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AI as a driver of digital platform development in the Ukrainian economy: focus on small and medium-sized

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ABSTRACT

This work analyzes the evolution of the digital platform using artificial intelligence in the Ukrainian economy. Particular emphasis is placed on Small and Medium Enterprises (SMEs). For this purpose, a mixed-method approach was adopted. It combined quantitative and qualitative methods. The quantitative prospect was effectuated using a structured survey targeting SME owners, co-founders, operations managers, and heads of marketing, logistics, customer support, and finance. The qualitative part concerned semi-structured interviews with SME decision-makers. The results demonstrated that while artificial intelligence (AI) has significantly improved operational efficiency and digitalization in Ukrainian SMEs, its effectiveness is constrained by financial, technical, and regulatory obstacles. Nonetheless, context-specific drivers of digitalization enable gradual, pragmatic adoption, with measurable benefits emerging even under cautious and uneven integration. The study concludes that AI plays a pragmatic yet limited role in driving digital transformation among Ukrainian SMEs.

Keywords: Artificial Intelligence, Digital Platforms, Ukrainian SMEs, Business Transformation

1. Introduction

Digital platforms have been credited with Ukraine's economic transformation and enhanced competitiveness. Through the use of artificial intelligence (AI), big data, and machine learning, along with other digital technologies, the innovation of business processes and the integration of Ukraine into the global economy were revolutionized [1]. In Ukraine, digital technologies are mainly in the public administration and financial sectors, the operational AI automation of decision making, the enhanced cyber-resilience and operational cyber ethical, transparency, and digital skills gaps, operational consistency and cyber operational ethical, transparency, covered gaps of tactical cyber skills, resilience, and operational ethical transparency gaps remain [2, 3].

Digital platforms, especially the Ukraine Diia ecosystem, enhance business flexibility and drive innovation and market access. However, integrating AI into a flexible organizational strategy is essential for realizing the full benefits of personalized and predictive services [4, 5]. This is even more so for Ukrainian SMEs. During war, the value of the pillars of digitalization became even more evident: the regulatory framework, the infrastructure, and the workforce's competencies. The operational continuity, global competitiveness, and market resilience that digitalization offers are essential for Small and Medium Enterprises (SMEs) and all-sized enterprises, even in times of war [6, 7]. Unlocking the transformative power of digital technology to drive firms – regardless of size – towards innovation, increase productivity, and achieve sustainable growth hinges on inclusive strategic leadership and strategic investments in culture, infrastructure, and people [8, 9].

In this light, the progress of digital platforms in Ukraine should emphasize anticipated gains from strategic cross-sectoral collaboration and the role of AI adoption, guided by investments in human capital to realize the transformative value of the digital economy [10, 11]. AI is an essential driver of digital platform expansion in Ukraine and of the transformation of business processes, boosting competitiveness and fostering resilience in the economy. Studies show that AI-driven technologies enhance operational flexibility and resilience across sectors of the economy [12]. Within the financial sector of the economy, AI technologies are powerful tools that streamline data processing and decision-making, strengthen cyber resilience, and foster the digitalization and modernization of Ukraine's financial sector [13]. Issues of ethics, transparency, and data processing, as well as enhancing decision-making and reinforcing cybersecurity, remain problematic [14]. For example, in automated customer service and support, AI is integrated with these systems to deliver personalized marketing and recommendations, forecast demand and optimize inventory, and screen transactions for fraud and risk. AI also creates marketing materials and ads in Ukraine [15].

Organizational readiness and leadership, along with strategic alignment and digital culture, remain undervalued and limit effective digital transformation [16]. Meanwhile, SMEs, without inclusive AI strategies, are widening the digital divide [17]. AI adoption drives innovation-led growth, improves efficiency, and strengthens digital business ecosystems, as the evidence suggests [18, 19]. Integration with big data, the internet of things, e-commerce, and other digital platforms improves operational optimization, enhances client engagement, and strengthens overall competitiveness [20, 21].

