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Tourism with No Resources?

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Abstract. The main objective of the present study is to examine the changes in national tourism supply and to find out whether these changes are quantifiable or not. Research analysis shows that – contrary to our hypotheses/expectations – tourism is relatively weakly connected to places, to the localization of traditional resources. Results reveal how relationships between tourism factors and resources and tourism supply and demand have changed. While tourism trends become more strongly connected to cultural resources, natural resources tend to lose ground. Post-industrial trends – such as the secondary value of the material environment, the reinterpretation of attractions and authenticity, the appearance of new contents and interpretations, etc. – are barely traceable in the Romanian statistical figures on tourism. At the same time, we have not encountered any studies of such extent on Romanian tourism and its resources or any large statistical analyses involving all settlements (all administrative units) from Romania; therefore, the current research can serve to fill this gap and offer new findings on the topic.

Keywords: tourism, resources, postmodern supply, quantitative analysis
JEL Classification: R11, Z30

Introduction

Tourism growth in Romania can be clearly shown: between 1995 and 2015, capacity grew by nearly 110%, while the number of facilities increased by 233%. Tourist traffic indicators reflecting demand have similarly increased; between 2001 and 2016, the number of visitors grew by 186%, while the number of guest nights increased by 120% in the last 15 years (INS, 2017, own calculations 2017). Within Romania, Transylvania is the most rapidly developing historical region (not only from a tourism perspective) as the above numbers in this region are 40–80% higher than the national average. It would be extremely difficult to summarize and present the qualitative changes in tourism supply on a national level or to examine them on

a regional or county level, wherefore the present study focuses on how changes in tourism (spatial and chronological) are related to resources – namely, the research set out to examine to what extent are tourism supply (number of accommodation establishments and capacity) and tourism demand (number of visitors and guest nights) connected to resource potentials. Tourism resource potentials can be regarded as constant in time but different in space – illustrated by two complex indicators, namely the synthetic indicators of natural and cultural resources.

The first part of the present paper deals with some theoretical issues in two major steps – namely, what we understand under the term "resource" and what it means in the context of postmodern tourism. Based on the reviewed literature, it can be stated that traditional resources are not always important in the case of new, contemporary forms of tourism. The hypothesis links the two main theoretical perspectives on understanding resource. The relativization of resources is a postmodern phenomenon, and this rupture, de-localization, or "resource-free" perspective can be traced in the Romanian tourism as well; and, what is more, it can be expressed in numbers.

The theoretical part of the study is followed by a short qualitative research carried out within the online context of Romanian tourism. Then, the paper presents the methodology and results of the statistical research (correlation and regression analysis). Results showed promises but failed to fully validate the hypothesis as, according to the numbers including all localities, there is a correlation of only 0.2–0.3 between resources and tourism.

Theoretical Framework

The present section of the paper deals with two major theoretical issues: a) resources and b) resource-orientedness of current tourism trends. Firstly, it is necessary to define what we understand under the term resource, to discuss if there is any distinction between tourism resources and touristic attractions and whether there are any differences between resources "designed"/"created" for tourism purposes and resources that are quasi-independent from the tourism industry. There is a vast literature on the concept of resource; however, there is no unified, generally agreed-upon definition of the term. In order to illustrate the above mentioned heterogeneity, some examples are provided in the following. The oldest and most popular illustration in Hungarian scientific literature is that of Márton Lengyel from 1994. In his illustration, Lengyel (1994: 47) presents tourism supply as including the following elements: attractiveness, infrastructure, services, hospitality, organizations, and other elements. The above definition does not provide a clear picture on what is attractiveness, what it includes (possibly resources?), but it is evident that it belongs to tourism supply

and that it is different from both services and infrastructure. Lóránt Dávid (2007: 62) distinguishes between public goods and free goods, factors of production and tourism resources, where the latter includes natural, cultural (institutions, programmes, and cultural heritage), infrastructural, and human factors. He also states that tourism resources can turn into consumable attractions only if they are complemented by appropriate services. Citing several authors, László Puczkó (1999: 21–23) starts out from the physical environment. One of his figures (id., Figure 1.2, p. 23) illustrates an overlap between tourism products and the physical environment, and thus elements of physical environment utilized in tourism products appear at the intersection of the two dimensions.
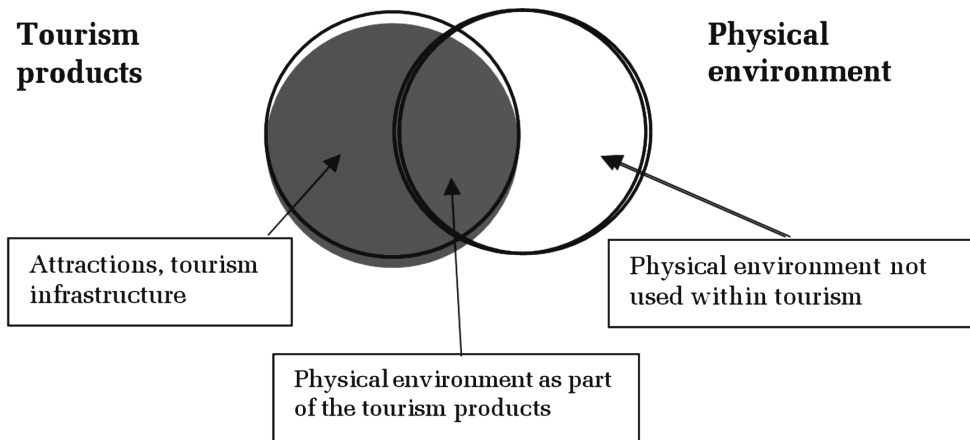
Source: Mieczkowski (1995: 58), qtd in Puczkó L. (1999: 23)

Figure 1. *Relationship between tourism and the environment*

Similarly, Goeldner and Ritchie (2009: 335) present tourism supply as being comprised of natural resources and the environment, constructed environment, operating sectors (organizations, companies), hospitality, and cultural resources.

The above mentioned approaches rather pertain to the mainstream tourism concept that does not explicitly focus on the specific role of resources but rather accepts their a priori and essential role in the development of supply, serving some kind of not strictly defined roles. In a relatively early period, Krippendorf (1980) already distinguished between two types of supplies: a so-called primary supply, which in fact was not created for tourism purposes, and secondary supply, which contains services especially created to satisfy tourists' needs. A rather interesting approach can be found in a doctoral thesis from Hungary, according to which until the last third of the 20th century – the 1980s – tourist attractions were mainly comprised of natural and cultural resources, while nowadays certain elements/components of infrastructure or tourism superstructure can serve as

attractions for today's tourism industry (Jónás–Berki, 2010: 20–21). Therefore, it seems that there is a shift from the traditional understanding of resources towards a new concept of resources that does not necessarily rely on touristic sights or cultural heritage. In the same vein, Benur and Bramwell (2015: 213–214), analysing the concentration and dispersion of primary touristic products (those that rely on traditional resources), argue that tourism industry frequently relies on traditional resources when creating primary touristic products; however, certain tourism destinations might contain other elements and products that do not derive from the traditional resources. It is also necessary to mention here Smith's (1994) model, in which he illustrates touristic products as the interaction of five concentric circles, where the inner circle represents the physical space together with the infrastructure and resources, the next circle represents services, then hospitality, freedom of choice, and the last, outer circle stands for the possibility of involvement. In Smith's model, the core element is the physical setting containing mainly traditional resources such as natural habitats, natural formations, and tourism infrastructure (e.g. holiday resorts). Another important contribution to the understanding of tourism products is McKercher's (2016) taxonomy, in which he selected and classified 330 types of tourism products based on several hundreds of publications. McKercher focuses on classifying tourism products into six levels according to Kotler's product classification; however, some bottom-level products quite obviously refer to certain resources or the lack of such resources. Let us take a look at the categories included into the top two levels named by McKercher as Need Family and Product Family in *Table 1* (subsequent levels are: Product Class, Product Line, Product Type, and Item):

Table 1. *Need Family and Product Family based on McKercher's classification of tourism products*

Need Family	Product Family
Pleasure	Food and drink / Leisure / Indulgent (sex, drug tourism, etc.) / Personal events / Built attractions (Gaming) / Sports / Recreation
Personal quest	Personal history / Religious / Medical / Wellness / Learning
Human endeavour	Industrial / Built heritage / People and intangible heritage / Creative / Dark / Museums and interpretive centres
Nature	Winter participatory / Place-based / Consumptive / Adventure / Natural area and wildlife appreciation and learning
Business	Meetings / Conventions, conferences / Exhibitions

Source: own editing based on McKercher (2016: 202)

Table 1 above illustrates – even without mentioning further product types – that there are several product families which may be devoid of traditional

resources and are likely to require a lot of intuitive and creative elements to create an experience with such a product. Some examples of these are the games and theme parks, personal quests or searching for family history, meeting simple people and experiencing otherness as well as medical treatments or spiritual retreats. These examples of tourism types do not involve extraordinary sights or canonical cultural heritage but explore everyday reality, offer an internal or external quest for tourists (those forms of experiences that are hidden from us by tourism itself in the MacCannellian sense).

Besides trying to define and understand resources in tourism, it is essential to take into account and explore some of the postmodern trends in the tourism industry. We believe that postmodern trends in tourism might neglect traditional resources or substitute them with specially created, invented, or virtual attractions. Therefore, it is important to explore the scientific literature and see what postmodern means in the context of tourism.

Defining "postmodern" is as difficult as in the case of other fields. According to Lyotard (1984) – the most accepted definition by us –, postmodern means distrust, incredulity towards metanarratives, it means a new structure of thought (or post-structure?) which questions everything, passes on the doubts of late modernity, and tests whatever has been proven beforehand.

László Árva (2012) formulates one of the most interesting approaches to postmodernism in tourism. While tourism of the modern period is compared to the strict, rigid, and efficient services offered by McDonald's, postmodern tourism products are rather like Disneyland. Thus, experience-based tourism, its complexity derived from the jumble of phantasy, dreams, and virtual reality is the creation of a new era. In one of his other studies, Árva extends the number of postmodern traits to include the following: in the era of post-industrialism, leisure time and business are interrelated, they overlap, the unique and personalized nature of services become more and more important, guests are looking for unique, authentic experiences, so-called third places appear, etc. (Árva–Sipos, 2011: 34). Wang (2012: 101) states that postmodernism accepts inauthenticity; postmodernism blurs the boundaries between imitations, fakes, and copies because it is simply not interested in authenticity – at least not to the extent of modern tourism. Therefore, it would be necessary to deal with the question of authenticity and authentic experiences; however, the complexity of the topic requires a separate study. Yet, another important question is whether authentic sights and attractions are created by tourism or they exist a-priori as such, and they only "need to be discovered".

According to Cohen (qtd in Puczkó, 2005: 29–32), when they leave their homes, tourists step out of a bubble (to a smaller or greater extent), they step out from the protective shield of civilization in order to experience something new. According to Urry, tourists search for something different from their everyday life, for

something unusual so as to escape from the mundane. MacCannell even speaks about a sacred rebirth through tourism, when certain attractions are canonized according to specific rites, and tourists are desperately looking for these. Similarly, Culler states that there is no authenticity without a signifier; thus, there is a need for clear signs and signifiers so that tourists should know what is authentic, but in the meantime, as they become the symbols of their own selves, the authentic feature of signifiers is lost. Postmodern researchers, on the other hand, do not consider it a problem if tourism becomes inauthentic. What is more, they believe that in many cases tourists are attracted by inauthenticity (see Urry's postmodern tourist who is aware of the inauthentic nature of his/her experiences), says Kiss (2014: 35). According to Boorstin (1975), tourism industry itself "spoils" tourists as they do not look for true, authentic products but favour reproductions generated and created by the tourism industry. Travel might mean a search for existential authenticity (Wang, 2012), an inner quest, gaining, collecting, and interpreting personal, own experiences, which in fact does not even require any movement or travel, using today's technological innovations (such as Google Earth, Virtual Reality, and other IT solutions). Dujmovic and Vitasovic's (2015) comprehensive summary provides a good insight into the literature on postmodern tourism and its relationship with society. The authors highlight the fact that in the 21st century we are tourists in all situations as the boundaries of tourism are blurred – they overlap with work, leisure, culture, learning, and the other areas of life.

The last part of the theoretical overview focuses on another relevant issue, namely, whether tourism resources and the efficiency or competitiveness of these resources are quantifiable and measurable or not. Trying to measure tourism resources is not a new phenomenon as there have been several attempts described within the scientific literature on this topic. Most analyses usually focus on one or a few settlements or micro-regions since it is a challenging task to analyse the attractions and sights of a tourist destination abundant in resources. The method of data collection in most cases involves inquiries, questionnaires – questionnaire surveys involving a large number of tourists usually try to counterbalance the subjectivity that threatens the reliable and accurate estimation of the value of each attraction. An example of such a survey is presented in one of the recent publications of Yan et al. (2017), in which they measure the tourism potential of cultural heritage sites in two cities in China. In their method of analysis, Yan et al. (2017) use two types of indicators: resource value and development state. Tourism potential was then calculated by the weighted combination of the two indicators. Surveys focusing on one tourist destination have almost created a new field of study dealing with the comparison of destinations based on their competitiveness. A core research paper dealing with this issue is the recent study of Mendola and Volo (2017), in which they compare indicators used by 10 different papers published between 2005 and 2014. Studies were chosen based on

15 criteria (explicit, clear nature, theoretical underpinning, statistical reliability, etc.). Indicators analysed within their study mainly focus on the competitiveness of tourism destinations, but they also note that there are so-called comparative indicators and methods which measure the inherited resources of certain destinations as well as competitive indicators and tools that monitor the ability of tourism destinations to "mobilize" their resources. Hungarian studies also focus on the assessment of competitiveness (see Papp Zs., 2012) or general tourism potential (Michalkó G., 2005); however, there are no recent publications regarding the quantitative assessment of resources. Romanian studies have mostly appeared in the field of geography, and here we need to mention the papers of Cianga N. (2002, 2007). In another study, based on a personal (rather subjective) but still a detailed and well-structured scale of assessment, G. Gaman (2015) measures the tourism potential of three Romanian settlements. He evaluates the state of the hydrological, climatic, bio-tourism, morphological, religious, archaeological, architectural resources as well as museums and memorial houses on a scale of 0 to 10 with specified phase criteria. For the visual representation of the scores, he uses a web chart for all the settlements surveyed.

To sum up, it can be said that there is a shift towards a new approach in tourism research, according to which postmodern tourism supply combines traditional, classical and modern, non-traditional tourism resources available in different creative and sometimes (almost) personalized services. Traditional resources are less preferred as in most cases they are overexploited, and there is no physical access to them for a novel approach. Postmodern tourism, however, can be commercial or non-profitable, but which in any case sheds new and original light upon the world already known. It generates such experiences which seek inner authenticity, search for a deeper understanding or reinterpretation of the visible and unseen reality (often without providing a frame for interpretation or background cultural knowledge), or raise participants' awareness of other existential issues not related to the local, external, or formal. At the same time, it is difficult to draw the boundaries between modern and postmodern, to say at what point modern forms become outdated, insufficient, or simply changed. This kind of flexible, informal, yet enjoyable novelty within tourism can be achieved through creativity and innovative approaches. As Rátz and Michalkó state in the introduction to the volume *Kreativitás és innováció a turizmusban* [Creativity and Innovation in Tourism] (2015: 9), *there is no area of tourism where creativity would not be a competitive advantage*. There are a large number of publications on how creativity and innovation influence tourism, creating newer and more modern products and participants in order to generate new experiences. The present study highlights two of these that offer a conceptual framework to the question of creativity in tourism. In one of his pivotal studies, Richards (2011) does not only review and summarize scientific literature on creativity and tourism, but in his conclusions

he states that creative tourism – even though emerged from mass cultural tourism but believed to contribute more effectively to the phenomenon of commodification than its predecessor – seems to shift from the creativity of tangible and physical heritage products towards a more intangible creativity, closer to everyday life. Creative tourism is not limited to a single actor but involves the participative interplay of service providers, consumers, policy makers, and landscapes, where authenticity does not refer to externally defined forms, but it means the internal, skill-based traits of its performers (Richards, 2011: 1245).

