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Impact of digital transformation on small enterprises

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Small enterprises are at the forefront of digital transformation and technology adoption, which entails the integration of digital technologies to transform operational procedures, elevate customer satisfaction, foster innovation, and increase competitiveness. The study reveals that heightened digital transformation and innovation is associated with increased small enterprises entrepreneurship, emphasizing the need for businesses to enhance their innovation and digital transformation capabilities to navigate challenges effectively. The author analyzed 300 samples consisting of small businesses and professionals working in small businesses. The article also considers the opportunities and negative impact of digitalization on small enterprises.

Introduction The advent of digital transformation has fundamentally altered how businesses operate, engage with customers, and communicate. Small companies are understanding that they need to adjust to the evolving digital world in order to stay competitive. This involves implementing e-commerce and employing data analytics. This article highlights both the advantages and disadvantages of the shift as it explores the intricate implications of digital transformation on small businesses. Digital transformation is the process of incorporating digital technology into every aspect of a business and drastically changing how it operates and adds value for customers. This change entails using technologies like the Internet of Things (IoT), cloud computing, artificial intelligence, and big data analytics to improve customer experiences, increase efficiency, and

simplify procedures. For small businesses, digital transformation is not merely an option but a necessity to survive and thrive in today's fast-paced and highly interconnected world.

Thanks to digital transformation, small companies have a lot of chances to grow, innovate, and connect with more people. One of the main benefits is the chance to reach global consumers through e-commerce platforms. By establishing a professional online presence, small companies may transcend geographical limitations and reach a large audience. Furthermore, by tailoring their messaging to specific demographics, digital technologies let businesses engage customers more effectively through targeted marketing strategies. Additionally, digital transformation helps small enterprises to streamline their operations and boost

efficiency [1]. By enabling remote collaboration, adaptable work schedules, and seamless communication, cloud-based solutions lower overhead expenses and boost productivity. Furthermore, data analytics tools provide valuable insights into customer behavior, market trends, and business performance, enabling small businesses to make informed decisions and adapt quickly to changing market dynamics.

Although there are advantages to the digital revolution, small businesses must also face some challenges in order to properly manage this shift. One of the biggest concerns is the initial financial investment required to adopt and use digital technology. Many small businesses may not have the funds to invest in expensive software, technology, or training programs because of their low operating capital. Furthermore, because technology is evolving so quickly, small businesses may find it difficult to keep up with the latest developments and trends. Embracing digital transformation puts small firms at risk from cybersecurity threats. Cyberattacks like ransomware, phishing schemes, and data breaches have increased in frequency as company processes become more digitally integrated. Small businesses, in particular, are vulnerable to these attacks due to limited resources and expertise in cybersecurity. Protecting sensitive data and ensuring the security of digital assets is a critical challenge that small businesses must address to mitigate risks effectively [9].

The digital divide presents another difficulty for small businesses, especially those that are based in rural or undeveloped areas with little access to high-speed internet and digital infrastructure. Unreliable connectivity may hinder small businesses' ability to use digital technology efficiently and compete on an equal basis with their metropolitan rivals. Despite these challenges, small businesses may effectively manage digital transformation if they adopt strategic approaches tailored to their unique needs and circumstances. Additionally, digital technology and infrastructure offer the best rate of return on investment. Small businesses should prioritize solutions that improve customer

experiences, promote operational efficiency, and stimulate revenue development. Small businesses can leverage partnerships and collaborations with technology providers, industry associations, and government agencies to access resources, expertise, and funding opportunities. By collaborating with external stakeholders, small businesses can overcome resource constraints and accelerate their digital transformation journey. To further protect against cyber-attacks, it is essential to invest in cybersecurity solutions and put strong data protection policies in place. To reduce the danger of cyberattacks, small firms should give priority to cybersecurity awareness training for staff members, implement multi-layered security solutions, and update software and systems on a regular basis. In order to guarantee fair access to digital infrastructure and resources, lawmakers, corporations, and community organizations must work together to bridge the digital divide. Small companies can support programs that provide broadband access, train people in digital skills, and encourage digital literacy in underprivileged areas [4]. Digital transformation has a significant and wide-ranging effect on small enterprises. It offers great potential for innovation, expansion, and competitiveness, but it also brings with it difficulties that need to be successfully resolved. Small firms can open up new markets, improve consumer experiences, and streamline operations by embracing digital technologies. However, smart financial decisions, vigilant cybersecurity, and cooperative alliances are necessary for success in the digital age. In an increasingly digital environment, small businesses which take the initiative to adjust to the digital landscape will set themselves up for long-term success. It offers great potential for innovation, expansion, and competitiveness, but it also brings with it difficulties that need to be successfully resolved. Small firms can open up new markets, improve consumer experiences, and streamline operations by embracing digital technologies [2]. However, smart financial decisions, vigilant cybersecurity, and cooperative alliances are necessary for success in the digital age. In an increasingly digital environment, small businesses