Operational challenges in Ukraine resulting from the war have become historic for SMEs, as businesses attempt to reorganize functions under resource constraints to avoid interruptions and address the consequences of employee displacement, staff shortages, and supply chain disruptions [22]. Solving some of these challenges can be done with the help of automation and AI tools that service customer transactions through chatbots, automate marketing at a personal level and through recommendation engines, and perform demand forecasting, inventory optimization, fraud detection, and the creation of marketing AI content [23]. Even with limited human and logistical resources [24], these tools allow businesses to reduce costs drastically, close digital sales channels, and make quick, data-driven decisions [25]. Due to their devastating consequences, SMEs in Ukraine have limited time to adopt these technologies to remain in the market, improve their adaptability amid a crisis, and defend their position. Research shows that the full potential of AI-powered digital tools depends not only on technology but also on entity-level change, which must be driven by leadership and an innovative culture [26]. AI empowers SMEs to automate processes, improve workflows and resource allocation, and deliver personalized customer service amid turbulent market conditions.

Compared to larger businesses, SMEs in Ukraine are struggling to maintain operations during the war. It is due to factors such as personnel losses, logistical constraints, and the need to maintain revenue. That is finally unsustainable in the actual situation [27]. AI resolutions can help SMEs, which have smaller budgets, simpler organizational structures, and limited capacity for continuous, long-term investigation and improvement, achieve operational efficiency and resilience in the most unequivocal and fastest ways possible [28]. AI can aid in automating customer service through chatbots, provide personalized marketing and recommendations during sales and promotional periods, refine demand forecasting and risk assessment, and help SMEs sustain their digital sales under pressure [29]. Such tactics help SMEs optimize efficiency and surmount the challenges posed by constricted personnel and resources, while reducing time and costs. For seamless integrations to take place, modern technologies need to be adopted, strategies need to be focused, leaders need to take initiative, and employees need to foster and embrace a digital mindset [30]. Additionally, there is a lack of a cohesive examination of barriers to adoption, particularly under wartime conditions; however, technology adoption is strongly influenced by legal and skill gaps, contextual barriers, and data privacy concerns [31]. Most scholarly work focuses on the research interests of large businesses, multinational companies, or generalized national digitalization policies, which are particularly presented under the umbrella of post-war recovery, rather than the immediate survival strategies employed by SMEs [32].

Thus, there is a gap in the literature on the practical use of AI in crisis conditions, documenting the barriers and facilitators SMEs face in deploying AI, and estimating the economic impact in real time, which is vital. This is the first study to provide real-time evidence of AI-supported operational and adaptive processes employed by Ukrainian SMEs to improve their position in a rapidly changing digital economy and remain viable and competitive. This study analyzes the impact of AI on digital platforms in the Ukrainian economy, with a focus on SMEs. This research examines how SMEs use AI tools, identifies the operational areas where value is created, and understands the challenges that prevent the scaling of AI-enabled digital platforms. This survey helps respondents, such as policymakers, business leaders, and technology developers, identify SMEs' adaptability, execution, and competitiveness plans.

Several research questions represent the objectives of this study:

- RQ1: How do Ukrainian SMEs utilize AI-enabled digital platforms to raise operational ratio, resiliency, and competitiveness, and what constraining factors bound the utilization of fully AI-integrated digital platforms?

- RQ2: Which business purposes are the most likely to be machine-controlled in Ukrainian SMEs?
- RQ3: Do decision-makers utilize simple AI abilities that come with programs?
- RQ4: What are the SME proprietors and managers' economic outlook on the outcome of AI proceeding on business operations?

The paper also attempted to get the practical, theoretical, and policy implications of AI-based digital platforms for Ukrainian SMEs. This paper analyses the use of AI inside small and medium enterprises. This considers machine-driven customer assistance systems, chatbots, demand forecasting, tailored marketing, inventory management, and fraud detection, as well as the assessment of the functional and economic measures within current constraints. The paper also proposes an analytical model for positioning AI technology, modern digital platform improvements, and operational outcomes.

This shows one mode for SMEs to supplement technology to maintain skillfulness, competitiveness, and resiliency in the face of operational delays during times of war, and to address a shrinking resource economy and workforce. From a policy and tactics perspective, the paper demonstrates ways to digitize SMEs, particularly in Ukraine, such as market training, regulatory reduction, and low-cost AI, which would improve operational execution. By integrating observations into an analytical model, this paper supports the investigation of AI as a concept driver for SMEs. The formulated business values, digital ecosystems, and economic policy underscore the need for economic stabilization instruments in Ukraine.

