EXAMINATION OF DIGITALIZATION IN HUNGARIAN AND ROMANIAN COMPANIES

Tünde-Zita Kovács, Beáta Bittner, Forest David, András Nábrádi
Károly Ihrig Doctoral School of Management and Business, Faculty of Economics and Business, University of Debrecen, Debrecen, Hungary
kovacs.tunde.zita@econ.unideb.hu
bittner.beata@econ.unideb.hu
forestdavid5@gmail.com
nabradi.andras@econ.unideb.hu

Abstract: *2020 posed a series of unforeseen challenges for economic actors. Digitalization, one of the most critical drivers of innovation, provided a lifeline for organizations who anticipated the opportunity and ramifications of a global pandemic. Digitalization offered alternative solutions for contacting partners, serving customer needs, retaining customers, and creating the possibility of online administration. The present study seeks to answer the question - using a database of ongoing research - to what extent are Hungarian and Romanian businesses able to discover the characteristics of the digital transformation, where and to what extent digital technology plays a role in the supply chain, and whether they have started digitization. The developed quantitative database was analyzed and processed utilizing SPSS 25 statistical software. Descriptive statistics and frequency analysis were run, followed by an analysis of variance to explore the existing relationships. For the multiple mean comparison test, the Tamhane test was used to analyze for differences in groups. As a result of the evaluation, the authors found statistical support that managers opinions on Internet Platforms creating more accessible business agreements is dependent on firm size with larger firms placing more emphasis on the benefits of Internet Platforms than smaller firms. The organizations recognize the potential of digital developments, but these developments are accompanied by a high degree of mistrust. Digital technology is typically used only to conduct processes during production or service activities and not as commonly conducted for increasing market share or expansion. Based on the authors' proposal, the broadest possible application of digital technology within a company can provide its user a long-term survival, competitive advantage, and further development opportunities.*

Keywords: *digitalization; innovation; platform business model; platform-based businesses*

JEL Classification: *M21; L1; D4*

1. Background

Platform-based businesses are the "consequences" of the digital revolution that began a few decades ago. According to a McKinsey survey in 2018, by 2025, more than 30% ($ 60 trillion) of global economic activity will be streamed by digital platforms (McKinsey, 2018). In the same year, PwC assessed the pace of digitalization of companies by comparing companies in the Asia-Pacific region, the Americas, and EMEA (Europe, Middle East, and Africa). Their research has yielded less favourable results for companies in the EMEA region, as they "are unable to combine their strategic, operational, technological and human capabilities and rarely involve their partners in their business models in order to create value for their customers" (PwC, 2018: 7). The European Commission has measured the trend of digital technology corporate integration (DESI index) in the European Union's member states every year since 2016. As of 2020, Hungary's commitment to digital technologies only exceeded Romania and Bulgaria's commitment. (European Commission, 2020). At the EU level, the

integration of digitalization processes has been more common in large companies. The majority of small and medium-sized enterprises (SMEs) are not using digital technologies at a system level.
However, the past year has left few viable alternatives for businesses. Due to the Covid 19 measures, 2020 was the year of the digital transformation (Némethi, 2021). In the present study, the authors are looking for answers to three key questions 1) to what extent can characteristics of the digital transformation can be discovered in the business enterprises in Hungary and Romania, 2) which and to what extent resources play the most prominent role in businesses and 3) to what extent have businesses initiated new digitization and networking policies in their business activities?

2. Literature background

A platform is a business model that creates value by facilitating exchanges between two or more interdependent groups, usually consumers and producers. To make these exchanges happen smoothly, platforms harness and create large, scalable networks of users and resources that can be accessed on-demand (Figure 1).

