

THESES OF THE DOCTORAL (PhD) DISSERTATION

MODERN CITIES PROGRAMME: A WAY OUT FROM THE BUDAPEST-CENTRIC ECONOMY?

AN ANALYSIS OF THE ECONOMIC AND LOCATION PREFERENCES OF ENTERPRISES
LOCATED IN THE INDUSTRIAL PARKS OF CITIES WITH COUNTY STATUS

Gergő Kun

Supervisor:

Dr. habil. Adrián Szilárd Nagy

associate professor



UNIVERSITY OF DEBRECEN

Károly Ihrig Doctoral School of Management and Business

Debrecen, 2021

1. THE BACKGROUND, OBJECTIVES AND PRESENTATION OF THE RESEARCH HYPOTHESES

The research topic is particularly close to me, as I have previously studied corporate economics, analyzed family businesses and started my professional career in a company located in an industrial park of a city with county status. This gave me the opportunity to experience first-hand what it is like to work in such an establishment and what factors companies consider important when choosing a location, and my personal motivation for carrying out this research was therefore also a reason for doing it.

Hungary's economic structure is unipolar, centered on Budapest, the disadvantages and advantages of which I have experienced from my own experience, in addition to the literature I have read, and so the topic arose that this current economic structure needs to be changed, and the positioning of rural settlements is an inevitable aspect of this, if we want to increase the population retention capacity of the countryside in the long term. The Modern Cities Programme (MVP) was announced about a year before I started my research, and it was then that I realized that this large-scale development programme might be worth a closer look. The Modern Cities Programme is an extremely diverse development package available to cities with county status through cooperation agreements. The agreements include a wide range of projects, from infrastructure development to cultural, sports and education development points, which can increase the population retention and economic role of the cities. Thus, in delimiting the subject of MVP, I have confined myself, also because of my aforementioned ties, to examining the development aspects of industrial parks in the cities with county status, by examining the preferences of companies in terms of location. In order to get a complete picture of all this, I also considered it necessary to carry out a demographic and financial analysis of the enterprises identified.

The main aim of the thesis is therefore to carry out a demographic and financial analysis of the companies located in the industrial parks of the municipalities participating in the Modern Cities Programme, to identify their location preferences and to examine whether the Modern Cities Programme can really provide an appropriate solution for the development prospects of both existing and newly created industrial parks, and whether it can be a tool for increasing the national economic strength of rural areas, which could

ultimately be a key factor in the development of a multipolar economy. My aim is to use the results obtained from these aspects to provide decision-makers with guidelines and suggestions for future spatial development and industrial park development plans, in order to achieve even more effective cooperation in the future.

Hypotheses put forward:

Hypothesis 1: The industrial parks of the cities with county status are typically populated by large companies, and the companies with sites are mainly engaged in manufacturing activities.

Hypothesis 2: The companies located in the industrial parks of the cities with county status represent a significant economic force in the national economy as a whole, based on their demographic and financial situation.

Hypothesis 3: The financial situation of businesses is adequate and they have the conditions to ensure their further development, which could be further improved with the support of the Modern Cities Programme.

Hypothesis 4: Businesses place particular emphasis on the quality of infrastructure conditions when determining their location preferences.

Hypothesis 5: The Hungarian economy, as a whole, is Budapest-centric, and businesses would prefer to operate in Budapest if they could.

Hypothesis 6: Developments under the Modern Cities Programme will provide the right infrastructure for the businesses under study and may increase the population retention of the cities with county status through cultural, sports and educational developments, thus increasing their economic role.

Main objectives of the research

1. Carry out a historical overview, to define the relevant basic concepts, location theories, industrial and spatial development initiatives and to describe the Modern Cities Programme.
2. Identify the industrial parks in the cities with county status and to identify the enterprises located there.

3. Carry out a questionnaire survey of the preferences of the businesses identified as regards the choice of location, to compile a database and to evaluate the results.
4. Create a database based on the financial results of the businesses identified and to carry out a financial analysis based on the results.
5. Identification of industrial park and industrial development projects under the Modern Cities Programme.
6. Draw up guidelines and proposals for future initiatives on the basis of the analysis results.

2. DATABASE AND APPLIED METHODS

The dissertation is the result of a four-year (2017-2020) research project, the structure and flowchart of which is shown in Figure 1, presents the situation of enterprises established in the industrial parks of county towns, their location preferences, and whether the Modern Cities Programme can be an opportunity to expand the unipolar Hungarian economy and make it multipolar, with reference to primary and secondary sources.