The paper is organized as follows. Section 2 presents the research methodology, in which the methods used for AI modelling, cluster analysis, and econometric evaluation are explained. Section 3 demonstrates and discusses the empirical grounds. Finally, in Section 4, the paper concludes by discussing the policy implications, restating the theoretical foundations, and proposing directions for future research.

2. Research method

2.1. Research design

A mixed-methods approach was used in the paper. This analyzes the use and outcomes of AI-enabled digital tools for Ukraine's SMEs. It focuses on existing businesses rather than hypothetical cases. This investigation's quantitative component is traced from a structured survey of SME owners, co-founders, operations managers, and heads of marketing, logistics, customer service, finance, and support functions. This section analyzes the iniquity, extent, and perceived quantitative economic value of AI adoption across various levels, complexities, and business values of AI innovations and integrations. These include AI customer assistance, marketing automation, demand-prediction automation, AI-driven automation, AI-assisted inventory control, risk management automation [33], business process automation, and overall business and market crisis resiliency.

The qualitative part is based on SME decision-makers. It is accomplished through semi-structured interviews. These cover the use of AI in practice, the constraints on execution and social control [34], and the organizational and strategic models needed for resilience, efficiency, and adaptability in a dynamic market. The use of these methods from various fields enabled a degree of triangulation across the measured components of the academic formulation and the qualitative prospects of AI in decision-making [35], invention, and strategy.

The investigation sample comprised 28 small and medium-sized enterprises (SMEs) currently operating in Ukraine. This provided a focused yet diverse representation of the country's digital economy. The firms that provided data are from various sectors, including e-commerce and online marketplaces, retailing with a digital presence, logistics, delivery, and fulfilment services, digital service providers such as SaaS firms and marketing agencies, and professional B2B service providers. Regarding size, among the headcount categories, 10 firms had fewer than 10 staff. Twelve firms had between 10 and 49, and 6 medium-sized firms had between 50 and 249 staff.

Turnover was provided in ranges, and, for confidentiality reasons, the ranges were approximate yet suggestive of the scale of the economy. Most SMEs submitted turnover ranges that fell within the lower- and middle-income brackets. In the post-war context, the SMEs within the sampling frame's geographical scope were either located in, or had during the war migrated abroad, while continuing to service Ukrainian clientele, or operated as fully remote or hybrid businesses.

The sampling strategy for the study was the digital business communities, professional organizations, and snowball sampling. The SMEs that aligned with the study criteria were passed on by initial respondents, which in turn assured the sampling of digitally interfacing SMEs, those that can engage and use AI.

2.2. Data collection instruments

For the study, robust data were collected in a mixed-methods design from 28 Ukrainian SMEs by integrating a structured survey instrument with semi-structured interviews to quantify and contextualize the actual operational AI adoption. The survey tool used for SME owners, co-founders, operations managers, and heads of functional units comprises several measurement blocks. In the first block, AI adoption was gauged by asking, “Are you currently using any AI-based tools in your operations?”, a straightforward yes or no question. In the second block, the domain of AI used in business operations was investigated, including marketing content generation, ad targeting, customer support automation through chatbots or AI assistants, demand forecasting, stock planning and logistics optimization, fraud and transaction risk screening, analytics and reporting dashboards, and dynamic pricing.

In the third section, the impacts of AI on operational costs, consequences, order processing times, staffing, and sales transition were assessed using a Likert-type scale. In the last section, the survey identified key barriers to progress, including in-house expertise, legal and regulatory uncertainty, consolidation costs, data security and privacy, and risks related to estimation or compliance. To supplement the survey, semi-structured interviews with owners and managers were conducted to gain a deeper understanding of actual practices, including the AI tools used, how workflows changed after adoption, which processes were prioritized for automation, the limits of AI, and the effort required for wider ordering.