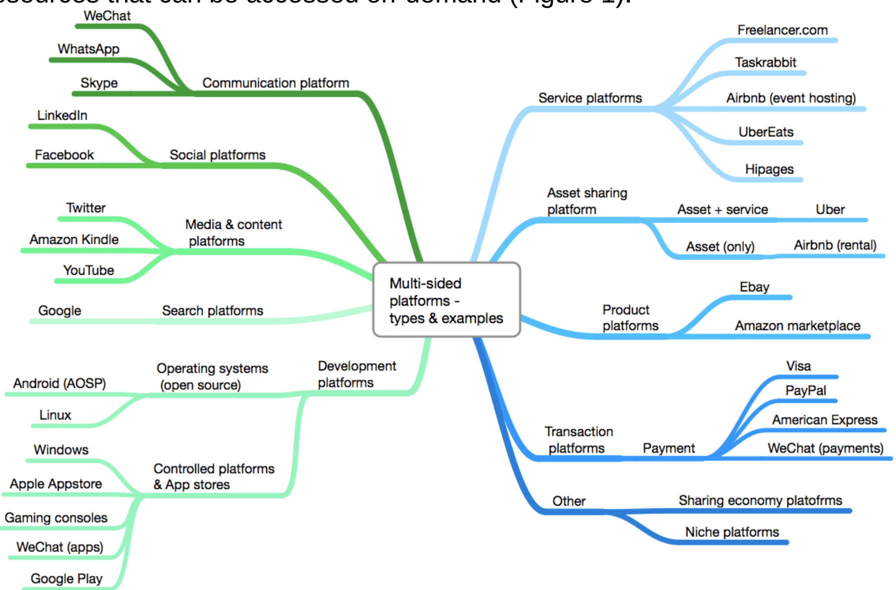

Figure 1: Types and examples of platform businesses
Source: (Uenlue, 2017)

The digital revolution gained momentum in the 1990's on how business relationships are implemented. As competition changes, businesses are undergoing a paradigm shift due to digital innovation (Jacobides, 2019; Watts, 2020). Competition is gravitating towards finding new relationships and working together and less towards finding alternative value propositions. Digital platform-based businesses have the following characteristics:

- allows interaction between two or more different user groups (usually sellers and buyers) (Hagiu and Wright, 2015; Rochet and Tirole, 2003; Rysman, 2009; Evans, 2003);
- creates interdependence between participants due to indirect and positive network effects (Hagiu and Wright, 2015);
- provides the ability to track interaction events between parties (Parker et al., 2016).

The essence of the platform-based operation is that manufacturers and service providers are interconnected in separate ecosystems. Platform-based organizations can more effectively reach users than traditional business actors (buyers and sellers) due to the indirect network effect, resulting in higher value in this non-linear value chain (Varga, 2018) Applying a mobile application, creating a website, or setting up a web store is not the same as platform-based operation, as a platform is not just a piece of software used. In this case, the company continues to operate on a value chain basis; the value creation process does not significantly change since the value remains the product or service created. Firms limiting themselves to traditional websites only create an alternative interface to address their partners for dialogue or sales. A platform-based business model is a holistic approach to the platform business that focuses on building relationships and expanding the network, facilitating interaction between two or more participants. The platform's role is matchmaking through matching demand with appropriate supply alternatives, providing techniques to facilitate transactions, establishing a governance structure, setting rules and standards to increase trust, maintaining quality and achieving the desired indirect network impact. (Hermans, 2015).
There are two phases to value creation for platform-based companies: networking and creating transactional opportunities. The platform aims to maximize the number and value of transactions and achieve through indirect network impact. To do this, firms apply digital enhancements that increase network efficiency (Van Alstyne et al., 2016; Hagiu, 2013).

3. Materials and methods

The present study is based on the results of a questionnaire survey. With the questionnaire, the authors assess the practical implementation of corporate strategy-making and the use of the opportunities offered by digital developments in companies. Entrepreneurs were contacted in person (telephone and e-mail) and asked to forward the questionnaire to their business community if possible. To date, 90 entrepreneurs from Hungary and Romania have completed the questionnaire.
The developed quantitative database was processed using SPSS 25 statistical software. Descriptive statistics and frequency analyses were performed, and an analysis of variance was run to determine if any significant differences in managers reporting Internet Platforms make business agreements more assessable were present based on firm size. After determining a significant F test on ANOVA, Tamhane's T2 test was run to determine where the differences between groups were. The selection of methods and the evaluation of the results were based on the literature recommendations of Sajtos and Mitev, (2007) and Huzsvai and Vincze, (2012).

