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DIGITAL CHALLENGES IN ONLINE RETAILERS: IDENTIFYING BARRIERS TO SUSTAINABLE TRANSFORMATION

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Abstract. This paper explores major digital challenges in online retail. Based on a structured literature review, five key groups of barriers are identified: low digital maturity, regulatory uncertainty, cybersecurity weaknesses, shortage of digital skills, and platform dependence. An empirical survey among micro, small and medium-sized enterprises validates the presence of these barriers in practice. Results highlight the need for strategic management and targeted support for sustainable digital transformation.

Keywords: digital transformation; online retailers; digital maturity; barriers
JEL*:* O33, L81, M15

Introduction

Global digitalization is fundamentally reshaping the business environment, creating both new opportunities and risks for small and medium-sized enterprises (SMEs). As the internet, mobile technologies, and digital platforms advance rapidly, online businesses evolve from a complement to traditional commerce into a key driver of value creation and competitiveness.

Among digital business models, e-commerce is the most widespread. Zhan (2024) describes it as the next stage of trade, while McKinsey & Company (2025)[1] define it as the buying and selling of goods and services over the internet and emphasize its role in meeting changing consumer expectations.

Online retail offers broad market reach but faces challenges such as low digital maturity, talent shortages, limited resources, and legal uncertainty. Rapid technological change, complex regulations, and rising customer expectations further intensify these issues (Restrepo-Morales et al., 2024; Rupeika-Apoga et al., 2022; British Business Bank, 2022).

This paper investigates the digital challenges faced by Bulgarian online retailers, focusing on micro, small, and medium-sized enterprises (MSMEs) that sell directly to end customers. The study reviews existing academic and applied

literature, identifies key barriers to digital resilience, presents the methodology and findings of a pilot survey among Bulgarian e-commerce businesses, and offers recommendations for overcoming these challenges and accelerating sustainable digital transformation in the sector.

Literature review

Digital transformation challenges in online business increasingly attract academic and policy attention. Studies on Bulgarian SMEs (Bogdanova et al., 2022; Takov, 2024) and institutional reports (BSMEPA, 2024) highlight barriers such as weak digital culture, limited flexibility, low strategic commitment, talent shortages, underinvestment in technology, and cybersecurity gaps.

Building on these findings, this paper groups the main barriers for Bulgarian online retailers into five categories: **(1)** digital maturity and strategic technology integration; **(2)** legal and regulatory uncertainty; **(3)** cybersecurity and data protection; **(4)** shortage of digital skills and human capital; **(5)** limited financing and technological resources, including platform dependence (Aslanova & Kulichkina, 2020; Varamezov, 2024; Stojanov & Grozdeva, 2023).

Background of digital maturity

Digital maturity reflects a firm's ability to strategically integrate technology by aligning technical, organizational, leadership, and analytical capabilities (Aslanova & Kulichkina, 2020). According to Hadzhieva and Doncheva (2024), new digital and logistics technologies, automation, and the use of artificial intelligence are becoming catalysts for business process innovation and highlight the strategic need for technological integration. Despite growing research interest, the application of the digital maturity concept to small online retailers in less digitally developed markets, such as Bulgaria, remains insufficiently explored.

DESI data (European Commission, 2022) indicate that many Bulgarian SMEs fail to reach even a basic level of digital intensity, reflecting a generally low degree of digital maturity. Key barriers include the absence of clear digital strategies, weak leadership commitment, and inadequate technological infrastructure (Varamezov, 2024). Recommended responses include digital skills training, the implementation of integrated digital strategies (Westerman et al., 2012), and participation in European digital hubs and networks (European Commission, 2023).

Legal and regulatory uncertainty in e-commerce

Online businesses operate within an increasingly complex regulatory framework that covers data protection, electronic contracts, and consumer rights. This complexity, combined with limited institutional support, creates significant barriers for small and medium-sized enterprises (SMEs) (Koops, 2014).

Many Bulgarian online retailers struggle to interpret and apply these rules, exposing them to potential sanctions and reducing customer trust (Stojanov & Grozdeva, 2023). Legal uncertainty becomes even more pronounced in cross-

border trade, where small firms often lack the capacity and resources to ensure compliance[2].

To address these challenges, the literature recommends developing digital self-assessment platforms, creating national legal portals that provide accessible guidance, and organizing practical, hands-on training sessions (OECD, 2021). In the Bulgarian context, such measures could bring substantial added value for small businesses.

Cybersecurity and data protect

Cybersecurity has become an integral part of the regulatory landscape, directly affecting the operational resilience and credibility of online retailers. ENISA (2022) reports that many small retailers remain poorly prepared to meet security requirements, relying on weak passwords, outdated software, and lacking formal incident response plans. Similar concerns are echoed by BSMEPA (2024), which highlights that micro and small firms often treat cybersecurity as a secondary technical issue rather than a component of overall risk management.

