Competition as a Catalyst for Innovation? Assessing SMEs' Attitudes towards Digital Market Regulation and Competition

Ján Huňady
Faculty of Economics, Matej Bel University in Banska Bystrica, Slovakia
Peter Pisár
Faculty of Economics, Matej Bel University in Banska Bystrica, Slovakia

Abstract

Expanding the digital economy represents a major challenge for EU competition policy and regulations. Despite their importance, small and medium-sized enterprises (SMEs) receive minimal attention regarding their perspectives on the issue. Hence, the main aim of the paper is to examine their attitudes towards digital market competition and its regulations. The paper analyses secondary data from the Flash Eurobarometer 510 survey with more than 12,800 observations from EU countries. Moreover, it also identifies potential factors affecting firms' attitudes based on the logistic regression. Firms' attitudes seem to be correlated with awareness of the EU competition policies for digital transition. Better-informed firms have more favourable attitudes towards market competition. They are increasingly perceiving competition as a catalyst for innovation. Moreover, they are increasingly reporting significant problems with the lack of competition when applying to digital platforms for customer outreach. Insufficient competition in the digital market appears to be a problem for a significant proportion of SMEs'. We also identified the sectors and countries experiencing the worst problems associated with limited competition in the digital platform market. Smaller firms and those with a long presence on the market are more supportive of the Digital Markets Act as an effective regulation.

Keywords: Market Competition, Competition Policy, Innovation, SMEs' attitudes, Digital platforms, Competition law, digital market regulation.
JEL classification: O30, 038, L40

Paper type: Research article
Received: 6 May 2024
Accepted: 1 September 2024

DOI: 10.54820/entrenova-2024-0033

Acknowledgments: This work was supported by the Slovak Scientific Grant Agency VEGA, Grant No. VEGA 1/0411/24. This work was supported by the Slovak Research and Development Agency under contract No. APVV-20-0338 "Driving forces of economic growth and survival of firms in the sixth K-wave".

Introduction

The rapidly growing importance of the digital economy across industries is currently seen as one of the key economic trends. This economic transformation has consequences for market competition and poses various challenges for effective regulation of these digital markets. The effect of market competition on innovation has been empirically examined by several studies so far. Negassi et al. (2019) used econometric analysis to identify the relationship between competition and innovation. They found significant differences between public and private companies. Inverted U-shape relationships have been found for firms in the public sector but not in the private sector. This is likely due to the overall higher intensity of competition among private firms. Similarly, Polemis & Tzeremes (2019) discover that the higher concentration in the market could enhance innovation capacity to some extent. However, the market situation also negatively affects their technological catch-up ability. Hence, the overall effect of market concentration on innovation appears to have the form of a U-shape curve. On the other hand, Nagessi & Hung (2014) did not find any correlation between the competition index and innovation outputs in the public sector. They argue that product market competition does not stimulate product innovation in this sector. Wang and Wang (2023) also fail to find any effect of competitive pressure on innovation. In this case, they examine the consequences of intense competitive pressure from the informal sector based on a large sample of firms in Eastern Europe and Central Asia.

Specific attention needs to be paid to the competition in the digital market. Due to the rapid shift to the digital economy in some sectors, digital platforms have become crucial in establishing contact with customers and suppliers. Hence, the competition and regulation in the digital market could further support or hinder innovation. There are growing initiatives and public policies to maintain fair market competition, which are mainly targeted by digital platform companies (Thatchenkery & Katila, 2023). Consequently, an increasing number of companies have faced substantial fines (Thatchenkery & Katila, 2023). Despite this fact, companies that are trying to digitally transform their businesses are often exposed to pressure from large digital platform enterprises to sign mostly unfavourable contracts (Raskovich et al., 2023). The abuse of market power may have an adverse effect on consumer welfare as well as digital innovation (Raskovich et al., 2023). Regulation of this market therefore appears to be a suitable solution. Especially the competition policy instruments that restrict concentration and enhance competition could be effective. Modifications in regulatory and legal framework conditions have a significant effect on the dynamics of innovations. The negative effect of compliance costs related to new regulations can be more than outweighed by additional incentives to innovate (Blind, 2012). This positive effect of digital market antitrust regulation on digital commitment and digital innovation has been currently shown by Xie & Wu (2024). This is in line with the findings of previous studies (Hunady et al., 2022; Hunady et al., 2024), which found the highest level of digital readiness in countries such as Denmark, Sweden, Finland, and the Netherlands. These countries are also traditionally considered to have the best quality of regulations (Radaelli & De Francesco, 2013). Moreover, Ji et al. (2022) found that suitable government policies can improve digital capabilities. A similar positive effect on innovation has also been attributed to competition pressure in the market (Ji et al., 2022).