Hypothesis

The main aim of the present study is to see the extent to which Romanian tourism has changed in the last decade and whether there are any signs/traces of post-industrial trends in the current tourism industry. More specifically, the paper focuses on one feature of postmodern tourism, namely breaking away from traditional resources and delocalization of space. This postmodern trend might appear in the case of tourist destinations with developed infrastructure or those having a rich cultural heritage or even in the case of tourist destinations offering the latest 20th-century services. According to our hypothesis, this delocalization trend can be demonstrated with the help of large numbers, on the level of exhaustive national figures, as we believe that tourism is also present in places and settlements where there are no significant tourism resources in terms of demand, traffic, and supply data. At the beginning of the new millennium, tourism traffic – based on empirical observations – appeared in places where there was no tourism in the past or where there are no particular tourist attractions or any natural or cultural (anthropogenic) resources in the traditional sense. There is a large number of so-called fake or pseudo-events – in the Boorstinian sense (Boorstin, 1975, see also Régi, 2017: 15 and Kiss, 2014: 11) – such as festivals, sport events, tourism services exploiting "behind the scenes", urban legends, or even very special types of hiking offers that can be found among current tourism offers. Therefore, the objective of the research was to find out whether this new dimension of the tourism phenomenon (not necessarily eco- or alternative tourism) has reached a measurable size. However, this would imply a larger project because a nationwide survey of novel tourism phenomena is not only resource-intensive and demanding but also complicated as the supply changes almost daily. Therefore, the study focuses on the relationship between tourism and traditional resources, the strength of their attachment being based on two factors, the location of given resource types and the tourist traffic of localities and counties as well as their correlation.

Therefore, the hypothesis is that natural and cultural resources contribute to a lesser extent to the intensity of tourism, either on the supply or on the demand

side. It is assumed that the territorial distribution of traditional natural and cultural resources does not necessarily follow the tourism phenomenon. The study aims to provide evidence for the weakening link between the localization of tourism resources and tourism phenomenon, which means that the latter might easily appear in places where there are no such resources. Following the postmodern trends in tourism, the new waves have appeared in Romania as well, and they are quantifiable in such a way that tourist phenomenon has become stronger in settlements where there are no natural or cultural resources that can be sold as tourist attractions.

Research Methodology

The research methodology described below is in line with the methods used by other scholars in Romania, presented within the theoretical section above. One part of the data is based on datasets created by the Romanian Ministry of Regional Development in 2007, adopted by Law No. 190/2009 and published within the *Tourism* chapter of the National Spatial Planning (www.mdrap.ro, 2018). It collected data in Romanian counties and settlements, with focus on two groups of factors within tourism and with the help of appropriate public research institutes and other professional institutions.[1] One group of factors involves natural resources including three main categories and further subcategories as follows:

1. natural and landscape elements: terrain, geomorphology, flora, fauna, hydrography, landscape;
2. natural healing elements: mineral water, lakes with healing properties, mud, gas-bath (mofetta), etc.;
3. natural reservations, national parks.

The other group of factors includes cultural heritage data in five different categories on settlement level:[2]

1. historical monuments: archaeological, architectural, public buildings, memorial sites;
2. museums and art collection;
3. folklore and traditions: events, collections, traditions;
4. cultural institutions;
5. annual events (periodical).

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1   Besides, the authorities evaluated the touristic and general infrastructures too, which are not used in this research because they might change rapidly. Natural and cultural heritages instead are more or less steady – they do not change from one year to another.

2   In the case of both natural elements and cultural factors, data collectors used an efficient method to score the respective factors according to which a settlement could obtain a maximum of 25 points for natural resources and another maximum 25 points for cultural heritage.

Furthermore, the other part of the data is based on current statistics on tourism, accessed through the TEMPO-Online application of the National Institute of Statistics. We downloaded four data types for each county and settlement (INS, TEMPO-Online):

– accommodation establishments (no. of units/year, hereinafter: establishment no.),

– accommodation capacity (bed places/year, hereinafter: bed places),

– nights spent/year (hereinafter: nights spent),

– number of tourists (no. of tourists/year, hereinafter: no. of tourists).

The two types of datasets were analysed using IBM SPSS Statistics 22 software. Correlation (Pearson) and regression analyses were carried out in order to explore the relationship between tourism resources and tourism supply and demand. Research focused on spatial distribution of resources and investigated whether supply or demand is more intensive in localities or counties with more resources. Furthermore, we analysed whether there is a correlation between the availability of resources and tourism intensity. To our knowledge, there is no other survey done on this scale. We examined all settlements and all counties within Romania except the capital as unusually high values would have distorted the results. Thus, the research involved 3,181 settlements in 41 counties, including the majority of tourist destinations within the country.

Results

Looking at the statistics on the volume of tourism, the following results have been found. Tourism in the Transylvanian regions of Romania has been growing at a rate 50–70% higher than in other parts of the country regarding the previously presented four tourism indicators between the years 1995 and 2015 and 2001 and 2015 (demand indicators are only available starting with the year 2001 and supply-related indicators since 1990). Another important finding is that the majority of tourism activities take place in urban environments: approximately 55% of accommodation establishments and 75% of bed places can be found in cities, and more than 80% of tourist arrivals and nights spent took place in cities in the year 2015. At the same time, the ratio of urban population was only 53.8% in that year (INS, 2018, TEMPO-Online application).

The research focused on a more in-depth analysis of the data, which starts with the Pearson correlation on the level of all Romanian settlements. *Table 2* below is very important in this regard as it examines the correlation between human endeavours, natural resources, and the four indicators of tourism development (of course, we believe that resources not only attract tourism on the demand

side but also have an effect on certain elements of the aggregated supply). All correlations are significant with 95% accuracy, so they are acceptable.

Table 2. *Correlations between resources and tourism indicators*

Correlation		Accommodation establishments 2016	Bed places 2016	No. of visitors 2015	Nights spent 2015
Human endeavour	Pearson Correlation	.284**	.191**	.291**	.238**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	3182	3181	3182	3182
Natural resources	Pearson Correlation	.315**	.219**	.202**	.236**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	3,182	3,181	3,182	3,182

Source: own calculations based on INS and NSP data, 2017

On the settlement level, there is a positive and relatively strong to mid-level correlation between resources and tourism indicators. This also means that on the settlement level available resources are not the only factors that shape supply (in this case, supply translates to available accommodation) or the actual number of visitors. Naturally, capacity and the number of tourists are highly correlated. Moreover, there is a +0.370 positive correlation between anthropic resources and settlement size (population) in the case of all examined settlements. (If we look only at the towns of Romania, this correlation is even stronger: 0.550!) In other words, the bigger the settlement, the more cultural heritage it has, which is a logical result, and it was expected similarly to the absence of almost any correlation between natural resources and settlement size (the presence or absence of natural resources does not depend on settlement size). Another relevant result is the strong correlation between anthropic resources and tourism (see *Table 3*).

Table 3. *Correlation of anthropic tourist resources and natural resources in Romania with nights spent, in the last 15 years*

		Anthropic res.	Natural res.
Nights spent – 2001	Pearson Correlation	**.157****	.243**
	Sig. (2-tailed)	.000	.000
	N	3,181	3,181
Nights spent – 2005	Pearson Correlation	**.180****	.238**
	Sig. (2-tailed)	.000	.000
	N	3,181	3,181
Nights spent – 2010	Pearson Correlation	**.211****	.232**
	Sig. (2-tailed)	.000	.000
	N	3,181	3,181
Nights spent – 2015	Pearson Correlation	**.238****	.236**
	Sig. (2-tailed)	.000	.000
	N	3,181	3,181

Source: own calculations based on INS and NSP data, 2017

Looking at the data presented in *Table 3* above, it can be seen that the correlation between anthropic resources and nights spent was only 0.157 in 2001, but in 15 years' time this connection has become stronger, reaching a level of 0.238 in 2015. However, the correlation between natural resources and nights spent has not changed (it is still at 0.240). The results above might suggest that only now does Romanian tourism start to discover its cultural resources, and tourism traffic starts to concentrate more on settlements with some sort of cultural, anthropic resources. Again, if we look only at the 319 towns of Romania, this correlation is stronger – from a value of 0.075 in 2001, there is a growth to 0.341 in 2015, which is a significant increase within 15 years (however, the correlation with natural resources remains stagnant).

The results are similar on the county level (there are 41 counties in Romania) as well. However, the correlation between the two types of resources and the four tourism indicators is generally higher on county level than on settlement level, but neither of the indictors exceeds the level of 0.500 (because of the small number of counties, significance tests are not always accurate). Significant positive correlation could be found only between anthropic resources and

accommodation establishments (0.491) and between anthropic resources and number of tourists (0.425).

The above presented results and connections were also analysed using linear regression. Natural and anthropic resources were used as independent variables, while nights spent and number of tourists were the dependent variables. The analysis was carried out on the settlement level. The aim was to find out whether resources are determinant factors of major tourism indicators. The value of adjusted residuals was between 0.100 and 0.200, which is acceptable, and the significance level is also acceptable. The standardized beta coefficients were 0.253 for anthropic and 0.120 for natural resources, which suggests a weak but positive correlation between resources and the number of tourists. If we also consider the local population, the value of the beta coefficient increases significantly (0.573). Therefore, it can be stated that settlement size is a stronger predictor than the two resources combined. Regression analyses were performed on towns as well, but only towns and counties with above 0 tourism traffic were taken into account. The value of the standard coefficients regarding resources did not exceed 0.400 in either of the cases, and therefore resources cannot be regarded as strong influencing factors (population size has a far greater impact).

Table 4. *Regression analysis between natural resources, population, and number of visitors in the case of Romanian towns (tourist traffic > 0), N = 246*

		Coefficients[a]				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	-41169.378	6620.755		-6.218	.000
	Natural resources	4118.205	592.022	.296	6.956	.000
	Population 2016	.750	.045	.703	16.512	.000

a. Dependent Variable: No. of visitors, 2015   *Source: own calculations*

Conclusions

Based on the results presented above, we might wonder why there is no stronger connection between natural, anthropic-cultural resources (which define tourism potential), and tourism indicators. Obviously, in social sciences, a correlation between 0.25 and 0.35 is acceptable when analysis is done on the whole population, but can we really expect a correlation above 0.5? What factors influence demand and supply if not resources? Are these other factors related to the characteristics of the given settlements (size, development), or are they some newly created cultural phenomena not included in any model but which suggest

some novel, immaterial values or cultural products? Are there any mistakes in the analysis? Did we overestimate the relevance of some subcomponent resource indicators in the tourism phenomenon?

Obviously, resources alone do not determine the attractiveness of a place, and they have even less influence on overall tourism traffic and tourism demand. According to the results of a recent publication, there are two major types of factors determining the travel of tourists from Hungary: these are the so-called push and pull factors (Hinek M., 2017). Push factors include mainly intrinsic motivation and psycho-social factors which motivate people to move and travel, while pull factors involve the attractiveness of a destination, including resources, services, affordability, and others. The study also points out that in consumers' minds these two types of factors are not consciously separated when making a decision. Relying on variance analysis, the study claims that pull factors influencing Hungarian tourists can be grouped into 6 categories (Hinek M., 2017: 9). Among these categories we can find touristic attractions though not with the same elements as in our case (they mention friendly local people, which are not present in our study). In Hinek's (2017) study, tourist attractions represent the variable with the highest weight and account for 29% of the total variance (the next category – services – comes in at 9.28%).

In reality, tourism takes place not only in settlements with the most resources (measured in outputs such as the number of nights spent) but also in other towns or resorts nearby. Therefore, further research should consider a regional analysis of the data, on the level of real or assumed tourist destinations. Moreover, postmodern tourism products should also be taken into account and included in tourism output measures, though it would require substantial work. Romanian tourism functions as a black market (see Kiss T. et al., 2013; Horváth A., 2013; Nagy B., 2013), what makes research even more problematic. Therefore, Romanian tourism should be measured not only based on available statistical data but relying on real data concerning tourist traffic.

The question remains as to whether Romanian tourism is becoming more and more detached from its resources. Is there a postmodern trend that can be statistically proven? It would be ideal, and the 0.2–0.3 correlation values might also suggest such a possibility, but the diachronic analysis of the correlation between resources and tourism indicators show the contrary. While the influence of natural resources has not changed over time, cultural resources are more and more appreciated, and even if they do not fully determine tourists' motivations they have more and more influence in defining tourist destinations, probably together with other factors such as image, effective marketing and management, or services and infrastructure. It seems that there is a shift towards an era of tourism when the potentials of natural and, especially, cultural resources are discovered and exploited. Based on the rather weak correlation between resources

and tourism indicators, it can be stated that tourism holds endless possibilities to develop noteworthy supply, which in turn would attract significant tourist traffic without any special set of resources. Exploiting these possibilities demands creativity, professionalism, and understanding tourists' needs rather than having imposing resources.

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The Influence of Self-Employment on Early-Stage Entrepreneurship in Romania. A Global Entrepreneurship Monitor-Based Analysis

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Abstract. The self-employment occupational status has a determinant role in the entrepreneurship development, including generally almost all sectors of the national economy. In this paper, we will focus on this topic. The statistical analysis of this occupational status and its implications on entrepreneurship in Romania in 2015 were considered based on the INSE statistical database, followed by an analysis based on a GEM 2015 (Global Entrepreneurship Monitor) database regarding the main factors influencing early-stage entrepreneurship. To describe the start-up intention and start-up effort, setting out from the literature, we included a set of indicators into the logistic regression analysis as follows: age, income, gender, education, working status, existence of entrepreneur acquaintances, confidence in one's own knowledge, skill, and experience, completing the set with the presence of self-employment, as new research suggests it.

Keywords: entrepreneurship, self-employment, occupational choice, Global Entrepreneurship Monitor (GEM)
JEL Classification: L26, J24

1. Introduction

The Global Entrepreneurship Monitor (GEM) is the largest research initiative which analyses the propensity of a country's adult population towards participation in entrepreneurial activities and the conditions to increase these entrepreneurial initiatives. Romania participated in the Global Entrepreneurship Monitor between 2007 and 2015, being represented by Babeş–Bolyai University, Faculty of Economics and Business Administration (Györfy, 2014). This analysis is based on the Global Entrepreneurship Monitor Adult Population Survey database for 2015. Section 2 contains the literature review regarding self-employment and entrepreneurship. Section 3 discusses self-employment in Romania; in Section 4, we take into account the main factors influencing early-stage entrepreneurship. Section 5 presents the results, with discussion. Finally, in Section 6, we formulate our conclusions.