Insufficient awareness and the absence of structured security protocols increase the likelihood of data breaches and legal non-compliance. Strengthening cybersecurity capacities through training, standardized guidelines, and integration into broader digital strategies is essential for improving trust and regulatory compliance in the e-commerce sector.

Digital skills and human capital in the online environment

Competent human capital is a key enabler of online business digital transformation. A shortage of professionals with both operational and strategic digital skills limits SMEs' ability to leverage technology effectively. Bulgaria ranks among the lowest EU countries in basic and advanced digital skills (European Commission, 2022).

Chanani & Wibowo (2019) stress that creating a learning culture and continuous training is vital for SMEs adapting to digital change. Mladenova (2024) adds that the skills gap often stems less from a lack of candidates than from weak strategic leadership and organizational commitment.

Omrani et al. (2024) find that maturity is higher where digital skills permeate all managerial and operational levels. European programs such as *Digital Europe* and *Erasmus for Young Entrepreneurs* prove the value of training and mentoring, yet Bulgarian SME participation remains limited, underscoring the need for localized support and targeted information campaigns.

Limited access to technology and financing

Limited access to financing and technological resources remains one of the key barriers to digital transformation for small and medium-sized enterprises (SMEs). According to the European Investment Bank (2022)[3], Bulgaria ranks among the weakest EU investors in digital solutions. This limitation constrains innovation, slows technological adoption, and reinforces dependence on external platforms.

As Sterev and Biolcheva (2024) emphasize, "the implementation of artificial intelligence in business necessitates substantial reorganizations and optimizations, which require significant financial investment." For many small firms, such investments are difficult to secure due to limited capital, lack of access to credit, and low participation in digital support programs. Strengthening public–private financing mechanisms and improving SMEs' awareness of EU digital funding opportunities could therefore help reduce the investment gap and foster greater technological readiness.

Platform dependence and market concentration

To achieve rapid scaling and access to established consumer networks, many online retailers in Bulgaria rely on external digital platforms such as eMAG, Etsy, Amazon, or Facebook Marketplace. While this model enables quick entry and low costs, it creates dependency through algorithms, fees, and data limits (European Commission, 2022).

Meanwhile, market concentration in the hands of a few global platforms makes it difficult for new players to enter and limits innovation among smaller retailers. As Kenney and Zysman (2020) note, platforms set the conditions for accessing digital markets, creating an asymmetric environment and additional barriers for SMEs.

In Bulgaria, many retailers similarly depend on eMAG or Facebook to reach customers, often without a long-term strategy for building their own digital channels. Developing independent online stores and direct communication channels with customers — such as proprietary websites, email marketing, or mobile applications — emerges as a sustainable strategic alternative.

The barrier groups identified in this literature review serve as a foundation for the empirical study, which examines how these challenges manifest among Bulgarian online retailers.

Methodology

To identify the main digital challenges, this study employs a pilot quantitative online survey designed to systematically collect data on the attitudes, practices, and difficulties of SMEs engaged in e-commerce.

The survey is conducted via Google Forms, which ensures participant anonymity and independent responses. The questionnaire is purposefully distributed among owners, executives, and managers of online stores through business networks on social media, including the Facebook group "Online stores" (≈19,000 members). This approach effectively reaches the target audience but does not guarantee statistical representativeness due to voluntary participation and self-selection. Data collection takes place in the second quarter of 2025.

The questionnaire comprises five thematic blocks aligned with the barrier groups identified in the literature review. All questions are closed-ended (single or multiple choice) to ensure comparability and objectivity in the analysis.

The collected data are subjected to descriptive statistical analysis to identify relationships between enterprise characteristics and the digital barriers they face. The results serve as a basis for summarizing key findings and formulating recommendations to strengthen the digital resilience of Bulgarian online stores.

As a pilot study, the research acknowledges several limitations: the lack of control over the sampling process due to voluntary participation, potential bias in self-assessed digital maturity (influenced by personal judgment or social desirability), and the relatively small sample size, which prevents the use of advanced statistical models. These constraints underline the exploratory nature of the work and should be addressed in future, larger-scale, randomized studies.

Analysis of the empirical study results

Participant profile

The sample includes 56 respondents, mainly micro- and small online enterprises. Nearly 70% sell exclusively in Bulgaria, about one quarter combine domestic sales with limited foreign activity, and just 5% focus mainly on international markets — indicating low internationalization and strong dependence on the domestic market. Almost half (48%) have operated online for one to three years, while another 18% have less than one year of experience; only one-third have been active for more than three years, reflecting a young sector with few mature business models. Micro-enterprises dominate (75%), reflecting limited IT and analytical capacity. Financially, about one-third report annual turnover up to BGN 50,000, 27% between BGN 50,001–200,000, and only 11% exceed BGN 1 million; 9% do not disclose turnover.

These characteristics mirror previous findings on Bulgarian online commerce – dominance of micro and small firms, limited international reach, and short operational history (BBSMEPA, 2024; EC, 2023) — and provide context for interpreting the digital barriers identified in this study.