Many countries have decided to intervene by regulating the digital market. The Digital Markets Act and the Digital Services Act have been adopted in the European Union to pave the way to following rules and regulations (Egorova et. al., 2002). The Digital Market Act (European Union, 2022) represents an essential regulation of the

business environment in the field of the digital economy in the EU. It predominantly sets regulations for dominant players in digital technology and aims to support sustaining innovation (Larouche & Streel, 2021). The Digital Markets Act (DMA) allows the designation of digital gatekeepers based on their turnover and number of users. It also reduces the extent of national legislation, which further supports the role of the European Single Market (Bergqvist, C., & Choi, Y. S., 2023).

The main aim of the paper is to examine small and medium-sized enterprises' (SMEs) attitudes towards digital market competition and its potential regulations. The paper identifies factors affecting their views on the role of competition in innovation and their experiences with a lack of competition when using digital platforms. It examines the characteristics of firms that support the Digital Market Act (DMA) as an effective regulator of digital markets. Significant differences among the industries, countries, and types of firms have been found. There have been several research papers focused on digital market competition and regulation of digital markets from a macro- or regulatory perspective. However, there is so far only very limited empirical research examining this problem based on micro-level data. Our paper analyses this problem from the point of view of SMEs. It is crucial to consider their views because they encounter competition and regulatory problems in practice on a day-to-day basis. Secondary data from the Eurobarometer survey has been used to quantitatively assess the attitudes of SMEs' representatives and factors that potentially affect their views on the problems. This allows us to draw conclusions regarding the role of market competition in innovation and recommendations for digital market regulation. As a result of how the questions were constructed, innovation has been considered as such in general. It can be a digital innovation or any other type of innovative product, service, or process in the company. However, it is likely that when competition is considered a catalyst for innovation in general, it will foster digital innovation as well. Other parts of the research directly address the problem of competition on the market for digital platforms and its perception by SMEs. The final part is focused on SMEs' attitudes towards regulatory frameworks for the digital market, such as DMA. These four research questions have been developed based on the research aims:

1. RQ: What factors and firms' characteristics are affecting SMEs' attitudes towards competition as a catalyst for innovation?
2. RQ: What factors and firms' characteristics are affecting SMEs' experiences with a lack of competition when using digital platforms to reach customers?
3. RQ: Do most of the SME's agree with the adoption of the Digital Market Act (DMA) as an effective regulation of the digital market?
4. RQ: What factors and firms' characteristics are affecting SMEs' attitudes towards the adoption of the Digital Market Act (DMA) as an effective regulation of the digital market?

These four research questions have been examined based on the analysis, which brings novel and unique empirical evidence from microlevel data. The next section provides a literature review related to the role of competition and regulation in innovation and digitalization. We also explain the basic concept of the Digital Market Act. Subsequently, we explain the methodology and data used in the analysis, show the most important results, and summarise the key conclusions and policy implications.