which take the initiative to adjust to the digital landscape will set themselves up for long-term success.

In today's corporate environment, use of digital technology has become essential for survival and growth, especially for small businesses. This essay's objective is to evaluate the extent to which small businesses have adapted digital technologies and altered their operational procedures. To provide a comprehensive picture of how small businesses are now adopting digital technology, we will measure the pace at which key digital technologies such as cloud computing, data analytics, and e-commerce platforms are employed across various industries and regions. The use of digital technologies indicates the integration of these technologies into the operations, marketing, sales, and customer service activities of small businesses. It is imperative to measure the use of particular digital tools and platforms in order to precisely determine the adoption rate. E-commerce platforms play a crucial role in small enterprises' digital development. These platforms enable businesses to access a larger customer base outside their physical presence by facilitating online transactions. Metrics like the proportion of small businesses with online storefronts, the amount of online transactions, and the revenue from e-commerce channels can be studied to measure the adoption of e-commerce platforms.

Cloud computing has revolutionized the way small businesses manage data, collaborate with teams, and access software applications. Quantifying the adoption of cloud computing involves assessing parameters such as the percentage of small businesses utilizing cloud-based storage solutions, the extent of reliance on cloud-based software applications, and the investment in cloud infrastructure. Data analytics empowers small businesses to derive actionable insights from data, facilitating informed decision-making and targeted marketing strategies. To measure the adoption of data analytics, metrics such as the percentage of small businesses collecting and analyzing customer data, the utilization of data-driven marketing campaigns,

and the integration of analytics tools into business operations can be examined [6]. The adoption of digital technologies varies across industries and regions due to factors such as market dynamics, regulatory environments, and technological infrastructure. Analyzing these variances provides valuable insights into the challenges and opportunities faced by small businesses in different sectors and geographic locations. Industries with a strong focus on customer engagement and online transactions, such as retail and hospitality, tend to have higher adoption rates of e-commerce platforms. Small retailers and hospitality businesses leverage e-commerce platforms to enhance the shopping experience and drive sales. In contrast, industries such as manufacturing and construction may exhibit lower adoption rates of e-commerce platforms but higher utilization of cloud computing for supply chain management and project collaboration. Small businesses in these sectors rely on cloud-based solutions to streamline operations and improve efficiency. Regional disparities in digital infrastructure and connectivity can also influence the adoption of digital technologies among small businesses. Urban areas with robust internet connectivity and access to technology hubs may have higher adoption rates compared to rural or underserved regions with limited digital infrastructure.

Several factors drive or inhibit the adoption of digital technologies among small businesses. Understanding these drivers and barriers is crucial for developing targeted interventions and policies to promote digital transformation. Key drivers of digital adoption include the perceived benefits of digital technologies, such as cost savings, improved efficiency, expanded market reach, and enhanced customer experiences. Small businesses are more likely to adopt digital tools when they perceive tangible benefits and positive returns on investment [3]. Conversely, barriers to adoption include factors such as lack of awareness or understanding of digital technologies, financial constraints, concerns about data privacy and security, and resistance to change. Small businesses may hesitate to invest in digital transformation

initiatives due to uncertainty about potential risks and benefits or a lack of technical expertise. To promote digital adoption among small businesses, policymakers, industry stakeholders, and support organizations can implement various strategies tailored to address specific challenges and opportunities. Providing access to resources and training programs can help small businesses build digital capabilities and overcome skill gaps. Initiatives such as digital skills workshops, online tutorials, and mentorship programs empower small business owners and employees to leverage the full potential of digital technologies.