2. Literature Review

The topic of self-employment and its main determinants were studied by Verheul et al. (2012) using a database including 8,000 individuals from 29 countries: the 25 EU Member States (2006), the United States, Iceland, Liechtenstein, and Norway. Based on Ajzen's (1991) Theory of Planned Behavior (TPB), they developed five hypotheses focusing on the gender and the entrepreneurial personality as well as on their influence on the preference for self-employment and ability to be involved in self-employment. Originally, Ajzen's (1991) theory differentiates the motivation (intention) and ability (behavioural control), with both having impact on behavioural achievement (Ajzen, 1991). In the case of Norway, this theory was used to predict the employment status choice by Kolvereid (1996) in a survey analysis: the respondents could choose between self-employment and organizational employment. In the case of Russia, in 1997, Tkachev and Kolvereid (1999) focused on a group of students.

Among the main reasons influencing the choice of being a self-employee or an organizational employee enumerated in Kolvereid (1996), we found economic opportunity, autonomy, work load, challenge, taking part in the entire process, avoiding responsibility, and career – based on a sample from Norway containing 372 business school graduates.

In the early literature on business start-ups, self-employment was discussed, among others, by Gatewood et al. (1995), who formulated survey questions related to the reason to start a business: "the autonomy and independence to do what I like through self-employment" and "enjoyment through self-employment".

The preference of self-employment is primarily an individual choice influenced by the personal attitudes in the same way the entrepreneurial

intention is influenced by them, as Douglas and Shepherd (2002) proved. As Lee et al. (2011) argued, entrepreneurial intentions are influenced by other factors, such as job satisfaction and personal innovation orientation, although their results were based on the investigation of a special group's database, all interviewed people coming from the IT sector. Gender and age were identified as main factors in self-employment intentions by Walker and Webster (2007). In a survey-based analysis in Australia, they found that women had a minor tendency to become self-employees. The same results were concluded by Verheul et al. (2012), analysing 29 countries.

The main aspirations which influenced the decision of becoming a self-employee in Great Britain were analysed by Henley (2007), using a longitudinal dataset. His presumptions that becoming an entrepreneur and a self-employee are preceded by entrepreneurial aspirations and preparations in form of trainings were not proved in the majority of cases.

Carter et al. (2003) identified the main reasons of being a nascent entrepreneur: self-realization, financial success, innovation, and independence. Based on a survey study carried out in the USA, they discussed the topic of self-employment and gender differences.

The business founders were investigated by Kolvereid and Isaksen (2006) in order to identify the relationships between the entrepreneurship and entrepreneurs; based on their analysis, they concluded that "male entrepreneurs are significantly more likely to enter into self-employment" and that the "attitudes may be altered in education and training programs".

In Norway, using the GEM (Global Entrepreneurship Monitor) database alongside another survey analysis database, the preference for self-employment as an explanatory indicator for business start-up intentions and business start-up efforts was used by Kolvereid (2016). Linan and Chen (2009) analysed the entrepreneurial intention in Spain and Taiwan, using the entrepreneurial intention questionnaire (EIQ), focusing on the role of cultural and social particularities as motivational arguments, and "self-employment experience" as explanatory variable was introduced in their structural equation models. The importance of the cultural differences in entrepreneurial career intentions was confirmed by Moriano et al. (2012) in a comprehensive research, in which they included more than 1,000 individuals living in European and Asian countries.

The relations between self-employment and job satisfaction were investigated by Bradley and Roberts (2004), whose results indicate a higher job satisfaction for those who are in this employment status as compared to others.

Delmar and Davidsson (2000) investigated nascent entrepreneurs (those who have just started an individual business) in Sweden. According to their explanation, self-employment was male-dominated in Sweden. In a logistic regression model, they predicted the business start-up intentions of these nascent

entrepreneurs, where self-employment status was introduced among the other explanatory variables (Delmar–Davidsson, 2000).

In a survey analysis in Netherlands, entrepreneurial intentions are explained by Van Gelderen et al. (2008) based on TPB (theory of planned behavior). They also analysed the preference for self-employment, which (as business intention) was motivated in the perception of the studied group by the almost infinite (unbounded) income opportunities compared to the organizational status.

Venture creation is one of the main reasons among the individual intentions of entrepreneurship, as Shook et al. (2003) demonstrated (based on a profound literature review on this topic). Entrepreneurial intentions are analysed by Bae et al. (2014) in relation to entrepreneurship education, differenced by gender or cultural context. A higher risk preference also has a significant impact on entrepreneurial intentions, as Barbosa et al. (2007) indicated based on a survey analysis.

In Liñán et al. (2011), the most influential factors of becoming an entrepreneur were identified as individual perceptions, perceptions regarding the opportunities, and the socio-cultural background – based on GEM data containing 33,731 observations from thirteen countries, in a model in which age, gender, education, income, and work status were the control variables.

One of the main goals of entrepreneurial research is the understanding of the individual entrepreneurial intention and decision-making process, as Fayolle and Liñán (2014) formulated in their study regarding the methodological and theoretical analysis of entrepreneurial intention.

In the literature, among the methodologies based on GEM data, the logistic regression reached a particularly important position (situation).

Gimenez-Nadal et al. (2019) developed an algorithm to measure the variable importance in logistic models, based on their predictive power and using the 2014 Global Entrepreneurship Monitor (GEM) National Level dataset.

The main determinants of the entrepreneurial activity were analysed by Velilla (2018) using a logistic regression model in a comprehensive study focusing on Spain, Europe, the U.S.A., Canada, and Australia. Preference for self-employment in Kolvereid (2016) was analysed using the GEM database and a logistic regression model.

3. Self-Employment in Romania

In the following, we will present the structure of active and newly created enterprises according to legal forms, the most common forms of the private entrepreneurs, and the employees' occupational status in Romania, focusing on the self-employment situation in the country.

The number of active enterprises in Romania increased with 14.24% between 2010 and 2015 mainly due to the increasing number of sole proprietors (an increase of 41.22%). The structural changes from the economic sectors' point of view show a significant increase in the number of enterprises in agriculture (*Table 1*).

Table 1. *The number of enterprises by legal forms (a) and economy sectors (b) in Romania in 2010 and 2015*

(a)

		2010	2015	2015−2010 %
Total	Nr	768,371	877,788	14.24
Limited liability company	%	63.32	55.04	-0.70
Sole proprietors	%	35.97	44.47	41.22
Partnership and other legal forms	%	0.71	0.49	-21.13

(b)

		2010	2015	2015−2010 %
Total	Nr	768,371	877,788	14.24
Agriculture	%	4.67	12.18	197.84
Industry	%	9.05	8.44	6.47
Construction	%	8.49	7.43	-0.04
Services	%	77.78	71.95	5.68

Source: own calculations, INSSE

In 2015 in Romania, 103,280 newly created enterprises were registered, 12.21% more compared to 2010. The majority of these enterprises had the legal form of limited liability company (54.67%) or of sole proprietorship (45.20%) in the services sector (73.55%) (*Table 2*).

Table 2. *The number of newly created enterprises by the legal forms (a) and economic sectors (b) in Romania in 2010 and 2015*

(a)

		2010	2015	2015−2010 %
Total	Nr	92,045	103,280	12.21
Limited liability company	%	47.20	54.67	-0.70
Sole proprietors	%	52.64	45.20	41.22
Partnership and other legal forms	%	0.17	0.14	-21.13

(b)

		2010	2015	2015−2010 %
Total	Nr	92,045	103,280	12.21
Agriculture	%	6.54	10.64	82.62
Industry	%	7.51	7.33	9.55
Construction	%	7.70	8.48	23.53
Services	%	78.25	73.55	5.46

Source: own calculations, INSSE

In Romania in 2015, there were registered 297,148 private entrepreneurs (an additional 2.13% compared to 2010) made up by two categories: authorized natural persons (92.23%) and family enterprises (7.77%) (source: INSSE).

The Statistical Household Labour Force Survey of the INSSE assesses the number of employees by status in Romania. In 2015, the proportion of the employees was 71.02%, while self-employees constituted 18.28%. The main tendency observed between 2010 and 2015 in the structure of employees by status highlights the growing number of employees, while the number of self-employees decreased with 15.65%, but it remained a significant form of employment (*Table 3*).

Table 3. *The number of employees by occupational status in Romania in 2010 and 2015*

		2010	2015	2015−2010 %
Total	Nr	8,712,829	8,535,386	-2.04
Employee	%	64.83	71.02	7.32
Employer	%	1.32	1.12	-16.66
Self-employed	%	21.23	18.28	-15.65
Others*	%	12.61	9.57	-25.70

Source: own calculations, INSSE

* Contributing family worker or member of an agricultural holding or of a cooperative

4. Factors Influencing Early-Stage Entrepreneurship

Two indicators and, related to them, two main questions could be found in the GEM 2015 (Global Entrepreneurship Monitor) database regarding the early-stage entrepreneurship status:

– the business start-up intentions variable named: "futsup", with the question: "Are you, alone or with others, expecting to start a new business, including any type of self-employment, within the next three years?" and

– the business start-up efforts variable named "bstart", with the question: 'Are you, alone or with others, currently trying to start a new business, including any self-employment or selling any goods or services to others?"

The set of indicators included in the analysis are:

age9c – age range for all respondents,

gemhhinc – income range for all respondents,

gender – gender,

gemeduc – education level,

gemwork3 – working status of all respondents classified into 3 categories,

knownent – the question: "Do you know someone personally who started a business in the past 2 years?"

futsupno – entrepreneurial intentions (in the sample of the population aged between 18 and 64 years who are not involved in entrepreneurial activity), and

occuself – the presence of self-employment status.

At the beginning of this analysis, our hypothesis was that the presence of self-employment status had a significant effect on business start-up intentions and business start-up efforts in Romania in 2015. The calculations above had tested these assumptions.

5. Results and Discussion

In the first step, we calculated the correlation relationships between the variables included in the model. The most important Spearman correlation results are as follows:

– between the existence of self-employment status and enterprise start-up efforts (bstart): -0.236,

– between the existence of self-employment status and start-up intentions (futsup): -0.093,

– between knowing entrepreneurs and start-up efforts (bstart): 0.232, and

– between perceptions of skills and start-up efforts (bstart): 0.287.

Table 4. Spearman correlations among the variables

	bstart	futsup	age9c	gemhhinc	gender	gemeduc	gemwork3	knowen15	suskil15	futsupno	occuself
bstart	1.000	.276**	-.103**	.089**	-.105**	.083**	-.135**	.232**	.287**	.283**	-.236**
futsup	.276**	1.000	-.220**	.079*	-.125**	.086**	-.141**	.230**	.262**	1.000**	-.093**
age9c	-.103**	-.220**	1.000	-.119**	.054*	-.117**	.275**	-.100**	-.075**	-.244**	.057*
gemhhinc	.089**	.079*	-.119**	1.000	-.124**	.423**	-.323**	.187**	.196**	.075*	-.050*
gender	-.105**	-.125**	.054*	-.124**	1.000	-.057*	.188**	-.087**	-.174**	-.117**	.095**
gemeduc	.083**	.086**	-.117**	.423**	-.057*	1.000	-.275**	.177**	.209**	.095**	-.007
gemwork3	-.135**	-.141**	.275**	-.323**	.188**	-.275**	1.000	-.138**	-.230**	-.149**	.289**
knowen15	.232**	.230**	-.100**	.187**	-.087**	.177**	-.138**	1.000	.298**	.226**	-.167**
suskil15	.287**	.262**	-.075**	.196**	-.174**	.209**	-.230**	.298**	1.000	.286**	-.201**
futsupno	.283**	1.000**	-.244**	.075*	-.117**	.095**	-.149**	.226**	.286**	1.000	-.111**
occuself	-.236**	-.093**	.057*	-.050*	.095**	-.007	.289**	-.167**	-.201**	-.111**	1.000

Source: own calculations, INSSE

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

In the case of Romania, in 2015, based on the above presented GEM database, the logistic regression model estimations were used in the identification of self-employment presence concerning start-up intentions and start-up efforts, as Kolvereid (2016) analysed this topic in the case of Norway. In our first model, the depending variable "futsup" has the value of 1 = "Yes" in the case of a responder "expecting to start a new business, including any type of self-employment within the next three years", while in the second model the depending variable "bstart" has the value of 1 = "Yes" in the case of a responder currently trying to start a new business.

Among the commonly used explanatory variables of the business start-up intentions – such as: age, income, gender, education, working status, knowing entrepreneurs, perception of skills, and the lack of skills in entrepreneurial activity (known from the GEM literature, as Kolvereid (2016) suggested) –, we introduced the "occuself", referring to the presence of self-employment (having the value of 1 = "Yes" in the case of existence).

The results of the first model indicate positive significant influence on the start-up intentions (futsup) by knowing entrepreneurs and perception of skills at 1% significance level and by self-employment at 10% significance level, and they show a negative relation with age at 1% level and working status at 5% level.

The model estimated for the start-up intentions are:
futsup = -.2966687 * age -.0182436 * gemwork3 + .5486836 * knowen15 + .6959694 * suskil15 + .2076317 * occuself

Table 5. *The business start-up intentions logistic model statistics*

Iteration 0: log likelihood = -1387.6807						
Iteration 1: log likelihood = -1182.7313						
Iteration 2: log likelihood = -1182.0821						
Iteration 3: log likelihood = -1182.0815						
Iteration 4: log likelihood = -1182.0815						
				Number of obs = 2002		
				Wald chi2(8) = 320.98		
Log likelihood = -1182.0815				Prob > chi2 = 0.0000		
futsup	Coef.	Std. Err.	z	P >|z|	[95% Conf. Interval]	
age9c	-.2966687	.0366908	-8.09	0.000	-.3685813	-.2247562
gemhhinc	-2.84e-08	1.67e-06	-0.02	0.986	-3.29e-06	3.24e-06
gender	-.1259637	.0919043	-1.37	0.171	-.3060929	.0541655
gemeduc	.0001291	.0001218	1.06	0.289	-.0001095	.0003678
gemwork3	-.0182436	.0081835	-2.23	0.026	-.0342829	-.0022043
knowen15	.5486836	.1041772	5.27	0.000	.3445	.7528672
suskil15	.6959694	.0973295	7.15	0.000	.505207	.8867318
occuself	.2076317	.1072789	1.94	0.053	-.002631	.4178945

Source: own calculations, INSSE

The results of the second model indicate positive significant influence on the start-up efforts (futsup) by perception of skills and the lack of entrepreneurial activity involvement at 1% significance level, and they show a negative relation with gender and self-employment at 1% level, while with age and income at a 5% level.

The model estimated for the start-up efforts:

bstart = -.1582108 * age -7.160 * gemhhinc-.5156572 * gender + .7251659 * suskil15 + 1.534737 * futsupno -.8846882 * occuself

Table 6. *The business start-up efforts logistic model statistics*

Iteration 0: log likelihood = -1061.9015						
Iteration 1: log likelihood = -383.66003						
Iteration 2: log likelihood = -366.05532						
Iteration 3: log likelihood = -363.25016						
Iteration 4: log likelihood = -363.24091						
Iteration 5: log likelihood = -363.24091						
				Number of obs = 1532		
				Wald chi2(9) = 504.43		
Log likelihood = -363.24091				Prob > chi2 = 0.0000		
bstart	Coef.	Std. Err.	z	P > |z|	[95% Conf. Interval]	
age9c	-.1582108	.0712184	-2.22	0.026	-.2977963	-.0186253
gemhhinc	-7.16e-06	3.62e-06	-1.98	0.048	-.0000143	-6.19e-08
gender	-.5156572	.1811414	-2.85	0.004	-.8706878	-.1606267
gemeduc	-.0003162	.0002188	-1.45	0.148	-.0007451	.0001127
gemwork3	-7.89e-06	.016197	-0.00	1.000	-.0317534	.0317376
knowen15	.2097862	.2073823	1.01	0.312	-.1966756	.616248
suskil15	.7251659	.2040095	3.55	0.000	.3253145	1.125017
futsupno	1.534737	.2120386	7.24	0.000	1.119149	1.950325
occuself	-.8846882	.207049	-4.27	0.000	-1.290497	-.4788796

Source: own calculations, INSSE

The principal differences between the two models from the self-employment perspective: while business start-up intention probability is influenced positively by the presence of self-employment status, business start-up efforts probability is decreased by them.

