Europe 2020 strategy. In other countries, this indicator diverged from the target value. The distance of the countries from the target value is captured in Figure 3. The results show what values of the share of R&D expenditure in relation to GDP the countries achieved in 2021, which is one year after the end of the Europe 2020 strategy. Based on this, we can evaluate which country achieved its own national target and which did not meet the target.

Based on Figure 3, it can be concluded that only four member countries have achieved the set target, namely Cyprus, Greece, Belgium and Germany. All other countries did not meet the target a year after the strategy expired. However, Italy came closest to it (lagging behind by only 0.04 %). Hungary (0.15 %), Croatia (0.16 %) and Denmark (0.19 %) lagged behind by less than 0.2 %. On the contrary, the furthest from the target value in 2021 were Romania, Malta, Luxembourg, Estonia and even Finland.

In addition to one of the main targets of the Europe 2020 strategy focused on R&D, it is also necessary to pay attention to a partial targets in this area related to the structure of expenditure on R&D. Within the structure, the source of funding for R&D activities is evaluated. According to the Strategy, 2/3 of expenditures should come from own company resources (business enterprise sector) and 1/3 from government resources.
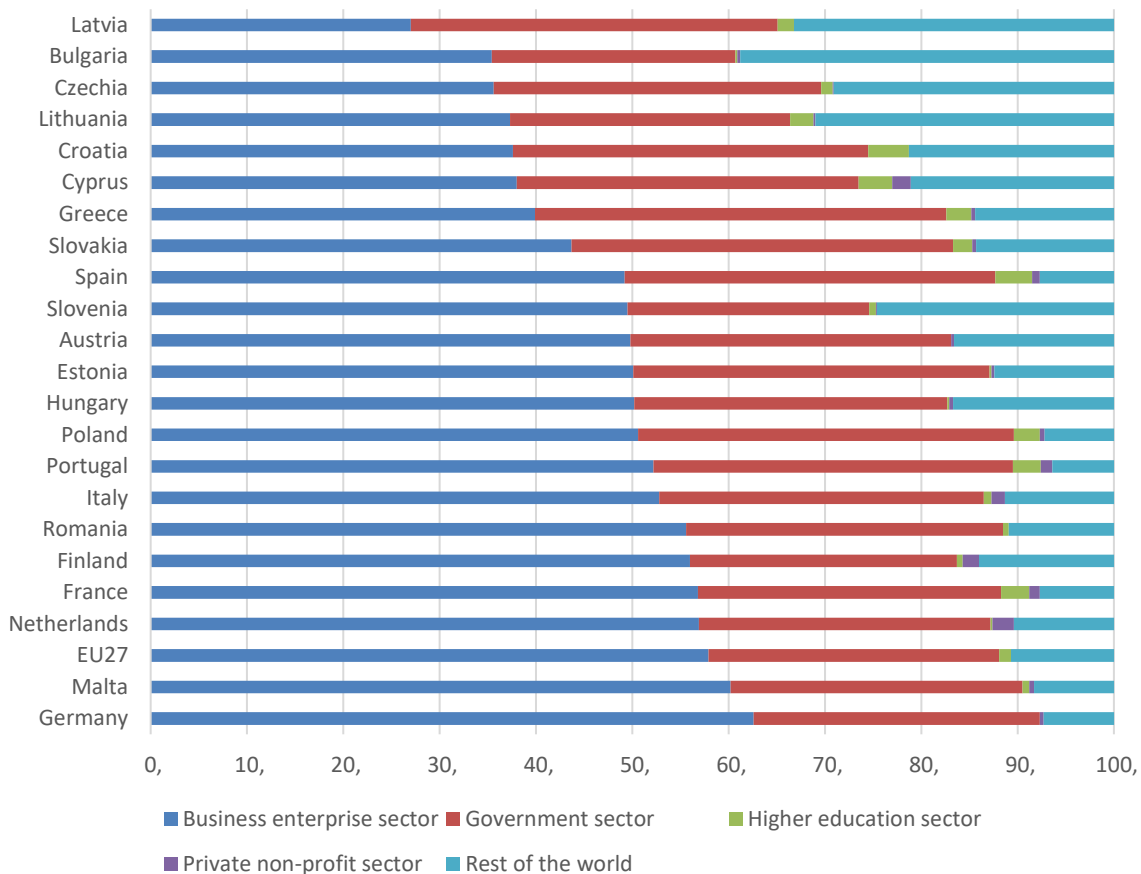
Figure 4 Percentage share of employment in tourism in total employment

Source: Own processing based on data from Eurostat, 2022

Figure 4 shows how the member countries of the European Union succeeded in achieving the stated partial target in 2021. Other sources of funding for R&D, such as the university sector, the private non-profit sector and also financial resources from the rest of the world (in the past referred to as resources from abroad) had a significant impact on its achievement. Germany and Malta came closest to the required 2/3 of their own business enterprise resources, which finance R&D activities. On the contrary, Latvia showed the fewest business enterprise resources (27 %). The Czech Republic is also significantly far from the required 2/3.

When looking at resources from the government sector, which should make up 1/3 of the total sources of funding for R&D, government resources (42.7 %) clearly dominate in Greece over business enterprise resources (39.9 %). However, another 14.4 % of resources are obtained from the rest of the world. Slovakia and Poland are two other countries where government resources make up almost 40 %, but do not dominate business enterprise resources. Less than 30 % of government resources are reported by Germany, Lithuania, Finland, Bulgaria and Slovenia. Resources from the rest of the world represent an important source of funding for R&D in some countries. In Bulgaria, these resources make up almost 40 %, in Latvia 33.2 % and in Lithuania 31 %. In Czech Republic, Slovenia, Croatia and Cyprus were obtained 20 % - 30 % of these resources.

Table 2 Correlation between sources of funding R&D in selected countries

Sweden	BES	GS	HES	PNS	RW
BES	1				
GS	-0,8305	1			
HES	-0,7294	0,6434	1		
PNS	-0,3778	0,2268	0,2291	1	
RW	-0,9044	0,5314	0,5826	0,2758	1

Romania	BES	GS	HES	PNS	RW
BES	1				
GS	-0,9205	1			
HES	-0,1705	0,2184	1		
PNS	-0,0722	-0,0394	-0,2059	1	
RW	-0,0411	-0,3401	-0,3899	0,2956	1

EU27	BES	GS	HES	PNS	RW
BES	1				
GS	-0,8020	1			
HES	0,4963	-0,8450	1		
PNS	-0,2557	-0,1418	0,2739	1	
RW	0,4525	-0,8929	0,8558	0,3673	1

Slovakia	BES	GS	HES	PNS	RW
BES	1				
GS	-0,2851	1			
HES	-0,2221	-0,7863	1		
PNS	-0,3595	-0,0616	0,1735	1	
RW	-0,6849	-0,5015	0,7799	0,3546	1

* BES – Business enterprise sector, GS – Government sector, HES – Higher education sector, PNS – Private non-profit sector, RW – Rest of the world

Source: Own processing based on data from Eurostat, 2022

In connection with the resources of funding, attention was also paid to monitoring the correlation between the financing of research, development and innovation activities from various sources (Table 2). For an illustrative example and comparison, Sweden was chosen as the leader in the first two monitored indicators, Romania, which is at the bottom of the ranking, and Slovakia as the home country. The results were compared with the average values for the EU27. Based on the results of the correlation analysis, it can be concluded that correlations in Slovakia copy the average results for the EU 27. Sweden shows a very strong negative correlation between resources from the business enterprise sector and other sources, with the exception of the private non-profit sector. It also shows a relatively strong positive correlation between the government sector and the higher education sector. Romania shows a very strong negative correlation in the only case, between the business enterprise sector and the government sector.

Conclusion

The aim of the article was to point out the convergence, or the divergence of countries towards the target of the Europe 2020 strategy in the area of financing R&D in the member countries of the European Union. For that purpose, an analysis and comparison of basic indicators was carried out in 2011 and 2021, such as the share of R&D expenditures per capita and the share of R&D expenditures in the country's GDP. According to the results achieved, the leader in both indicators is Sweden, on the contrary, the lowest values in 2021 were achieved by Romania. Based on the results of the analysis, it was possible to evaluate the degree of fulfilment of the target of the Europe 2020 strategy by individual countries. In 2021, only four countries achieved the set targets, which cannot be considered a success of the strategy.

The article also included an analysis and comparison of the structure of funding resources for the mentioned activities with a focus on fulfilling the partial target of the strategy in the area of R&D. It was a view of financing from business enterprise resources and government resources. Germany came the closest to the partial target in 2021. On the contrary Latvia was the furthest away from this partial target and this country also largely used resources from other world to finance R&D activities.

Acknowledgement

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About the author

doc. Ing. Emília Duľová Spišáková, PhD.
University of Economics in Bratislava
Faculty of Business Economy with seat in Košice
Department of Economics and Management
Tajovského 13, 041 30 Košice
e-mail: emilia.dulova.spisakova@euba.sk

APPLICATION OF THE JONES MODEL FOR THE DETECTION OF DISTORTION OF ACCOUNTING DATA IN A SELECTED COMPANIES

APLIKÁCIA JONES MODELU DETEKCIE SKRESĽOVANIA ÚČTOVNÝCH ÚDAJOV VO VYBRANÝCH PODNIKOCH

Jozefína HVASTOVÁ

Abstract

One of the phenomena that is currently increasingly affecting business entities is the distortion of accounting data. In practice, it is possible to encounter practices that lead to the fact that the reported data do not correspond to objective reality. The importance of application of models that can be used to identify the distorted data increases more and more. In addition to a brief overview of selected quantitative methods for detecting the distortion of accounting data, the paper points out the possibility of their use in Slovak conditions. The aim of the paper is to apply the original Jones model in two selected companies of different size categories in the Wholesale sector and thereby identify potential manipulation of accounting data.

Key words: financial statements, creative accounting, data distortion, Jones model

Abstrakt

Jedným z fenoménov, ktorý sa v súčasnosti stále viac týka podnikateľských subjektov, je skresľovanie účtovných údajov. V praxi sa totiž možno stretnúť s praktikami, ktoré smerujú k tomu, že vykazované údaje nezodpovedajú objektívnej realite. O to viac vzrastá význam využívania modelov, ktorými ich je možné identifikovať. Príspevok okrem stručného prehľadu vybraných kvantitatívnych metód detekcie skresľovania účtovných údajov poukazuje na možnosť ich využitia v slovenských podmienkach. Cieľom príspevku je aplikovať pôvodný Jones model v dvoch vybraných spoločnostiach rôznych veľkostných kategórií zo sektoru Veľkoobchod a tým identifikovať potenciálnu manipuláciu účtovných údajov.

Kľúčové slová: účtovná závierka, kreatívne účtovníctvo, skresľovanie údajov, Jones model

Introduction

In accordance with the Act no. 431/2022 Coll. on Accounting as amended, the accounting unit is obliged to account so that the financial statements provide a faithful and true picture of the facts that are the subject of accounting and the financial situation of the accounting unit. However, the practice of distorting accounting data and the use of creative accounting practices is not alien to accounting units in Slovakia either. As a result, financial statements, as a basic information source for decision-making by internal and also external entities, can provide misleading information. The introduction of preventive measures is all the more necessary, but they cannot fully prevent the manipulation of accounting data. And so the ways in which creative practices could be revealed, play an increasingly important role. In Slovakia, this is a relatively little-discussed issue. Therefore, our intention is to apply one of the wide range quantitative models for

detecting the distortion of accounting data, specifically the original Jones model, in selected enterprises in Slovakia.