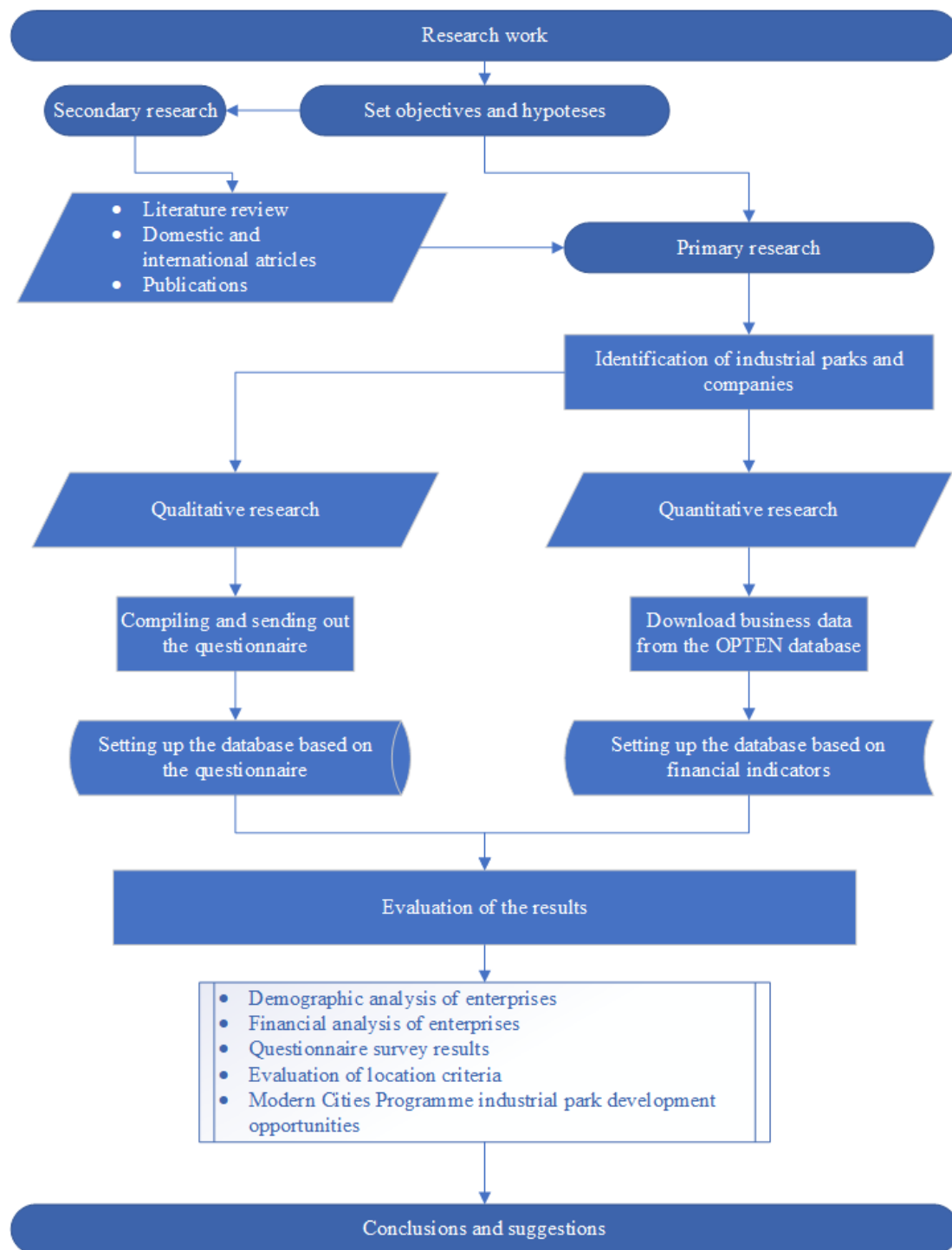


Figure 1: Structure of the research work

Source: own editing, 2020

In the first two years of the research (2017-2018), secondary research was carried out on the topic, in the course of which a number of domestic and international literature, books and articles were processed, and the study of sources related to the topic, but not primarily created for research purposes, helped the research to progress. The secondary research was conducted before the primary research, in accordance with the recommendations of the research methodology (LEHOTA, 2001; BONCZ, 2015).

2.1. Presentation of the mapping of selected enterprises

The scope of the questionnaire survey and of the enterprises to be used for the analysis of financial performance was defined with a view to full representativeness. Thus, according to the representativeness criteria, the database of the dissertation was defined in terms of all the enterprises of all the industrial parks of all the enterprises located in the county towns of Hungary.

Currently, there are 23 cities with county status in Hungary. The next step of the delimitation was the mapping of the industrial parks located in the 23 county-level cities. In its reply to my request of 16 April 2019, the Industrial Park Association informed me that there were 196 industrial parks operating in the country at that moment, and the list provided also delimited the number of industrial parks operating in the cities with county status. In total, 48 industrial parks were identified, which is the basis for this topic, all county towns except Érd have at least one industrial park.

The information about the industrial parks and the exact names and numbers of the enterprises that have set up in them was gathered from several sources and as a result of a relatively long research.

- Email enquiries about industrial parks;
- If the municipality is the maintainer, municipality was contacted;
- Industrial parks' websites;
- Free company information service of the Ministry of Justice's Business Information and Electronic Company Registration Service; - <https://www.e-cegjegyzek.hu/>

- OPTEN Business Information System;
- Google Maps.

The research was carried out between 2019 and 2020.

2.2. Methodology for demographic and financial analysis of the enterprises

Among the first factors examined in the demographic analysis of enterprises is the distribution of the size category of enterprises. The SME Act helped to define the size category. As a general rule, SMEs are defined as enterprises with fewer than 250 employees, with a turnover of up to €50 million or a balance sheet total of up to €43 million, and which also meet the criteria for autonomy set by the law (ACT XXXIV of 2004, 2004).

In order to qualify as an SME, an enterprise must meet only two of the three economic indicators mentioned above. The criterion of number of employees must be met, but the criteria of annual net turnover and balance sheet total are secondary, and it is sufficient if only one of the two is met. In order to better align the enterprises examined with the SME Act, I have categorized them according to the following breakdown, which is shown in Table 1.

Table 1: Defining the category of small and medium-sized enterprises in the dissertation

Size category	Annual net turnover (EUR)	Balance sheet total (EUR)
Micro-enterprises with 0 employees	<2 000 000	<2 000 000
Micro-enterprises with 1 person	<2 000 000	<2 000 000
Micro enterprises with 2-9 employees	<2 000 000	<2 000 000
Small businesses	<10 000 000	<10 000 000
Medium enterprises	<50 000 000	<43 000 000
Large enterprises	50 000 000 fölött	43 000 000 fölött

Source: based on Act XXXIV of 2004, own editing

2.3. Method of financial analysis of the enterprises

In the course of the research, the profitability and liquidity of the companies under study were examined using management accounting methods and tools, as financial and management accounting information is used for financial efficiency and competitiveness studies (BORDÁNÉ RABÓCZKI, 2012). The financial evaluation of the companies was

carried out using the DuPont system of indicators, the indicators studied are shown in Table 2. At the same time, I also performed liquidity and turnover rate analysis on the identified enterprises.

Table 2: Indicators used in the DuPont analysis

Indicator	Meaning of indicator	Indicator formula
ROS	Profit after tax on turnover	Profit after tax/revenue*100
Asset Turnover Ratio	Corporate asset management efficiency indicator	Net sales/total assets
ROA	Profit after tax on assets	Profit after tax/total assets*100
Equity multiplier	Equity-financed part of assets	Total assets/equity
ROE	Profit before tax in proportion to equity	Profit before tax/equity*100

Source: based on BREALEY-MYERS (2005), KRESALEK (2005), ECOSTAT (2008), LAÁB (2009), FENYVES (2013), BARANYAI et al. (2013), TARNÓCZI (2015), SÁPINÉ DUDUK (2017), own editing

Based on the data of the main balance sheet and profit and loss account lines extracted from the OPTEN system, it became possible for me to create a database of the data of the enterprises and to analyze the data, based on which I saw the application of the DuPont indicator system as appropriate. KRESALEK (2007) noted that the DuPont system of indicators was developed in 1919 by the American chemical company Du Pont and has since become widespread and frequently used because of its ability to provide a complex assessment of company performance. The indicators are built on each other and there is also an order of magnitude and importance.