6. Conclusions

In this paper, we studied the self-employment situation in Romania in 2015 and its influence on early-stage entrepreneurship. In the context of this topic, from the total number of active enterprises, there was 71.95% in services and 12.18% in

agriculture; by legal forms, 4.47% was sole proprietors, and from the total number of newly created enterprises 45.20% was this type in 2015. In the studied year, the main part of the private entrepreneurs (92.23%) was authorized natural persons.

The statistical household labour force survey datasets of the INSSE give a more accurate view on self-employees. In 2015, in Romania, 18.28% from the total number of employees were identified as having this type of occupational status.

The database contained the following variables: two indicators describing the early-stage entrepreneurship status: the business start-up intentions (futsup) and the business start-up efforts (bstart), and a set of explanatory indicators: age, income range, gender, education level, working status, knowing entrepreneurs, previous entrepreneurial intentions, and self-employment status.

In the first step, the dataset was analysed using the Spearman correlation matrix to identify the relations between the variables. According to the results, the correlation between the presence of self-employment and the enterprise start-up intentions (bstart) is -0.236, while between the self-employment and start-up efforts (futsup) is -0.093.

The logistic regression analysis results suggest positive influence on the start-up intentions by knowing entrepreneurs, perceptions of skills, and self-employment and negative influence by age and working status; the second model indicates positive significant influence on start-up efforts (futsup) by perceptions of skills and lack of entrepreneurial activity and negative influence by age, income, gender, and self-employment.

The main differences between the two models from the self-employment perspective indicate that self-employees had increased the probability of business start-up in Romania in 2015.

Our results suggest a preference for self-employment in Romania in 2015, which was a special occupational status, while from the entrepreneurial perspective it affected new business start-up intentions as well as new business start-up efforts.

The results mainly fit, but in small parts they also differ from Kolvereid's (2016) findings: in Romania, the preference for self-employment does not predict the involvement in business start-up attempts, but it predicts the intention to start a new business. Gender and age were identified as main factors in self-employment intentions by Walker and Webster (2007) in Australia, but in the case of Romania we have found only the influence of the age being significant concerning start-up intentions. On the other hand, regarding start-up efforts, our findings corresponded with Walker and Webster's (2007) and Verheul et al.'s (2012) findings, both gender and age being significant in the case of Romania.

Henley's (2007) unproven presumption for Great Britain that becoming entrepreneur and self-employee is preceded by entrepreneurial aspirations could be a subject for further analysis. Start-up efforts being influenced in Romania by perception of skills completes Kolvereid and Isaksen (2006)'s findings that

the "attitudes may be altered in education and training programs" – the linkage between the two aspects might also be a subject for further analysis.

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The effects of employment policy measures on the labour demand of persons with changed working abilities

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Abstract. Based on the methods used by economic theory, the study analyses the labour demand of companies and pays special attention to people with changed working ability. The European Union emphasizes the development of active employment policy programmes in line with the wide range of benefits linked to additional labour force utilization in our country. Tax liabilities and tax allowances related to additional labour force utilization significantly affect the profitability of companies. For this reason, the study examines the effects of the use of the production factor in certain cases on the profit based on the example of a 25-person company. Despite active employment policy measures, experience shows that the labour demand of companies is less directed towards people with changed working abilities. However, in this situation, besides the estimated lower labour productivity, infrastructural and sociological factors also play an important role.

Keywords: labour market, effects of fiscal policy
JEL Classification: D2 (Production and Organizations); J2 (Demand and Supply of Labour); J3 (Wages, Compensation, and Labour Costs); H2 (Taxation, Subsidies, and Revenue)

1. Introduction

In the former socialist countries, in the early 1990s, people with changed working abilities were forced into passive care (state transfers) and were permanently excluded from the labour market. From the employment policy's point of view, a number of measures were adopted only in the period of 1998–2007 alone, which contributed to the establishment of the employment rehabilitation system (Csillag–Szilas, 2009).

Based on the labour market data of 2015 (KSH, 2015. Munkaerőpiaci helyzetkép), 11.3% of the active-aged population (680,700 persons) can be considered as persons with changed working abilities. While in 2011 the employment rate of people with changed working ability was 47.3% on average in the European Union, this number was only 23.7% in Hungary. According to the data of the Hungarian public finance in 2008, 2.9% of the GDP was spent on the benefits for active-aged persons with changed working abilities (Pulay, 2009). The costs of passive benefits is currently covered by the so-called "rehabilitation contribution". An employer engaging more than 25 employees must employ at least 5% (quota) labour force with disabilities. In the absence of this, a rehabilitation contribution must be paid after the missing number of employees specified in the quota. Nevertheless, if the employer fulfils the employment obligation (quota), they are exempted from the payment of the rehabilitation contribution (articles 22–23, Act 2011/191), from which an employment incentive effect can be expected.

The European Disability Strategy (2010–2020) emphasizes the priority of active programmes. It defines the direction of the support (active, passive) for the measures, for the tools and directly for the employment and the proportion of the expenditures as well. EU documents mean training, development, professional consultancy, and selective job recruitment below "employment rehabilitation". The measures of the special programmes are extremely diverse in the Member States, the most widespread among them being as follows:
– wage subsidies compensating for lower productivity,
– supporting the necessary transformation of the workplace,
– support for employment services, and
– trial employment, transit employment.

The general objective of the EU is to integrate as many people with disabilities as possible into the labour market through active employment policies and at the same time reduce the burden on Member States' budgets on paying transfers. Unfortunately, it is not clear how to implement the effective EU regulations in practice. Among the 28 EU Member States, we can find less good examples as well (Hyde, 2000).

In our country, in line with EU regulations, in 2017, a call for proposals entitled *Promoting Group and Individual Employment of People with Disabilities*

was published in Hungary under EFOP-1.1.6-17. In addition, the demand of the labour force of people with disabilities is influenced by various government programmes as well. There are a lot of international studies on factors influencing the labour demand of such persons too (Roulstone, 2013). In our study, we would like to introduce the impact of the government intervention in force in 2017 from the perspective of the companies in Hungary with at least 25 employees.

In Section 2, we introduce the labour demand as production factor. The main focus is on the effects of the increasing employment on the cost and revenues of the company. In Section 3, we introduce the fiscal policy methods that are taken into account during our analysis both on the cost and the revenue sides. Section 4 presents the analysis of the cost in connection with additional labour force use. In Section 5, we draw conclusions based on our analysis.

2. The Demand of Labour as Production Factor

2.1. The Effect of Increasing Employment on Company Revenue

We start our study from the microeconomic principles. Accordingly, we will first analyse the value of the marginal product of labour. Businesses' demand for labour is derivative as the quantity produced by the company depends on the quantity demanded by the market. In this case, we assume that it is rational to increase production by employing a new labour force. The impact of the new labour force on revenue can be expressed by the marginal product revenue indicator, which shows how many units the total revenue of a company changes with when the amount of the given input factor's use changes by one unit.[1]

$$MRP_L = \frac{\Delta TR}{\Delta L} \tag{2.1}$$

So, the marginal product revenue shows how much the company's revenue increases as a result of the recruitment of an additional employee. Basically, microeconomics examines the revenue generated by production (TR = PxQ), which is the net revenue of an enterprise from the accounting point of view. However, in a market economy, as a result of state intervention, we face with several other revenue categories that have a significant impact on the level of employment. From the point of view of the topic under examination, state subsidy for rehabilitation employment is considered to be such income. Therefore, we analyse the impact of the employment of persons with disabilities on the total revenue of the enterprise (turnover and other income).

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1   Where MRP_L is the marginal product revenue of labour, ΔTR is the change of the revenue, and ΔL is the change of use of labour force.

2.2. The Effect of Increasing Employment on the Cost of the Company

In addition to revenue, the business decisions are also influenced by labour-related costs. The impact of additional input consumption on costs can be expressed by the marginal cost of production factor (MFC$_L$), which shows with how many units the total cost changes as a result of the change in the volume of the used input (Kopányi, 2009).[2]

$$MFC_L = \Delta L * P_L \; ; \; MFC_L = \frac{\Delta TC}{\Delta L} \qquad (2.2)$$

The additional cost can be determined by two methods: on the one hand, as multiplication of wages and the change of labour force usage and, on the other hand, it can be examined by calculating how much the total cost of a company will change if it increases the number of its employees by one unit. In this case, only the costs directly related to the production are examined by microeconomics; however, labour costs are also linked to taxes and contributions as well besides wages. Therefore, in our analysis, we also take into account the amount of wage contributions when examining total costs. Typically, the obligation to pay rehabilitation contribution is considered as such a wage contribution in the case of companies with more than 25 employees.

In order to determine the optimum level of labour consumption, a revenue and a cost indicator are also needed since the use of a production factor is optimal if the marginal product revenue of the given input factor is equal with the marginal cost of the factor:

$$MRP_L = MFC_L$$

$$MRP_L = \frac{\Delta TR}{\Delta L}$$

$$MFC_L = \frac{\Delta TC}{\Delta L} \qquad (2.3)$$

$$MR = MC$$

Using the above mentioned contexts, we can state that the company is going to employ new employees as long as the increase of the total revenue and the total cost of the business are going to be the same. If these two values are equal, we can say that the total profit will be zero. So, the conditions of perfect competition are fulfilled. That is why entrepreneurs increase their demand at the perfect labour market because of the profit maximization goal until the marginal product revenue is higher than the cost of using an additional unit of labour force. The use

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2   Where MFC$_L$ is the marginal cost of labour force, ΔL is the change of use of labour force, P$_L$ is the price of labour force (wage), m and ΔTC is the change of total costs.

of a new input factor, ceteris paribus, reduces the level of the marginal product of labour, and so the decreasing marginal product revenue gradually reaches the marginal cost level. This equality expresses the limit of the company's demand for labour force (Oroszi, 1996).

3. Fiscal Policy Measures Taken into Account during the Analysis

3.1. Cost-Side Analysis

Wage costs: Wage is not differentiated, and so all employees receive the same amount of wage, which is the level of the guaranteed minimum wage.

Wage contributions: Employers (currently in Hungary) are required to pay social contribution tax (22%) and vocational training contribution (1.5%) based on gross wages. In addition, every employer is obliged to pay a rehabilitation contribution according to Act 191 of 2011 if the number of employees is more than 25 and the number of people with disabilities employed by the company is less than 5%. The amount to be paid is the missing number multiplied by the amount of the rehabilitation contribution (which is 1,147,500 HUF/person/year from 1 January 2017).

3.2. Revenue-Side Analysis

Revenue is unchanged because we assume that the employees can perform their task with the same efficiency. This may be in the case when a disabled employee performs mental work.

Analysis of other revenues: In connection with the employment of disabled persons, the employer is entitled to a contribution allowance as budget support, which is recorded as other revenue in the accounting records. Currently, the following benefits are available in connection with employing people with disabilities:

Social contribution tax allowance: In 2017, the social contribution tax was 22 percent of the gross wage. According to Act 156 of 2011 on social contribution tax, the 22 percent social contribution tax must be payed based on the taxable income which generates tax liability. The Act allows the employer to get benefits. Allowance can be used in the employment of the following categories: mothers of children under the age of 3, entrants under the age of 25, long-term job seekers over the age of 55, agricultural and non-skilled jobs, and people with disabilities.

4. Analysis of the Cost in Connection with Additional Labour Force Use

Analysis terms:
  – the enterprise has 25 employees,
  – the monthly gross wage is 161,000 HUF/person,
  – they wish to employ +1 person for a monthly wage of 161,000 HUF,
  – work with the same effectiveness can also be performed by a person with a disability.

As a first step, we analyse how the measure of the total cost will change as a result of the increase in employee number.

Table 1. *Costs related to the use of additional labour force in the case of employing an employee with normal working capacity*

Number of employees	Annual wage (HUF/capita)	Annual wage cost (HUF)	Annual wage contribution (HUF)	Rehabilitation contribution
25	1 932 000	48 300 000	11 350 500	
1	1 932 000	1 932 000	454 020	
	Total:	50 232 000	11 804 520	1 147 500

Source: own construction

In addition to wage and contribution costs related to wages, the employer is also required to pay a rehabilitation contribution if the number of employees is at least 25 per year on average. So, the annual wage and contribution costs shown in the above introduced table increase by 1,147,500 HUF according to the 2017 regulations.[3] Based on these, the total cost of employment (TC) is 63,184,020 HUF.[4]

According to the regulation, the wages of persons with disabilities (up to twice as much as the minimum wage) are not connected with the obligation for the company to pay wage contribution. The State grants this benefit to enterprises in the form of a "de minimis" subsidy and should therefore be considered as other revenue.

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3   Year 2017.
4   50,232,000 + 11,804,520 + 1,147,500 = 63,184,020.

Table 2. *Costs related to the use of additional labour force in the case of employment of disabled worker*

Number of employees	Annual wage (HUF/capita)	Annual wage cost (HUF)	Annual wage contribution (HUF)	Rehabilitation contribution
25	1 932 000	48 300 000	11 350 500	
1	1 932 000	1 932 000		
Total:		50 232 000	11 350 500	0

Source: own compilation

The new employee (who has a disability in this case) has only wage cost connected to his/her wage because in his/her case wage contribution cost is not involved. So, the annual wage and wage contribution costs shown in the table above increase with the value of the gross wage. Based on these, the total cost to the employer (TC) amounts to 61,582,500 HUF.[5]
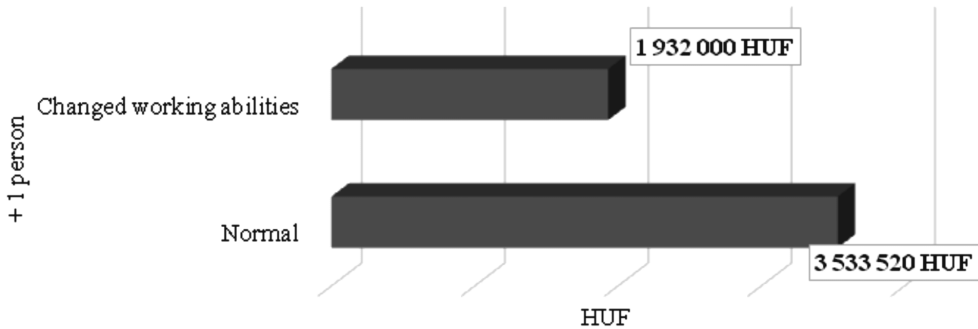
Source: own compilation

Figure 1. *Yearly costs related to additional labour force usage (HUF)*

In connection with the employment of the new labour force, the marginal cost is the increase in wage and wage contributions. We assume that the 26 persons employed would result optimal labour utilization, which also means that the marginal cost and marginal revenue are equal with the use of the new labour force. In this case, we can say that an additional employee (with normal abilities) means that the marginal cost and the marginal revenue would be 3,533,520 HUF.