Methodology

The primary contribution of this paper is to analyse the factors affecting SMEs attitudes towards competition and regulation in the digital market across all EU countries. As far as we are aware, no other study has examined this problem from firms' perspectives on such a wide sample of SMEs'. We assume that attitudes towards competition and regulation are based on two groups of factors. Firstly, their attitudes can be based on self-interest when they consider potential costs and benefits related to either stronger market competition or stricter regulation. On the other hand, their attitudes can also be strongly affected by previous experience, knowledge, and risk aversion. In line with both views, it seems likely that attitudes can be different across industries and can be correlated with some firms' characteristics. In our case, we considered characteristics that can be identified based on the data available in the questionnaire. The empirical analysis is based on data from the Flash Eurobarometer 510 questionnaire relating to May–June 2022. This contains the responses to a series of questions related to SMEs' expectations for an effective competition policy. The questionnaire contains altogether more than 12,000 respondents. However, the unavailable and ambiguous responses to some questions reduce the effective sample to approximately 7,800 respondents. The appropriate regressions were done by restricting the sample to individuals with a full set of responses. The analysis was done using the econometrics package programme STATA. All three dependent variables are related to the responses to a question that asked about SME's attitudes towards competition and digital market regulation. In the first part, the analysis is focused on the most general question out of three. It deals with SMEs' attitudes towards competition as a mechanism supporting innovation in general. The second The second question is directly related to their experience with a lack of competition in the digital market. The final question examines their views on the DMA as an effective regulatory tool. The explanatory variables will include those for which either theory or literature suggests an impact on SMEs' business and decision-making, which could subsequently affect their attitudes towards competition and regulation. They include the firm's age, turnover, and change in turnover in the past two years. The number of employees was not used due to the strong positive correlation with turnover. Moreover, other questions containing answers to different questions have also been used as dependent variables. There is a question about following the updates to the EU competition rules to facilitate green and digital transitions. This was used as a proxy to capture respondents' awareness of the competition policy and regulation of digital markets. The question related to the power of buyers also captures the competition in the market where the company operates. With strong buyers who are imposing unfair conditions, it is likely that this is a market with high competition on the supply side. The answers to the question asking firms about the importance of different types of improvements to competition have also been used as independent variables. Apart from individual characteristics, we also include country- and industry-dummy variables. The choice of the dependent variables was limited by the availability of micro-level data in the anonymized questionnaire survey. All variables used in the regressions are described in Table 1.

Table 1
Description and coding of variables used in the regressions

Variable name	Question	Coding
	Dependent variables:	
Competition encourages innovation	For each of the following statements, please tell me whether you totally agree, tend to agree, tend to disagree or totally disagree.	Totally agree = 4 Tend to agree = 3 Tend to disagree = 2 Totally disagree =1 Don't know = excluded
Lack of competition in digital platforms	Have you ever experienced problems caused by a lack of competition when using digital platforms to reach customers?	Yes = 1 No = 0
Regulations such as DMA are effective solution (used also as independent variable)	Do you agree or disagree with the following statement? "For market sectors with systemic competition problems, regulation that prevents unfair market behaviour from taking place, such as the Digital Markets Act, is an effective solution."	Totally agree = 4 Tend to agree = 3 Tend to disagree = 2 Totally disagree = 1 Don't know = excluded
	Independent variables:	
Age	How long has your company been in business?	Less than 1 year = 1 1-5 years=2; 6-10 y. = 3 More than 10 years =4 Don't know = excluded
Total turnover	What was your company's total turnover in 2021?	Coded based on the value from 1 to 9
Turnover growth	Over the past two years, has your company's annual turnover increased, decreased or remained unchanged?	Increased= 1 Decreased/ Unchanged = 0
Follow updates	Over the last 12 months, have you seen or heard about the ongoing updates to EU competition rules to facilitate the green and digital transitions?	Yes, and I follow these updates closely = 1 No=0
Powerful/unfair buyers	Thinking about the competition problems, what are the main difficulties you experience? Powerful buyers can impose unfair buying conditions.	Yes/Agree =1 No/Disagree = 0
How important do you think the following improvements to competition are?...		
Remove advantage from non-EU subsidies	... Taking advantages away from competitors who are subsidised by non-EU governments.	Very important =4 Fairly important = 3 Not very important =2 Not at all important = 1
Remove advantage from EU subsidies	... Taking advantages away from competitors who are subsidised by EU governments	
Preventing mergers	.... Preventing mergers and acquisitions that reduce competition in a given sector	
Fighting cartels	… Fighting cartels	

Source: Authors' work

Logistic regression has been used to examine the dependence between dependent and independent variables. Order logistic regression has been used for models with both multinominal and ordinal dependent variables. As a result of possible endogeneity in the models, we can rather speak of non-causal dependencies or correlations than causal relationships. Even so, we consider our results to be beneficial because there is a lack of empirical studies that would describe similar dependencies. The next section shows some of the most significant results.

Results

The first part of the analysis is focused on the questions used as dependent variables in regressions. Basic descriptive statistics are shown in the Table 2.