4. Results and discussion

In the first part of the questionnaire, information on the main characteristics of companies was surveyed.
Based on the answers, it was determined that 65.6% of enterprises operate as limited liability companies (LLCs), followed by self-employed persons (21.1%). The respondents include six public limited-liability companies (PLCs) (6.7%), four limited partnerships, and two other community-owned organizations.
70% of the responder companies were based in Romania, with the remaining 30% located in Hungary. The companies are mostly privately owned (92%). There is an equal distribution of the level at which they carry out their activities: local, regional, national, and global. Around

68% of enterprises operate in the service (tertiary) sector, 21% in the secondary sector, and the remaining 10% are almost equally divided between the primary and quaternary sectors. In terms of the size of the enterprise (Figure 2), 68% of the participants operate as micro-enterprises, i.e. they employ fewer than ten people permanently, and their turnover or balance sheet total does not exceed EUR 2 million. 20% were small enterprises, 8% were medium-sized, and four large enterprises were among them. Of the four large companies, three operate as PLCs and one as an LLC.

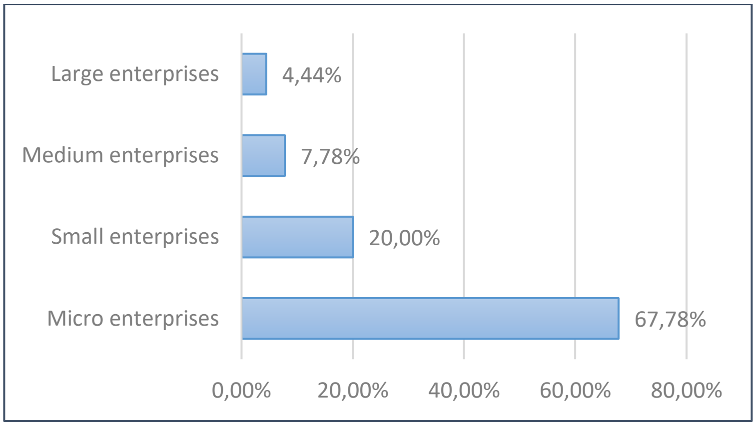

Figure 2: Size distribution of enterprises (n = 90)
Source: own research and editing, 2021

In terms of the scope of activities, the enterprises are quite diverse, but Sector C (manufacturing), G (trade, repair of motor vehicles), and M (professional, scientific, and technical activities) are the most represented, accounting for more than 50% of the organizations. Approximately 48% of businesses operate on a B2C (business-to-consumer) business model, so the business sells its products or services to individuals as end-users, and 37% operate in a B2B (business-to-business) business structure.
Nearly 56% of the managers surveyed believe that the industry they operate and compete in is characterized by moderate growth, 32% say the industry is stagnant, 8% are declining, and only 4% rate it showing a dynamically increasing trend.
Just over half of businesses (52%) have a website, but only 14% of respondents have a web store. Most businesses with a web store (70%) operate on a B2C business model, selling their products directly to end-users.
Nearly 75% of the companies prepare a formal plan of some capacity (be it a financial plan, a strategic plan, or a business plan); typically (55%) means planning for one year. The planning period of 3 years or more is typical for only 20% of the companies preparing the plan. A quarter of the companies stated that they did not generate a plan to guide its operation, explore its development opportunities or point out their limitations. The planning task is typically the owner's responsibility; almost 80% chose this from the options offered.
Regarding assessing the market position vis-à-vis competitors, 48% considered the firms to be in a better position (40%) or significantly better (8%) than its competitors, and 39% considered it similar. According to the respondents, the quality of the product or service offered, the ownership and management approach and the financial resources contribute the most to their company's performance. Of the ten factors listed, respondents indicated they believe R&D contributes the least to current business performance.