Financial incentives and grants can encourage small businesses to invest in digital transformation initiatives by offsetting upfront costs and mitigating financial risks. Government agencies and industry associations can offer funding opportunities, tax incentives, or low-interest loans to support small businesses' adoption of digital tools and technologies. Moreover, fostering a supportive ecosystem of technology providers, consultants, and service providers facilitates small businesses' access to expertise and guidance in implementing digital solutions [5]. Collaborative partnerships between the public and private sectors promote knowledge sharing, innovation, and best practices in digital transformation. Understanding the present status of digital transformation and identifying potential for further adoption requires evaluating the extent of digital technology usage among small enterprises. Stakeholders can assist small firms in their digital journey by examining industry and regional differences, establishing adoption drivers and hurdles, and creating strategies for digital adoption. In the digital age, encouraging innovation, boosting competitiveness, and propelling economic growth depends on small firms adopting digital technology [6].

Relationship with Digital Transformation and Entrepreneurs

The role and activities of entrepreneurs are critical for the survival and success of entrepreneurial firms, which are defined as companies that introduce new products and services to the market by identifying and seizing opportunities. En-

trepreneurs, who are typically the founders or owners of these small to medium-sized companies, have a significant influence on the strategy and organization of their businesses. Within these organizations, owners take on various roles and engage in different activities such as directing, planning, monitoring, selling, and coordinating. Owners are responsible for designing the organization and determining its strategic direction. The success of entrepreneurial firms is strongly correlated with the entrepreneur's intellectual capital, capabilities, and personal networks. Furthermore, the past experience of the entrepreneur has been found to impact various aspects of a firm's performance, including innovation. Table 1 shows essential technological tools for small enterprises and entrepreneurs.

Researchers play a critical role in fostering digital entrepreneurship by identifying trends, analyzing strategies, and driving innovation and growth in the digital landscape. Through in-depth studies on the latest technologies, market dynamics, and consumer behavior, researchers provide valuable insights that empower aspiring small enterprises entrepreneurs to make informed decisions and navigate the complexities of the digital economy. Research-driven approaches such as market segmentation analysis, competitive benchmarking, and trend forecasting help aspiring digital entrepreneurs identify market gaps, develop unique value propositions, and capitalize on emerging opportunities in the digital space

Small enterprises entrepreneurship in the context of innovation, sustainability, and digitalization can be understood as the process of creating and implementing new, sustainable, and digital business models that drive growth and value creation for customers, firms, and the environment. This approach is influenced by sustainable entrepreneurship, innovation, and digitalization. Sustainable entrepreneurship involves creating value for customers, firms, and the environment by addressing social and environmental challenges while ensuring long-term success. Sustainable entrepreneurship is influenced by business environment, firm strategy, sustainability, innovation,

Table 1. Tools and Technologies for small enterprises and entrepreneurs.

Name of the Tools	Applicable for small enterprises and entrepreneurs
Social networking	Social networking platforms such as LinkedIn, Facebook, Twitter, and Instagram play a crucial role in the strategic efforts of entrepreneurs to establish and enhance their brand presence, foster connections with prospective customers, and engage in professional networking with peers within their respective industries.
Video call	Video conferencing tools such as Zoom, Microsoft Teams, and Google Meet have emerged as indispensable tools for facilitating remote collaboration
Voice call	Skype, WhatsApp, and Viber offer affordable and flexible voice communication. AI Voice Assistants such as Alexa for Business and Google Assistant handle tasks, create reminders, and operate hands-free.
Instant massaging	Instant messaging platforms such as Microsoft Teams, and WhatsApp play a crucial role in facilitating real-time communication. They provide features such as Automation, Secure Messaging, File sharing, interaction with project management applications, and threaded chats.
Busuness intelligence	BI tools play a crucial role in facilitating data-driven decision-making, and there have been significant advancements in this field. Advanced analytics platforms such as Power BI, and Looker provide users with the capability to perform predictive analytics and visualize data.
Email	A mainstay of corporate communication, email is still quite successful thanks to developing technology: AI-Powered Email Management: Smart sorting and scheduling capabilities of programmes like Boomerang help control inbox overflow.