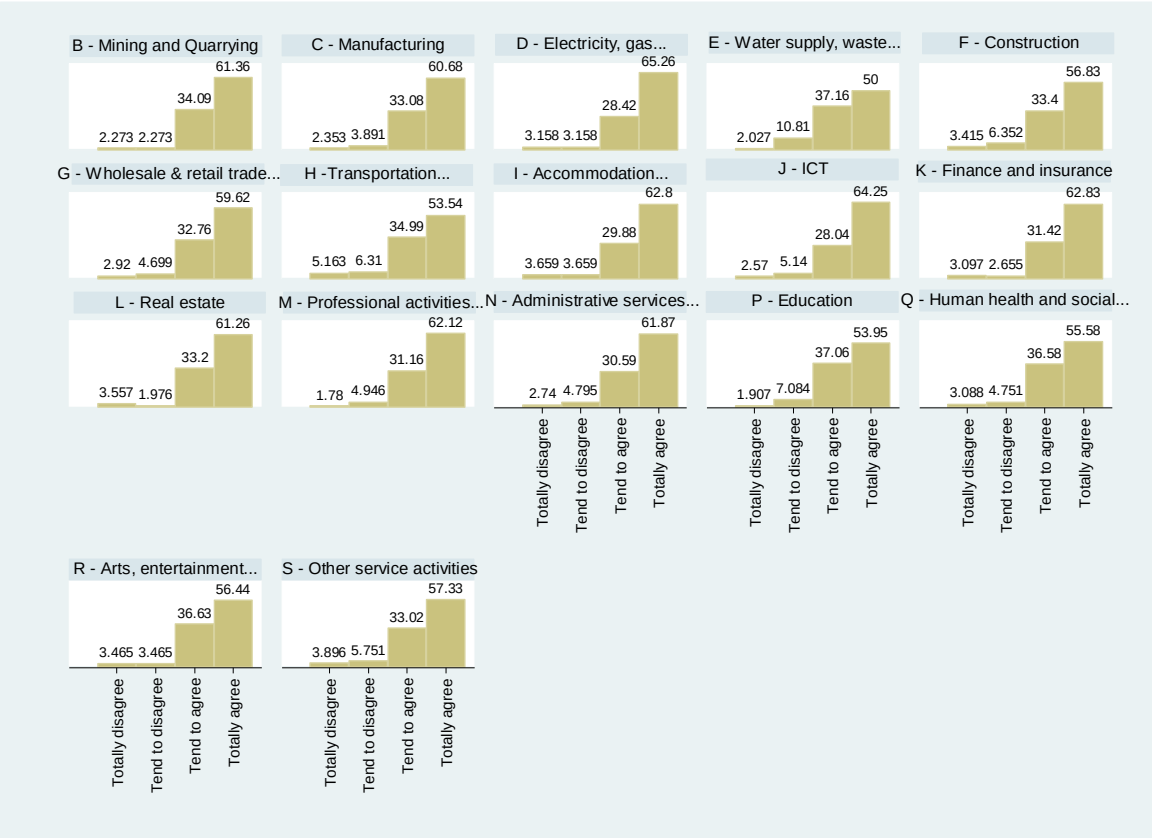
Table 2
Descriptive statistics: Competition encourages innovation

Competition encourages innovation	Proportion	Std. error	95% Conf.	Interval
1: Totally disagree	0.029	0.0015	0.0264	0.0323
2: Tend to disagree	0.048	0.0019	0.0451	0.0526
3: Tend to agree	0.328	0.0042	0.3203	0.3366
4: Totally agree	0.594	0.0044	0.5851	0.6022
Lack of competition when using digital platforms to reach customers	**Proportion**	**Std. error**	**95% Conf.**	**Interval**
0: No (no such experience)	0.9336	0.0022	0.9292	0.9378
1: Yes (already experienced)	0.0664	0.0022	.06218	0.0708
Regulations such as DMA are effective solution	**Proportion**	**Std. error**	**95% Conf.**	**Interval**
1: Totally disagree	.0647	.00235	0.0602	0.0695
2: Tend to disagree	.1451	.00336	0.1386	0.1518
3: Tend to agree	.5358	.00476	0.5265	0.5451
4: Totally agree	.2544	.00416	0.2463	0.2626

Source: Authors based on the Flash Eurobarometer 510 data (2022).

The proportion of answers is shown in the second column. More than 59% of respondent firms agree with the statement that competition encourages innovation. Hence, we found a very strong positive view of competition as a catalyst for innovation. This is very likely also true in the case of digital innovation. However, there are some significant differences among different types of industries, as can be seen in Figure 1. Interestingly, firms in the energy sector are most often convinced that competition supports innovation. This can be related to the usually low level of competition in this sector due to technical and financial market entry barriers. The information and communication sector and financial services are the other two industries with the highest level of competition. On the other hand, the results show relatively lower agreement with the statement for firms in water supply and waste management, as well as those in transportation, storage, and education. However, the competition has been considered stimulating innovation by the vast majority of SMEs in all 17 industries.