Digital maturity

Digital maturity is assessed across four dimensions: management commitment, process automation, data use for decision-making, and online customer communication. About 40% of firms report structured managerial support with clear responsibilities and a dedicated digitalization budget. One-third display only isolated initiatives without a long-term strategy, and nearly one-quarter show no meaningful commitment – confirming the limited strategic vision noted in previous studies (Varamezov, 2024). E-commerce platforms are the most widely adopted (82.1%), followed by marketing automation (55.4%); ERP systems reach 41.1%, while CRM (16.1%) and BI tools (12.5%) remain rare, limiting data-driven management and customer relationship building. Process automation is mostly partial; only 29% report full automation. Data analytics shows a similar pattern:

around 40% use it minimally, while one-third integrate it systematically. Online customer communication is weakest: almost half report low maturity, and only one-third describe well-developed or fully integrated practices.

Overall, Bulgarian online retailers demonstrate basic digitalization and partial automation but lack strategic technology integration, with analytics and customer relationship management as the main weaknesses.

Cybersecurity and data protection

With rising digital risks, information security is critical for online retailers' resilience and customer trust. Most respondents rate their cybersecurity maturity as low to medium; only a few reach the highest level. Just 41% apply concrete data-protection measures, while 59% lack systematic actions, and about one-fifth experienced cyberattacks in the past year.

Micro-enterprises show the weakest preparedness, relying mainly on basic tools without formal protocols or clear responsibilities. Larger and more established firms demonstrate higher commitment and more complex safeguards.

These findings are consistent with ENISA (2022) and BSMEPA (2024), which note that small firms often treat cybersecurity as a secondary technical issue rather than part of risk management. The absence of internal policies limits incident response and raises regulatory compliance risks, especially under data-protection rules. Stronger integration of cybersecurity into overall digital strategies is needed.

Digital skills and human capital

Human capital is critical for digital transformation, yet many online retailers invest little in staff skills. Nearly half (48%) rate their training maturity as low or very low; 21.4% report partial development, and only 30% reach good or high levels. Most initiatives are ad hoc and driven by owners or managers rather than systematic programs.

This lack of skills development limits sustainable growth and adaptation to new technologies, putting small firms at a disadvantage compared to better-resourced competitors. In the Bulgarian context, this area remains underdeveloped and requires more active, structured capacity building.

Access to technology and financing

Limited access to technology and financing remains a major barrier to SMEs' digital transformation in Bulgaria, aligning with EIB (2022), which ranks the country among the weakest EU investors in digital solutions.

Nearly half cite lack of technology as a constraint, and 30% report moderate difficulties. If financing becomes available, priorities include digital marketing (41%), process automation (28%), and integrated IT systems (20%) — indicating clear needs but limited execution capacity.

Overall, scarce capital, low participation in support programs, and limited technical readiness slow innovation. Without improved access to funding, training, and guidance, the digital gap is likely to widen.

Platform dependence and regulatory uncertainty

Many Bulgarian online stores rely on external platforms: 34% use channels such as eMAG, Facebook or Etsy alongside their own site, while 14% depend mainly on them — meaning nearly half remain exposed to platform rules, algorithms and limited customer data access.

Regulation is another challenge: 56% find legal requirements unclear or hard to apply, especially on data protection and consumer rights. Only 12% feel fully GDPR-compliant. Limited internal expertise and scarce institutional support deepen this uncertainty.

These findings highlight the need for measures to reduce platform dependence and improve SMEs' legal awareness and support for compliance.

Discussion and recommendations

The results show that micro and small enterprises dominate Bulgarian online commerce and operate with limited digital maturity. A clear gap exists between priorities and actual implementation. This gap is driven by restricted access to financing, expert resources, and institutional support. Dependence on external platforms and the complexity of the regulatory environment further limit sustainable development.

Still, there are positive signals. Some enterprises already adopt basic digital practices and show interest in new investments. This indicates real potential for growth, but its realization depends on systematic support and clear managerial strategies.

Several priorities emerge from these findings: targeted programs for digital skills training and development; building proprietary digital infrastructure instead of relying solely on external platforms; easier access to financing and consulting support; greater clarity and practical guidance in the regulatory framework.

Future research should include a broader sample and combine quantitative and qualitative methods to better understand managerial attitudes toward digitalization.

Conclusion

The digital transformation of online commerce in Bulgaria is a process with great potential, but also with numerous barriers. Their nature shows that sustainable change cannot be achieved solely through technical solutions — it also requires a strategic shift in how enterprises manage their resources and prepare for future challenges.

In this sense, efforts should focus on creating an environment where technological opportunities are more accessible and usable for small businesses. Only in this way can digital transformation move from intention to reality and become a driver of a more sustainable and competitive economy. Ultimately, its success will depend on the ability of enterprises to turn digital tools into consistent strategic advantage.

NOTES

1. https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-e-commerce
2. https://ecommerce-europe.eu/news-item/key-findings-from-the-cee-ecommerce-survey-report-2023/
3. https://www.eib.org/en/publications/online/all/investment-survey-european-union

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