Source: compiled by author.

and digitalization. Innovation is about creating new, useful, and conscious value impact for customers, firms, and the environment. In the context of Small enterprises entrepreneurship, innovation involves developing new products, services, and business models that address sustainability and digitalization challenges while creating value for customers. Meanwhile, digitalization refers to the process of integrating digital technologies into a firm's operations, marketing, and business models. In Small enterprises entrepreneurship, digitalization enables firms to create new opportunities for growth, improve efficiency, and enhance customer experiences. Small enterprises entrepreneurship in the context of innovation, sustainability, and digitalization involves creating and implementing new, sustainable, and digital business models that drive growth and value creation for customers, firms, and the environment [8].

Methodology

The study involved 300 samples consisting of small enterprises and professionals working in small

businesses. This research consists of four variables which respectively consist of three independent variables and one dependent variable. The first independent variable is innovation which will be measured by five questionnaire statements. The second independent variable is the sustainability variable which is represented by four questionnaire items. The third independent variable is the digital transformation variable which will be represented by five questionnaire items. Meanwhile, the dependent variable in this research is Small enterprises entrepreneurship, which is represented by five questionnaire items.

Questionnaires of study:

Innovation

1. Innovation is essential for the success of our organization.
2. I believe that trying new and creative approaches is crucial for personal and professional growth.
3. I feel comfortable suggesting innovative ideas

to my colleagues and superiors.

4. Our organization actively encourages and supports employees in taking risks to explore new opportunities.
5. Employees in our organization are given sufficient time and resources to explore and implement innovative ideas.

Sustainability

1. I believe that incorporating sustainable practices is important for the long-term success of our organization.
2. Our organization actively seeks ways to reduce its environmental impact.
3. I feel a personal responsibility to contribute to sustainability efforts in our workplace.
4. Sustainability initiatives, such as recycling and energy conservation, are well-supported in our organization.

Digital Transformation

1. I believe that digital transformation is crucial for the future success of our organization.
2. Our organization actively embraces new digital technologies to enhance its operations.
3. I feel comfortable adapting to and using new digital tools and platforms in my role.
4. Digital transformation initiatives in our organization are well-communicated and understood by employees.
5. Our organization invests in ongoing training and development to enhance digital skills among employees.

Small enterprises entrepreneurship

1. I believe that Small enterprises entrepreneurship play a vital role in fostering economic growth and job creation.
2. I feel encouraged to pursue entrepreneurial opportunities within the small enterprises entrepreneurship sector.
3. Our community values and supports local Small enterprises entrepreneurship and entrepreneurship.
4. There are sufficient networking and collaboration opportunities for Small enterprises en-

trepreneurship in our business community.

5. Small enterprises entrepreneurship in our region have access to adequate training and development programs.

The author examined the results of the survey using a regression model in Table 2.

The results show that there is a positive and significant influence between digital transformation on small enterprises entrepreneurship. These findings support and are in line with several previous studies. The digital transformation of small enterprises entrepreneurship has been a subject of interest in academic journals. Several studies have explored various aspects of this transformation, including technology adoption, entrepreneurial mindset, value creation, and the barriers to sustainable digital transformation. For example, a study in the *Journal of Small Business & Entrepreneurship* discusses the adoption of digital technology by small enterprises entrepreneurship and its impact on value creation and entrepreneurial orientation [11]. Another study investigates the main barriers to small enterprises entrepreneurship sustainable digital transformation, emphasizing the global importance of this issue. These studies provide valuable insights into the role of digital transformation in small enterprises entrepreneurship, offering a comprehensive understanding of the challenges and opportunities associated with this process. The digital transformation of small enterprises entrepreneurship in Russia has been a topic of interest in recent research. The government of Russia has been actively encouraging the digital transformation of small enterprises entrepreneurship to strengthen the national economic foundation. These researches provide valuable insights into the ongoing digital transformation of small enterprises entrepreneurship in Russia, highlighting the importance of this process for the country's economic development. The research findings underscore the positive and significant impact of innovation, sustainability, and digital transformation on small enterprises entrepreneurship. The study reveals that heightened digital transformation and innovation is associated with

Table 2. Results of regression analysis.

Factor	Regression coefficients	Standardized regression coefficients
Innovation	0,811*** (0,035)	0,698***
Sustainability	0,753*** (0,073)	0,591***
Digital Transformation	0,853*** (0,054)	0,635***

Source: compiled by author.