Figure 1
Firms attitudes towards competition as catalyst of innovation (competition encourages innovation) classified by NACE category

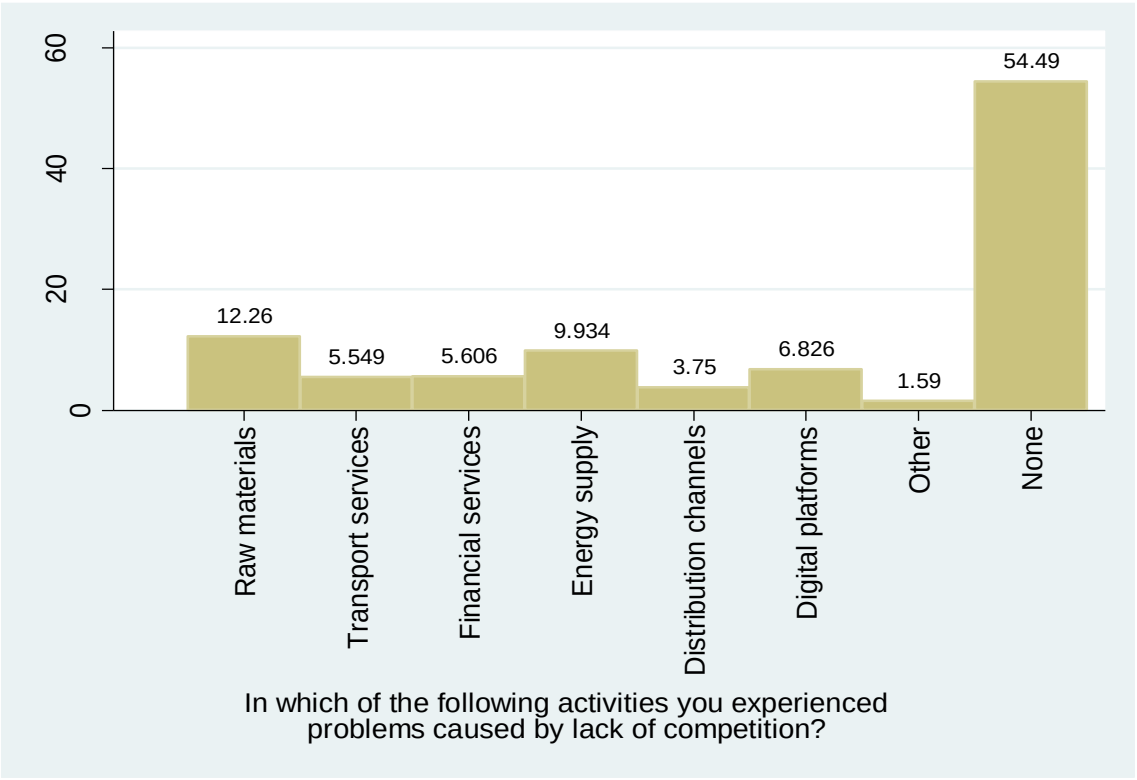


Source: Authors based on the Flash Eurobarometer 510 data (2022).

Approximately 6.6% of respondent firms experience problems related to a lack of competition when using digital platforms. Even though this is a relatively low number at first glance, it is the third highest share out of all seven mentioned areas. The results can be seen in Figure 2. Firms have been asked about their experience with problems caused by a lack of competition in seven different areas (raw materials, transport services, financial services, energy supply, distribution channels, digital platforms, and others). The most serious problems with lack of competition have been reported for raw materials and energy, followed by digital platforms. Hence, the problem seems to be rather significant. Approximately 54.5% of SMEs did not report any evident problems with a lack of competition.

Based on the results, most firms also appear to be in favour of regulations such as DMA as an effective solution for markets with systemic competition problems. Altogether, more than 79% of SMEs either tend to agree or fully agree with this statement.

Figure 2
Activities where firms experienced problems caused by lack of competition



Source: Authors based on the Flash Eurobarometer 510 data (2022).