5. Digital technologies in respondent companies

Half of the respondents do not have a website, and 85% do not have a web store, i.e., only 15% of the respondents' products or services can be found on the internet. 70% are targeted at the end-user in this way. 60% of the companies surveyed use some form of the integrated corporate governance system. Most often, process support systems, followed by communication support systems, and decision support systems were mentioned in third place. 10% of businesses believe that sharing economy type businesses are present in their industry in the following areas: shipping, online shopping, online sales, professional services, personal services through the app, and online content. Only 33% of respondents indicated that platform-based businesses posed a threat to their operations. To avoid this danger, they should consider the following responses:

- developing a web store
- developing an online contact option (supplier and buyer)
- introducing online marketing
- improving the quality of customer service through data mining and data analysis

Respondents consider the essential resource to be the partnerships they possess and the knowledge that their human resources possess. As an essential resource for growth, the information held is only the third of the listed options, digital data analysis, which would make the market opportunities recognizable, although hardly typical.
In research, we assumed that there is no correlation between firm size and the use of digital technology, and the following hypothesis was developed:

H0: There will be no difference in managers' perceived importance of Internet Platforms making business agreements more accessible based on firm size.

To determine statistical significance if respondents working for larger firms consider internet platforms to produce more accessible business agreements, an ANOVA was run yielding an F of 2.14, which corresponds to a significance level of 0.08 based on our sample size of 90, allowing rejection of the null hypothesis. Table 1 below used Tamhane's T2 test to determine group differences since it is unknown where the differences between the groups are.

Table 1: Tamhane's T2 test (multiple comparative test) (n = 90)

Multiple Comparisons						
Dependent Variable: Tamhane	Company size					
					95% Confidence Interval	
(I) Internet platforms make more accessible business agreements.		Mean Difference (I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
None	Slightly	-0,77	0,281	0,166	-1,73	0,19
	On average	-,77*	0,218	0,019	-1,45	-0,09
	Above average	-,44*	0,130	0,024	-0,84	-0,04
	Entirely	-0,23	0,128	0,580	-0,62	0,16

Source: own research, 2021

With this method, we were able to show where the significant relationship between company size (1 – micro-enterprises, 2 – small enterprises, 3 – medium enterprises, 4 – large enterprises) and the degree to which Internet platforms make more accessible business agreements (used variables: 1 - none, 2 - slightly, 3 - on average, 4 - above average and 5 - entirely) are located. The resulting post hoc test revealed respondents selecting on average and above-average were from larger sized firms than respondents selecting none were statistically significant.

6. Conclusions

The development and spread of platform-based operations are monitored by many organizations, both domestically and internationally. Its importance and significance have been emphasized long before the epidemic situation, which was made even more apparent by the pandemic that fundamentally dominated last year. In addition to economic considerations, societal expectations, such as environment protection, the long-term conservation of natural resources, or promoting education, are playing an increasingly dominant role. The platform-based sharing economy also strives to meet these aspirations, although its awareness and popularity among entrepreneurs in our region are very narrow.
Our results indicate that managers of larger firms are aware of the importance of digital platforms, but there was no statistically significant relationship indicating managers of smaller firms feel digital platforms are essential to their businesses. Nevertheless, the use of digital platforms will become unavoidable, even for smaller firms, to keep their market position, as several market research companies and organizations have already pointed out. However, running companies on a platform basis or connecting them to existing platforms requires structural changes in the production process, developing the value chain, and restructuring the business model.
The organization's strengths and weaknesses help define the role of the enterprise in the platform economy, which can be an orchestrator, a partner or a contributor. The size and the age of the company, the culture and traditions of the business, the resources and skills possessed can help the business owners decide how their business wants to connect to digital platforms.
In the coming years, the rise of digital platforms will be significant, so transparent and reduce uncertainty systems must be put in place, in the authors' opinion. The presentation of digital opportunities and introducing their functions to the business sector is also essential for its spread, contributing to increasing competitiveness moving forward.

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