Notes: * – $p < 0.10$;

** – $p < 0.05$;

*** – $p < 0.01$;

$R = 0.896$

$R^2 = 0.845$

Adjusted $R^2 = 0.803$

$p < 0.0000$

Standard error of estimate: 0.429

increased small enterprises entrepreneurship, emphasizing the need for businesses to enhance their innovation and digital transformation capabilities to navigate challenges effectively.

Small enterprises entrepreneurship play a pivotal role in achieving Sustainable Development Goals through job creation, economic growth, and entrepreneurship [7]. Sustainable entrepreneurship is shown to positively influence non-financial business performance in areas such as supplier relationships, employee stability, and customer satisfaction. Additionally, the study establishes a positive and significant influence of digital transformation on small enterprises entrepreneurship, with global and Russian research exploring technology adoption, barriers to sustainable digital transformation, and government initiatives promoting Small enterprises entrepreneurship digital evolution for economic development.

Small enterprises may face obstacles when implementing digitalization:

Financial Constraints

A major obstacle that small firms encounter when trying to adopt technology and undertake digital transformation is limited financial resources. Small firms face constraints on their ability to invest in new technologies, digital tools, and the essential infrastructure needed for digital transformation due to limited finances [7]. The limited availability of financial resources can significantly impede the

competitiveness and growth prospects of small firms.

Lack of Technical Expertise

Small enterprises frequently face challenges due to a deficiency in technical proficiency, which is essential for effectively navigating the intricacies of digital transformation [8]. The deficiency of skills and expertise might result in difficulties in choosing appropriate technologies, efficiently deploying them, and maximizing their use for corporate operations. The lack of technical competence makes it challenging for small enterprises to evaluate the potential return on investment (ROI) of digital projects. This difficulty further hampers their adoption of technology.

Resistance to Change

One of the biggest problems with small companies embracing technology and going digital is their resistance to change. Organizational culture, employee fears, and a failure to grasp the advantages of digital transformation are all potential causes of this reluctance. Effective change management tactics, like as communication, training, and employee involvement in the transformation process, are necessary to overcome this resistance. Many obstacles stand in the way of small companies making the transition to digital transformation and technology adoption [8]. Managing resistance to change, obtaining sufficient funds, improving technical competence, and emphasizing cybersecurity are all components of an integrated strategy

to overcome these obstacles. Making it through these challenges is crucial for small firms to take advantage of digital technology's benefits and stay competitive in a digital environment. Insights into the complex issues small firms have when digitally transforming and embracing new technologies are provided by this investigation. In order to leverage digital technology to promote growth and create new opportunities, it is necessary to address these concerns.

Opportunities abound for small enterprises through digital transformation, helping them to thrive in today's dynamic market, gain a competitive advantage, and expand sustainably [1]. New growth opportunities, such as expanding into new markets and encouraging innovation, can be unlocked when small businesses fully embrace digital technologies. Opportunities abound for small businesses through digital transformation, helping them to thrive in today's dynamic market, gain a competitive advantage, and expand sustainably:

Reaching Wider Markets

Small businesses can leverage digital transformation to expand their market presence beyond local limits and tap into broader, perhaps global markets. Small firms can utilize e-commerce platforms, digital marketing, and social media channels to effectively display their products and services to a wide audience, eliminating the need for physical establishments in several places. The digital marketing methods have a substantial impact on improving the visibility and reach of small firms, leading to higher sales and market share.

Improving Customer Service

Small businesses can utilize digital technologies to provide improved customer service. Data analytics enables organizations to acquire valuable insights about customer behaviour, preferences, and feedback, so enabling them to optimize their offers and customer interactions with more precision.

Enhancing Operational Efficiency

Small firms experience substantial enhancements in operational efficiency as a result of digital transformation. The automation of repetitive tasks, the

integration of digital workflows, and the installation of cloud computing solutions have the potential to decrease operational expenses, enhance productivity, and optimize business processes. The impact of these efficiencies on small firms, highlighting their ability to minimize the time and resources allocated to non-core operations.