VAN VOORHIS (1981) stated that the DuPont model is a ratio-based analysis that allows management to observe the interactions of important variables in the cost-profit chain, on the basis of which the situation of the enterprises under study can be successfully presented and conclusions drawn from the results (Figure 2).

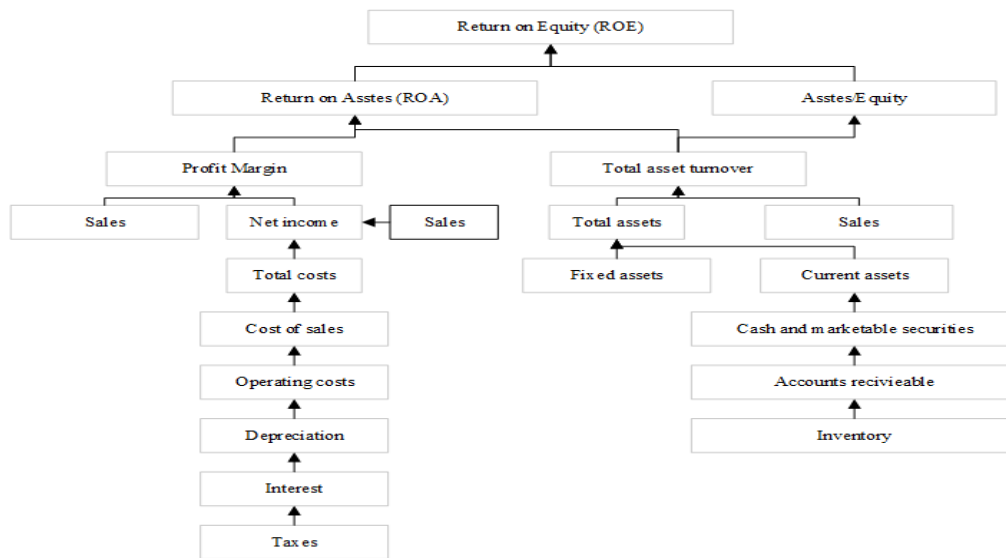


Figure 2: Extended DuPont analysis model

Source: based on VAN VOORHIS (1981) own ed.

To get an accurate picture of the financial situation of the companies, I also considered it necessary to examine the liquidity ratios calculated from the balance sheet results of the companies identified. These ratios measure the ability of a business to meet its short-term liabilities (MUSINSZKI, 2014). In order to accurately assess the liquidity of a company, it is useful to calculate several liquidity ratios and assess them together in a complex way.

$$\text{General liquidity ratio} = \frac{\text{current assets}}{\text{short-term liabilities}}$$

$$\text{Liquidity quick ratio} = \frac{\text{current assets} - \text{inventories}}{\text{short-term liabilities}}$$

Higher liquidity ratios indicate that the company is likely to be able to meet its short-term liabilities and finance its operating costs in the future. Lower values of the ratios may predict that the firm may have difficulties in meeting its short-term liabilities in the near future, which may cause problems in the firm's operations (FENYVES et al., 2016).

The inventory management position of businesses should also be mapped to get the full picture. This can be measured in several ways, but their common characteristic is that they provide feedback to management on the efficiency and success of their operations. The widely used tools for this assessment are the so-called rotation indicators. The indicators trained in this analysis can be said to be aimed at measuring the level of asset management of enterprises and its efficiency.

$$\text{Asset turnover rate} = \frac{\text{net sales}}{\text{total assets}}$$

$$\text{Inventories turnover rate} = \frac{\text{net sales}}{\text{inventories}}$$

Accordingly, the rotation speed measurements can cover several areas of the business, depending on which rotation speed is being measured. The analysis is based on benchmarking, whereby the performance of the periods under analysis can be compared (GYULAI, 2011). Accordingly, in this thesis, the rotation rates of assets and inventories of enterprises were examined.

2.4. Industrial park site selection

In developing the questionnaire on site selection criteria, I have taken into account the model of optimal site structure described by LENGYEL (2000).

Based on the research results of VERES (2017), I used the scoring method for the analysis of the site selection questions, and the surveyed enterprises were weighted on a 5-point Likert scale. The scoring method is a kind of universal measurement method that can be applied to the analysis of site selection issues. By applying this method, important and less important factors can be filtered out by assigning weights to each factor. The results obtained can be evaluated in two ways, additively or multiplicatively, but they have in common that the higher the value the better.

The decision system for the site selection process is shown in Figure 4, based on CHIKÁN and DEMETER (2006), with questions related to the steps also appearing in the questions of the area covered by the questionnaire.

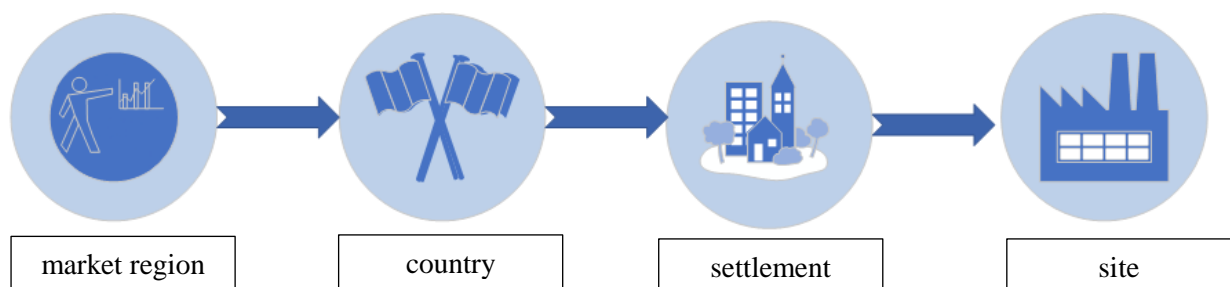


Figure 4: Hierarchical decision system for site selection

Source: CHIKÁN - DEMETER (2006), based on own editing

The questionnaire survey was also used to explore subjective data, such as the perception or vision of the business, through the choice of location. According to ÁLDORFAINÉ et al. (2018), depending on the research topic, it is even possible to average the indices by weighting them if we have prior knowledge about which factors may have had the greatest influence on the choice of location, i.e. which factors may have had the greatest weight in the formation of the results.