1 Literature review

Financial statement misrepresentation is often associated with creative accounting. The definition of creative accounting has evolved over the years. In the 1950s and 1960s, creative accounting was referred to as the ability to smooth profits or reduce periodic fluctuations in profits through the use of discrete operations within accounting principles (Hepworth, 1953; Copeland, 1968). Later, the definition of creative accounting also included the free decisions of managers to reduce the level of profit fluctuation to an acceptable level or to optimize the company's profits (Gibson, Francis, 1975; Barnea, Ronen, Sadan, 1976). Currently, creative accounting could be defined as an active distortion of the indicators presented in the financial statements (for example, in the balance sheet, income statement). This customization is done in order to show a certain desired result. A company can achieve this through the choice of accounting strategies or in some cases through fraudulent financial reporting (Mulford, Comiskey, 2011). Because creative accounting is frequently used to falsify a faithful and true picture of a company's financial situation, many authors consider creativity in accounting as an activity that amounts to a crime. Such an understanding of creativity in accounting leads to the definition of creative accounting as a negative practice generating many threats to the objectivity of published financial data (Kamiński, 2014).

To identify creative accounting, i.e. distortion of accounting data, there are two different methods – there are quantitative methods and qualitative methods. Quantitative methods include various mathematical and statistical tools that, when applied to individual companies or larger samples, can identify potential users of creative accounting. These are certain mathematical procedures that, based on the assumed relationships of some economic indicators (found primarily in the balance sheet and income statement), can identify some anomalies in the financial statements. These procedures are based on various assumptions and often take into account relative parameters in the sense that they put the economic results of the current and previous, respectively subsequent periods into a mathematical relationship. In some cases, a longer time period is also taken into account.

Healy (1985) was the first to introduce the concept of discretionary accruals, which are subject to managers' decisions, while non-discretionary accruals are the result of the standard use of the accrual principle of accounting. He assumed that non-discretionary accruals have a statistically insignificant frequency of values over the years (so-called "white noise"). The average of these values is zero. This means that the value of expected non-discretionary accruals is zero. So if the value of total accruals, which is the sum of discretionary and non-discretionary accruals, is not zero, it is a consequence of profit management.

DeAngelo (1986), on the other hand, assumed that non-discretionary accruals have a random value. If the firm is in a stable condition, non-discretionary accruals in a period t are equivalent to non-discretionary accruals in a period t-1, i.e. their difference is zero. If non-discretionary accruals in two consecutive periods are not equivalent, then the difference between non-discretionary accruals in period t and non-discretionary accruals in period t-1 is identical to discretionary accruals, which is the result of earnings management.

Beneish (1999) came up with a model whose results confirm a systematic relationship between the probability of manipulation in accounting and selected financial indicators. It is based on several (eight and later five) indicators. If the M-score is > -2.22 (later > -1.78), then there is a risk that the financial statements are likely to be manipulated.

Jones (1991) argues that discretionary accruals of future periods provide more room for manipulation compared to non-discretionary accruals. If non-discretionary accruals decrease, discretionary accruals increase and thus the risk of data distortion increases. (The model is described in more detail in chapter 2.)

In addition to the original parameters of the Jones model, the PMDA model (Performance Matched Discretionary Accruals Model) also takes into account the company's performance. Performance is taken into account on the basis of ROA (Naidu, Patel, 2013; Kothari, Leone, Wasley, 2005).

When applying quantitative models, it is essential to respect the sectoral approach. Each sector has its own specific characteristics changing over time, which should be reflected in the accounting data of companies in the selected sector in a similar way. The more consistently the division into sectors is preserved, the more reliable results can be obtained by applying quantitative models to selected samples of companies and company-years. Therefore, another version of the modified Jones model was created, which takes into account the differences between individual sectors in the business environment (DeFond, Jiambalvo, 1994; Dechow, Sloan, 1991; Dechov, Sloan, Sweeney, 1995). This version assumes that the level of non-discretionary accruals is similar or the same in each sector.

The CFEBT approach (Drábková, 2020) is based on the hypothesis of a mutual relationship between the creation of the economic result and the cash flow at a time when changes in the cash flow (CF) without the influence of taxes and the accounting result of the economy before taxes (EBT) are monitored for at least five accounting periods. Materiality, significance ranges between 5 and 10%, taking into account the individual circumstances and risks of the entity.

2 Data and Methodology

One of the most common approaches to identifying creative accounting practices is the discretionary accrual approach known as the **Jones model**. Jones (1991) argues that discretionary accruals of future periods provide more room for manipulation compared to non-discretionary accruals. If non-discretionary accruals decrease, discretionary accruals increase and thus the risk of data distortion increases. The model tries to identify "abnormal" total values of accruals of future periods and is based on the basic assumption:

$$TA_t = NDA_t + DA_t \qquad (1)$$

Where:

TA_t ... *total accruals* in year t

NDA_t ... *non-discretionary accruals* in year t

DA_t ... *discretionary accruals* in year t (which, assuming no data distortion methods have been applied, are equal to zero)

The model that was used to calculate the coefficients of the regression equation is applied to several consecutive time periods (specified time period) in proportion to the total assets of the previous period and is developed as follows:

$$TA_t / A_{t-1} = \alpha_1 (1/A_{t-1}) + \alpha_2 (\Delta REV / A_{t-1}) + \alpha_3 (PPE_t / A_{t-1}) + \varepsilon_t \qquad (2)$$

Where:

TA_t ... *total accruals* in year t

A_{t-1} ... *assets are the total assets* in year t-1

ΔREV ... *change in revenues* in year t compared to year t-1

PPE_t ... *property, plant and equipment* in year t

$\alpha_1, \alpha_2, \alpha_3$ ... *coefficients of the regression equation*

ε_t ... *the residual*, which represents the measure of discretionary accruals

When calculating the total accruals, which represent the dependent variable, we used the values of the balance sheet and the income statement (Jones, 1991):

$$TA_t = (\Delta CA - \Delta Cash) - \Delta CL - DAE_t \qquad (3)$$

Where:

TA_t ... *total accruals* in year t

ΔCA ... *change in current assets* in year t compared to year t-1

$\Delta Cash$ ... *change in cash* in year t compared to year t-1

ΔCL ... *change in current liabilities* in year t compared to year t-1

DAE_t ... *depreciation and amortization expense* in year t

Parameters **α₁, α₂, α₃** (in equation 2) were determined using **linear regression** in the specified time period. After assessing the suitability parameters of the model, the **residual εₜ** was calculated for each company-year separately. Under the assumption that data distortion methods have not been applied, the residual (which represents the firm's specific share of discretionary accruals on total accruals) is zero. In such a case, non-discretionary accruals are equal to total accruals. According to the authors Dechov, Sloan and Sweeney (1995), when calculating the residual for individual companies (respectively company-years), the *change in receivables* in the current year compared to the previous year (ΔREC) is also taken into account, so the residual ε_t is calculated from the following equation:

$$\varepsilon_t = TA_t / A_{t-1} - (a_1(1/A_{t-1}) + a_2((\Delta REV - \Delta REC)/ A_{t-1}) + a_3(PPE_t / A_{t-1})) \quad (4)$$

The next step was to identify the values that deviate from the framework of normal values of the residual, that is, to establish **the upper and lower limits of extreme values**. In their calculation, the method using the first and third quartiles was used. Residual values beyond these bounds represent those company-years in which data bias was potentially used.

As mentioned above, quantitative models are based on different assumptions. In our previous research, we applied the quantitative Jones model to Slovak conditions, namely to a large set of Slovak companies, and thus we identified potential manipulation and distortion of accounting data. A highly numerous research sample was used, which contained over 90,000 companies and around 200,000 company-years. To respect the sectoral approach, this sample was divided into 20 sectors. The SPSS program was used for the calculations.

To present the research results in this paper, we will use two case studies from the Wholesale sector. The first company is ALFA, s. r. o., which in terms of size category belongs to large enterprises. The second company is BETA, s. r. o., which belongs to the size category of small businesses. To preserve anonymity, the companies are designated by fictitious names. The data needed as input variables for the calculations were drawn from the financial statements for the accounting periods 2012 – 2021, which are accessible in the Register of Financial Statements.

3 Results and Discussion

The Jones model was applied to particular sectors. A **regression equation** was determined that expresses a kind of magnitude of total accruals depending on two variables – the interannual difference in revenues (ΔREV) and the property, plant and equipment of the current year (PPE). For mutual comparison within the time period, relative values are needed, which were created by calculating a ratio to the total assets of the previous year (A_{t-1}). We present the linear regression

equation for the Wholesale sector, since the company ALFA, s. r. o. and company BETA, s. r. o., to which we apply the Jones model, belong to the sector.

$$\frac{TA}{A_{t-1}} = -35214{,}248 * \frac{1}{A_{t-1}} + 0{,}028 * \frac{\Delta REV}{A_{t-1}} + 0{,}333 * \frac{PPE}{A_{t-1}} + \varepsilon_t$$

Subsequently, after calculating the parameters of the suitability of the model, the **residual** (equation 4 in chapter 2) was calculated **for each company-year** of **ALFA, s. r. o.** and **BETA, s. r. o**., that means for 10 monitored accounting periods in each company.

In order to detect any potential manipulation of accounting data, the results for the investigated accounting units were compared with the **upper and lower limits of the extreme values** *of the Wholesale sector*, where the lower limit = - 3.633420, the upper limit = 4.791120.