Fostering Innovation

Small firms are motivated to innovate through the adoption of digital technologies. Digital tools and platforms offer the resources necessary to create innovative goods, services, and business models that may set small businesses apart in the market. Digital transformation-induced innovation has the potential to generate distinctive value propositions, hence facilitating the emergence of novel sources of income and cultivating a culture of ongoing enhancement and adjustment.

The process of digital transformation offers numerous advantages for small firms, such as expanding their market reach, strengthening customer service, optimizing operational efficiency, and promoting innovation. To seize these opportunities, one must adopt a strategic approach to technology and be willing to invest in digital capabilities. Small firms who are determined to overcome the obstacles of digital transformation have the opportunity to achieve greater competitiveness, enhanced consumer engagement, and sustainable growth. This analysis of the possibilities offered by digital transformation highlights the capacity for small enterprises to utilize technology for expansion and creativity. Small firms may successfully traverse the obstacles of the digital age and maintain their position in the future marketplace by identifying and taking advantage of these opportunities.

Contribution of Small Businesses to Local Economies

Small enterprises play a vital role in regional economies, propelling economic expansion, fostering innovation, and promoting community advancement. As example in the U.S. Small Business Administration (SBA), small firms contribute to 44% of the economic activity in the United States [7]. They bolster local economies through job creation, tax

payment, and contribution to the local GDP. Small enterprises help cultivate a sense of communal identity and solidarity, by endorsing local initiatives and enhancing the liveliness of their communities.

Role in Job Creation

Small enterprises play a crucial role in job creation, as they are responsible for producing a major proportion of new employment possibilities. According to the SBA, small businesses have been responsible for generating 1.5 million jobs per year, which represents 64% of all new jobs created in the United States [7]. Small businesses have a crucial role in decreasing unemployment rates and promoting economic stability in local communities by providing job opportunities.

Enhancement through Technology Adoption

Small businesses can make a bigger impact on the economy by embracing technology. This is especially true when it comes to creating jobs and raising wages. By embracing digital transformation, small firms may enhance their operations, expand their customer base, and foster innovation. This, in turn, boosts their competitiveness and potential for growth. Technology enhances efficiency, cuts expenses, and boosts output. One example is how cloud computing improves operations by allowing small firms to access advanced software and storage solutions without having to spend a fortune up front [10]. Table 3 examines technology adoption and digital transformation in small businesses.

Economic Impact of Technology Adoption in Small enterprises

Small enterprises are of utmost importance in regional economies, as they contribute significantly to the generation of employment, expansion of the economy, and advancement of the community. Implementing technology and undergoing digital transformation in these businesses improves their economic influence, resulting in elevated rates of employment, improved pay, and heightened competitiveness. Facilitating the adoption of technology in small enterprises is crucial for promoting economic resilience and success. The swift integration of technology by small enterprises yields substantial economic advantages, such as heightened employment generation and enhanced

operational effectiveness [11]. Companies that adopt digital transformation strategies frequently achieve improved competitiveness and long-term economic viability. Small firms may effectively manage the impact of external crises and promote regional socio-economic growth by embracing digital technologies and implementing sustainable business strategies. Promoting and assisting small business use of technology is essential for overall economic resilience and prosperity as it leads to growth, job creation, and community development.

Social Impact of Digital Transformation in Small enterprises

The digital transformation of small enterprises goes beyond just economic advantages, as it also has a significant social impact by fostering inclusivity, accessibility, and empowerment. Digital platforms facilitate the expansion of small enterprises' reach to underserved and distant regions, thereby granting them wider access to vital services and products. This diminishes the disparity in access for marginalized communities, promoting increased participation in the digital economy [9]. Small businesses can utilize digital tools to provide customized services that cater to the varied requirements of their communities, thereby fostering social inclusivity. For instance, digital channels enable and promote cultural expression and the integration of minority populations. Digital transformation equips entrepreneurs, particularly women and young entrepreneurs, with the necessary resources to initiate and expand their firms.

Conclusion

The study concludes by both the opportunities and difficulties small firms have in adopting digital transformation, as well as the suggested improvements of digital technology. Also, author provides recommendations for small business and entrepreneurs to improve digital transformation for their business:

- Small businesses should prioritize investing in digital skills training programs for employees to enhance digital literacy and competency. By providing comprehensive training in areas such as digital marketing, data analytics, and

Table 3. Technology adoption and digital transformation in small enterprises.