2.5. Modern Cities programme data, supporting documents

Modern Cities Programme industrial park development grants were processed in the form of a document analysis. The cooperation agreements between the Government of Hungary and the cities with county status were laid down in a separate government decision for each city and published in the Hungarian Gazette.

Table 3: Cooperation agreements under the Modern Cities Programme

City with county status	Date of conclusion of the cooperation agreement	Government Decision number
Békéscsaba	2016. April 26.	1283/2016. (VI. 7.)
Debrecen	2015. May 18.	1382/2015. (VI. 12.)
Dunaújváros	2016. May 31.	1394/2016. (VII. 21.)
Eger	2015. April 10.	1251/2015. (IV. 23)
Érd	2015. July 3.	1504/2015. (VII. 23.)
Győr	2017. April 28.	1387/2017. (VI. 27.)
Hódmezővásárhely	2017. May 26.	1840/2017. (XI. 10.)
Kaposvár	2015. October 9.	1803/2015. (XI. 10.)
Kecskemét	2016. February 9.	1131/2016. (III. 10.)
Miskolc	2016. February 11.	1315/2015. (V. 21.)
Nagykanizsa	2015. June 23.	1496/2015. (VII. 21.)
Nyíregyháza	2015. November 10.	1955/2015. (XII. 17.)
Pécs	2015. April 28.	1316/2015. (V. 21.)
Salgótarján	2017. March 21.	1388/2017. (VI. 27.)
Sopron	2015. March 24.	1217/2015. (IV. 17.)
Szeged	2017. January 30.	1151/2017. (III. 20.)
Székesfehérvár	2015. May 26.	1383/2015. (VI. 12.)
Szekszárd	2016. February 23.	1159/2016. (IV. 5.)
Szolnok	2015. June 3.	1428/2015. (VI. 25.)
Szombathely	2015. November 17.	1936/2015. (XII. 12.)
Tatabánya	2016. March 22.	1240/2016. (V. 13.)
Veszprém	2016. May 10.	1284/2016. (VI. 7.)
Zalaegerszeg	2015. April 14.	1252/2015. (IV. 23.)

Source: based on FEKETE (2017) own ed.

FEKETE (2017) had already collected the government decisions in his previous study, but the government decision on Hódmezővásárhely was missing at that time, which I have replaced in Table 3, where it is listed alongside the other cities with county status.

The development points set out in the cooperation agreements are confirmed in a grant document, which specifies the project to be supported, the purpose of the support, the amount, the duration of the supported activity and the monitoring arrangements.

In the literature review, it was partly determined that the precise delimitation and quantification of projects under the Modern Cities Programme is incomplete and opaque due to the lack of available documentation, making it extremely difficult to obtain information from the official source, the government.hu. The status of the projects under the programme is only available in one place, on the k.blog.hu (K-BLOG, 2020), where the list of projects received from the Prime Minister's Office and the status of the projects in August 2020 was uploaded based on the reply received from the Government Commissioner Alpár Gyopáros to the data request of Miklós Merényi, PhD student at Corvinus University of Budapest, and this enabled me to elaborate the chapter of my thesis on the Modern Cities Programme related to industrial park developments more precisely (K.BLOG.HU, 2020).

3. THE MAIN CONCLUSIONS OF THE DISSERTATION

In the framework of the literature review I described the main stages of industrial development in Hungary, in the course of which I established that the Budapest-centric economic structure that is typical today can be traced back to historical reasons. It typically emerged after the end of the First World War, and the unprecedented loss of territory, population and economic activity still stigmatises the whole economy today. And the loss of territorial integrity and the fall of the Second World War two decades later uprooted the economic structure that still exists today. The communist, socialist planned economy following the war years began to develop heavy industry, which, in contrast to the natural character of the traditional Hungarian economy, was forced to develop, and in the years following the 1989 regime change, mass factory closures and extremely high unemployment showed that this was a dead end, but the location of the newly established industrial plants during the communist years showed signs of an initiative to include rural areas in the functioning of the economy. In the years between the change of regime and our accession to the European Union, the economy grew very slowly and the level of industrial development was very low, but the emergence of cohesion funds and the EU's structural policy after 2004 has developed and transformed not only EU but also domestic industrial development in such a way that industrial policy has become an enterprise policy. And the industrial development programmes that have emerged in the meantime have provided the right stimulus for the spread of industrial parks throughout the country, which are also home to the enterprises under study in this research.

The number of industrial parks identified according to the criteria set out in the research is 48, distributed at regional level as shown in Table 4. Overall, the number of industrial parks per region does not vary greatly, ranging from six to ten, but the proportions vary considerably. At the regional level, the number of industrial parks in cities with county status is lowest in the South Transdanubia region, with only six, and highest in the South Great Plain region, with between ten and ten, and in the West Transdanubia region. It should be pointed out that the higher number of parks is also found in these regions because, in addition to the county capitals, Hódmezővásárhely in Csongrád, Sopron in Győr-Moson-Sopron and Nagykanizsa in Zala also have the status of a city with county status.

Table 4: Number of selected industrial parks by region

Region	Number of industrial parks
Southern Great Plain region	10
South Transdanubia region	6
Northern Great Plain Region	7
North Hungary Region	7
Central Transdanubia Region	8
West Transdanubia region	10
Total	48

Source: own research, 2020

Based on the size distribution of the companies identified in the survey, which are located in the industrial parks of the cities with county status, the share of the SME sector is 89 percent, while the share of large companies is 11 percent. It can be concluded that the industrial parks are structurally favourable to large companies, but that the proportion of SMEs is also significant, although it is worth pointing out that it is lower than the national average, which is over 99 per cent. Looking at the legal forms of the enterprises surveyed, it was found that enterprises in the industrial parks of the municipalities covered by the Modern Cities Programme are typically limited liability companies, accounting for 88.6 % of the enterprises identified, 5.4 % are limited partnerships, 5 % are private limited companies and 1 % have other legal forms (Table 5).

Table 5: Distribution of legal forms of enterprises with an establishment

Legal form	Number of companies	Percentage
Limited liability company	1565	88,6%
Limited partnership	96	5,4%
Private limited company	88	5,0%
Non-profit organisation	9	0,5%
Cooperative	4	0,2%
Public limited company	3	0,2%
Unlimited liability company	2	0,1%
Total	1767	100%

Source: own research, 2020

Based on the TEÁOR'08 nomenclature, the main activity of the enterprises was identified, which allowed the categorization of the 1767 enterprises by industry (Table 6).