This epistemology altered the quantitative study issue to be analyzed alongside elaborated narratives. Thus, the papers’ goal was to examine not only the generality of AI use but also the operational context, decision-making principles, and paradigms and limitations for SMEs in Ukraine and under wartime conditions. The study’s analytical model centered on key variables to examine AI processes and their effects on Ukrainian SMEs. These variables were formulated with survey and interview options. Their definition and key indicators focused on:

- *Degree of AI integration*. This is understood in terms of automation across different stages of business functions, classified as low, medium, and high. This helped understand the extent to which AI tools are used for automation in marketing, customer support, logistics, finance, and analytics.
- *Type of AI deployment*. Ranges from simple AI functionalities available as part of SaaS offerings to bespoke deployments of several integrated tools to self-developed systems built around general-purpose AI technology.
- *Perceived economic value*. Assessed from different dimensions of Likert scale indexes: cost savings, time savings, error savings, and maintaining operations with fewer employees. This mirrors the subjective value of AI integration to the SME managers.
- *Barriers to scaling AI use*. Knowledge or skills gaps, regulatory or other risky uncertainties, integration costs, and data privacy or security gaps are constraints on broader deployment.
- *Strategic intention*. Planned AI adoption for the next 6-12 months indicates priority areas, reflecting an SME’s AI-induced investment intention.

These variables served as the basis for both the quantitative and qualitative components of the structured survey and the semi-structured interviews.

2.3. Data processing and analysis

This research focuses on assessing AI adoption among Ukrainian SMEs and using a mixed-methods analytical approach. Quantitative and qualitative methods were initiated to ensure the data were well elaborated and defensible. In the quantitative part, descriptive statistics were used to describe the baseline features of the AI process patterns and the assets of SMEs employing each AI-enabled purpose, such as marketing automation, customer support, logistics optimization, fraud detection, and analytics dashboards.

The mean scores on a Likert scale for SME representations were computed for economic profits from AI, cost savings, time savings, reduced errors, and reduced workforce operations. To develop a better understanding of the differences between the firms, group comparisons were performed on micro, small, and medium firms that served primarily the Ukrainian market versus those serving clients outside of Ukraine, as well as on digitally mature firms with CRM, e-commerce, and analytics infrastructure [36], compared to those that were offline.

For those comparisons, basic statistical difference tests [37], including t-tests, the Mann-Whitney U test, and ANOVA, were employed when significant differences were identified. Reflecting on the qualitative analysis process, the analysis of semi-structured interview transcripts focused on the content gathered from SME owners and managers. There emerged the recurrent themes of reasons for the adoption of AI, for example, “we had to reduce support staff”, and the perceived risks and operational entry points, such as legal and regulatory uncertainty as risks, and insufficient in-house skills for integration as operational blockers.

There was an effort to relate the themes to patterns observed in the surveys for contextual quantitative interpretation, to support triangulation. The integration of descriptive, comparative, and thematic analyses enhances AI's potential to serve as an aid for future researchers who can employ the same methods in comparative research, as the elements of data collection, coding, and interpretation have been laid out for others to follow.

2.4. Ethics and consent

The study is based on ethical norms, as the only human subjects were the owners, co-founders, and managers of SMEs, who completed surveys and participated in semi-structured interviews. As the research was based on anonymized data from SME representatives and did not include personally identifiable data, ethical approval was not required.

The respondents were informed of the study objectives and how their responses would be used in the research. Completed responses were anonymous. Before data collection, consent was obtained, and participants were informed of their right to withdraw from the study without repercussions. Confidential financial data was not collected, and privacy was not compromised in any other way.

All data provided was reported securely in aggregate, ensuring the confidentiality of the firms involved. Ethical conduct focuses on the research participants' autonomy, balance, and trust in the confidentiality of the business data being researched. It also enables the collection of valuable data on the use of AI by Ukrainian SMEs.

3. Results

3.1. Quantitative evidence

The adoption rates of AI-enabled functions in business activities in Ukrainian SMEs are presented in Table 1. Data indicates a selective, strategic approach to AI adoption. With a 55% adoption rate, AI is being incorporated into marketing and content generation.

This shows that AI delivers immediate, quantifiable ROI in customer engagement and revenue-generating functions. SMEs focus on and invest in AI-enabled automation in customer support functions. This is because of the characteristics’ chief focus on cost reduction and seamless customer service continuity during wartime, amidst staffing shortages. The 40% adoption of AI in analytics and reporting reflects recognition of the value of automated tools in revenue-generating and customer-facing functions.