The second part of the analysis is devoted to the examination of factors potentially influencing or correlated with the stated attitudes of SMEs. These factors have been identified based on logistic regression and order logistic regression. The results are summarised in Table 3. The first column shows the results of regression, with the dependent variable capturing attitudes towards competition as a catalyst for innovation. The results suggest that firms with higher turnover and growing turnover are more in favour of competition as a support for innovation. Hence, bigger and more successful firms tend to see competition as desirable and supportive of innovation. This finding shows that previous experience, knowledge, and other factors could be important. This is also in line with our finding that firms with higher awareness of digital market regulation and those supporting DMA are more in favour of the competition as well. Moreover, SMEs', which tend to support all mentioned tools to further enhance competition (removing EU and non-EU subsidies, preventing mergers and acquisitions, and fighting cartels), also more often agree with the thesis that competition supports innovation. This is fully consistent with our expectations. There can be a potential reverse causality as well. Because of their general positive view of competition, they might be supportive of any kind of measure to further improve competition in the market. SMEs in the following industries (manufacturing, construction, sales, and transport) tend to be reluctant to compete with respect to its positive effect on innovation compared to the reference category (professional, scientific, and technical activities).

Table 3
Results of logistic regressions

	(1)	(2)	(3)
VARIABLES	**Competition encourages innovation**	**Lack of competition in digital platforms**	**Regulations such as DMA are effective solution**
Age	-0.0380	-0.238***	0.0739**
	(0.0356)	(0.0752)	(0.0337)
Total turnover	0.0365***	-0.00766	-0.0287**
	(0.0131)	(0.0326)	(0.0119)
Turnover growth	0.255***	-0.146	0.00830
	(0.0500)	(0.122)	(0.0452)
Follow update	0.374***	0.504***	0.256***
	(0.0954)	(0.183)	(0.0928)
DMA is effective solution	0.352***	0.0713	
	(0.0333)	(0.0718)	
Powerful/unfair buyers	0.133	42.68***	0.0302
	(0.154)	(0.800)	(0.124)
Remove advantage from non-EU subsidies	0.0803**	-0.0374	0.136***
	(0.0333)	(0.0795)	(0.0338)
Remove advantage from EU subsidies	0.118***	-0.0565	-0.0387
	(0.0370)	(0.0857)	(0.0360)
Preventing mergers	0.0702**	-0.0221	0.198***
	(0.0317)	(0.0747)	(0.0316)
Fighting cartels	0.210***	-0.0167	0.256***
	(0.0350)	(0.0835)	(0.0342)
26 dummy variables included for EU countries (2 selected countries shown in the table) – Germany was used as a reference category:			
SK	-0.918***	0.0365	-0.137
	(0.165)	(0.481)	(0.163)
HR	-0.862***	0.460	0.518***
	(0.155)	(0.459)	(0.164)
16 dummy variables included for industry type (4 selected industries shown in the table) – professional activities were used as a reference category:			
Manufacturing	-0.184*	-1.195***	0.156*
	(0.101)	(0.253)	(0.0882)
Construction	-0.416***	-0.580**	0.115
	(0.108)	(0.239)	(0.0941)
Sales	-0.206**	-0.489***	0.146*
	(0.0930)	(0.189)	(0.0811)
Transport	-0.539***	-0.908**	0.196
	(0.146)	(0.362)	(0.131)
Observations	7,833	7,878	7,878

Note: Regressions 1 and 3 estimated by ordered logit and regression 2 by logit. Standard errors are corrected for heteroscedasticity. ***/**/* denotes significance at the 1%/5%/10% level of significance. Country and industry dummies included in all three regressions.
Source: Authors based on the Flash Eurobarometer 510 data (2022).

The regression with problems related to the lack of competition when using digital platforms as a dependent variable is shown in the second column. In this case, the age of the firm appears to have a negative effect on experiencing this problem. Furthermore, awareness of regulatory frameworks and competition appears to be positively correlated with an experienced lack of competition in the digital platform market. Both results are rather surprising. It is possible that stable and long-term operating companies, despite their age, encounter the mentioned problem less often because of more stable partnerships, long-term contracts, and experience in the field. However, this is rather an assumption that would require more exploration in future research. It is also likely that those who follow updates on competition policy and regulations will have more information on the potential problems related to competition. Hence, the representatives of these SMEs could be more careful and tend to indicate these problems more often. Even more interesting is the very significant positive effect of market competition captured by the variable, which indicates problems with powerful buyers and unfair practices. SMEs with buyers in an advantageous position are significantly more often experiencing problems with the lack of competition when using digital platforms. This may be the consequence of an unfavourable market constellation and the weak position of the firm compared to buyers as well as suppliers of digital solutions. The attitude towards DMA is not statistically significant in this case. This variable was also used as a dependent variable in the next regression. The results show that established firms tend to have more positive views on regulations such as the DMA. This may be related to the fact that firms with a longer history in the business are used to regulations and can see them as tools to protect their role and market share.