Figure 1 shows the residual of the regression equation for the company ALFA, s. r. o. (that is, the rate of discretionary accruals) and at the same time shows the threshold levels for extreme values for the Wholesale sector. The residual ε_t for the selected company according to the defined regression equation represents discretionary accruals, which (as mentioned above) should be equal to zero. As can be seen in Figure 1, according to the original Jones model, the value of the residual does not deviate from the established threshold levels.
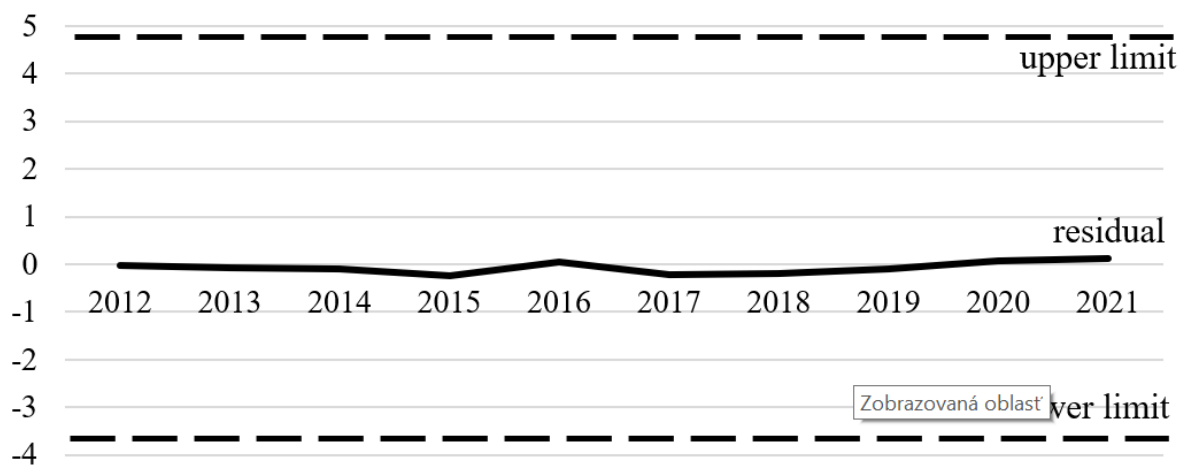
Figure 1 Residual ALFA, s. r. o. and upper and lower limits of extreme values

Source: own processing

Figure 2 shows the residual of the regression equation for the company BETA, s. r. o. (that is, the rate of discretionary accruals) and at the same time shows the threshold levels for extreme values for the Wholesale sector. The residual ε_t for the selected company, according to the defined regression equation, again represents discretionary accruals, which, according to the assumption, should be equal to zero. As can be seen in Figure 2, the value differing from zero and crossing the limits of extreme values for the Wholesale sector in this case occurs in the company-year 2014. This year, when applying the Jones model to the

accounting periods 2012 – 2021, was identified as the accounting period when potentially accounting data may have been manipulated. In such a case, a detailed examination of the accounting records in the environment of the identified company is necessary, which would confirm or refute the suspicion of the application of creative practices in the accounting of the given company, and especially in the suspicious accounting period of 2014.
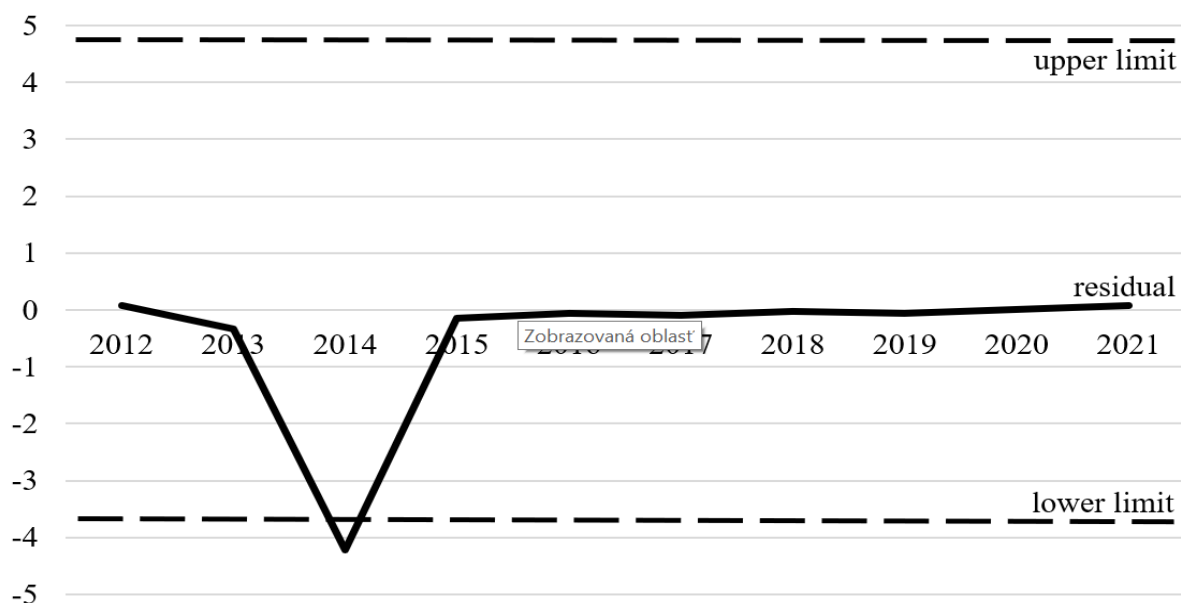
Figure 2 Residual BETA, s. r. o. and upper and lower limits of extreme values

Source: own processing

During the research, we were based on the fact that quantitative models for identifying accounting data distortions, such as the Jones model, are models that were initially developed for application to a certain time period (a period of several years) for one specific company. Thus, in order to establish the coefficients of the equation for the calculation of discretionary accruals for one company-year, a series of several consecutive accounting periods is necessary. When determining the period under study, we took into account the fact that even Jones (1991) requires that there be at least 10 consecutive observations within one company. However, we placed the investigobsered companies in the environment of a specific sector. Compared to the approach that takes into account the time periods of individual companies only, the sector approach is more advantageous in that it eliminates fluctuations that may occur within time periods for individual companies and looks for the most probable development of total accruals within a larger number of samples in one sector (Holland, Ramsay, 2003). Ergin (2011) analyzed the behavior of firms over a five-year period and found that large firms were less likely to use creative practices than small firms, which was also confirmed in our case studies.

Conclusion

The issue of misrepresentation of accounting data is an extremely current and very interesting topic. If the accounting unit does not achieve satisfactory results, managers are "tempted" to use accounting to improve the picture of the financial and income situation, even in an unauthorized way. Although these are not always extreme cases, it is increasingly important to deal with their detection. One possibility is the use of quantitative models. The present paper brought an insight into this issue through the use of the Jones model and pointed out the fact that the methods of detecting the distortion of accounting data can also be applied in Slovak conditions. Thus, there are ways to identify and reveal creativity in accounting in order to increase transparency in accounting and financial statement preparation.

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About the author

doc. Ing. Jozefína Hvastová, PhD.
University of Economics in Bratislava
Faculty of Business Economy with seat in Košice
Department of Economics and Management
e-mail: jozefina.hvastova@euba.sk

INITIAL PUBLIC OFFERING (IPO) OF GREEN BONDS: COVID-19 AS A POSSIBLE FACTOR IN CHANGING THE MARKET FOR ENVIRONMENTAL INVESTMENTS

PRVOTNÁ VEREJNÁ PONUKA (IPO) ZELENÝCH DLHOPISOV: COVID-19 AKO MOŽNÝ FAKTOR ZMENY TRHU ENVIRONMENTÁLNYCH INVESTÍCIÍ

Jakub SIEBER

Abstract

The objective of the presented paper is to analyze and compare the basic parameters of the IPOs of green bonds before and after the COVID-19 pandemic. The paper brings an up-to-date literature review of the researched topic, as well as the overall development of the market with the "green money". Conventional bonds IPOs have increased by 53.17% during the COVID-19 period, while the market of green bonds has shown growth of 414.59% during the same period. By analyzing two samples of green bond IPOs, the results show there is an increase in the variability of the yield and coupons in the green bond market after the outbreak of the pandemic. In comparison with the conventional bond IPOs, the median "greenium" difference has decreased by 0.61%, signaling the willingness of investors to pay so-called "greenium" to environmental projects has decreased.

Keywords: green bonds, IPO, pandemic consequences, environmental investments

Abstrakt

Cieľom predloženého príspevku je analyzovať a porovnať základné parametre IPO zelených dlhopisov pred a po pandémii COVID-19. Príspevok prináša aktuálny prehľad literatúry k skúmanej téme, ako aj celkový vývoj trhu so "zelenými peniazmi". IPO konvenčných dlhopisov sa počas obdobia COVID-19 zvýšili o 53,17 %, zatiaľ čo trh zelených dlhopisov vykázal v rovnakom období nárast o 414,59 %. Na základe analýzy dvoch vzoriek IPO zelených dlhopisov výsledky ukazujú, že po vypuknutí pandémie prišlo na trhu zelených dlhopisov k zvýšeniu variability výnosov a kupónov. V porovnaní s IPO konvenčných dlhopisov sa medián rozdielu, tzv. "greenium" znížil o 0,61 %, čo signalizuje, že ochota investorov investovať do environmentálnych investícii poklesla.

Kľúčové slová: zelené dlhopisy, IPO, dopady pandémie, environmentálne investície

Introduction

In recent years we are experiencing a significant outburst of issues in the bond market with the label "green bonds". Over the past decade, green bonds have become an iconic financial tool for green investing and financing. Green bonds are governed by principles set out by the International Capital Market Association (ICMA). Green bonds by their very nature, are mainly centered around carbon pricing, a broad set of policies to limit CO_2 emissions that include a "carbon tax" and a "cap-and-trade system" (Auffhammer, 2018). As PIMCO (2022) notes, securities focused on sustainability, environmental and social benefits are

becoming an important part of global fixed-income markets. Investors are increasingly looking to align their portfolios with their financial goals and internationally recognized sustainability targets such as the Paris Agreement or the UN Sustainable Development Goals (SDGs). In terms of the use of proceeds, the available evidence shows that sovereign green bonds are likely to be used for a more diverse range of eligible projects than corporate green bonds. It is difficult to assess whether the public issuances represent a genuine increase in the amount of finance going towards climate-related public investments, or whether these investments may have simply been rebranded and repackaged as green bonds rather than as traditional (conventional) bonds (IMF 2016a, 2016b).

Green bonds included in the Climate Bonds Green Initiative[1] (CBI) in the first quarter of 2022 totaled USD 83.5 bn, which represents a decrease of 38% compared to Q1 2021 (Climate Bond Initiative, 2022). The reasons for the decrease in year-on-year counts of the issuances in the green bond market might be subject to the various happenings in 2022, such as the dynamics of the bond market were impacted by the coronavirus disease 2019 (COVID-19) inflation that was even worsened by the Russian invasion of Ukraine in February and the ensuing European energy crisis. Bond issuance declined because of rising rates and excessive volatility, and the market was rife with tales of issuers canceling agreements at the eleventh hour. Following COVID-19, the USA experienced demand-driven inflation, which was anticipated to respond to changes in monetary policy. In contrast, Europe experienced supply-led inflation, which was more difficult to control. For comparison, in the first half of 2021, the issuance of green debt instruments grew further. According to the CBI, volumes during this time more than doubled to USD 227.8 billion from the first half of 2020, setting a record for any half-year period since the market's creation in 2007.

Since December 2019, the COVID-19 outbreak in China has presented significant difficulties to the worldwide bond and equity markets (Wagner, 2020), afterward spreading over the entire world. On March 11, 2020, the WHO classified COVID-19 as a pandemic[2]. The outbreak and spread of the COVID-19 pandemic have dramatically altered the economic, financial, and social picture not just in the euro region but globally as well. In response, the ECB swiftly acted by announcing a new temporary asset purchase program, PEPP, on March 18, 2020. (Zaghini, 2021). The second major response from the European Commission was establishing the new bond issuance under the NextGenerationEU[3], which serves as a temporary tool to help Europe's recovery from the COVID-19 epidemic and the creation of a greener, more technologically advanced, and more resilient

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[1] Annual reports of the Market Development by Climate Bonds Initiative. Retrieved on September 29th, 2022 available at: https://www.climatebonds.net/resources/reports/2022
[2] WHO declaration on COVID-19 pandemic. Retrieved on September 25th, 2022. Available at: https://www.who.int/europe/emergencies/situations/covid-19
[3] European Commission - Press release: European Commission completes the second successful bond issuance in 2022. Retrieved on September 29th, 2022. Available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1935

Europe with more than €800 billion. Both mentioned programs might be therefore considered as igniting actions, encouraging the issuance of green bonds on a larger scale as in the years before the pandemic started. The global pandemic of COVID-19 brought a new paradigm into the world order. But even before the instruments mentioned, the PEPP and the NextGenerationEU, there was a "big boom" in the market of green bonds. The green bond market only took off in 2013 but has experienced potent growth since then (Wang et al., 2020). Due to the market capacity to be openly traded and the safety of the green bonds, they are also seen to be the most widely used instrument among institutional investors in terms of fixed-income investments[4]. Businesses must get creative in the various ways of approaching their activities such as sales strategies, financing, management, marketing, etc. Innovations became a crucial tool for competitiveness.