However, the adoption of AI in decision-making tools is less widespread compared to customer-facing or revenue-generating tools. Demand Forecasting and Inventory Optimization AI tools are adopted at a 35% rate. This shows caution in the use of AI in operational planning. Errors at this level of planning can severely impact service cost and reliability.

Table 1. AI-enabled business functions in Ukrainian SMEs

AI-Enabled Business Function	% of SMEs Using AI
Marketing / Content Generation	55%
Automated Customer Support	48%
Demand Forecasting / Inventory Optimization	35%
Fraud / Risk Control	22%
Analytics / Reporting Dashboards	40%
Pricing Automation	18%

Source: Author’s concept

The adoption of AI for fraud and risk control (22%) and 18% for pricing automation indicates high levels of complacency in risk reduction. This level of AI adoption in highly regulated environments suggests an aversion to AI, minimal customer-facing AI, or a lack of automation.

The benefits of AI adoption among Ukrainian SMEs are summarized in Table 2 using mean Likert scores.

Table 2. Reported benefits of AI adoption

Reported Benefit	Mean Likert Score
Cost Reduction	4.1
Time Savings / Faster Order Processing	4.3
Ability to Operate with Fewer Employees	3.8
Increased Sales Conversion / Revenue Stability	3.9

Source: Author’s concept

SMEs perceived AI most for operational workflow acceleration and customer order response, with time savings and order processing receiving the highest appreciation, with a mean score of 4.3. AI also aids in budget management and wartime pressure resource allocation, as cost reductions received a mean score of 4.1. Even though AI technology helps firms cope with understaffing, as evidenced by a mean score of 3.8, most firms still rely on human staff for supervision, especially for critical reasoning and direct client interaction. In the early phase of AI adoption, SMEs evaluate AI solutions as an additive to business growth, as evidenced by a mean score of 3.9. The 3.9 score also shows that AI helps achieve revenue stability, drive business growth, and improve sales conversions. These points show that SMEs in Ukraine strategically deploy AI to gain operational efficiencies, prioritizing short-term outcomes over longer-term ones. The pattern shows that AI is used to reduce costs, speed up processes, and maintain service quality under challenging conditions. Steel, more compound or revenue-sensitive purposes rest less automated, reflecting restrained segregation and risk-management conditions. The impediments to AI grading in Ukrainian SMEs are explained in Table 3.

Table 3. Data on AI proceeding performance

Reported Benefit	Mean Likert Score
Lack of Expertise	3.8
Legal / Regulatory Uncertainty	3.5
Cost of Integration	4.1
Data / Privacy / Security Concerns	3.9
Fear of Reputational or Compliance Risk	3.3

Source: Author’s concept

Financial impediment is the most critical restriction, given the 4.1 mean score. It appears that AI expanding on the most elementary phases continues to be adopted in an unnatural tactical way. This is presumptive to the purpose of the constricted budgetary discourse in which the AI-initiating SMEs run. The lack of evidential aid for in-house R&D. A mean score of 3.9 was assigned to concerns about retention, breaches, regulatory scrutiny, or misuse of content, reflecting the rigor of privacy and safety concerns amid the digital expansion underway in times of war. The score of 3.8 is attributed to a lack of expertise. It highlights the need for training and knowledge-sharing to ease adoption, as well as the necessity of skill development to implement and maintain AI systems. The score of 3.5 demonstrates that equivocal legal models and regulative lapse are also limiting factors. The reputational or compliance risk concern seemed least significant, with a score of 3.3. This suggests the need to protect their reputation is of a far lesser order than the technical or financial constraints identified.

3.2. Qualitative evidence

The qualitative evidence reveals the strategic and pragmatic reasons for Ukrainian SMEs' adoption of AI amid wartime and resource-constrained conditions. Many owners and managers referred to cost and operational efficiency as the key Game Changers. AI chatbots replaced support agents while AI-powered demand forecasting streamlined inventory and order processing. Many SMEs highlighted AI’s contribution to efficiency improvement and customer responsiveness. Most SMEs highlighted the efficiency of automating awaiting marketing tasks and real-time analytics dashboards, as well as automating marketing tasks that feed into performance dashboards for real-time campaign adjustments. On the other hand, companies, as a rule, did not automate sensitive or complex roles within the organization, specifically accounting, strategic pricing, and negotiation with key B2B clients, which were characterized by strong relational and emotional dimensions of attachment and control. Interviewees noted probable obstacles to further scaling, and the most concerning were regulatory ambiguity and potential compliance infringements, closely followed by the potential detrimental consequences of lost client relationships for data privacy and reputation.