Table 6: Breakdown of enterprises with an establishment by industry

Industry	Number of companies	Percentage
Manufacturing industry	528	29,9%
Trade, motor vehicle repair	465	26,3%
Real estate	167	9,5%
Construction	131	7,4%
Transport, storage	118	6,7%
Professional, scientific and technical activities	115	6,5%
Administrative and support service activities	64	3,6%
Information and communication activities	43	2,4%
Water supply; sewerage, waste management and remediation activities	26	1,5%
Accommodation and food service activities	23	1,3%
Financial and insurance activities	20	1,1%
Human health and social work activities	17	1,0%
Other service activities	16	0,9%
Education	10	0,6%
Electricity, gas, steam and air conditioning supply	7	0,4%
Agriculture, forestry and fishing	7	0,4%
Arts, entertainment and recreation	7	0,4%
Mining and quarrying	2	0,1%
Public administration and defence; compulsory social security	1	0,1%
Total	1767	100,0%

Source: own research, 2020

The economic structure of the industrial parks surveyed is homogeneous, there are no major regional differences, manufacturing enterprises are typically located in the industrial parks surveyed, accounting for 29.9% of the enterprises identified, while the second largest sector of activity is trade in motor vehicle repair, which was identified in 26.3%. Relatively higher proportions are also found in real estate activities, construction, transport and storage, and professional, scientific and technical activities, while the remaining less dominant activities are also widely represented in industrial parks. The survival rates of the businesses identified in the demographic analysis (Table 7) are higher than the national average, leading me to conclude that businesses that locate in industrial parks are more likely to survive than their counterparts that locate elsewhere.

Table 7: Survival rate of new businesses

Year of establishment of the company	2016	2017	2018	2019
2015	93%	93%	91%	84%
2016	-	93%	91%	87%
2017	-	-	81%	78%
2018	-	-	-	96%

Source: own research, 2020

This also shows that in the future it is particularly worthwhile and should be a priority to develop existing industrial parks or create new ones, as their impact on employment is not negligible, which can be said to be significant based on the results obtained, with companies with a 4.5% share of national employment in industrial parks in cities with county status.

In order to draw the appropriate conclusions, I considered it necessary to carry out a financial analysis of the companies, which I did along the lines of the DuPont ratio system, and I also carried out a liquidity and turnover rate analysis.

Table 8: Profitability indicators by size class

Size category	ROS		Asset Turnover Ratio		ROA		Equity multiplier		ROE	
	Average	Min/Max	Average	Min/Max	Average	Min/Max	Average	Min/Max	Average	Min/Max
Micro enterprises with 0 employees	-1,38	-332,78 281,56	0,68	0,00 100,00	0,76	-602,00 1477,67	2,08	-4559,72 1784,38	1,70	-23,79 1477,67
Micro enterprises with 1 person	-1,20	-477,60 427,93	1,11	0,00 27,44	-0,21	-52,80 3,17	-9,16	-9178,95 1094,09	0,42	-127,87 156,38
Micro enterprises with 2-9 employees	-0,40	-282,40 303,67	1,78	0,00 152,11	0,01	-21,94 5,29	2,28	-5598,78 1832,67	0,50	-65,50 690,56
Small businesses	-0,60	-979,88 19,77	1,86	0,00 111,02	0,05	-31,17 0,91	1,73	-2640,89 325,58	0,02	-455,60 24,70
Medium enterprises	0,08	-7,55 17,97	1,79	0,00 33,85	0,08	-3,68 1,01	10,64	-250,58 7456,37	0,99	-64,66 1067,78
Large enterprises	0,06	-1,60 28,11	2,01	0,00 15,18	0,05	-0,73 0,54	3,85	-144,47 90,79	0,16	-8,67 9,04
Total	-0,48	-979,88 427,93	1,62	0,00 152,11	0,10	-602,00 1477,67	2,39	-9178,95 7456,37	0,55	-455,60 1477,67

Source: own research, 2020

On the basis of the DuPont analysis and the profitability studies (Table 8), I found that the indicators of enterprises located in the industrial parks of the cities of the county are good,

although there is a wide variation by sector, but the indicators of the most important categories, such as manufacturing or trade and motor vehicle repair, are good. By size category, all the indicators analysed are good for the two most prominent categories, medium and large enterprises, while for the other size categories there may be some indicators that fall into the undesirable range, but in their case the results are affected by the relatively high dispersion. In terms of regions, it was the enterprises in Southern Transdanubia that performed best under the DuPont model.

Analysing the liquidity tests by industry, the liquidity ratios were at or above the minimum expected values for all industries, but the results showed a significant dispersion. It can be highlighted that enterprises in the Mining and quarrying industry have liquidity indicators closest to the required values, while the other sectors have too many liquid assets and may therefore fall short of the returns from alternative investments. By size category, large firms have by far the best indicators both in terms of the overall liquidity ratio and the quick ratio, for smaller size categories this efficiency decreases, higher values are obtained, which if not indicating payment difficulties, may however indicate a loss of income due to underinvestment, however it should be noted that the values of firms show a large dispersion. At the regional level, the Northern Great Plain region achieved the closest values to ideal, with the Southern Transdanubia region performing the worst, achieving very high liquidity ratio values, but also with high dispersion. And in terms of turnover rates, stocks were best managed by the transport and storage industry, with liquidity indicators indicating that this was not due to low stocks due to insolvency, so it is likely that these enterprises are indeed managing efficiently. Public administration and defence; compulsory social security scored lowest.

By size category (Table 9), large enterprises have the best liquidity scores, with average scores coinciding with ideal scores, but medium and small enterprises are not necessarily bad, while micro enterprises have scores that are too high.

Table 9: Liquidity and turnover indicators by size category

Size category	General liquidity ratio			Liquidity quick ratio		
	Average	Spread	Max	Average	Spread	Max
Micro-enterprises with 0 employees	114,82	966,69	16 993,81	95,56	802,60	16 993,81
Micro-enterprises with 1 person	37,68	441,75	11 583,75	16,92	138,55	3 554,67
Micro enterprises with 2-9 employees	6,25	28,11	668,76	5,44	27,21	668,76
Small businesses	3,27	8,88	292,20	2,65	8,70	292,20
Medium enterprises	2,49	4,08	68,91	1,84	3,67	65,20
Large enterprises	1,74	2,52	65,91	1,26	2,45	65,91
Total	19,81	355,13	16 993,81	14,98	273,96	16 993,81

Source: own research, 2020

The situation is similar in terms of speeds of rotation (Table 10), with large companies and medium-sized companies being the most efficient. In terms of regions, enterprises in the Central Transdanubian region are the most efficient in terms of inventory turnover, while the Southern Great Plain is the most efficient in terms of asset turnover, and the Southern Transdanubian region is the worst performing in all respects in terms of these indicators among the enterprises surveyed.