Let us suppose that an employee with a disability is able to perform the same task with the same efficiency. Based on the data in the table below, it can be seen that in this case the marginal cost is also 3,533,520 HUF, but as a result of government intervention the marginal revenue is 5,135,040 HUF, which is 1,601,520 HUF higher than the marginal cost.

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5   50,232,000 + 11,350,500 = 61,582,500.

Table 3. *The change of additional cost and revenue in connection with the increase of employment in the case of employees with different working abilities*

	Net sales income	Wage cost	Wage contribution cost	Subsidies	Total
Normal employee					
Marginal cost		1 932 000	1 601 520		3 533 520
Marginal revenue	3 533 520			0	3 533 520
Balance					0
	Net sales income	Wage cost	Wage contribution cost	Subsidies	Total
Employee with changed working abilities					
Marginal cost		1 932 000	1 601 520		3 533 520
Marginal revenue	3 533 520			1 601 520	5 135 040
Balance					1 601 520

Source: own compilation

From the analysis and the data shown in the figure above, we can conclude that:

In a case when an enterprise employs 25 persons and wants to employ an additional labour force, it is worth examining whether the person with a disability can work with the same efficiency. If so, the person with a disability is the rational choice for the employer.

5. Conclusions Based on the Analysis

In our analysis, based on basic microeconomics contexts, we have provided empirical proof of the impact of employing disabled people in their active age on the revenue situation. Of course, the operation and decision-making mechanism of an enterprise are greatly influenced by its external and internal environment. The infrastructure that can be considered as a facility often limits the selection of employees. The change of these factors is, of course, in progress, but let us face the fact that it is a long process and can be changed to a limited degree in the case of small and medium-sized enterprises. Here we can think not only about the mobility of the disabled person but also about the distance between home and the workplace and the inflexibility of working time.

This is proved by the model of Könczei–Komáromi in 2002, based on the data of the 200 largest Hungarian companies, illustrating the motivation of employing

disabled people. According to their theory, the size of the company, the alternative employment opportunities, and the level of development of its operating region determine the employment of disabled persons. A very serious issue is employers' attitude to employment. According to Berde and Dajnoki (2007), the obstacle to employment is the employer's prejudice and discriminatory decision. However, business owners should not be condemned for this as their decision is not only financial but also a risk factor. In 2004, after asking 213 companies in the South Transdanubia region, experts came to the finding that more than half of the companies surveyed did not plan to employ a person with disability (Horváth et al., 2005). The reason for this was mainly the higher probability of sick leave and the lower performance, as they assumed. On the other hand, we know that employees' opinion, motivation, and helpfulness greatly determine the efficiency of employment (Csányi–Mihala, 2013). If we compare our findings with international studies, we can say that employer reluctance to employ disabled people narrows the economic and vocational opportunities of these persons. Based on Hemphill and Kulik's (2016) findings, a further step can be identifying which mainstream employers are most likely to hire disabled people in Hungary.

We can see, however, that as a result of the current demographic and economic processes, the labour supply of companies with 25 employees is becoming unstable in rural areas – the impact of preponderance in labour demand on the labour market has recently emerged perhaps most strongly in these cases. In our opinion, the processes on the labour market may make it necessary and provide an opportunity to employ people with disabilities.

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Shareholder Wealth Maximization and Investment Decisions of Nigerian Food and Beverage Companies

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Abstract. The study examines the effect of shareholder wealth maximization on investment decision in food and beverage companies listed in Nigeria. To achieve this, seven listed food and beverage companies were selected. The research adopted an ex post facto research design, while purposeful and stratified sampling techniques were used to select seven out of the fifteen companies in the food and beverage subsector. Data for the study were extracted from the annual reports and accounts of the sampled companies from 2008–2017. The result obtained from the regression analysis reveals that earnings per share and market price per share have no significant positive effect on investment decisions, while dividend per share was found to have no significant negative effect on investment decisions. In effect, the study concludes that the unique combination of the identified proxies for shareholder wealth maximization have jointly a significant positive effect on investment decisions. Arising from this, the study recommends that food and beverage companies should improve more on earnings per share, dividend per share, and market price per share so as to attract more investment from shareholders.

1. Introduction

Nigerian food and beverage companies make up a subsector of the manufacturing sector that is saddled with the responsibility of producing and distributing basic food products and beverages for consumption. In effect, the sector contributes significantly to the overall economy both at the macro- and micro-level. The sector affects positively and significantly the performance of the economy through many channels such as the provision of employment, provision of raw materials to many businesses, and contribution to the domestic revenue of the government through payment of tax. All these roles place it on a significant scale towards the growth of an economy, and as such it is worth studying whether shareholder wealth maximization induces investments in the sector.

Share capital is one of the sources of raising finance, and most companies benefit from it either as a seller or as buyer or as both. As the operation of any business without finance is impossible, share capital has become a veritable source of raising substantial and cheap finance for many businesses of the world at every stage of their operations. Consumer goods companies therefore obtain a substantial part of their capital through three main sources of which share capital is one. Share capital represents a unit of companies' capital that is allocated to individuals. The shares issued to shareholders qualify the holders for a residual interest in the asset of the company which represents their investment in the company.

Investment is the commitment of a current fund into long-term projects with the aim of gaining more in the future. Such decision is regarded by Zayol, Agaregh, and Eneji (2017) to involve commitment of huge current funds into a risky and uncertain long-term project where the tendency of the business making profit is in doubt; and where profit is expected, it cannot be accurately estimated. Due to the identified attributes of investments, the decision must not be made in isolation from the financial statement, as Popoola, Akinsanya, Babarinde, and Farinde (2014) observed that the commitment of funds into an investment without considering the financial statement is like entering a dark room without knowing its settings and structures.

In recent times, shareholder wealth maximization has gained more prominence as it is the most popular variant for measuring firms' success. It has remained a cardinal objective of many businesses in the developed, developing, and, by implication, the whole world as competition from local and global markets has

opened up many investment opportunities to investors; firms that therefore wish to pool more investments from investors have adopted shareholder wealth maximization as a competitive strategy. As a result of the prominent roles of shareholder wealth maximization, managerial decisions, strategies, tactics, and policies are evaluated for effectiveness and efficiency by their abilities to maximize shareholder wealth (Singh–Pattanayak, 2014). The traditional finance theory has laid much emphasis and prioritized shareholder wealth maximization as it considered shareholders as the owners of the company who contribute to the capital for the formation and running of the business affairs of the venture, and therefore their interest should be prioritized.

Shareholder wealth, according to Diepiriye (2018), is a fundamental function of top management which requires the formulation of tactics and strategies as well as an efficient allocation of resources for its attainment. Profitability is a major determinant of shareholder wealth maximization as only profitable companies can pay dividend and increase the market price of their shares. Arising from the importance of shareholder wealth maximization, different regulatory bodies, such as the Corporate Affairs Commission, the Companies and Allied Matters Act, Financial Reporting Council of Nigeria, Nigerian Stock Exchange, or Security and Exchange Commission, have formulated, introduced, and sanctioned different regulations such as the preparation of annual reports (its contents and qualitative attributes) on public companies, with the principal mandate of re-engineering them towards value creation so as to protect the interest of their stakeholders in terms of maximizing their wealth.

Theoretically, shareholder wealth maximization is expected to impact shareholder investment as it is believed that greater wealth maximization is capable of motivating investors to commit more funds into a business. Scholars of accounting, finance, and management have identified mainly two proxies as measures of shareholder wealth maximization, which are market price per share and dividend per share. This study suggests yet another one by including earnings per share as it is generally believed that companies can only pay dividend out of earnings.

Studies on shareholder wealth maximization centred around empirical approaches in developed and developing countries as well as in Nigeria as they relate to dividend policy and market price per share. For instance, researchers such as Balagobei (2018) focused on dividend per share and market price per share in India, while other studies focused on working capital management and shareholder wealth maximization (Oseifuah–Gyekye, 2017; De-Almeida–Eid Jr. 2014; Ogundipe–Idowu–Ogundipe, 2012) and capital budgeting and shareholder wealth maximization (Barasa, 2014; Uwah–Asuquo, 2016; Tuoyo, 2017). Besides these apparent gaps in literature, many of these studies have produced mixed results, which make them unreliable and confusing. Due to these inconsistencies

in former works of literature, the current study investigates shareholder wealth maximization and investment decisions in Nigerian manufacturing companies in general and food and beverage companies in particular, with the aim of ascertaining the magnitude of interaction between the independent variables (earnings per share, dividend per share, and market price per share) and the dependent variable (investment decision).

Arising from this, the following research questions were addressed:

(i) What is the effect of earnings per share on investment decision in Nigerian food and beverage companies?

(ii) Does dividend per share has any effect on investment decision in Nigerian food and beverage companies?

(iii) How does market price per share affect investment decision in Nigerian food and beverage companies?

The study tested the following hypotheses:

H_{o1}: Earnings per share has no significant effect on investment decision in Nigerian food and beverage companies.

H_{o2}: Dividend per share has no significant effect on investment decision in Nigerian food and beverage companies.

H_{o3}: Market price per share has no significant effect on investment decision in Nigerian food and beverage companies.

The remainder of the paper is organized as follows. Section 2 presents a review of relevant literature. Section 3 presents the research methods. Section 4 discusses the empirical results. Section 5 provides conclusions and recommendations.

2. Literature Review

2.1. Shareholder Wealth

The modern finance theory operates on the assumption that the only objective of a business concern should be to maximize the market value of the share or shareholder wealth. Shareholder wealth is expressed by the relation SW (Shareholder Wealth) = n x MV (Number of Shares held x Market Value per Share) (Zubair–Irem, 2018). It is clear from the expression that given the number of shares held, shareholder wealth can be maximized by maximizing the market value per share. Hence, every business decision should ultimately lead to maximizing the market value of the share (Zubair–Irem, 2018).

The major objective of finance, among other competing ones, that has gained global acceptance and recognition is shareholder wealth maximization (Alnaaem–Alnaaemi, 2010; Brigham–Ehrhardt, 2013; Brounen–Jong–Koedijk, 2014). Tufuor and Duko (2013) were of the opinion that the main objective of a company is

to get the best out of the net present value of expected future income for the shareholders. In line with this expectation, the resources of an entity must be utilized towards shareholder wealth maximization.

Shareholder wealth is represented in the market value of the organization's shares, which, in turn, is dependent on the organization's investment (long- and short-term) and other, mainly long-term issues such as financing and dividend decisions. Dividend decision is one of the most important decisions affecting efficient performance and the attainment of goals (Tuoyo, 2017). The decision regarding dividend determines the amount of dividend to be paid per unit of share for a reporting period. Dividend per share refers to the distribution from earning of a company to its shareholders in proportion to each unit of ordinary shares outstanding for a time period. The quantum of dividend to be paid by shareholders is a function of the earnings, liquidity, finance deficit, availability of investment opportunities, and regulations. So, a company decides on its dividend policy along these factors. Dividend payment is an obvious determinant of shareholder wealth maximization as some investors may prefer committing their funds in a company that pays regular dividends. The goal of finance manager, according to Tarver (2015), is to figure out the quantum of dividends that will improve the value of a firm. Dayananda (2002) argued that the goal of maximizing shareholder wealth reflects the amount of time and risk associated with future cash flows that shareholders expect to receive in the future. The shareholder wealth maximization proxies that are identified in this study are: earnings per share, dividend per share, market price per share, and liquidity. Earnings per share are a profitability variant which measures the performance of the managers as to the utilization of shareholder's capital investment in a company.

Earnings per share measure the proportion of companies that is allocated to each unit of ordinary share capital of a company over a reporting period. They measure firms' performance from the shareholder's perspective. The variable is considered relevant in this study because businesses are established to maximize the wealth of their owners.

Dividend Per Share (DPS) is the total amount of dividend attributed to each outstanding individual share of a company. Calculating the dividend per share allows an investor to determine how much income from the company he or she will receive on a per share basis. Dividends are usually a cash payment paid to the investors in a company.

Market price per share (MPS) is the price at which a stock can be readily purchased or sold in the current market place. It is the "going price" of a share of stock. The MPS may vary everyday due to changes and fluctuations in the stock market and economy.

Liquidity can be seen as the degree to which an asset or security can be quickly bought or sold in the market without affecting the asset's price. Also,

liquidity is generally defined as the ability of a financial firm to meet its debt obligations without incurring unacceptably large losses (Maness–Zietlow 2005). Current liability coverage ratio, a measure of a firm's liquidity position provides a litmus test for the firm's solvency. It is considered the most accurate method as cash used to pay off dividends is subtracted, thus giving a truer picture of the operating cash flow.

2.2. Investment Decision

Investment decision refers to decision relating to the commitment of current financial resources into a long-term project with the hope of having more in the future. Such decision is regarded by Agaregh and Eneji (2017) as commitment of hard-earned current financial resources into a risky and long-term project with the perspective of earning better returns in the future. Taking the right decision as to the commitment of funds in a company is one of the most difficult tasks for investors as adequate care must be taken while making such decision because it usually involves commitment of large capital outlay into a long-term project. Such decision has been regarded by Popoola et al. (2014) as a decision taken by individuals, investors, and companies regarding the expansion, acquisition, modernization, and replacement of long-term assets, disposition of a division or company (divestment) within an entity, modification of the method of distribution of goods, advertising campaign, and Research and Development (R&D) programmes. All these decisions require the sound judgment of those who make them, and as such better strategies have to be formulated. For the purpose of this study, investment decision relates to commitment of funds into ordinary share capital of companies with the aim of attracting regular dividend payment or capital gain arising from future appreciation in the value of those shares.

2.3. Shareholder Wealth Maximization and Investment Decision

Agency relationship exists between the principals and the agents. While the principals provide the finance needed in running the affairs of a business, the day-to-day running, management, and administration of the affairs of a business lie with the managers. In doing this, the Chief Executive Officer/business owner entrusts resources to their managers to perform the duty, while the firm serves as a nexus that brings the principal and the agents into a contractual relationship. The managers are then expected to use the resources in maximizing the wealth of the shareholder by generating positive returns which can be used in paying dividends, grow the business so as to improve the company's market value. The maximization of shareholder wealth goes a long way in determining their investment decision regarding investing more or even divesting what they have

initially invested. The quantum of fund a business is therefore able to pull is a function of the extent to which they have created wealth for the shareholders.

2.4. Theoretical Review

Several varieties of theories have been constructed on how shareholder wealth maximization affects investment decision. Studies on this have therefore been anchored in different theoretical constructs and postulations. This study will be anchored in the shareholder theory.

2.4.1. Shareholder Theory

This theory was presented by Friedman in 1970 (Castelo–Rodrigues, 2007). According to him, companies have only one social responsibility, that is, use their resources to participate in activities designed to increase their profitability over time while staying within the rules of the game, which means to participate openly and get involved in free competition, without dishonesty or fraud (Fridman, 1970). The mentality behind this theory is that managers have a duty to maximize stakeholder interest in a legal and ethical manner. It is a theory of how business leaders address their business environment as well as place emphasis on prioritizing stakeholder interest, which means that one of the manager's responsibilities is to serve the best interests of the shareholders, using the resources of an organization to measure profit in search of the latter's wealth (Sneirson, 2007). Castelo (2013) believes that behaviours within the constraints of the law and without fraud and dishonesty would be beneficial for the society at large. The theory is of greater relevance for this study as it evaluates shareholders' interest with respect to other stakeholders in the business environment, which could force them to invest more in a company.