The primary objective of this paper is to compare the basic parameters of the IPOs of the green bonds before and after the COVID-19 pandemic. The outcome of the presented research is going to state how the analyzed volume, yield, maturity, coupon, spread, and reoffer IPO changed. Results are going to compare the willingness of investors to invest their funds to "green money" projects and investments, and how it has changed during COVID-19 pandemic.

1 Literature Review

As stated by Banga (2019) the green bond market promises a new way for an investor to help finance a transition to a new, low-carbon, and sustainable economy, to help the global economy to become more resilient to the challenges of the next decades. From this point of the view, green bonds can be viewed as a new approach to the symbiosis of environmental change and the financial world (Scholtens, 2017). International Capital Markets Association (ICMA) refers to a green bond as "any type of bond instrument where the proceeds will be exclusively applied to finance or re-finance, in part or in full, new or/and existing eligible green projects" (ICMA, 2018).

We now have many decades of experience with the primary strategies taken in the finance industry to better align financial flows with environmental, social, and ethical goals. The origins of contemporary ethical and environmental investment can be traced back to the 1970s (Friede et al., 2015; Naidoo, 2020). According to Sachs (2015), a green environment may be attained with the use of green financial instruments. The process led to the creation of financial instruments by financial intermediaries and markets, including green bonds, green home mortgages, green loans for commercial buildings, environmental home

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[4] Investigations of NN Investment Partners show that green bonds are the most popular sustainable fixed income investment among institutional investors. Retrieved on September 26th, 2022. Available at:
https://www.nnip.com/en-INT/professional/insights/articles/green-bonds-are-most-popular-sustainable-fixed-income-investment-among-institutional-investors

equity programs, "go green" auto loans, small business administration express loans, and climate credit cards.

Green money, also known as sustainable financing, promotes investment in emerging technologies and breakthroughs, such as renewable energy (Jones, 2015). Such an acceleration of investments in sustainable energy and technology will heavily rely on the financial system. A green bond is a relatively new financial tool for allocating capital to environmentally friendly initiatives, and it could be able to facilitate some of the increased investment needed for environmentally friendly energy and technology (Torvanger et al., 2021). Investors are encouraged to hold green assets by non-financial factors, including pro-environmental inclinations, it has been emphasized. Investor preferences affect equilibrium prices if the utility function of a group of investors includes their hunger for particular asset classes in addition to their expectations for return and risk (Fama and French, 2007). One of the major dangers the planet is now facing is global warming. The Sustainable Development Goals (SDGs) of the United Nations (UN) focused attention on the rising concern about environmental pollution and the depletion of natural resources, which opened the door for the introduction of contemporary ideas like sustainable growth. The financial industry formerly disregarded the ecosystem, but it has gradually started to take environmental concerns into account and launched a variety of financial instruments that are expressly aimed at environmental conservation, such as green bonds (Meo and Karim, 2022).

Initially, supranational organizations dominated the market; currently, the main issuers are financial and nonfinancial businesses (Kapraun et al., 2021) To meet the objective set forth in the Paris Agreement, a low-carbon economy must be transitioned. The green bond market has had very rapid growth over the last five to ten years, but at the same time, the rate of expansion has been unequal among nations. This market could assist mobilize financial resources toward sustainable initiatives. The distinction between Norway and Sweden from the study of Torvanger et al. (2021) is a good illustration. According to Sweden's experience, other nations looking to promote the use of green bonds should prioritize sustainability leadership, cooperation between green bond issuers and investors, active communication, high visibility, and comprehensive disclosure of sustainable financing operations. As has been highlighted, different nations and issuer types, including multilateral banks, sovereigns, financial institutions, agencies, businesses, and municipalities, have seen varied developments in the green bond market.

In international fora like the G20 and the Financial Stability Board, climate change is well acknowledged as a significant threat to financial stability and the global economy. However, non-financial hazards are not considered by present macroprudential policies. Several central banks and regulators—particularly those in developing economies—are thinking about including a determination of banks' exposure to green lending into their framework for supervising the

industry. Regulatory adjustments that account for these risks within the Basel minimum capital requirement framework are being pushed for by academics and practitioners more and more, either by decreasing risk weights for "green assets" or by raising weights for "brown assets." However, it is not obvious in this context that green (brown) assets are inevitably associated with lower (higher) risk (Fatica et al., 2021).

Literature on this new debt product also emerged because of the financial markets' growing acceptance of green bonds. Numerous studies that focus on the process of the green bond IPOs compare the yields on green bonds with those on conventional (brown) bonds and indicate that green bonds sell at a premium from the issuer's point of view (offer a premium) at the time of their issuance (E.g.: Baker et al., 2018; Fatica et al., 2021; Gianfrate and Peri, 2019; Kapraun et al., 2021; MacAskill et al., 2021). The attention paid to the yield of bonds at issue allows for a look at changes in the main bond market, which is where the cost of borrowing for the issuing organizations is fixed (Zaghini, 2021). Bond yields are determined by a complex set of interactions among the market, firm, bond, and currency factors (Hacıömeroglu et al. 2022). Ehlers and Packer (2017) analyzed the credit spreads of conventional and green bonds in their study. They discovered that while green bonds have performed similarly to other bonds, they are typically valued more than conventional bonds.

The benefits of green bonds are commonly expressed as supporting a transition of society The advantages of green bonds are frequently described as helping society transition to a more sustainable and environmentally friendly future, achieving the Paris Agreement's global climate goal, improving risk management for climate change, and preparing businesses and long-term investments for a greener future. Participants frequently cite the following reasons for participating in the green bond markets: expanding the investor base, lowering the cost of capital for issuers (a so-called "greenium"), improving institutional capacity to handle sustainability issues and climate risk, and gaining reputational advantages because issuers and investors involved in green bonds are seen as acting in a socially responsible manner (Maltais and Nykvist, 2020, Torvanger et al., 2021). A "greenium" is a value or premium that is added to green investment, such as green bonds, above conventional bonds. This implies that bond purchasers accept a lower return on green bonds, which lowers the cost of financing for the bonds' issuers.

Depending on the country of investigation and the kind of issuance, the literature on the "greenium" is inconsistent. Some studies (Gianfrate and Peri, 2019; Zerbib, 2019; Harrison, 2021) discover green bond yields that are lower than that of equivalent conventional bond yields. Fatica et al. (2021) declare no yield disparities for issuances by financial institutions but a premium for green bonds issued by corporations and supranational organizations. Others claim there is no premium distinction between green and conventional bonds. (Larcker and Watts, 2019; Drage and Sundt, 2019). This premium offers the issuer a definite

cost-of-borrowing advantage. Issuers may gain more from this shift if the present crisis climate does genuinely enhance market preferences for green bonds (Hacıömeroglu et al. 2022).

The COVID-19 pandemic has had a big influence on China's green bond market and significantly raised the green bonds' cumulative abnormal returns (CAR). The CAR dramatically declined once the pandemic was weakening its impact on society (Yi et al., 2021). A study by Hacıömeroglu et al. (2022) claims that following the onset of the pandemic, both green and corresponding conventional (brown) bonds issued by firms saw a fall in their primary market rates; however, the decline for the green bonds was slightly bigger, resulting in green bond yields that are, on average, 32 basis points lower. Schumacher (2020) It has been proposed that green bonds can outperform brown bonds since they will be less susceptible to situations like the pandemic, where climate-related risks grow. Corporate green bond issuance is most concentrated within the utilities and energy sectors, specifically in the electricity and gas sectors. Another important sector where corporate bonds are issued in the real estate sector. From the above, it can be assumed that corporates use the primary green bond market mainly for electricity, gas, and green building projects. On the other hand, corporate bond issues related to renewable and alternative energy account for less than 3.6% of the sample and do not even reach 4.5% in terms of volume. In terms of countries issuing green bonds, the United States, Germany, and China have the largest number of such bonds issued. There are as many green bonds issued in Germany as in America and China, which represent much larger economies (Zhang, 2020). It is also interesting to note that Germany and France together issue more green bonds than the United States and China combined, making European primary green bond debt the largest in terms of issuance volumes. Preliminary analyses of the primary bond market suggest that sovereigns and government agencies, compared to corporates and financial institutions, are primarily using the bond market to finance large environmental and sustainability projects.

2 Methodology

The objective of the presented paper is to compare and describe the changes and development of the green bond IPO market. The focus is primarily set on the basic parameters of the IPOs and the credit ratings assigned for the researched sample. The analysis part is therefore divided into two parts. The first part is covering the parameters of the green bonds IPO, and the second covers the rating differences. The studied samples cover the period from November 29th, 2017, to May 31st, 2022. To understand the changes in green bond IPO during the studied period, for a better picture there is used market of conventional bond IPOs as a baseline. Examined sample of bond IPOs is sourced from a database provided by database bondradar.com. During the data preparation phase, there were several conditions considered. The IPOs which have not met set conditions were left from the final samples.

Conditions and assumptions for every bond IPO taken into the initial analysis are:

  - the corresponding date of the bond issue according to the selected period;
  - stated the volume of raised capital and currency;
  - the coupon rate for the bond issued;
  - only fixed coupon rates were taken into account;
  - only bonds with a set maturity date;
  - only bonds with set yield (in percentage) and spread in basis points.

The whole sample is divided into two subsamples a, b. Every subsample covers the timespan of the 822 calendar days. Subsample a covers the time period from November 29th, 2017 to February 28th, 2020 (561 working days), while containing 4,584 observations. Subsample b covers the period from March 1st, 2020, until May 31st, 2022 (563 working days). Subsample b contains 9,788 observations.

In both samples, there are used non-parametric tests: the independent sample median test and the Mann-Whitney U test. According to the results of non-parametric tests, it is possible to compare the median values and distribution of two groups of bonds. In this case, the compared group variable is called "green", with value 0 stating: "no green bonds". Value equaled to 1: "green bonds". The formulation of the Mann-Whitney U test leads to assumptions: (Pratt, 1964)

  - All the observations from both groups are independent of each other.
  - The responses are at least ordinal (it is possible to compare if any of the two observations is greater).
  - Under the null hypothesis H0, the distributions of both populations are identical.

After comparing the mean scores with a Mann-Whitney U test, it is necessary to know if the median scores are equal. A median test will answer the question by testing the null hypothesis that the population medians for groups of the green and "no green bonds" are equal for each examined variable. For both groups in both subsamples, there is a tested relation to selected variables, describing the elementary parameters of the bond. Examined variables along with tested hypotheses in the presented paper are volume, coupon, maturity, reoffer, spread, and yield. After all, there are tested twelve base hypotheses for both subsamples. Tested hypotheses are stated in Table 1.