Such positions show that AI proceedings are extremely tactical. It aims to achieve immediate efficiency gains and is chiefly used to address high-stakes purposes. Additionally, the concept that decision-making among SMEs is distinctly grounded in operational realness proposes a digital transformation discourse that is far more adjusted and cautious than speculative.

4. Discussion

These results show how AI drives the evolution of digital platforms among Ukrainian SMEs and the strategic and tactical use of AI. As demonstrated in Table 1, AI is preponderantly engaged in client-facing, revenue-driving functions, such as marketing and content generation (55%) and automated customer support (48%). AI utilization in operational design, analytics, and risk management models, nevertheless, is far less explored. The grounds propose that AI is currently a tactical tool rather than a fully transformational one, and it is centered on operational, prompt needs rather than on digital schemes at the enterprise level.

Qualitative grounds alter this measurement, as SME owners pointed out that AI tools such as chatbots and demand forecasting systems allow them to continue rendering services and reduce their dependence on deficient labor. “We couldn’t afford to hire two more support agents, so we deployed an AI chatbot”, illustrates the point. This means AI assists and substitutes for human labor in certain functions, enables SMEs to operate during wartime disruptions, and provides quick access to online sales. Certain AI-adopting export-oriented firms loosened AI adoption to sustain cross-border service delivery during the pandemic.

The economic principle is evident in both quantitative and qualitative constructs. Time savings (mean 4.3), cost savings (mean 4.1), AI's impact on operational efficiency, as well as improvements in productivity (mean 3.8) and revenue stability (mean 3.9), signaling economic activity or sales levels, indicate AI is still incremental to sustaining the competitive position. A comparative investigation of SMEs was used. It showed that those with higher digital skills (i.e., SMEs that have already implemented CRM systems, analytics dashboards, and e-commerce platforms) adopted AI with greater assurance and advanced digital capabilities more rapidly than their less digitized counterparts. Additionally, export-focused SMEs have reported greater AI adoption and application. Cost of integration (4.1), data/privacy/security concerns (3.9), knowledge/skill gaps (3.8), and uncertainty around the legality of data, voice automation, and communication flow masking pose systemic barriers that should be accounted for.

While AI has the potential to improve operational efficiency and digital platform integration, transforming an organization technologically will always hinge on financial, technical, and regulatory barriers. There are pragmatic and context-specific drivers of digitalization among Ukrainian SMEs [38], and the findings accurately reflect that the adoption of AI technology carries evident, measurable benefits, even if the integration occurs in a cautious, patchwork fashion.

5. Conclusions

5.1. Summary of the main findings

This study has shown that, in Ukrainian SMEs, AI is an operational driver of digital platforms, albeit on a tactical and limited scale. Table 1 shows that most adoption occurs in functions that directly impact customer interactions and operational efficiency. For example, marketing and content generation lead at 55%, followed closely by automated customer support at 48%. This proposes that SMEs first focus on the capital values of increased connection and service coherence. The balance of firms choosing analytics and coverage dashboards is 40%, pointing to some approval of the value of data-driven decision-making. Nevertheless, precaution is evident in the operational design, driven by supply prognostication and register optimization, as acceptance remains relatively limited at 35%. Roles that involve higher risk and/or complexity, such as crime/risk control at 22% and pricing automation at 18%, are also less often automated.

This suggests that SMEs lack confidence in AI's ability to make decisions on tasks pivotal to business success. Table 2 shows that SMEs perceive the most outstanding value in AI-driven order processing speed and cost reduction, followed by increased sales conversion and streamlined operations to reduce workforce. Three main barriers to scaling adoption are identified: the cost of integration, concerns about data/privacy/security, and a lack of expertise. Perhaps more fundamental are regulatory uncertainty (3.5) and reputational risk. Regulatory and reputational factors are more fundamental to the barriers to expansion. Qualitative evidence implies that SMEs are not hesitant to adopt AI.