2.5. Empirical Review

Elly and Hellen (2013) examined the relationship between inflation and dividend pay-out for companies listed on the Nairobi Securities Exchange. The study obtained secondary data from all the firms listed on Nairobi Stock Exchange that consistently paid dividends for the period of 2002–2011. Their findings revealed that inflation rate has no impact on the dividend pay-out. Meanwhile, Mirbagherijam (2014) examined the asymmetric effect of inflation on the dividend policy of Iran's stocks market. Panel data was obtained to test the non-symmetric effect of inflation on companies' decision in decreasing, increasing, and maintaining of dividends. The result shows that inflation has a positive effect on the decision of companies in increasing and maintaining dividends.

Furthermore, Gul, Lai, Saffar, and Zhu (2015) examined the effect of political institutions on the substitution between stock market liquidity and dividend policy, using secondary data from fifty-two countries. Their findings show that the negative association between dividend and stock market liquidity is more pronounced in countries with stronger political rights and constraints than in countries with poor investor protection and low accounting transparency. From their findings, it can be deduced that political institutions have effect on dividend payment policy.

In addition, Huang, Wu, Yu, and Zhang (2013) researched on political uncertainty and dividend policy. The study made use of secondary data from international sample across thirty-five countries over the period of 1990–2008 and found out that past dividend payers are more likely to terminate dividends and that non-payers are less likely to initiate dividends during periods of high political uncertainty. It was therefore concluded that political uncertainty had a negative effect on dividend pay-out policy.

Uwem and Akabom (2016) examine the relationship that exists between capital budgeting processes and wealth maximization objectives in Nigerian firms. The results show that capital budgeting processes (indicated by: Investment identification and selection, Project evaluation and capital budget proposal, Budgeting approval and authorization, Project tracking and development, Monitoring and control of projects, and Post completion audit) have a significant relationship with wealth maximization objectives of firms in Nigeria.

Ozuomba, Anichebe, and Okoye (2016) explored the link between dividend policies on the wealth maximization of some selected companies listed in Nigeria. The study adopted a survey research design by using primary source of data obtained through the administration of questionnaires while adopting quota random sampling technique to ensure that each of the industries in the Nigerian stock exchange is adequately represented. The finding from the ANOVA revealed that dividend policy has significant influence on shareholder wealth maximization in Nigerian listed companies.

A study by Osefual and Gyeke (2017) focused mostly on financial management and shareholder wealth maximization, with specific emphasis on the working capital management and market price per share of listed non-financial firms in the Johannesburg Stock Exchange. The study used regression analysis to analyse the secondary data obtained from annual reports and accounts of the sampled 75 companies for 10 years. The empirical finding from the regression revealed that both inventory conversion period and receivables conversion periods significantly and positively influence firms' value, while cash conversion cycle was found to exert positive but not significant effect on firms' value. Furthermore, findings revealed that payables' payment periods significantly and positively affect profitability.

In contrast, an empirical investigation by De-Almeida and Eid Jr. (2014), which focused on the working capital investment and firm value of Brazilian listed companies, found that investment in current asset – which is a mirror for working capital investment – significantly reduced company value. In the study conducted by Ogundipe, Idowu, and Ogundipe (2012), they found that aggressive working capital management policy in the form of aggressive financing policy has a negative and significant impact on profitability and firm's value, while the aggressive investment policy has a positive and significant impact on profitability. However, aggressive working capital management policy has no significant impact on firm value. Profitability has a positive and significant effect on firm's value, and profitability mediates aggressive working capital management policy on the firm's value.

The investigation of capital budgeting moderators and how they influence shareholder wealth maximization was the cardinal objective of the study conducted by Tuoyo (2017). In achieving this objective, the study employed descriptive survey research design, while Taro Yamane's formula was used in determining the sample size of 397 out of the entire population of 53,528 member of staff of twelve deposit money banks. The study found that different shareholder wealth maximization proxies (dividend per share, profit, retained earnings, and market price per share) are significantly affected by capital budgeting moderators. Capital budgeting moderators, such as inflation, political instability, management attitude to risk, and economic conditions, influenced shareholder's wealth positively in the Nigeria deposit money bank.

Also, a study by Barasa (2014) focused on the effect of firm-level investment appraisal on shareholder wealth maximization in Kenya achieved by using questionnaires to elicit response from respondents, who were top- and middle-level management executives of 57 selected firms quoted on the Nairobi Stock Exchange. The study used stratified sampling technique, and the correlation analysis showed that shareholder wealth maximization is positively correlated with asset allocation and the market timing of stock.

A study by Uwah and Asuquo (2016) focused on "the potential benefits of value addition consideration when making decision relating to capital budgeting and how it affects shareholder wealth maximization". The data for the study were obtained from both primary and secondary sources. The study used exploratory research design. Results from the regression analysis provides mixed results by finding some proxies for capital budgeting to exert significant positive effect on shareholder wealth maximization, while others were found not to be significant. Capital budgeting stages used to proxy capital budgeting, such as investment identification and selection, budget approval and authorization, and project monitoring and control, were found to be the stages of capital budgeting that significantly affect shareholder wealth maximization, while project evaluation

and capital budgeting proposal, project tracking and development, and post completion audit were found not to exert significant effect on shareholder wealth maximization in Nigeria.

3. Methodology

Food and beverage industry/companies in Nigeria make up a diverse sector as they have a large range of different products and manufacturing processes. Currently, the industries in this subsector are so numerous that they could be subdivided into several categories, including: flour and grain; soft drinks and carbonated water; breweries; starch and miscellaneous food products; meat, poultry, and fish; tea, coffee, and other beverages; fruit juices; animal feed; sugar; distilleries and blending of spirits; cocoa, chocolates, and sugar confectioneries; agricultural and food chemicals; industrial packaging (Ojo, 1998).

Food and beverage firms in Nigeria are the major producers of consumer goods sustaining the life of humans. Scholars and practitioners regard this sector as the strongest one in the manufacturing industry – it represents 22.5% of Nigeria's manufacturing sector and 66% of total consumer expenditure, and thus foods and beverages make up the largest sector in the industry (Ringier Trade Media Ltd, 2015; Okere, 2012).

The study covers seven food and beverage firms listed on the Nigerian Stock Exchange, which engaged in consumer goods between 2008–2017. The seven food and beverage companies were selected on the basis of their market capitalization, years of engagement, and their presence as an integral part of the Nigerian manufacturing sector with an outstanding profile (see *Table 1*).

Table 1. *List of sampled food and beverage companies*

S/N	Name of Company
1.	Unilever Nigeria Plc
2.	Nestle Nigeria Plc
3.	Dangote Sugar Plc
4.	Cadbury Nigeria Plc
5.	Flour Mills Nigeria Plc
6.	Seven-up Bottling Company
7.	Nigerian Breweries

Source: authors' compilation (2018)

The study focused on the effect of the shareholder wealth maximization and investment decision of Nigerian listed food and beverage companies. The study used an ex post facto research design to obtain secondary data from the annual reports and statements of accounts of the sampled listed food and beverage

companies, while purposeful and stratified random sampling technique was used to select companies based on their size and to ensure that each one of the subsectors is represented so as to avoid sample bias. The study conducted descriptive statistics and regression analysis to analyse the data for the study.

Integrating the dependent and independent variables, the model for the study is specified thus:

$$LOSC_{it} = \alpha_i + \alpha_1 LOSC(-1)_{it} + \alpha_2 EPS_{it} + \alpha_3 DPS_{it} + \alpha_4 LMPS_{it} + \varepsilon_{it} \qquad (1),$$

where: $LOSC_{it}$ = Log of ordinary share capital of firm i in period t, which is the mirror for investment decision; $LOSC(-1)_{it}$ = a period lag of ordinary share capital of firm i in period t; EPS_{it} = Earnings per share of firm i in period t; DPS_{it} = Dividend per share of firm i in period t; $LMPS_{it}$ = Log of market price per share of firm i in period t; ε_{it} = error term of firm i in period t.

Table 2. *Measurement of variables*

Variable	Acronym	Measure	Expected Effect
Dependent variable			
Investment decision	LOSC	Natural log of value of number of ordinary share capital	
Independent variables			
Market price per share	LMPS Log of	Total market value of company / Number of ordinary share	+
Earnings per share	EPS	Total earnings after interest and tax / Number of ordinary share capital	+
Dividend per share	DPS	Total declared dividend / Number of ordinary share capital	+

Source: authors' compilation, 2018

4. Results

4.1. Descriptive Statistics

Table 3. *Descriptive statistics*

Variable	Minimum	Maximum	Mean	Median	Std. Deviation
LOSC	12.454	16.300	14.189	14.263	1.207
LMPS	0.182	7.350	3.863	3.798	1.556
EPS	-16.820	42.550	5.269	2.700	8.821
DPS	0.000	34.000	3.931	1.500	6.790

The number of observations = 70.   *Source: authors computation, 2018*

Descriptive statistics of the variables used in this study were presented in *Table 3*. It provided comprehensive information on the maximum, minimum, mean, median, and standard deviation for the dependent variable and the independent variables. The results showed the trend of the variables: LOSC, EPS, DPS, and LMPS over the period of 2008–2017. The results revealed that LOSC, LMPS, EPS, and DPS each ranged between the minimum values of 12.454, 0.182, -16.820, and 0.000 and the maximum values of 16.3, 7.350, 42.550, and 34.000 with a mean of 14.189, 3.863, 5.269, and 3.931 respectively. The median value ranged between 14.263, 3.798, 2.700, and 6.790 with a standard deviation of 1.207, 1.556, 8.821, and 6.790 respectively.

Table 4. *Correlation matrix*

Variable	LOSC	LMPS	EPS	DPS
LOSC	1.000			
LMPS	-0.398	1.000		
EPS	-0.417	0.685	1.000	
DPS	-0.633	0.713	0.853	1.000

Source: author's computation, 2018

Table 4 presented the Pearson correlation matrix for shareholder wealth maximization and investment decision for the same period. The results indicated that LMPS, EPS, and DPS have a negative correlation with LOSC. In the same vein, EPS and DPS show a positive correlation with LMPS, while DPS has a positive correlation with EPS.

Table 5. *Model estimation results summary*

Independent variables	Dependent variable (LOSC)					
	Pooled (OLS)		Fixed Effects		Random Effects	
	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.
(Coefficient)	0.025	0.911	4.655	0.000	0.052	0.851
LOSC (-1)	0.998	0.000	0.663	0.000	0.995	0.000
LMPS	-0.003	0.845	0.028	0.171	0.002	0.880
EPS	-0.001	0.776	-0.000	0.939	-0.001	0.798
DPS	0.001	0.775	0.002	0.662	0.000	0.956
Adj. R-square	0.993		0.995		0.984	
F-statistic	2296.048		1217.897		967.471	
Prob. (F-statistic)	0.000		0.000		0.000	
Durbin − Watson stat	1.811		1.784		1.920	
Hausman Test (Prob.)			0.001			

Source: authors computation, 2018

4.2. Results of Model Estimation

Table 5 showed the empirical results of the estimates for the models specified in *Equation 1*. The three different estimates have been grouped into pooled Ordinary Least Squares (OLS), fixed effects and random effects models. The results showed that the adjusted R-square for LOSC was 0.993 for the pooled OLS, 0.995 for the random-effects model, and 0.984 for the fixed effects model. This showed that shareholder wealth maximization contributed in approximately 99%, 100%, and 98% to the investment decision measured by the natural logarithm of ordinary share capital.

The F-statistic measured the general importance of the explanatory variables in a specific model. The values of the F-statistic, based on the result of the panel regressions (pooled OLS, fixed and random), were 2,296.048, 1,217.897, and 967.471, with a probability value of 0.000, which were significant at a critical level of 5%. The decision rule for the F-statistic is that the null hypothesis is rejected when it is less than 5%. Since the F-statistic was lower than the required 5% significance level, the null hypothesis was rejected, and it was established that the explanatory variables were significant for explaining changes in the dependent variable.

The Durbin Watson statistic is used to detect the presence of autocorrelation, which is always between 0 and 4, where a value of 2 means that there is no serial correlation in the model. A value approaching 0 indicates positive autocorrelation, and values approaching 4 indicate negative autocorrelation. However, in this study, the Durbin Watson results of the pooled OLS, fixed and random effects panel regressions were 1,811, 1,784, and 1,920, resp., indicating that there was no serial correlation in the model because the value was greater than 1 and approaching 2.

To choose between fixed and random effects models, the Hausman test was performed. The results showed that the probability value was less than 5%, which suggested that the fixed effects model was statistically preferred to the random effects model.

4.3. Shareholder Wealth Maximization

As showed in the fixed effects model in *Table 3*, among shareholder wealth maximization measures, only LOSC (-1) was found to have a statistically significant impact on ordinary share capital (LOSC). LOSC (-1) has significant impact at the level of 1% (prob. value = 0.000 < 0.01). LMPS was found to have a positive and statistically insignificant impact on LOSC at the level of 5% (prob. value = 0.171 > 0.05). EPS was found to have a negative and statistically insignificant impact on LOSC at the level of 5% (prob. value = 0.939 > 0.05). DPS was found to have positive and statistically insignificant impact on LOSC at the level of 5% (prob. values = 0.662 > 0.05).

5. Conclusion and Recommendations

The empirical findings showed that although all the independent variables used in this study do not individually exert significant effect on the investment decision of shareholders, they were found to exert significant positive joint effect on investment decision when drawn together, implying that food and beverage companies need to maximize the wealth of their shareholders by increasing earnings per share and dividends per share and always doing their bids to ensure that the shares of the company are favourably valued by the Nigerian Stock Exchange (NSE). The results of the study are in line with the findings of Munyua (2012), who examined the effect of dividend policy on stock prices for firms listed at the Nairobi Securities Exchange. Findings from their result show a strong positive relationship between dividend per share and share prices. It was also noted that share prices are affected by paid out dividends per share. The result is supported by Anike (2014), who indicated that stock prices of Nigerian banks are not influenced by dividend pay-out because dividends per share had no significant impact on share prices. Adediran and Alade (2015) examined dividend policies and corporate performance in Nigeria. Findings indicate a positive relationship between organizations' dividend policies and profitability.

Arising from the findings, it is recommended that food and beverage companies improve on the individual identified proxies for shareholder wealth maximization as they jointly exert a significantly positive effect on investment decision.

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Modelling the Financial Failure of Romanian Stock Companies

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Abstract. The aim of the present article is to model and predict the financial failure of non-financial companies listed on the Bucharest Stock Exchange. The prediction models are based on the companies' financial reports. The paper emphasizes the importance of processing outlier data and the significance of categorical independent variables. The paper contributes to bankruptcy and corporate financial failure research by presenting a Romanian situation. Results show that the model that uses 3-year financial data prior to the failure has a better accuracy. Several models have been compared, and it was found that using categorical independent variables as explanatory variables increased the accuracy of the models against those that used numerical regressors.

Keywords: corporate failure prediction, parametric modelling, non-parametric modelling, bankruptcy
JEL Classification: G33 – bankruptcy, liquidation

1. Introduction

The present article deals with corporate failure prediction, which is one of the main topics of modern finance (Fantazzini–Figini, 2009). The financial failure of a company can cause significant losses for the business sector (investors, creditors, employees) and for the society as well. For this reason, there is a high

demand for developing reliable failure prediction models which are able to predict difficulties in a timely manner (Horta–Camanho, 2013).