Table 1 The list of the tested hypotheses – bonds parameters

Hypothesis	Tested relation of the null hypothesis	Tests used
H1.1, H1.2	**The medians and distribution of volume are the same across categories of bond groups.**	**Independent-Samples Median Test**
H2.1, H2.2	**The medians and distribution of coupon are the same across categories of bond groups.**	
H3.1, H3.2	**The medians and distribution of maturity are the same across categories of bond groups.**	
H4.1, H4.2	**The medians and distribution of reoffer are the same across categories of bond groups.**	Independent-Samples Mann Whitney U Test
H5.1, H5.2	**The medians and distribution of spread are the same across categories of bond groups.**	
H6.1, H6.2	**The medians and distribution of yield are the same across categories of bond groups.**	

Source: Authors processing.

Variable volume is measured in millions of US Dollars. In case the IPO is denominated in a different currency than the US dollar, the volume is converted to US dollars according to the FX (foreign exchange) rate of the date of the IPO. Maturity is measured as the number of days from the IPO and the exact date of the bond maturity. Reoffer is measured as a percentage of the final volume of IPO in relative share to the initial thoughts. E.g.: The value of 100 for parameter reoffer means that there were not made any changes to the volume of the IPO. The spread of the bonds is measured by the basis points, and the yield of the bond is measured in percentage.

3 Results

The counts of bond IPOs in the examined subsamples are summarized in Table 2. In the subsample before the COVID-19 pandemic, there were issued 4,584 bonds in aggregate. 4,399 bonds were not marked as "green" at the IPO. While 185 bonds (4%) were marked as green bonds. In the period after the COVID-19 breakout studied sample contains 9,788 bonds, of which 9,021 are not marked as green, while 767 (7.84%) bonds are labeled as green bonds.

Table 2 The count of bond IPOs between November 29th, 2017, and May 31st, 2022

Bonds type / Period	2017 - 2020	2020 - 2022
No green bonds	4,399	9,021
Green bonds	185	767

Source: Authors processing.

According to the counts, it is possible to state the total number of bond IPOs has increased by 53.17% during the COVID-19 period, while the market of green bonds has shown growth of 414.59% during the same period. Table 3 shows descriptive statistics for both examined samples. In a comparison of the before and after COVID-19 period it is possible to observe from descriptive statistics that

the means of volume (in million USD dollars), maturity, and spread of bonds have increased.

Table 3 Descriptive statistics of examined samples for basic parameters of issued bonds

	N	Min	Max	Mean	St. Dev.
Sample 2017 - 2020					
volume	4,584	11.26	11,387.35	848.898	798.4678
coupon	4,584	.0000	13.125	2.7883	2.0365
maturity	4,584	419	36,531	3,652.9	3,162.39
reoffer	4,584	93.054	162.728	100.0238	2.5529
spread	4,584	-33.00	1,301.00	155.771	155.2688
yield	4,584	-2.942	14.92	2.792	1.9968
Sample 2020 - 2022					
volume	9,788	3.54	24,042.88	933.402	1,049.2311
coupon	9,788	.0000	17.50	2.4668	1.9524
maturity	9,788	466.00	368,925	3,764.00	7,086.40
reoffer	9,788	74.562	355.948	100.0114	3.865
spread	9,788	-56.00	2,913.00	174.774	179.963
yield	9,788	-2.39	17.50	2.497	1.951

Source: Authors processing.

Other observed parameters have decreased in mean in the COVID-19 period. In each of the observed parameters of the bonds, it is possible to observe that their range has risen significantly in the period during COVID-19. Meaning that the variability of the observed parameters has increased in the sample of bond IPOs happening during the COVID-19 pandemic.

According to the results of the researched hypotheses presented in Table 4, it might be stated that the median and the distribution of volume, maturity, and the median of reoffer of the bond IPOs are the same in both analyzed bond groups. In these parameters, there is no significant difference in the mentioned groups in selected samples.

Table 4 Hypothesis Test Summary – Before COVID-19. Asymptotic significances are displayed in the significance statistics. The significance level is set to .050. a stands for Yates's continuity corrected asymptotic significance.

Hypothesis	Sig.	Decision	Hypothesis	Sig.	Decision
H1.1	.073[a]	Retain	**H4.1**	.101[a]	Retain
H1.2	.185	Retain	**H4.2**	.012	Reject
H2.1	.000[a]	Reject	**H5.1**	.000[a]	Reject
H2.2	.000	Reject	**H5.2**	.000	Reject
H3.1	.368[a]	Retain	**H6.1**	.000[a]	Reject
H3.2	.543	Retain	**H6.2**	.000	Reject

Source: Authors processing.

In the case of H4.1, it is not possible to reject the null hypothesis, so the median value of reoffer in both groups of bonds is quite similar in both subsamples.

Table 5 and figure 1 summarize the median values of both bond groups in the selected periods. Observing the no green bonds, the median values of both parameters coupon and yield have decreased in the IPOs happening during the COVID-19 pandemic. Before the pandemic, the median value of coupons was 2.87% but during the period of COVID-19, the median value decreased to 2.40%.
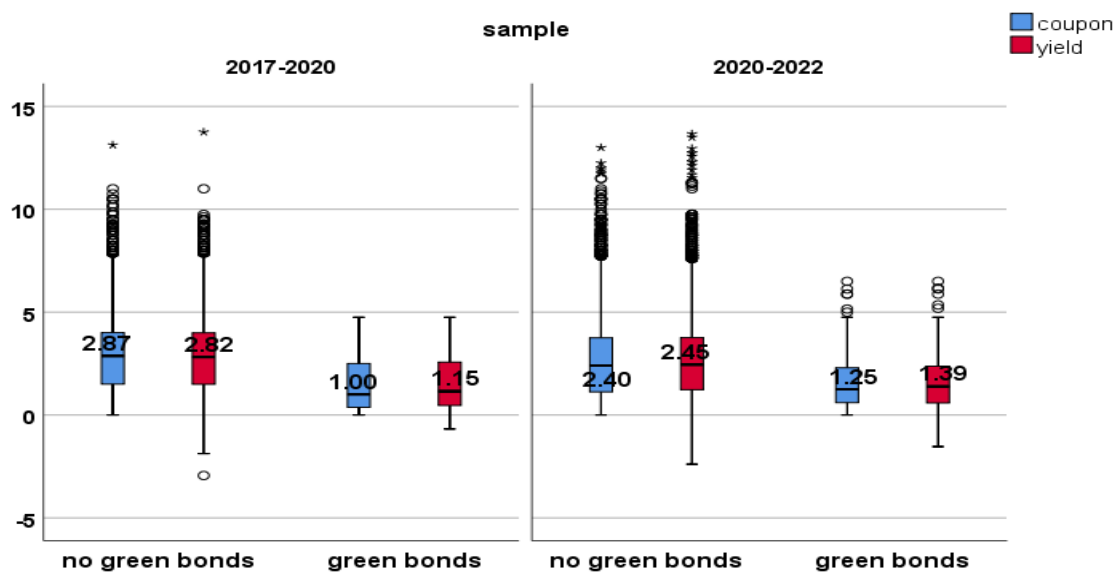

Figure 1 Clustered boxplot of the coupon and yield of no green and green bonds in selected periods.

Source: Authors processing.

Table 5 The median values of two selected bond IPO groups in observed samples.

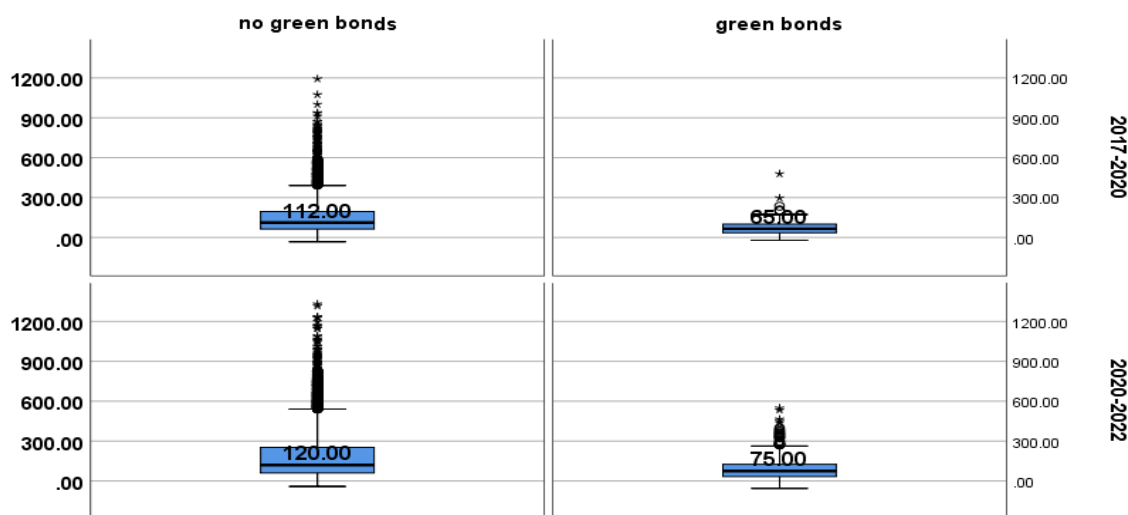|	Sample 2017 - 2020		Sample 2020 - 2022	
	No green	**Green**	**No green**	**Green**
coupon	2.87	1.00	2.40	1.25
reoffer	99.837	99.779	99.885	99.744
spread	112	65	120	75
yield	2.82	1.15	2.45	1.39

Source: Authors processing.

Figure 2 Boxplot of spread changes of no green and green bonds IPOs in the selected period.

Source: Authors processing.

Vice versa, the green bonds, and their median values of coupon and yield have increased. In the case of coupons, the median value increased by 0.25%, and the yield increased by 0.24%. The parameter of spread (Figure 2) is showing signs of an increase in both groups of the bonds. Green bonds' median value of the spread has increased by ten basis points, from 65 to 75, while the no green bonds median value has changed by eight basis points from 112 to 120.

Conclusion

Presented results of the green bond IPOs have summarized the trend and development of the market with green bonds in the period before the COVID-19 pandemic and after. Two time periods of 822 days were analyzed, covering the date range from 29 November 2017 to 31 May 2022. To better analyze the overall condition, green bonds in all hypotheses tested were compared to conventional bonds issued in the same period, which served as a baseline.

Based on the results, it can be concluded that the volume of IPO issuance focused on green bonds has increased significantly. The overall increase in green bond issuance was 414.59%. Compared to conventional bonds, or in other words bonds without the green label, that market grew by 53.17% during the same period.

In the first part of the analysis of the green bond market, priority is given to the fundamental parameters of bonds such as volume, maturity, coupon, yield, spread, and reoffer, and their median compared to the IPO of conventional bonds. All the parameters except volume and maturity are found to be statistically significant. The results showed that there was an increase in the variability of the mentioned parameters in the green bond market after the outbreak of the COVID-19 pandemic. With respect to specific parameters, it can be argued that while there was a decrease in yield and coupon in the IPO of conventional bonds, there was

an increase in these parameters in the IPO of green bonds. In the case of coupons, it can be observed that the median value has increased during the pandemic to a level of 0.25%, and the yield has increased by 0.24%. The findings of the presented paper offer evidence, that premiums, in the case of the green bonds called "greenium" have raised during the COVID pandemic in comparison with the conventional bonds, which is in line with the previous studies of the green bond market by (Gianfrate and Peri, 2019; Zerbib, 2019; Harrison, 2021). In comparison with the conventional bond IPOs, the median "greenium" difference has decreased from 1.67% before the COVID-19 pandemic to 1.06% after its outbreak. According to the presented findings it might be claimed that investors are still willing to receive lower yields when compared to conventional bond IPOs, but the median has decreased during the pandemic.