Table 10: Rotation ratio indicators by size category

Size category	Inventories turnover rate			Asset turnover rate		
	Average	Spread	Max	Average	Spread	Max
Micro-enterprises with 0 employees	52,70	140,03	884,37	0,68	3,56	100,00
Micro-enterprises with 1 person	57,92	136,65	853,76	1,11	2,22	27,44
Micro enterprises with 2-9 employees	49,13	113,52	894,97	1,78	4,41	152,11
Small businesses	67,19	152,94	896,57	1,86	3,54	111,02
Medium enterprises	52,04	126,08	958,16	1,79	1,59	33,85
Large enterprises	45,96	118,88	871,97	2,01	1,63	15,18
Total	55,49	132,72	958,16	1,62	3,34	152,11

Source: own research, 2020

Although the results of the questionnaire survey are not representative, the characteristics of the sample obtained are representative of the whole population under study, as all enterprises located in the industrial parks of the cities with county status were surveyed, and the 95 responses received did not show a large difference in the proportions of the distribution of the 95 responses compared to the distribution of all enterprises by main activity (Table 11), and their regional distribution showed only a minimal difference compared to the data set under study.

Table 11: Breakdown of enterprises by industry for the dataset and respondents

Industry	Total data set distribution	Percentage of respondents	Deviation
Manufacturing industry	29,9%	35,8%	5,9%
Trade, motor vehicle repair	26,3%	27,4%	1,1%
Construction	7,4%	14,7%	7,3%
Transport, warehousing	6,7%	7,4%	0,7%
Real estate	9,5%	3,2%	-6,3%
Education	0,6%	2,1%	1,5%
Professional, scientific, technical activities	6,5%	2,1%	-4,4%
Other service activities	0,9%	2,1%	1,2%
Information, communication	2,4%	2,1%	-0,3%
Extra-territorial organisation	0,0%	1,1%	1,1%
Electricity, gas, steam and air conditioning supply	0,4%	1,1%	0,7%
Agriculture, forestry, fishing	0,4%	1,1%	0,7%

N=1776

N=95

Source: own research, 2020

After evaluating the answers to the demographic questions, I conclude that 47% of the enterprises located in industrial parks are family businesses, of which 96% are SMEs, while 4% of family businesses are large enterprises. The survey revealed that businesses are mainly positive about their future prospects, with only around 10 per cent of those who think their performance will deteriorate in the future, perhaps also due to the secure operating environment provided by the industrial parks. The results also allowed me to identify the factors which are the main obstacles for the enterprises concerned by the research, mainly high tax and social security burdens, strong competition in the market and unpredictability of economic regulation, which shows that the main obstacles are not due to the localisation of enterprises, so I see potential for the creation of a multi-polar economy in Hungary.

The questionnaire survey also assessed the location preferences of the surveyed enterprises, which, based on the characteristics of the survey sample, could be valid for enterprises with a location in the industrial parks of all county towns. Summarising my findings on the location preferences, I found that, when faced with location choice issues, 82% of businesses would identify infrastructure as the primary consideration, with the second most important consideration being the price or rent of the site and the availability of skilled labour. Of the hard and soft infrastructure conditions, the hard conditions are considered more important. Of the hard infrastructure elements, the availability of broadband internet is the most important, with 80% of businesses saying that it is essential for them. Second is the

availability of utilities, and third is the proximity of a motorway. Soft infrastructure is considered less critical, but the results show that tender monitoring services and accounting and consultancy services are the services that are rated as good when choosing a location.

Based on the results of the questionnaire survey, 61% of enterprises would not want to leave their industrial park or its location under any circumstances, but 39% would be willing to relocate if an industrial park with better conditions were established near them. This is the case for 25% of businesses within a radius of 0-10 km, 19% within a radius of 10-20 km and, as the distance increases, only 1% of businesses say they would be willing to relocate anywhere in Hungary if an industrial park were to be created that met their needs. In terms of radius and location of relocation, Pest County stands out with 22 %, but the western counties also bring strong figures of between 15 and 17 %.

Based on the results obtained, it is therefore worthwhile to implement the industrial development support of the Modern Cities Programme and all related projects in line with it, so that rural businesses feel more comfortable in their premises, but above all to further increase the already significant role of these facilities in the Hungarian national economy by creating more value added in a more efficient way.

4. NEW AND NOVEL RESULTS OF THE DISSERTATION

The aim of the thesis was therefore to analyze the demographic and financial characteristics of the enterprises located in the industrial parks of the municipalities participating in the Modern Cities Programme, and to explore their choice of location, while at the same time I wanted to explore the potential of the Modern Cities Programme by analyzing its cooperation agreements.

The results obtained from the aspects examined are listed below. It is my hope that by using the results, it will be possible to draw up guidelines and suggestions for the decision-makers, even for future spatial development and industrial park development plans, in order to achieve even more effective cooperation in the future. This will also increase the future economic and population retention power of rural areas and reduce the dominance of the unipolar, Budapest-centred economic structure in Hungary, which can be traced back to historical reasons.

1. Part of the novelty of the research lies in the identification of the range of enterprises located in the industrial parks of the cities with county status. This shows that their activities are mainly manufacturing, which accounts for 30 per cent of the total number of enterprises identified, but that the range of other activities is very broad. The distribution of enterprises by size category does not follow the national average, with a lower presence of SMEs, ranging from 89 to 91 percent compared to 99 percent of the national average, and a higher presence of large enterprises, ranging from 9 to 11 percent compared to 0.1 percent of the national average, in the industrial parks of the municipalities participating in the Modern Cities Programme.
2. Based on the results of the research, I conclude that the companies located in the industrial parks of the cities with county status represent a significant economic force in the national economy as a whole, based on their demographic and financial position. Nationally, one out of every 300 registered partnerships is located in the industrial parks surveyed. They account for 14.4 percent of the turnover of all registered enterprises in the country. They also play a significant role in employment, accounting for 4.5 per cent of the national workforce aged 15-64.