In Romania, the highest number of companies struggling with financial problems was registered in the year 2013: almost 28,000 companies (Guda, 2018). However, this number decreased to 8,300 in 2017. From this point of view, Romania is one of the countries with the highest number in Central Eastern Europe (Sielewicz, 2018). Thus, there is a clear need for research on bankruptcy and financial failure in this area (Karas–Režňáková, 2013). One of the objectives of the present study is to fill the research gap in this field. The article focuses on modelling and predicting financial failure and seeking methodological answers to make more accurate predictions.

At this point, it is important to make a difference between financial failure and bankruptcy. Legally speaking, the financial failure process in Romania either starts with the petition on the creditor's behalf or the procedure is started by the company itself. The company enters in a restructuring process, from where there are two possibilities: if it is a successful reorganization, the company survives and if not, the company files for bankruptcy based on Law no 84/2014 on insolvency prevention procedures and insolvency proceedings in Romania.

The present article is organized as follows. Section 2 briefly summarizes the literature of bankruptcy prediction. Section 3 provides a short description of the data and methods used in financial failure prediction. Section 4 summarizes the results. Section 5 concludes and provides some suggestions for future research on financial failure prediction.

2. Literature Review on Bankruptcy Prediction

Several models have been developed in the past decade in order to predict bankruptcy and financial failure. These models have been continuously improved; however, there is no unified and generally accepted model. This is because there is no generally accepted definition of bankruptcy (Constad–Yazdipour, 2011), and researchers tend to interpret the concept of bankruptcy differently when applying different statistical methods (Bellovary et al., 2007).

The first bankruptcy modelling attempt dates back to the 1930s, when Fitzpatrick compared the financial indicators of financially healthy and unhealthy companies (Fitzpatrick, 1932). In 1966, William Beaver published his research results, where the author used discriminant analysis (DA) to predict financial failure one year before bankruptcy. The model was accurate in 90% of the cases (Beaver, 1966). Altman was the first to adopt multivariate discriminant analysis (MDA) for predicting bankruptcy. Altman's failure prediction model was based on 5 financial indicators and had an accuracy of 95% (Altman, 1968).

Altman's model is still used these days; many articles and research papers use it for comparison and reference (Bellovary et al., 2007).

Since 1980, a new model family has been developed in financial prediction, the logistic regression modelling (LRM), which can be linked to Ohlson. Ohlson compared 105 bankrupt companies with 2,058 healthy companies between 1970 and 1976 (Ohlson, 1980). Another form of the LRM is the probit modelling, firstly used by Zmijewski (1984). Since 1990, a new prediction model family was born with the fast developing of the IT sector: the neural-network-based prediction models (Meesier–Hanesen, 1988). From this time on, research turned to artificial intelligence and non-parametric models such as hybrid-, fuzzy-, or generic algorithmic prediction models (Fejér-Király, 2015).

In Romania, bankruptcy research is based on logistic regression. In their article, Brîndescu–Goleț studied 4,327 companies from Timiş County, of which 266 companies were bankrupt. In their research based on logistic regression, they obtained 5 significant variables, and their model had 68% accuracy in predicting the bankrupt company (Brîndescu–Goleț, 2013). Based on Altman's (1966) and Tafflers' (2008) models, Cimpoeru compared 75 healthy and 30 bankrupt companies using logistic regression (Cimpoeru, 2014). In one of his later researches, Goleț used more logistic regression models and tested their differences on a sample of 5,908 companies (of these, 354 were bankrupt) between 2008 and 2012 (Goleț, 2014). The use of neural network modelling in Romania was carried out by Slavici et al. (2015). Their research included 55 samples, 18 financial indicators, and 3 hidden layers. The model had an accuracy of 98% (Slavici et al., 2015). Compared to the international datasets, in Romania, research on bankruptcy is limited due to the low availability of official financial data and fiscal behaviour. Only 1 out of 2 companies struggling with financial difficulties submitted a financial report one year prior to entering the phase of financial failure.

The present article suggests an alternative logistic model based on companies listed on the Bucharest Stock Exchange. According to the international research results, financial data one year prior to financial failure is the most accurate, while financial data from 2 or 3 years before the failure will decrease the accuracy of the model (Beaver, 1966; Altman, 1968). On the other hand, there are studies which confirm that models in which the financial indicators are calculated based on a longer period are more accurate (Berg, 2007). The present study also aims to examine these contrasting findings.

In many studies, one of the problems is that some variables in the data sample are outliers. This has an effect on the accuracy of the models. The present article also wishes to find an answer to this issue. Is it possible to make the logistic regression-based model more accurate in predicting financial failure by transforming these outlier variables? The classification of the logistic regression model is better when the independent numerical variables are categorized (Lázár, 2011). In the present

article, these independent variables are transformed into categorical variables; in this way, the accuracy of the logistic regression model can be improved.

3. Data and Methods Used in Predicting Financial Failure

Financial data were collected from the Bucharest Stock Exchange site and from the companies' annual financial reports. The financially failed companies were selected from the National Trade Register Office and were legally deemed as failed companies. 6,142 companies are listed on the Bucharest Stock Exchange, and legal proceedings were launched in the case of 441 companies for financial failure or bankruptcy between 2005 and 2016. From this sample, the research focuses on those companies that financially failed between 2010 and 2016. From this list, financial institutions, banks, and companies without financial data or with 0 sales were eliminated. The remained sample had 65 financially failed companies. The entire sample contains 160 items, out of which 65 are in a state of financial failure and 95 are healthy companies. Taking into consideration all companies listed on the Bucharest Stock Exchange, 5–7% of the companies listed are in a state of financial failure. Compared to this, the sample of the present study includes 60% healthy companies and 40% companies in a state of financial failure. In the literature, healthy companies are usually overrepresented, or a similar number of healthy and unhealthy companies are included in the research (Altman et. al, 1977; Amendola et. al, 2011; Nyitrai, 2015; Virág et al. 2006).

Based on the companies' business activities, the sample used in the present research has a similar distribution to those listed on the Bucharest Stock Exchange. Within the sample, the distribution of industrial and commercial companies is also very similar. *Table 1* shows that industrial companies form the majority, while commercial companies account for the smaller part of the sample.

Table 1. *The Bucharest Stock Exchange (BVB) and data sample distribution*

	BVB	Data sample		Financially failed group		Healthy group	
	distribution	distribution	number	distribution	number	distribution	number
Industry	59.6%	65.0%	104	64.6%	42	65.3%	62
Services	27.6%	24.4%	39	26.1%	17	23.2%	22
Agriculture	4.7%	6.2%	10	6.2%	4	6.3%	6
Commerce	8.1%	4.4%	8	3.1%	3	5.2%	5
Total	**100%**	**100%**	**160**	**100%**	**65**	**100%**	**95**

Source: Bucharest Stock Exchange, own calculation

The data collection was based on the year when financial failure proceedings began. The study used financial reports of the last three years before the financial failure. Therefore, the data come from the period between 2007 and 2015, and the ratio of industrial and commercial companies is similar. The two groups of data are similar in terms of company size and number of employees (between 50 and 249).

The data were analysed using binomial logistic regression. Logistic regression is widely used within the literature, and it was often used at the beginning of research on bankruptcy as well (Bellovary et al., 2007). Moreover, it is the most widely used method in developing credit scorecards (Thomas, 2009). One advantage of this method is that it does not require the normal distribution of independent variables, but it is sensitive if outlier data are present (du Jardin, 2010). A large sample is needed for the success of the procedure; a research needs to have 10 times more observations than dependent variables (Peduzzi et al., 1996). Our 160-item sample fulfils this condition. 16 variables were selected to be used in the model as independent variables, taking into consideration relevant literature and using the companies' yearly financial reports (Bellovary et al., 2007; Virág–Kristóf, 2005). Stock data were examined at their end-of-year closing value because averaging stock value requires more data (reference and base value are also needed) and more work, while it will not improve results significantly (Nyitrai, 2017). The financial indicators and their calculation methods are shown in *Table 2*.

Table 2. *Financial indicators used in the calculation*

Financial indicators	Calculation formula
1. Return on Assets (ROA)	Net income/Assets
2. Return on Sales (ROS)	Net income/Total sales
3. Return on operating results	Operating results/Total sales
4. Liquidity ratio	Current assets/Current liabilities
5. Net working capital	(Current assets – Current liabilities)/ Current liabilities
6. Working capital	Current assets – Current liabilities
7. Equity ratio	Equity/Assets
8. Covered long-term assets	(Equity + Long-term liabilities)/Long-term assets
9. Debt ratio	Total liabilities/Assets
10. Asset Turnover	Total sales/Assets
11. Days Sales Outstanding (DSO)	Total sales/Accounts receivable
12. Inventory ratio	Inventory/Current assets
13. Current liabilities ratio	Current liabilities/Total liabilities
14. Change in total sales	$\text{Total sales}_1/\text{Total sales}_0$
15. Employees	Average employees
16. Company foundation year	Years since foundation of company

It must be noted that it is necessary to prepare the data before modelling, on the one hand, because logistic regression can lead to distorted results if outlier data is still present and, on the other hand, as we also need to consider multicollinearity that might distort the results. To identify multicollinearity, we used the variance inflation factor, the general formula of which can be seen below:

$$\text{VIF}_j = \frac{1}{T_j},\tag{1}$$

where T_j is the tolerance indicator, and $T_j = 1\text{-}R^2_j$, which shows how many unexplained variables are left after j-th independent variable. Therefore, in formula (1), if the j-th independent variable is linearly independent from other variables, then the value of the indicator is one, while in the case of an extreme multicollinearity the value of the indicator is infinite. The general threshold value is 5; if the indicator is greater or equal to 5, then there is a strong multicollinearity (Kovács, 2008).

The analysis revealed that there is multicollinearity between profitability indicators such as return on sales, return on operating results, equity, or debt ratio. For this reason, only one pair of indicators was used at a time for modelling, making it easier to identify the best performing indicators to be used in the final model, using a single iteration.

There is no consensus in the literature about identifying and handling outlier data. However, most seem to agree about the fact that outlier data can have a significant impact on parametric as well as non-parametric tests (Zimmerman, 1994). Winsorization is often used in bankruptcy research in order to handle outliers (Wu et al., 2010; Mansi et al., 2010; Araujo et al., 2012), and therefore the present study also made use of this method. Outliers were examined with the help of interquartile range, and it showed that almost all indicators had outliers, in some case even extreme outliers. Reducing the size of an already small sample was not an option, and so we did not exclude outliers. Outlier values were substituted by one and a half times the value of the interquartile range. Statistical analyses also include identifying outliers which are three times greater than the average range of dispersion (Li–Sun, 2011).

Using random sampling, the whole sample was divided into 80% test and 20% control groups in order to examine the predicting ability of the models. It is important to note that the number of failed companies within the test sample needs to have at least 50 items in order to perform multivariate statistical analysis (Engelman et al., 2003). Our sample fulfils this criterion. To create the final models, the Enter method was applied using the results of several trial tests. For the graphic evaluation of the models' performance and the calibration plot, the ROC (Receiver Operating Curve) was used. The ROC shows the accuracy of classification within the model compared to the real classification, including

all cut-off values. Generally, the horizontal axis presents the probability of false alarm, while the vertical axis presents the ratio of correctly classified failed companies. There is a 45-degree line, which illustrates the chance diagonal and the level at which the model is not acceptable. The accuracy of the model can be measured with the help of the area below the ROC curve. The higher the value of the AUC, the better the model. While a value of 0.5 AUC refers to chance, a value of 1 indicates a perfect model.

4. Results

The study aims to model the 3 years before the companies' financial failure, where the point of reference is the state of financial failure (marked with a "t"). All three models showed a significant correlation between the dependent and independent variables at a level of 0.05 based on the Chi-square test. The Hosmer–Lemeshow tests showed that the models fit the data. The indicators included in the final models are shown in *Table 3* below.

Table 3. *Financial indicators present in the final model (years prior financial indicators – year t-n)*

Financial indicators	year t-1	year t-2	year t-3
ROA	*	*	*
DSO	*	*	*
Equity ratio	*	*	
Working capital	*	*	
Changes in total sales	*		
Debt ratio			*

* means that the financial indicator is present in the final model   *Source: own calculations*

As far as the final models are concerned, there is a relatively consistent result regarding the significance of the indicators. Return on assets proved to be one of the most stable indicators, which had a significant impact on all three models. This was hardly a surprising result as Bellovary et al. (2007) concluded in their study that the ROA indicator is the most commonly used indicator in the history of bankruptcy research. The DSO is also present in all three models as a significant independent variable. Equity ratio had a significant impact on the first and second year before the state of financial failure. Debt ratio was significant only in the third year before the state of financial failure. Changes in the total sales indicator were only significant in the first year before the state of financial failure. Only one liquidity indicator, the working capital, contributed to the prediction of financial failures in models *t-1* and *t-2*. The ROS seemed to be significant in all cases when

the ROA indicator was not included in the model. This is because of the strong connection between the two indicators, but it is worth mentioning that using ROS resulted in less accurate models, and therefore it was left out of the final models. Return on operating results was similarly in a strong correlation with both ROS and ROA. Results showed that most of the indicators used in modelling had no effects on the financial failure.

In the case of the binomial logistic regression variable, weight is shown by variable coefficient. *Table 4* takes the *t-1 model* as example, and by examining the B coefficient it can be seen that an increase in any financial indicator decreases the chance of financial failure, while the other indicators remain unchanged. The exception to this rule is the working capital indicator, the increase of which also increases the chance of financial failure. The likelihood ratio, or Exp(B) shows how an increase of regressors by one unit increases the chance of financial failure. A likelihood ratio greater than 1 increases, while a likelihood ratio smaller than 1 decreases the chance of financial failure. Looking at *Table 4*, it can be observed that a one-unit increase in the working capital increases the likelihood of financial failure by one unit. The ROA indicator has the most powerful effect on the likelihood of financial failure – a unit increase in ROA decreases the likelihood of financial failure with almost 100%, leaving other indicators unchanged. Equity ratio and change in total sales work in the same way though their impact is less powerful. The DSO has the least effect on financial failure, where a one-unit increase, ceteris paribus, increases the likelihood of financial failure by 0.825 times, meaning a 17.5% decrease. Due to the limited space, the parameters and formulas for models *t-2* and *t-3* can be found in the *Annex*.

Table 4. *The parameters of one year prior to failure (t-1) model*

Financial ratio	B	S.E.	Wald	Sig.	Exp(B)
ROA (x_1)	-11.137	2.982	13.949	0.000	0.000
Equity ratio (x_2)	-4.421	1.053	17.629	0.000	0.012
DSO (x_3)	-0.193	0.084	5.285	0.022	0.825
Changes in total sales (x_4)	-1.899	0.872	4.741	0.029	0.150
Working capital (x_5)	0.000	0.000	11.360	0.001	1.000
Constant	3.356	1.023	10.765	0.001	28.666

Source: own research and calculations with SPSS

Formula for model *t-1*:

$$P(\text{failed}) = \frac{1}{1+e^{-(3.356-11.137 \cdot ROA-4.421 \cdot \text{equity ratio}-0.193 \cdot DSO-1.899 \cdot \text{change in total sales})}} \quad (2)$$

The models' ability to predict financial failure can be tested on the control groups, in the case of which all three models show a lower ranking accuracy

(*Table 5*). In model *t-1*, it is lower by 1.5%, in model *t-2*, by 6.2%, and in model *t-3* by 4.6% compared to the test group, which is normal. For this reason, the models prove to be adequate in predicting financial failure. At the same time, it can be observed that in spite of the large proportion of the test group, we cannot speak of overtesting, which in turn reinforces the predicting ability of the models.