While investigating the spread of analyzed IPOs, the green bonds' median value of the spread has increased by ten basis points, from 65 to 75, while the no green bonds median value has changed by eight basis points from 112 to 120, an increase can be observed in both cases, but in the case of green bond IPOs, the median value of the spread has increased by three basis points. For the reoffer parameter, the opposite trend can be observed. In the case of green bonds, a decrease in reoffer rates is observed, while a slight increase is observed for IPOs of conventional bonds. In both cases, however, the values are below 100, indicating that issuers had to reduce slightly the required amount of bonds issued in the issuance process.

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About the author

Ing. Jakub Sieber
University of Economics in Bratislava
Faculty of Business Economy in Košice
Department of Corporate Financial Management
Tajovského 13, 041 30 Košice
e-mail: jakub.sieber@euba.sk

MARKETING IN HEALTHCARE – INFORMATION SEEKING BEFORE CHOOSING A HEALTHCAE PROVIDER IN HUNGARY

MARKETING V ZDRAVOTNÍCTVE – VYHĽADÁVANIE INFORMÁCIÍ PRED VÝBEROM POSKYTOVATEĽA ZDRAVOTNEJ STAROSTLIVOSTI V MAĎARSKU

Szilárd SZIGETI – László JÓZSA

Abstract

Our study examines the Hungarian customers' demographical factors influencing health-seeking behaviours and health information gathering when choosing a healthcare provider. The aim of our study is to investigate healthcare marketing and consumer attitudes in Hungary. The research was carried out in February 2021 and was conducted among adult individual residents in Hungary. The majority of the respondents use the internet (64.4%) as a tool to help them choose a healthcare service, however, they most often gather information from a doctor (70.3%), family members (58,5%), friends (46.6%) and health care workers (40.0%). The younger the consumer, the more likely they seek information online when choosing a healthcare provider. The older the consumer, the more likely they gather information from their doctor when choosing a healthcare provider.

Keywords: marketing, healthcare, consumers, social media, Hungary

Abstrakt

Naša štúdia skúma demografické faktory maďarských zákazníkov, ktoré ovplyvňujú správanie pri hľadaní zdravia a získavaní informácií o zdraví pri výbere poskytovateľa zdravotnej starostlivosti. Cieľom našej štúdie je preskúmať marketing v zdravotníctve a postoje spotrebiteľov v Maďarsku. Výskum sa uskutočnil vo februári 2021 a bol realizovaný medzi dospelými obyvateľmi Maďarska. Väčšina respondentov využíva internet (64,4 %) ako nástroj, ktorý im pomáha pri výbere poskytovateľa zdravotnej starostlivosti. Najčastejšie však získavajú informácie od lekára (70,3 %), členov rodiny (58,5 %), priateľov (46,6 %) a zdravotníckych pracovníkov (40,0 %). Čím je spotrebiteľ mladší, tým je pravdepodobnejšie, že pri výbere poskytovateľa zdravotnej starostlivosti vyhľadáva informácie na internete. Čím je spotrebiteľ starší, tým je pravdepodobnejšie, že pri výbere poskytovateľa zdravotnej starostlivosti získa informácie od svojho lekára.

Kľúčové slová: marketing, zdravotníctvo, spotrebitelia, sociálne médiá, Maďarsko

Introduction

Hungary's healthcare market is in transition and highly market-driven because the public healthcare supply is scarce, waiting lists have increased due to the COVID-19 pandemic, and the health workforce's regularisation has also affected the motivation of human resources (Csiki, 2021a). In the market, private healthcare providers are expanding their offer, and patients who are able and willing to pay for care out of pocket (either from private insurance or health insurance funds) are spending their money with these providers (Csiki, 2021b)

(Csiki, 2021c). The scientific literature has also addressed this issue because consumers are moving out of publicly funded care, and social insurance is providing a different level of service or sometimes not even subsidizing specific interventions (Csiki, 2021a). The boom in the private health care market has also led to some research in health marketing - how and in what form private healthcare can meet the needs of the public. This requires a conscious understanding of the demographic parameters of consumers, their purchasing decisions, and the sources of information they use.

The purpose of this study was to explore the Hungarian customers' demographical factors influencing health-seeking behaviours and health information gathering when choosing a healthcare provider. We also tried to find answers about the clients' (customers'/patients') perspective regarding the main characteristics of a good advertisement in healthcare marketing.

1 Theoretical background

The primary objective of the health system should be to meet health needs. However, the needs of individuals should not be ignored. The marketer should try to understand better what the consumer wants (or buys). The marketer's response to meeting the patient's needs would be positive, but the response must be medically appropriate (Berkowitz, 2006). There are two opinions about the purpose of marketing (1) transaction view and (2) customer relationship-building and loyalty view. The latter is now being used more and more sparingly by marketing professionals (including the health sector) (Kotler–Stevens–Shalowitz, 2021). Health is generally not considered a market good, except for private goods (for example, a cosmetic plastic surgery procedure), where market characteristics are present. Thus, the attributes of market mechanisms can be defined - competition, free choice, market product, or service, and unenforced demand (Ozorovský–Vojteková, 2016). Hanuláková (2013) draws attention to some specificities of health marketing:

- The healthcare sector is situated at the border between the commercial and the public sector from a marketing perspective.
- Marketing management is at the border between the economic and medical professions.
- Health is not a commodity.
- Marketing in the health sector is multidimensional and has many unique characteristics.
- It is a two-component target market (Hanuláková, 2013).

Kotler-Keller (2016) mention several marketing management tasks that should be delivered: (1) developing marketing strategies and plans, (2) capturing marketing insights, (3) connecting with customers, (4) building strong brands, (5) creating value, (6) delivering value, (7) communicating value, (8) conducting marketing responsibly for long-term success (Kotler-Keller, 2016). The literature

uses the expression to CCDVTP (meaning create, communicate, and deliver value to a target market profitably) that could be used in healthcare marketing (Kotler–Stevens–Shalowitz, 2021).

Marketing and its approach are very much applicable to the health sector, as the conditions of competition are also present here. There is a difference between public and private providers since the former do not operate in an entrepreneurial way, while the latter must operate in an entrepreneurial way, where the aim is to achieve the highest possible profit (Kotyza, 2015). This, however, needs to be partly modified or corrected, or regulated, mainly because of the role of medical ethics and the primacy of the patient. All health systems and health institutions can be evaluated according to four primary objectives: (1) accessibility, (2) quality, (3) equity, (4) profitability (Staňková, 2013). Proper marketing approaches and processes will enable a healthcare institution to operate in a stable and economic market (Kotyza, 2015). From the consumer's perspective, the primary product to be purchased is the knowledge or skills of doctors and nurses and the accompanying technology. The primary product is the essence of the health service - it is the quality or technical component (the cost of entry) of the health organization. When developing a unique product attribute, it is important to focus on one service component that can be a defining characteristic. Such a component is one that consumers perceive as important and that they perceive as different from competitors (Hillestad–Berkowitz, 2020).

Examples of health information sources: healthcare providers, family and friends, television, radio, newspapers, and magazines and advanced sources such as search engines on the Internet or company web sites (Ha – Jung Lee, 2011). The Internet provides patients a variety of purposes (e.g., prescription refills, nonurgent consultations or requesting for treatment information) with greater access to doctors and this saves time and cost (Jiang, 2019). The increasing availability of health information allows people to easily access health information. This is supported by different media platforms, printed publications, as well as digital media or websites. Each source has specific functions and characteristics in satisfying consumers' information needs (Zhang et al., 2020). Most adults search for health information via the Internet, however many of them are still unable to understand the information they acquire (Ha – Jung Lee, 2011).

Digital platforms, including mobile apps and social networks, are changing customer interactions and expectations. The challenge for marketing staff in healthcare organizations is to determine how to use social media to reach customers and turn social media content into business value (Baker et al., 2018). Three different types of media can be defined: information-oriented media, entertainment media and new media (Zhang et al., 2020). Printed media are more often used for informational purposes and are seen as containing more credible and reliable health information (Meulemann, 2012). Broadcast media in audio-visual modalities (radio, TV), are often used as entertainment sources. The Internet has the characteristics of both information-oriented and entertainment-

oriented media, as it encompasses multiple modes of communication (Dutta-Bergman, 2004). Health consumers are increasingly using different online channels to obtain health information. Social media's peer-to-peer network and various interactivity options (e.g., group chat or commenting) make it easy for people to join online social support groups to access informational and emotional resources, exchange information and first-hand experiences. The majority of online health seekers searched for health information through search engines (Zhang et al., 2020), so they prefer online platforms for information seeking.

Younger people, people with higher incomes and people living in different types of towns and cities in Hungary use websites for information seeking. As education levels increase, so does the number of people using the website to find information on health products (Lányi et al., 2018). As for internet usage and the rise of social media, based on statistics for the Hungarian population (January 2021), internet usage in the country is 8.01 million users (83% of the population), of which 51.6% browse the web on laptops or personal computers; 46.3% on mobile phones and 2% on tablets. As for social media-related statistics, the number of active social media users is 7.09 million (73.5% of the population). The potential audience on Facebook is 6 million (53.3% female; 46.7% male), while on Instagram it is 2.5 million (53.8% female; 46.2% male). According to a Google report, YouTube has an audience of 7.09 million (Kemp, 2021). Recognizing the importance of social media is the first step in a healthcare institution's engagement with the digital world, as social media can help a healthcare institution manage the patient experience, connect with community members and potential patients, and make interactions with patients more comfortable and less clinical (Baker et al., 2018).