Section	Suggested improvements
Financial constraints	Include detailed examples or case studies illustrating how financial constraints impact small business's ability to adopt technology. Provide specific data on the costs of digital transformation and available funding options
Digital skills training and education programs	Provide detailed examples of successful training programs or partnerships between small businesses and educational institutions. Include data on the effectiveness of these programs in improving digital skills among small business employees.
Partnerships with tech companies	Include specific examples of successful partnerships between small businesses and tech companies. Describe how these partnerships have helped small businesses access new technologies and technical expertise.
Leveraging government incentives	Provide detailed examples of government programs and incentives that have successfully supported small businesses in their digital transformation efforts. Include data on the uptake and impact of these programs.

Source: compiled by author.

cybersecurity, small businesses can empower their workforce to leverage digital technologies effectively.

- Small businesses should adopt agile methodologies and iterative approaches to digital transformation, allowing them to adapt quickly to changing market conditions and customer preferences. By breaking down large-scale digital projects into smaller, manageable tasks and iterating based on feedback and data insights, small businesses can achieve incremental progress toward their digital goals.
- Small businesses should prioritize enhancing the customer experience across all digital touchpoints. By leveraging digital technologies to personalize interactions, streamline transactions, and provide timely support, small businesses can improve customer satisfaction and loyalty,

driving repeat business and positive word-of-mouth referrals.

- Small businesses should explore collaborative partnerships with other businesses, startups, and technology providers to accelerate their digital transformation efforts. By pooling resources, sharing knowledge, and collaborating on digital projects, small businesses can access specialized expertise and innovative solutions that may be beyond their capabilities.
- Small businesses should prioritize cybersecurity measures to protect sensitive data and safeguard customer privacy. By implementing robust cybersecurity protocols, including encryption, multi-factor authentication, and regular security audits, small businesses can mitigate the risk of data breaches and cyberattacks, preserving trust and credibility with customers.

References

1. Anatan L., Nur. Micro, Small, and Medium Enterprises' Readiness for Digital Transformation in Indonesia // *Economies*. – 2023. – Vol. 11, no. 6.
2. Chaves-Maza M., Fedriani E. M. Defining entrepreneurial success to improve guidance services: a study with a comprehensive database from Andalusia // *Journal of Innovation and Entrepreneurship*. – 2022. – Vol. 11, no. 1.
3. Gaglio C., Kraemer E., Lorenz E. The effects of digital transformation on innovation and productivity: Firm-level evidence of South African manufacturing micro and small enterprises // *Technological Forecasting and Social Change*. – 2022. – Vol. 182.
4. Gavrila S., Ancillo A. Entrepreneurship, innovation, digitization and digital transformation toward a sustainable growth within the pandemic environment // *International Journal of Entrepreneurial Behavior & Research*. – 2021. – Vol. 7, no. 3.
5. Mangifera L., Mawardi W. Digital Transformation and Its Impact on Financial Performance: in the Food and Beverage Small Business Sector // *International Conference of Business and Social Sciences* Vol. 3. – 2022. – P. 49-61.
6. Plekhanov D., Franke H., Netland V. H. Digital transformation: A review and research agenda // *European Management Journal*. – 2022. – Vol. 8.

7. *Rupeika R.* Barriers to Sustainable Digital Transformation in SMEs // *International Journal for Multidisciplinary Research*. – 2022. – Vol. 4.
8. *Skare M., de las Mercedes de Obesso M., Ribeiro-Navarrete S.* Digital transformation and European small and medium enterprises. A comparative study using digital economy and society index data // *Journal of Information Management*. – 2023. – Vol. 5, no. 1.
9. Sustainable digital transformation in small and medium enterprises (SMEs). A review on performance / *Alves Junior P. N. [et al.]* // *Heliyon*. – 2023. – Vol. 9, no. 3.
10. *Veile J. W., Kiel D., Muller J. M.* Lessons learned from Industry 4.0 implementation in the German manufacturing industry // *Journal of Manufacturing Technology Management*. – 2020. – Vol. 31. – P. 977–997.
11. *Vial G.* Understanding digital transformation: A review and a research agenda // *The Journal of Strategic Information Systems*. – 2019. – Vol. 28, no. 2. – P. 118–144.