Table 5. *The main characteristics of the three models*

cut-off value = 0.50	t-1. model	t-2. model	t-3. model
No. of significant indicators	5	4	3
Hosmer–Lemeshow Sig.	0.935	0.876	0.858
Nagelkerke R^2	0.647	0.505	0.396
Test group accuracy	82.8%	78.1%	73.4%
Control group accuracy	81.3%	71.9%	68.8%

Source: own research and calculations with SPSS

If we go back in time from the moment of financial failure, we can find less significant indicators, weaker explanatory power, lower accuracy, and the AUC is also becoming smaller. While in the first year before the state of financial failure there are five significant indicators, with an explanatory power of 64.2%, in the third year, there are only three significant indicators with an explanatory power of 39.6%. This means that on a short term the results are more accurate, and the further we go back in time, the more the accuracy of models and predictions are decreased, which is perfectly realistic and supports the reliability of the models (*Table 5*).

Examining the performance of the models based on ROC, we can find that in the case of model *t-1* there is a significant deviation from the 45-degree line, which shows an excellent model. Model *t-2* proves to be good, while the AUC value of the *t-3* model can also be considered as good based on *Figure 1* (0.802).

Calibration of the cut-off value revealed that in the case of model *t-1* the optimal cut-off point is 0.41, in model *t-2* 0.39, and in model *t-3* 0.30. Going further back in time from the state of financial failure, the calibration of the cut-off value seemed to be less advantageous: in the case of model *t-1*, it brought about an accuracy increase of 3.1% in the test and control groups, while in model *t-3* this increase was only of 1.6% in the test group, but it had no effect on the control group.
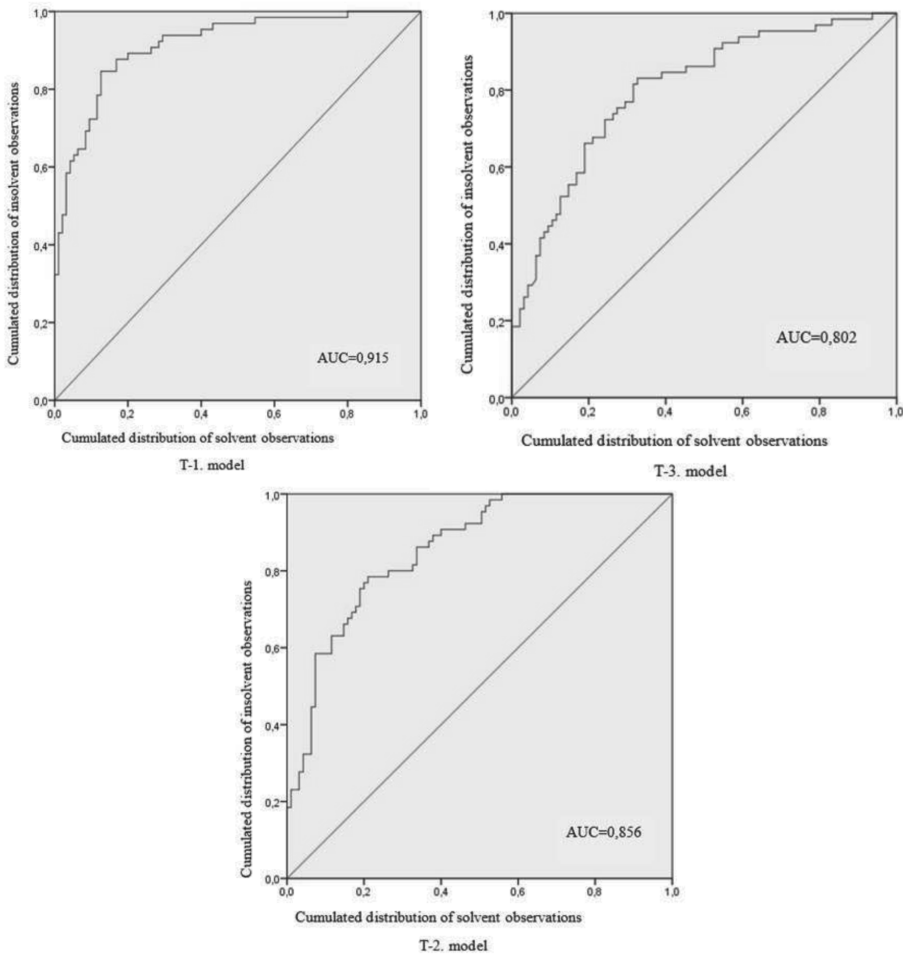
Figure 1. *The ROC-curve of the three models*

Multi-Year Model vs Model t-1

Besides creating the 3 models, one of the aims of the present paper is to assess the reliability and forecasting ability of the model which includes all financial indicators three years prior to the financial failure. After several testing procedures, the best model contains 6 independent variables. According to the Hosmer–Lemeshow test, this model fits our data, and according to the Nagelkerke R^2 the selected independent variables have a confidence level of 72.4% in predicting financial failure. Its accuracy proved to be the best for the test group and the control group alike. Compared to the *t-1* model, it has a better classifying ability

for the test group, but it performs worse in the case of the control group. The comparison is illustrated in *Table 6* below.

Table 6. *Key features of the multi-year model vs model t-1*

cut-off value = 0.50	Multi-year model	t-1. model
No. of significant indicators	6	5
Hosmer–Lemeshow Sig.	0.825	0.935
Nagelkerke R²	0.724	0.647
Test group accuracy	89.1%	82.8%
Control group accuracy	75.0%	81.3%
AUC	0.921	0.915

Source: own research and calculations with SPSS

The Importance of Managing Outliers

The paper also seeks to find and answer to the question whether winsorizing outliers improves the models' accuracy, classifying ability, and explanatory power. In order to run this test, the whole sample of 160 items was used without dividing it into test and control groups. Managing outliers was done according to the procedure mentioned in the theoretical part of the paper; outlier values were substituted by one and a half times the value of the interquartile range. Managing outliers was performed on all three models created previously, and the cut-off value was set at 0.50.

Looking at the raw data with outlier values in the first year before the financial failure, we can see that the number of significant independent variables decreased to four because the ROS indicator was not significant. Based on the Nagelkerke R² test, the explanatory power of the model was at a confidence level of 56.6% with the outlier data and 63.2% after managing outliers. According to the Hosmer–Lemeshow test, both models fit de data. Classification accuracy was better after managing outliers, and based on the area under the ROC curve the data without outliers resulted in an excellent model, whereas with the outlier data it is an acceptable model. *Table 7* summarizes the arguments above.

Table 7. *Results before and after managing outliers in year t-1*

Year t-1	No. of significant indicators	Match (%)			Nagelkerke R²	Hosmer–Lemeshow test (Sig.)	AUC
		Healthy	Financially failed	Total			
Without outliers	5	87.4	75.4	82.5	63.2%	0.601	0.913
With outliers	4	86.3	70.8	80.0	56.6%	0.436	0.887

Source: own research and calculations with SPSS

Examining the second year before the financial failure based on the existing model, both sets of data contain four significant variables, and they fit based on the Hosmer–Lemeshow test. Results in *Table 8* show that the explanatory value of raw data containing outliers is 4.3% less compared to the database without outliers. Classification accuracy is higher in the sample managed for outliers, but the raw sample yielded better results in terms of identifying healthy companies. Based on their position under the ROC curve, both samples of data can be considered good.

Table 8. *Data with and without outliers in year t-2*

Year t-1	No. of significant indicators	Match (%)			Nagelkerke R²	Hosmer–Lemeshow test (Sig.)	AUC
		Healthy	**Financially failed**	**Total**			
Without outliers	4	84.2	64.6	76.3	47.2%	0.106	0.863
With outliers	4	86.3	60.0	75.6	42,9%	0.505	0.842

Source: own research and calculations with SPSS

In the third year before the financial failure, out of three independent variables in the raw data, the ROA and the DSO were only acceptable on a 10% significance level, but they remained in the model. We can see in *Table 9* that both samples fit well according to the Hosmer–Lemeshow test. There is a significant difference in their explanatory power in favour of the sample without outliers based on the R^2 test. The total classification accuracy of the sample without outliers is higher, while the classification accuracy of raw data is more precise. Based on the AUC, the data without outliers results in a good model, while raw data yield a mediocre/average model.

Table 9. *Data with and without outliers in year t-3*

Year t-1	No. of significant indicators	Match (%)			Nagelkerke R²	Hosmer–Lemeshow test (Sig.)	AUC
		Healthy	**Financially failed**	**Total**			
Without outliers	3	81.1	60.0	72.5	35.9%	0.760	0.809
With outliers	3	86.3	46.2	70.0	18.1%	0.669	0.783

Source: own research and calculations with SPSS

The Importance of Categorical Independent Variables

Another interesting aspect was the possibility of obtaining better classification results by using categorical independent variables instead of numerical variables. In order to achieve this, we transformed the sample containing outliers to categorical values. Each financial index with a value in the first quartile was assigned into Category 1, Category 2 was made up of values between the first and second quartile, the median and upper quartile were assigned into Category 3, and values in the upper quartile were placed into Category 4. For the modelling process, the entire 160-item sample was used, taking into consideration the variables of the previous models using a cut-off value of 0.50. Testing the first year before the financial failure and using categorical variables, we revealed that only three were significant: ROA, equity ratio, and DSO. The Hosmer–Lemeshow test confirms that the models fit well; the explanatory power of the categorical data sample is 2.1% higher compared to the numerical data sample. Classification accuracy was higher when using categorical variables in both classes, and total classification accuracy is the highest among all models in the current study.

In the second year before the financial failure (*t-2*), the categorical variables allowed for a higher total classification accuracy and a higher explanatory power. Unfortunately, the Hosmer–Lemeshow test revealed that the model does not fit the data well, wherefore it is unacceptable.

In the third year before the financial failure, the categorical values perform better again, the model fits the data, and the explaining power is 9% higher compared to the numerical data. Total classification accuracy using categorical values at 75% is good and higher than its numerical counterpart. The summary of the models' results is shown in *Table 10*.

Table 10. *Models using categorical vs numerical variables*

Year t-1	No. of significant indicators	Match (%)			Nagelkerke R²	Hosmer–Lemeshow test (Sig.)
		Healthy	**Financially failed**	**Total**		
Numerical (year t-1)	5	87.4	75.4	82.5	63.2%	0.601
Categorical (year t-1)	3	88.4	80.0	85.0	65.3%	0.221
Numerical (year t-2)	4	84.2	64.6	76.3	47.2%	0.106
Categorical (year t-2)	3	83.2	75.4	80.0	51.5%	0.027
Numerical (year t-3)	3	81.1	60.0	72.5	35.9%	0.760
Categorical (year t-3)	3	80.0	67.7	75.0	44.6%	0.697

Source: own research and calculations with SPSS

5. Conclusions

The final conclusion of the present paper is that it is possible to predict the financial failure of non-financial companies listed on the Bucharest Stock Exchange. The most accurate predictions were calculated using short-term, one-year data. The study confirms the validity of the general approach on financial failure prediction models, more specifically that they work as a short-term, early warning/forecasting system. It is worth mentioning that models built on data three years prior to the financial failure were also acceptable, and this way it can be stated that the phenomenon of financial failure is not a single event but rather the end result of a financially problematic period.

Modelling was based on examining data from three consecutive years before the financial failure occurred, and a model containing data from all three years was also created. The results of the study show that the multi-year model proved to be better than our best model built on data from one year before the financial failure (*model t-1*). This led us to the conclusion that the most reliable models need to be based on more data than those available in the year before the failure.

Calibration of the cut-off value only improved accuracy by approximately 3 percentile points; furthermore, in the case of the test sample, there was no increase in classification accuracy in the long term. Fine-tuning the cut-off value did not yield outstanding results; however, the improved measuring, those couple of per cents could be of key importance when making decisions.

The classification accuracy of the logistic regression improved after winsorizing outliers, transformations based on the one and a half times the interquartile range did not cause a significant loss of data, and in each case better models were obtained compared to the scenario of using raw data with outliers. Therefore, it can be stated that outliers outside the one and a half times the interquartile range do not contain vital information; rather they have a distorting effect. Further studies could examine the effect of more strict or lenient winsorizing on the results.

Compared to the models using numerical data, a higher classification accuracy was achieved by grouping independent variables into categories. This process is also a good outlier management tool. Thus, a further question is to be answered: does it make sense to place numerical variables in more categories than the existing four in order to achieve better accuracy?

The results of the present study have their limitations, but at the same time they might point out further research directions. The limitations of the study are that it is heavily reliant on the public data available on the Bucharest Stock Exchange website; therefore, the conclusions can be formulated only for a part of the listed companies. The viability of this small-scale study could be confirmed by a similar study carried out on the national level.

A significant distortion comes from the fact that the database is from the years 2007–2015, and we cannot overlook the effect of this. The global economic crisis of 2008 is also a distorting factor because in addition to normal economic operations some companies failed due to the domino effect, which caused economic difficulties. Taking the years affected by the crisis out of the data range and rebuilding the models is the object of a future research.

Out of more than a dozen indicators, only 3–5 proved to be of significant influence on the financial failure – among these are the ROA and DSO, which proved to be very stable.

They are included in each of the models as a significant explanatory variable. ROA had a substantial impact on the development of financial failure, just as we expected. Only one liquidity indicator proved to be significant, the working capital, which contributed to the estimation of financial failure in models *t-1* and *t-2*. The debt ratio turned out to be significant only in the third year before the financial failure (model *t-3*) and showed a strong causality of financial failure. This last result is believed to indicate that the debt ratio is an early warning sign of financial failure, but this needs to be confirmed by further studies.

With a single exception, only static indicators were used, and for this reason in the future it might be useful to create a model with dynamic indicators, where we could identify the rank between dynamic and static indicators.

Appendix

Appendix 1. *The parameters and formulas for the t-2 model*

Financial ratio	B	S.E.	Wald	Sig.	Exp(B)
ROA	-10.408	2.825	13.572	0.000	0.000
Equity ratio	-4.444	1.009	19.412	0.000	0.012
DSO	-0.245	0.076	10.447	0.001	0.782
Working capital	0.000	0.000	8.760	0.003	1.000
Constant	2.563	0.743	11.893	0.001	12.980

Source: own research and calculations with SPSS

Formula for model *t-2*:

$$P(failed) = \frac{1}{1+e^{-(2.563-10.408 \cdot ROA-4.444 \cdot equity\ ratio-0.245 \cdot DSO)}}$$

Appendix 2. *The parameters and formulas for the t-3 model*

Financial ratio	B	S.E.	Wald	Sig.	Exp(B)
ROA	-10.210	3.584	8.117	0.004	0.000
Debt ratio	4.002	0.904	19.593	0.000	54.681
DSO	-0.263	0.073	13.028	0.000	0.768
Constant	-0.867	0.450	3.713	0.054	0.420

Source: own research and calculations with SPSS

Formula for model *t-3*:

$$P(\text{failed}) = \frac{1}{1+e^{-(-0.867-10.210\cdot\text{ROA}+4.002\cdot\text{debt ratio}-0.263\cdot\text{DSO})}}$$

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