Mobile technology can help healthcare providers manage risk, encourage healthy behaviours, and engage with consumers while also holding the real potential to reduce healthcare expenditure (Baker et al., 2018). Hungarian women, young people, people with at least secondary education, people with good/better income, people living in cities with county status and people living in large municipalities use social media sites more actively than average when they are looking for information about health news and new products. The elderly and low-income groups are not likely to obtain information from social media (Lányi et al., 2018). The relationship between social media and healthcare: healthcare marketing typically has its strengths online - for example, on Facebook, Twitter, YouTube, LinkedIn, where audiences can be reached. Facebook is suitable for advertising, posting news, content, announcements, and the target audience of a healthcare institution is likely present in large numbers on this platform (given the statistics presented above). YouTube is also an excellent platform for sharing professional videos, short summaries, explained tutorials, and guides. LinkedIn can be a platform for professional community building and branding. It is helpful to create news and posts on informative health topics and build a positive, trusting

relationship with the target audience. Educational content can be made available and can activate consumers every day (Szatmári, 2020).
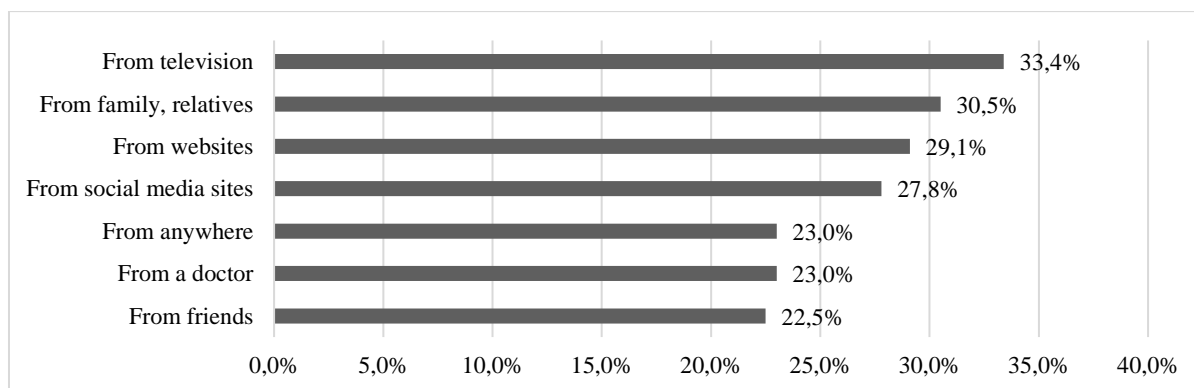

From television — 33,4%
From family, relatives — 30,5%
From websites — 29,1%
From social media sites — 27,8%
From anywhere — 23,0%
From a doctor — 23,0%
From friends — 22,5%

Figure 1 Sources of information on health news, new products in Hungary (N=2001)

Source: Lányi et al., 2018

Physicians, nurses or other healthcare providers are considered and influential and reliable official sources of health information (Hwang, 2020). What are the usual sources of information on health news and new products for Hungarian respondents? Figure 1 shows the proportion of respondents mentioning each source, with television being the most popular source of information, followed by family, relatives and then the website, but the results show that respondents are less likely to be interested in information than in the previous question. The number of other responses was not significant, but here the majority mentioned radio, press/newspapers and leaflets (Lányi et al., 2018).

There are differences in the sources of personal information seeking. In Hungary family and relatives are a more important source of information for women and for those living in towns and villages, and much less so for those living in Budapest. Women are also more likely to ask the doctor for information, and this is more typical of older people than younger people. Those living in large municipalities are also more likely to ask the doctor for information, while those living in Budapest are much less likely than average to seek information in this way, similar to the group with the worst income situation, but the group that is just better off is the most active in this area (Lányi et al., 2018).

2 Material and methods

The aim of our study was to explore the Hungarian customers' demographical factors influencing health-seeking behaviours and health information gathering when choosing a healthcare provider. It was important for us to find answers about the clients' perspective regarding the main characteristics of a good advertisement in healthcare marketing.

In the primary survey, an anonymous online questionnaire was used to collect responses from an individual resident in Hungary. We used closed questions, semi-closed questions, multiple-choice questions, and Likert scale questions (1 to

5 scale). However, the survey was carried out in February 2021 using a non-probability sampling method (snowball sampling) - the sample is not representative.

Evaluation and analysis methods: For statistical analyses, nominal and ordinal variables were examined; cross-tabulation analysis, Chi-square test was performed. Results were considered significant at a p-value of 0.05 and a p-value of 0.001. According to Csallner (2015), the correlation coefficient (r-value) as a parameter indicates a perfect positive relationship for $r=1$, a strong positive relationship for $0.7<r<1$, a medium positive relationship for $0.2<r<0.7$, and a weak relationship for $0<r<0.2$. We also examined the phi coefficient and the Cramer V value. The statistical results were visualized using bar charts and bar graphs.

Research objective – research questions (RQ) and four hypotheses (H):

RQ1: Where do clients (customers/patients) get information when choosing a healthcare institution?

RQ2: What are the main characteristics that clients (customers/patients) mark when deciding as a good advertisement?

H1: There is a relationship between the age group and the answers choosing an informative type of advertisement (as the main characteristic of a good advertisement).

H2: There is a relationship between the highest education and the answers choosing an informative type of advertisement (as the main characteristic of a good advertisement).

H3: When choosing a health care provider, there is a relationship between the information obtained from the Internet and the age group of the respondents.

H4: There is a relationship between the information obtained from the doctor and the age group of the respondents when choosing a health care provider.

2.1 Description and characteristics of the study group

The total number of Hungarian respondents to the survey was N=455, of which 26.0% were male and 74.0% female. The distribution by age group was: 18-23 years old (16.5%), 24-29 years old (9.5%), 30-35 years old (4.4%), 36-41 years old (6.8%), 42-47 years old (14.3%), 48-53 years old (20.0%), over 54 years old (28.6%), which suggests that the 54+ age group is over-represented.
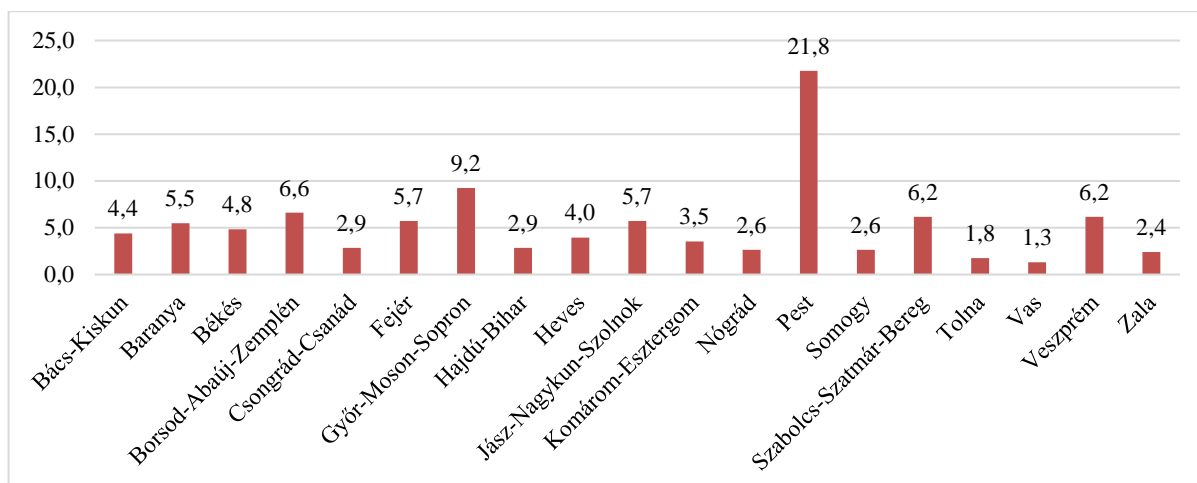
Figure 2 Distribution of respondents by county of residence in Hungary (N=455)

Source: own research

The highest level of education of respondents is the following: 8th grade (2.2%), vocational education (11.2%), vocational high school diploma (27.0%), high school diploma (21.5%), college or university degree (38.0%). Respondents with a college or university degree are the most numerous. Responses were received from all regions in Hungary (see Figure 2), although it should be noted that the highest number of respondents (21.8%) live in Pest Region.

3 Results and discussion

3.1 Marketing aspects

We were primarily curious to know how acceptable is for respondents if a healthcare institution uses marketing tools. The respondents could choose 1-5 Likert-scale answers (1=I do not consider it acceptable; 5=I consider it fully acceptable). The responses received (N=455) gave a calculated mean value of 4.01 (standard deviation 1.11) and a median value of 4, indicating that the respondents consider it acceptable that a health care institution uses marketing tools.

In response to the question "Is it important for you to read professional references before choosing a health service?", 64.6% of respondents consider it important to read references on a blog, and 72.3% consider it important to read professional references available on a website. This suggests that most respondents use the internet as a tool to help them choose a healthcare service, seeking information from a variety of sources and consider this important. Among the social media platforms, 89.0% of respondents had encountered an advertisement for a private healthcare institution on Facebook, followed by only 29.5% on YouTube and, thirdly, 19.1% on Instagram. On television, 25.5% of respondents had encountered such advertising.
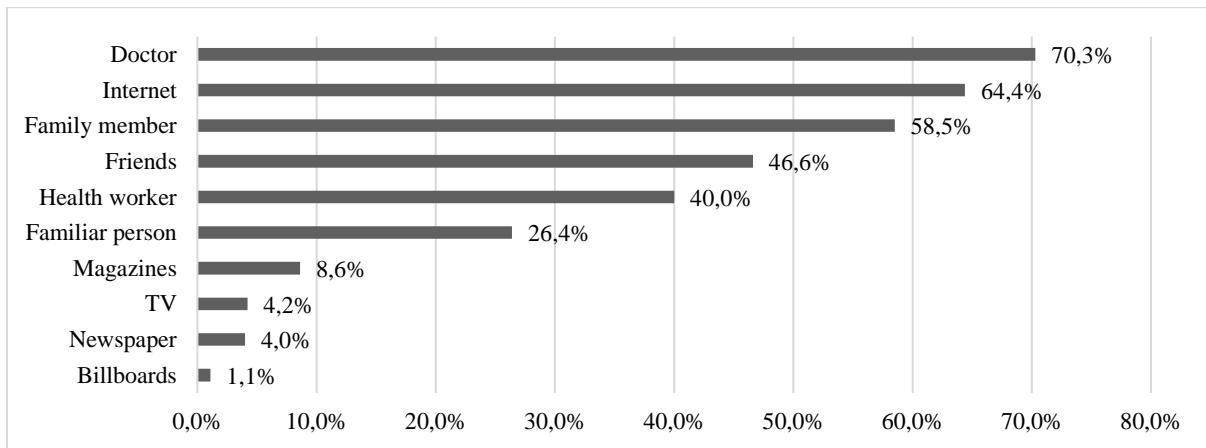
Figure 3 Source of information when choosing a healthcare institution (N=455)

Source: own research

RQ1: Where do clients (customers/patients) get information when choosing a healthcare institution?

The questionnaire included a closed question regarding information seeking when choosing a healthcare institution. The results were summarised in Figure 3 using a bar chart. Respondents (N=455) most often gather information from (1) a doctor (70.3%), (2) the internet (64.4%), followed by (3) family members (58,5%), (4) friends (46.6%) and (5) health care workers with 40.0%. A tiny proportion of people obtain information from magazines, TV, newspaper, and billboards.
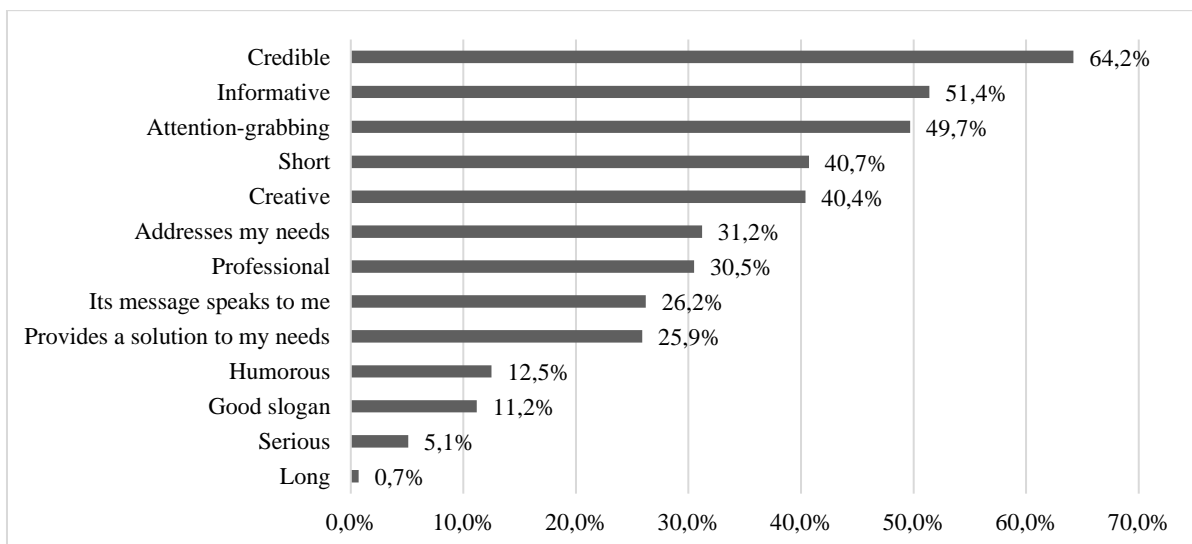

Figure 4 The main characteristics of a good advertisement (N=455)

Source: own research

RQ2: What are the main characteristics that clients (customers/patients) mark when deciding as a good advertisement?