3. Based on the financial analysis carried out, I conclude that the enterprises have a sound financial background, and the efficiency, liquidity and turnover rate indicators obtained from the study suggest that the enterprises studied in the framework of the research have the conditions to ensure the further development of the enterprises, which could be further improved by the Modern Cities Programme.
4. The questionnaire survey has identified the preferences of the businesses surveyed in terms of location. The results show that businesses are looking for the best possible infrastructure conditions for their business when deciding where to locate, but that soft infrastructure options are also important for businesses, in addition to hard infrastructure conditions.
5. The results of the secondary research show that the Hungarian economy as a whole is Budapest-centric, and the results of the primary research show that 44% of the businesses that completed the questionnaire consider that this economic structure has a negative impact on their business, and only 11% consider that Budapest-centricity has a positive impact, but the majority of businesses do not want to move from their current location, and only 22% of those willing to move would move to Pest County.
6. I conclude that the results of the secondary sources analyzed in the research, and the industrial development and industrial park development projects identified through the cooperation agreements of the Modern Cities Programme and the cooperation agreements, are suitable for promoting the development of the economy of the cities with county status by providing an appropriate infrastructure for businesses located in industrial parks. Support for infrastructure, cultural and educational projects linked to the programme will contribute to the population retention capacity of rural areas, but I also consider it necessary to involve local stakeholders in the decision-making process for determining the development direction in order to achieve a more effective outcome.

5. PRACTICAL APPLICABILITY OF THE RESULTS

In general, the Modern Cities Programme's unprecedented development package will have a positive impact on the development of industry and industrial parks in rural areas. Out of the 40 industrial developments identified, 21 were industrial park developments, involving the creation of new industrial parks or the development of existing ones.

It should be stressed that the development opportunities provided under the MVP, which are the primary and largest, and even the infrastructure improvements, are essentially in line with the results of the study on the location preferences of firms in rural industrial parks, so that the programme covers a real need of enterprises, which in the longer term can certainly promote a greater number of rural establishments.

Overall, the results of the questionnaire show that the majority of the businesses surveyed have a positive attitude towards the planned developments of the programme, are willing to participate in them and that the planned and partially implemented developments provide an excellent opportunity for the cities of the county and their population and for local businesses or businesses established in the municipalities, as the development projects cover real needs. Thus, based on the results obtained, I definitely consider the industrial development support of the Modern Cities Programme and the implementation of all related projects to be worthwhile, because ultimately, this can help rural businesses to operate more efficiently and to establish a larger number of businesses, which can contribute to further increasing the already significant role of these facilities in the Hungarian national economy by creating even more added value.

However, given that almost a quarter of the businesses surveyed have not even heard of the scheme, I would suggest that the current information should be made more effective and that stakeholders should be involved as widely as possible. It is very important to assess the needs of local economic and social organizations, since the results show that businesses have specific needs when choosing a location, and it would be worthwhile to tailor the improvements provided by the programme to the needs of the stakeholders.

I believe that the results of the questionnaire survey can also provide valuable information for decision-makers. I would suggest that when planning the infrastructure of the industrial park, a strong emphasis should be placed on the provision of utilities, with a particular focus

on the availability of high-quality broadband internet. Among the innovation-related responses to the research questionnaire, it was noted that several companies would like to implement elements of Industry 4.0, which requires broadband, reliable, low-latency internet. Although the results also highlight the proximity to the motorway and the existence of a well-developed truck park, they should also pay attention to the soft infrastructure elements, especially in terms of tender monitoring and accounting and consultancy services. The results also show that businesses are highly price-sensitive when making location decisions, so I would suggest subsidizing the price or rent of premises, of course with the right conditions, even in the form of a tender.

In the interests of more effective cooperation between businesses and decision-makers, I would suggest involving organizations with an integrating role and appropriate lobbying power in the development plans, such as the EDC Debrecen City and Economic Development Centre, which can help to bring businesses together. In this way, the business community, together with the municipality, the university, professional and non-profit organizations, could have a greater lobbying power. This would allow for the development of professionally sound and competent development plan proposals and, thanks to the university link, the latest international experience and best practice could be integrated into the existing or emerging operating environment.

In my opinion, if these needs and suggestions are taken into account when creating new industrial parks in the future, we can talk about a development programme that is destined to be a success. At the same time, the Modern Cities Programme as a whole, complemented by related infrastructure, cultural, sporting and educational developments, will also improve the liveability of rural settlements, which may well improve the population retention capacity of rural settlements, increase their economic role and ultimately reduce the unipolar nature of the Hungarian economy centered on Budapest.

REFERENCES

1. Áldorfainé Czabadai L. M. – Némediné Kollár K. – Péli L. – Urbánné Malomsoki M. (2018): Regionális gazdaságtan – Oktatási segédanyag, Szent István Egyetem, 2018 http://abi.gtk.szie.hu/system/files/upload/course_material/reggazd_okt_segedanyag_201809vegl_0.pdf (letöltve: 2020. november 7.)
2. Baranyi ZS. – Fenyves V. – Pupos T. – Takács I. – Tarnóczi T. (2013): Gazdasági elemzés /Elméleti jegyzet/, Debreceni Egyetem, AGTC, ISBN: 978-615-5183-69-0
3. Boncz I. (2015): Kutatásmódszertani alapismeretek, Pécsi Tudományegyetem Egészségtudományi Kar, Pécs, 2015. ISBN 978-963-642-826-6
4. Bordáné Rabóczki M. (2012): Számviteli információk a versenyképesség szolgálatában. BCE Vállalatgazdaságtan Intézet Versenyképesség Kutató Központ, TM 72. sz. műhelytanulmány, 26., ISNN 1787-6915 http://edok.lib.unicorvinus.hu/430/1/TM72_Bordane.pdf (letöltve: 2020. szeptember 19.)
5. Brealey R, – Myers S. (2005): Modern vállalati pénzügyek, Panem Kiadó, Budapest, 1175 p., ISBN:963-545-422-8)
6. Bryan L. (2007): The new metrics of corporate performance: Profit per employee, <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-new-metrics-of-corporate-performance-profit-per-employee#> (letöltve: 2020. szeptember 26.)
7. Chikán A. – Demeter K. (2006): Az értékteremtő folyamatok menedzsmentje - Termelés, szolgáltatás, logisztika, Aula Kiadó Kft.
8. Ecostat Kormányzati Gazdaság- és Társadalom-stratégiai Kutató Intézet (2008): A versenystatisztika adatbázis módszertana,
9. Fekete D. (2017): A Modern Városok Program elemzési lehetőségei, Polgári Szemle, 13. évf. 1–3. szám, 2017, 94–105., DOI: 10.24307/psz.2017.0909
10. Fenyves V. – Bács Z. – Tarnóczi T. (2016): A forgótőke menedzsment jelentősége a vezetői döntésekben = Importance of circulating capital management in the

managerial decisions, TAYLOR: gazdálkodás- és szervezéstudományi folyóirat, 2016. (8. évf.) 1. (22) sz. 37-45. old.