On the other hand, those firms that reported higher turnover are, in general, less favourable to these regulations. Similarly, those who are following updates to the EU competition rules more closely are significantly more in favour of DMA. This can be attributed to better awareness. The favourable view of DMA is also positively correlated with the perceived need for measures to improve competition. SMEs that support DMA also often consider three out of four measures to be desirable. However, this is not true for their attitudes towards EU subsidies.

Discussion

Market competition and regulations are both considered significant factors affecting innovation and digitalization (Negassi et al. 2019; Polemis & Tzeremes 2019). The market competition in the digital market appears to be limited. This is especially true for the big technology companies providing digital services (Raskovich et al., 2023; Katila and Thatchenkery, 2023). Antitrust regulations supporting fair market competition like DMA may improve the situation at this market (Ji et al., 2022).

Our paper examined this problem from the perspective of SMEs and provided new empirical insights based on microlevel data. It analyses SMEs' attitudes towards market competition, the situation in the digital platform market, and their views on digital market regulation. four main research questions have been investigated in the analysis. The results are summarised in the Table 4.

Table 4
Summarization of key results based on the investigation of research questions

No.	Research question	Results
RQ1	What factors and firms' characteristics are affecting SMEs' attitudes towards competition as a catalyst for innovation?	The most significant factors: total turnover and its growth, firms' awareness on digital market regulations and DMA support.
RQ2	What factors and firms' characteristics are affecting SMEs' experiences with a lack of competition when using digital platforms to reach customers?	The most significant factors: firms' age, awareness on digital market regulations and especially the position of the firm at the market (market competition).
RQ3	Do most of the SME's agree with the adoption of the Digital Market Act (DMA) as an effective regulation of the digital market?	25.4% of SMEs in our sample totally agree with the statement that digital market regulations as the DMA are effective tools. An additional 53.6% of SMEs tend to agree with this statement as well.
RQ4	What factors are affecting SMEs' attitudes towards the adoption of the Digital Market Act (DMA) as an effective regulation of the digital market?	The most significant factors: firms' age and total turnover, awareness of digital market regulations, and country of operation.

Source: Authors' work

Most of the SMEs in our sample have a positive attitude towards competition and see it as a catalyst for innovation. Their views are in line with the findings of previous studies (Negassi et al. 2019; Polemis & Tzeremes 2019), which mostly found a positive effect of competition on innovation. Furthermore, most of the SMEs are also supportive of the new regulations of the digital market, such as the DMA. They believe that DMA can be an effective tool to improve the situation on the market. This finding is complementary to the results of research studies that argue that such regulation is important (Raskovich et al., 2023) and also found positive effects on the market (Ji et al., 2022).

Conclusion

Several previous studies show that the relationship between market competition and innovation appears to be positive. They also argue that the competition in the digital market is problematic and needs to be supported by a regulatory framework. This paper builds on these findings and examines the problem from a new perspective. It shows the attitudes and experiences of SEMs regarding this problem. Firms in our sample see competition as a catalyst for innovation, and they are mostly supporting digital market regulation as DMA. However, there are many significant differences between different types of firms. Factors such as firm age, size, and industry seem to be important factors. Moreover, awareness of competition policy and market structure can also affect their attitudes. The results thus confirm the need for digital market regulation to increase market competition. DMA seems to be one of the potentially effective solutions.

Our paper used an extensive dataset and standard methodology. However, there are still certain limitations to our approach. First, all the cross-sectional data used in the analysis is not able to capture any trends or changes over time. Moreover, the results of logistic regression can suffer from the endogeneity problem. Hence, it is recommended to perceive most of the results in the sense of correlation rather than causal dependencies. The results reflect the subjective attitudes of SMEs and can be

affected by a cognitive bias. Hence, it would be useful to directly compare attitudes with the actual situation in the digital market. This could be one of the possible paths for future research.