According to the 455 respondents, the TOP 5 characteristics of a good advertisement (see Figure 4) were: credible (64.2%), informative (51.4%), attention-grabbing (49.7%), short (40.7%) and creative (40.4%).

3.2 Results of hypothesis testing

In our cross-tabulation analyses, the variables of interest are at nominal measurement levels, so we performed Pearson's Chi-square test and examined the Cramer V value and the contingency coefficient (see Table 1).

Table 1 Cross-tabulation analysis of the relationship between age group, the highest level of education and answers choosing an informative type of advertisement

Age group * Informative (as the main characteristic of a good advertisement) (Nominal by Nominal)	N=455	Value	df	Asymptotic Significance
	Phi	0,238	6	0,000
	Cramer's V	0,238		0,000
	Contingency Coefficient	0,232		0,000
The highest level of education * Informative (as the main characteristic of a good advertisement) (Nominal by Nominal)	N=455	Value	df	Asymptotic Significance
	Phi	0,265	4	0,000
	Cramer's V	0,265		0,000
	Contingency Coefficient	0,257		0,000

Source: own research

When examining age group (independent variable) and the answers choosing an informative type of advertisement (as the main characteristic of a good advertisement) (dependent variable), we see a significant weak relationship with a positive direction (p=0.000, where p<0.001; r=0.238; Cramer V=0.238; contingency coefficient value 0.232; df=6). The results of cross-tabulation analyses show that the younger the consumer, the more they prefer informativeness as one of the main characteristics of a good advertisement.

We conclude that the alternative hypothesis H1 can be confirmed based on the statistical results: There is a relationship between the age group and the answers choosing an informative type of advertisement (as the main characteristic of a good advertisement).

When examining education as an independent variable our statistical test (Pearson Chi-Square) also shows significant weak relationship with a positive direction, as p=0.000, where p<0.001; r=0.265; Cramer V=0.265; contingency coefficient value 0.257; df=4. The results show that the higher education the consumer, the more they prefer informativeness as one of the main characteristics of a good advertisement.

We conclude that the alternative hypothesis H2 can be confirmed based on the statistical results: There is a relationship between the highest education and the answers choosing an informative type of advertisement (as the main characteristic of a good advertisement).

The results show that when marketing professionals do the market segmentation by age group or highest level of education:
- it is advisable to create health-themed advertisements with high information content for the higher educated customers;
- for younger age groups, it is advisable to create health-themed advertisements with a high information content;
- information content is not a priority for older age groups.

Table 2 Cross-tabulation analysis of the relationship between age group and information obtained from the Internet or by the doctor

Age group * Information obtained from the Internet (Nominal by Nominal)	N=455	Value	df	Asymptotic Significance
	Phi	0,320	6	0,000
	Cramer's V	0,320		0,000
	Contingency Coefficient	0,305		0,000
Age group * Information provided by the doctor (Nominal by Nominal)	N=455	Value	df	Asymptotic Significance
	Phi	0,230	6	0,001
	Cramer's V	0,230		0,001
	Contingency Coefficient	0,224		0,001

Source: own research

In our next cross-tabulation analyses, the variables of interest are at nominal measurement levels, so we performed Pearson's Chi-square test and examined the Cramer V value and the contingency coefficient (see Table 2).

We analysed, whether there was any relationship between choice and age group for the two most common responses (from a doctor and the internet). Statistical tests were used to support the alternative hypothesis. The following results were obtained:

H3: When choosing a health care provider, there is a relationship between the information obtained from the Internet and the age group of the respondents.

We analyzed nominal variables (Internet information: yes – no; and age groups) using the cross-tabulation analysis. The result of the degrees of freedom (df) is 6, and the Chi-square test is p=0.000 (p<0.001), so there is a significant relationship between the two variables. The strength of the relationship is 0.320 according to the Phi value and 0.320 according to the Cramer coefficient - a moderately weak positive relationship. The contingency coefficient is 0.305. Based on the results obtained, the alternative hypothesis can be confirmed: there is a relationship between the information obtained from the Internet and the age group of the respondents. The younger the consumer, the more likely they seek information online when choosing a healthcare provider.

H4: There is a relationship between the information obtained from the doctor and the age group of the respondents when choosing a health care provider.

The analysis was performed using nominal variables (consultation with a doctor: yes – no; and age groups) using a cross-tabulation analysis and a Chi-square test. Our statistical test shows significant relationship, as p=0.001, where p<0.05; r=0.230; Cramer V=0.230; contingency coefficient value 0.224; df=3. There is a significant relationship between the two variables (a weak relationship in the positive direction). Based on the results obtained, the alternative hypothesis is accepted. The older the consumer, the more likely they gather information from their doctor when choosing a healthcare provider.

4 Discussion and conclusion

Our results suggest that health care providers should engage in conscious thinking and planning in their marketing activities. Our validated hypotheses indicate that age group and highest educational level are associated with the use of the Internet for information seeking when choosing a health care institution. The younger the consumer, the more likely they seek information online when choosing a healthcare provider. The older the consumer, the more likely they gather information from their doctor when choosing a healthcare provider.

We conclude that the results suggest differentiated marketing in the marketing of healthcare institutions in Hungary. Due to the demographic differences of consumers, different marketing solutions should be used, and a balance should be found between electronic (internet) content and medical information content and exploiting the potential of the available interfaces. Word-of-mouth marketing should be emphasized, as the results show that the opinions of family members (58,5%), friends (46.6%) and (5) health care workers (40.0%) are important for patients who are trying to make a decision regarding a healthcare provider. This also supports the scientific findings. The professional references and other content published on the website and blog are important for consumers (64.6% of respondents consider it important to read the references on the blog, and 72.3% to read the professional references available on the website). Facebook is the most widely used social media platform where patients can be reached; therefore, intensive but planned marketing activities on this platform can effectively target specific groups. According to the 455 respondents, good advertisement is credible (64.2%), informative (51.4%), attention-grabbing (49.7%), short (40.7%) and creative (40.4%).

Managerial implications and future research: The results show that when marketing professionals do the market segmentation by age group or highest level of education it is advisable to create health-themed advertisements with high information content for the higher educated customers; for younger age groups, it is advisable to create health-themed advertisements with a high information content.

The present study examined two demographic parameters (age group; highest educational level). We believe that research on additional parameters (e.g., income, place of residence) could yield further valuable results in the future. Also, we plan to increase the sample size, expand the range of entrepreneurs, extend the geographical area covered to realize more complex analysis and statistical testing.

Limitations: sample size, geographical limitation, Hungarian speaking customers.

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About the authors

Mgr. Szilárd Szigeti
J. Selye University, Faculty of Economics and Informatics, Department of Economics
Hradná str. 167/21., 945 01 Komárno, Slovakia
E-mail: szilard.szigeti.edu@gmail.com

Prof. Dr. László Józsa, CSc.
J. Selye University, Faculty of Economics and Informatics, Department of Economics
Hradná str. 167/21., 945 01 Komárno, Slovakia
E-mail: jozsal@ujs.sk

REVIEW

LUKÁČ, Jozef – KUDLOVÁ, Zuzana: Financial analysis focused on the food industry, First edition. Ostrava: Technical university of Ostrava, 2021. 132 s. ISBN 978-80-248-4589-0.

The monograph provide readers information about the current state of the food sector and its financial health in Slovakia. The authors through the financial analysis wanted to convey the current problems and facts that food businesses face in their business.

The monograph consists of five logically connected chapters. The first chapter describes and points out the position of the food industry in Slovakia in the context of other industries. Within it, the authors compare added value, revenues and profits of individual industries. The chapter is supplemented with interesting comparisons related, for example, to monthly staff costs in individual sectors.

The content of the second chapter is a theoretical introduction to financial analysis, in which the authors describe users of financial analysis, data source for financial analysis and other data sources.

Defining and also specific calculations of indicators of liquidity, profitability, indebtedness and average values in the activity area are contained in the third chapter. I very positively evaluate the comparison of the achieved results of 46 companies from the food production sector, which the authors subsequently divided into clusters using the statistical software R. They modeled the case study for two different number of clusters (first it was for 4 clusters and later for 5 clusters. Created clusters are heterogeneous with each other, but companies within their cluster are homogenous. As the authors stated, it means that businesses in one cluster have similar characteristics in term of financial performance indicators but different characteristics of indicators with food businesses in other clusters.

The fourth chapter focuses on the use of financial analysis in evaluating the value of food businesses using EVA and MVA indicators and provides the calculation of EVA for food business in Slovakia. The last chapter of the monograph presents an analysis of the financial performance of companies in the food sector in the context of the crisis. In this chapter, the authors tested two hypotheses using mathematical-statistical methods and the JASP program.

The authors of the publication worked with a large amount of mostly foreign literature, thus demonstrating the ability to process and unify the issue and the approach of several authors to the solved issue into one logical whole.

In terms of content and form, the publication is at a very good professional level. It brings universal knowledge that can help to improve financial stability and achieve good financial health for food businesses. It will be interesting to follow the development of financial performance of companies in the agricultural sector before and after the outbreak of the global pandemic crisis caused by COVID-19.

The monograph can also serve as teaching material for students for the courses taught at the Faculty of Business Economy with seat in Košice (Financial analysis and financial planning, Financial and economic analysis, Financial management, Expertise), but also for similar courses taught at other faculties with an economic focus.

doc. Ing. Emília Duľová Spišáková, PhD.
University of Economics in Bratislava
Faculty of Business Economy with seat in Košice
Department of Economics and Management
e-mail: emilia.spisakova@euba.sk

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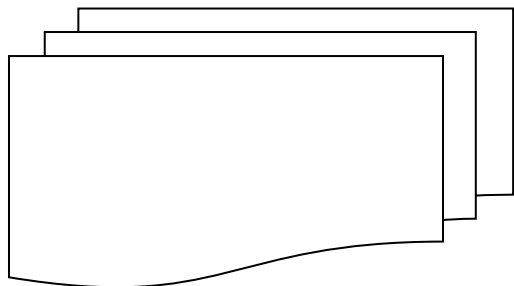Source: XYZ   (Times new roman, 12 pt)

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