Owners explained that AI chatbots could replace support staff and that AI could be used for demand forecasting to streamline processes. Still, automation is not used for accounting, pricing strategy, or B2B negotiations. The most direct uses of AI in Ukrainian SMEs focus on marketing, customer support, and analytics. AI serves as an operational enabler rather than a fully incorporated strategic resource and is indicative of a deployment strategy that is primarily efficiency-driven, resource-constrained, and wartime resource-constrained.

5.2. Implications for policy and SME support

This paper's results give various implications for policy and support for SMEs in Ukraine. To begin with, the exclusive and tactical conduct is explained with reference to Table 1, where the SMEs underscore marketing, content, creative activity, and customer aid, and seem to sidestep the more basal roles.

These items support policies that aim to ease AI development at an additive pace, with lower-purpose AI projects suggested rather than advocating for more assertive pioneering of transformative digital initiatives. What Ukrainian SMEs demand most is access to pragmatic, inexpensive AI tools that can be rapidly incorporated into their workflows, including chatbots and request forecasting modules, rather than more fancy or costly options. Second, the acquisition and content gaps detailed in Table 3 underscore the need for more hands-on training and strategic references, such as AI toolkits, to build confidence in AI adoption and support.

This could touch education sessions, virtual education paths, or even AI functional application working groups. Third, the uncertainty around conception and the risk of conformity in customer engagement, client data, and AI-generated content underscore the need for more meticulous, guidance-based laws and for clear, auditable principles for SMEs to follow. Taking all of the above into account, advise a policy model that eases access to instruments, promotes practical learning, and establishes clear regulations, enabling small and medium-sized enterprises to adopt AI beyond tactical uses into larger operational and strategic fields.

5.3. Limitations of the study

This paper has some critical limitations that should be addressed. To begin, the Ukrainian SMEs examined and interviewed to model this examination were a suitable sample, drawn from business networks, e-commerce platforms, and targeted outreach. Hence, the preceding patterns, along with the welfare delineated, are likely not relevant to other SMEs, essentially micro and offline enterprises.

The following limitations are the self-reported perceptions of the positive sides of AI, the obstacles to progress, and the operational outcomes of AI. While this data is necessary for apprehending a manager's view, it is also likely to be partial and personal due to disposition or a lack of a longer-term orientation, which can lead to overstating or understating the existing created efficiencies, the costs saved, or the engaged quantifiability. Third, this paper is cross-sectional; it provides only a snapshot of AI proceedings and their effects in times of war and under peculiar economic circumstances.

This design does not permit a longitudinal measure, such as how integrating AI into several business purposes and regulatory changes over the years might alter productivity. Lastly, the emphasis on tactical progress under constrained conditions means that endurance schemes, as delineated in the findings, are expected rather than an absolute, enterprise-wide digital alteration.

5.4. Future research directions

Based on this investigation, future examinations that measure the issue of AI on occurrence drivers of Ukrainian SMEs, using a longitudinal and panel research design, would offer significant opportunities for the body of knowledge. Such an investigation would change the perception of the causal impact of integrated AI on functional outcomes and other key metrics, such as average time to outcome, process ratio, and logistics costs per order.

Studies focusing on individual industries are also critical, as the forms of AI adoption and the consequent profits can differ significantly across e-commerce, logistics, marketing agencies, and professional services, offering guidance on strategies and best practices aligned with their various functions. Another stimulating investigation possibility is to analyze how AI-augmented digital platforms help SMEs expand their reach beyond the national market and the possible role of AI in assisting internationalization, cross-border commerce, and competitiveness on the global stage. Combining quantitative metrics with qualitative research on performance would enrich understanding of the dynamics of AI adoption, as well as its barriers and strategic value. Such an approach would address current evidence gaps, providing actionable guidance to SMEs, policymakers, and technology providers in Ukraine and other countries with similar levels of digital market transformation on the operational and strategic value of AI-enabled digital shifts.

Declaration of competing interest

The authors declare that they have no known financial or non-financial competing interests in any material discussed in this paper.

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Author contribution

The contribution to the paper is as follows: S. Petko, A. Vdovichen: study conception and design; S. Petko, O. Vdovichena, Y. Koroliuk: data collection; A. Vdovichen, Y. Koroliuk, I. Losheniuk: analysis and interpretation of results; I. Losheniuk: draft preparation. All authors approved the final version of the manuscript.

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