References

1. Bergqvist, C., & Choi, Y. S. (2023). Controlling market power in the digital economy: The EU and Asian approaches. Computer Law & Security Review, 50, 105834.
2. Blind, K. (2012). The influence of regulations on innovation: A quantitative assessment for OECD countries. Research policy, 41(2), 391-400.
3. Egorova, M. A., Fisichella, D., & Kozhevina, O. V. (2022). Platforms and related market competition. In The Platform Economy: Designing a Supranational Legal Framework (pp. 331-345). Singapore: Springer Nature Singapore.
4. European Union. (2022). Regulation (EU) 2022/1925 of the European parliament and of the council on contestable and fair markets in the digital sector and amending Directives (EU) 2019/1937 and (EU) 2020/1828.
5. Hunady, J., Pisár, P., Vugec, D. S., & Bach, M. P. (2022). Digital Transformation in European Union: North is leading, and South is lagging behind. International Journal of Information Systems and Project Management, 10(4), 58-81.
6. Hunady, J., Pisár, P., Khawaja, S., & Qureshi, F. H. (2024). The Digital Transformation of European Union Countries before and during COVID-19. Business Systems Research: International journal of the Society for Advancing Innovation and Research in Economy, 15(1), 22-45.
7. Ji, H., Pang, Y., Suo, L., & Wang, T. (2022). Research on How External Environment Influences Digitalization of Cultural Enterprises. Discrete Dynamics in Nature and Society, 2022(1), 6807145.
8. Larouche, P., & de Streel, A. (2021). The European digital markets act: A revolution grounded on traditions. Journal of European Competition Law & Practice, 12(7), 542-560.
9. Negassi, S., Lhuillery, S., Sattin, J. F., Hung, T. Y., & Pratlong, F. (2019). Does the relationship between innovation and competition vary across industries? Comparison of public and private research enterprises. Economics of Innovation and New Technology, 28(5), 465-482.
10. Negassi, S., & Hung, T. Y. (2014). The nature of market competition and innovation: does competition improve innovation output?. Economics of Innovation and New Technology, 23(1), 63-91.
11. Polemis, M. L., & Tzeremes, N. G. (2019). Competitive conditions and sectors' productive efficiency: A conditional non-parametric frontier analysis. European Journal of Operational Research, 276(3), 1104-1118.
12. Radaelli, C. M., & De Francesco, F. (2013). Regulatory quality in Europe: Concepts, measures and policy processes. In Regulatory quality in Europe. Manchester University Press.
13. Raskovich, A., Ginsburg, D. H., Wright, J. D., Yun, J. M., Kobayashi, B. H., & Lipsky, A. B. (2023). The 2022 Revision of China's Anti-Monopoly Law: Global Antitrust Institute Comments on Draft Provisions of the Supreme People's Court of the People's Republic of China Concerning Application of the Law in Civil Disputes Arising from Monopolistic Conduct. George Mason Law & Economics Research Paper, (23-01).
14. Thatchenkery, S., & Katila, R. (2023). Innovation and profitability following antitrust intervention against a dominant platform: The wild, wild west?. Strategic Management Journal, 44(4), 943-976.
15. Wang, K., & Wang, T. (2024). Competition from informal firms and new-to-market product innovation: A competitive rivalry framework. Journal of Product Innovation Management, 41(4), 816-842.
16. Xie, Y., & Wu, D. (2024). How does competition policy affect enterprise digitization? Dual perspectives of digital commitment and digital innovation. Journal of Business Research, 178, 114651.

About the authors

Jan Hunady is an associate professor in finance at the Faculty of Economics at Matej Bel University in Banska Bystrica. His research is focused on public finance, public institutions, innovation, and emerging technology. He has published research papers in renown journals. He participates in national and international research projects in research policy and innovation. His expertise is also in econometrics. He is a member of the Eurasia Business and Economics Society and an alumni of the Study of the United States Institutes for Scholars. The author can be contacted at **jan.hunady@umb.sk**

Peter Pisár is full professor of finance, banking, and investment at Matej Bel University. His research focuses on European public finances, especially innovative financing and the evaluation of regional policy and public expenditure programs. In practice, he is also a consultant for the development and implementation of projects supported by EU funds and is particularly concerned with public policies supporting innovation. The author can be contacted at **peter.pisar@umb.sk**