11. Gyulai L. (2011): Kis- és középvállalkozások üzletfinanszírozása, Saldo Zrt., ISBN: 9789636383800
12. https://www.gvh.hu/pfile/file?path=/gvh/versenykultura_fejlesztes/archivum/versenystatistika/vkk_versenystat_modszertan_2003.pdf&inline=true (letöltve: 2020 október 17.)
13. K-blog (2020): Lassan teljesülnek az orbáni ígéretek, harmadánál jár a Modern Városok Program https://k.blog.hu/2020/08/11/mvp_891 (letöltve: 2020 szeptember 5.)
14. Kresalek P. (2005): A számviteli beszámolók elemzésének egyes elméleti kérdései. Tudástranszfer és információs társadalom. BGF tudományos konferencia a Magyar Tudomány Napja 2004. tiszteletére, 2004. november 4-5. (Megjelent: Tudományos évkönyv 2004. BGF, Budapest, 2005.) <https://docplayer.hu/6278466-Kresalek-peter-a-szamviteli-beszamolok-elemzesenek-egy-es-elméleti-kerdesei.html>, (letöltve: 2020. november 13.)
15. Kresalek P. (2007): Mutatószámrendszerek a vállalati elemzésben, in: BGF tudományos évkönyv 2006, 138-153 p.
16. Laáb Á. (2009): Vezetői számvitel. Budapesti Műszaki és Gazdaságtudományi Egyetem, 164. www.kulker.hu/wpcontent/uploads/2013/03/teljeskOny_1550281.pdf. (letöltve: 2020. november 14.)
17. Lehota J. (2001): Marketingkutató az agrárgazdaságban, Mezőgazda Kiadó, 2001, ISBN: 9639358258
18. Lengyel I. (2000): A regionális versenyképességről, Közgazdasági Szemle. 12. 962-987. o.
19. Musinszki Z. (2014): Mit mutat a mérleg? A hányadoselemzés alapjai és buktatói, Controller Info, I. évfolyam, 2013/12., 20-26. o., II. évfolyam, 2014/1. 42-53. o., ISSN 2063 9309

- 20.Netjogtár (2020): 2004. évi XXXIV. törvény a kis- és középvállalkozásokról, fejlődésük támogatásáról, <https://net.jogtar.hu/jogszabaly?docid=a0400034.tv> (letöltve: 2020. augusztus 8.)
- 21.Sápiné Duduk I. (2017): Üzleti teljesítmény és versenyképesség a nagyvállalati versenyelőnyök és versenyhátrányok pénzügyi összefüggésében, Doktori (PhD) értekezés. Debreceni Egyetem
- 22.Tarnóczy T. (2015): Pénzügyi kimutatások elemzése, in: Alapvető pénzügyi és számviteli ismeretek a gyakorlatban, Center-Print Nyomda, Debrecen, ISBN 978-615-80290-5-6
- 23.Van Voorhis, K.R. (1981) “The DuPont Model Revisited: A Simplified Application to Small Business”*Journal of Small Business Management*, 19(2), p.45-51
- 24.Verés L. (2017): A telephelyválasztás aktuális kérdései, *Közép-Európai Közlemények*, 10(2), 33-43.



Registry number: DEENK/264/2021.PL
Subject: PhD Publication List

Candidate: Gergő Kun

Doctoral School: Károly Ihrig Doctoral School of Management and Business

MTMT ID: 10056803

List of publications related to the dissertation

Articles, studies (5)

1. **Kun, G.:** A foglalkoztatotti létszám alakulása az Észak-alföldi régió megyeszékhelyeinek ipari parkjaiban a Covid-19 pandémia időszaka alatt.
Debreceni Szemle. 1, 15-25, 2021. ISSN: 1218-022X.
2. **Kun, G.:** Review of industrial parks located at the county towns of the Northern Great Plain Region.
Network Intelligence Studies. 8 (16), 141-155, 2020. EISSN: 2344-1712.
3. **Kun, G.:** Industry development policies in the Austro-Hungarian Empire, in focus Hungary's industry from the Austro-Hungarian compromise to the World War 1.
SEA: Practical Application of Science. 7 (19), 55-64, 2019. EISSN: 2360-2554.
4. **Kun, G.:** Vállalkozási hajlandóság a Debreceni Egyetem hallgatói körében.
International Journal of Engineering and Management Sciences. 3 (3), 181-194, 2018.
EISSN: 2498-700X.
DOI: <http://dx.doi.org/10.21791/IJEMS.2018.3.15>.
5. Nagy, A. S., **Kun, G.**, Fenyves, V.: Franchise from family business?
Network Intelligence Studies. 4 (7), 85-91, 2016. EISSN: 2344-1712.

Conference presentations (1)

6. Nagy, A. S., Tobak, J., **Kun, G.:** Családi vállalkozás fejlesztése franchise rendszerben.
International Journal of Engineering and Management Sciences. 2 (4), 390-400, 2017.
EISSN: 2498-700X.
DOI: <http://dx.doi.org/10.21791/IJEMS.2017.4.31>.





List of other publications

Articles, studies (1)

7. **Kun, G.**, Nagy, A. S., Shunsuke, H., Maasa, T., Kazuyuki, I.: Methane emission from Matsuo rice paddy field in light of different fertilizers, costs, profit and carbon credit.
Agrártudományi Közlemények. 69, 9-13, 2016. ISSN: 1587-1282.
DOI: <http://dx.doi.org/10.34101/actaagrar/69/1781>

The Candidate's publication data submitted to the iDEa Tudóstér have been validated by DEENK on the basis of the Journal Citation Report (Impact Factor) database.

10 May, 2021

