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The Impact of Emerging Technologies on Digital Transformation in Small and Medium Enterprises

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Author’s Photos



Author's short biographies

Teuta Veseli-Kurtishi, is an Associate Professor at the Faculty of Business and Economics, South East European University. She received PhD in Marketing at the Faculty of Economics, in University of Tirana.

Her main research interests are application of marketing strategies and their impact in business institutions and education institutions.

Teuta Veseli - Kurtishi published several scientific papers in international and national journals and participated in many scientific international conferences.

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Introduction

- SMEs, which form the backbone of many economies worldwide, are increasingly recognizing the importance of integrating emerging technologies into their operations
- This paper explores the profound impact of emerging technologies on the digital transformation of SMEs.
- For instance, the adoption of AI and ML in SMEs has shown significant improvements in predictive analytics and customer relationship management (CRM) (Jarrahi, 2018). IoT applications have enabled real-time monitoring and optimization of supply chain processes (Gubbi et al., 2013). Additionally, blockchain technology is revolutionizing the way SMEs handle transactions and ensure data integrity (Nofer et al., 2017). Cloud computing provides scalable and cost-effective solutions for SMEs to manage their IT infrastructure and applications (Marston et al., 2011).

The Literature Review

  - The importance of digitization in SMEs
- Businesses and organizations are being radically and rapidly transformed by digitization and the phenomenon of digital transformation (Chatterjee et al. 2023; Jedynak et al. 2021). While some firms effectively manage digitization and reap benefits from the use of digital technologies, others that are unable to go digital or refuse, face the risks of falling into an unfavorable market position, loss of profit and even bankruptcy (Becker and Schmid 2020).

The Literature Review

Barriers to the adoption of digital orientation

- Complexity of New Technologies
  - Interoperability Issues
  - Rapid Technological Change
- Organizational Barriers
  - Organizational Culture
  - Leadership and Vision
- Environmental Barriers
  - Regulatory Issues
  - Market Conditions
- Human Factors
  - Employee Skills and Competencies
  - User Acceptance
  - Training and Development

The Literature Review

The Study

Research Question(s)

1. How do emerging technologies influence the digital transformation strategies of SMEs?
2. What are the primary drivers and barriers for SMEs in adopting emerging technologies during digital transformation?
3. What factors influence the adoption of emerging technologies in SMEs, and how do they differ from larger enterprises?
4. How does the impact of emerging technologies on digital transformation vary across different industries within the SME sector?
5. Which sectors within SMEs benefit the most from specific emerging technologies (e.g., AI in manufacturing, IoT in logistics)?

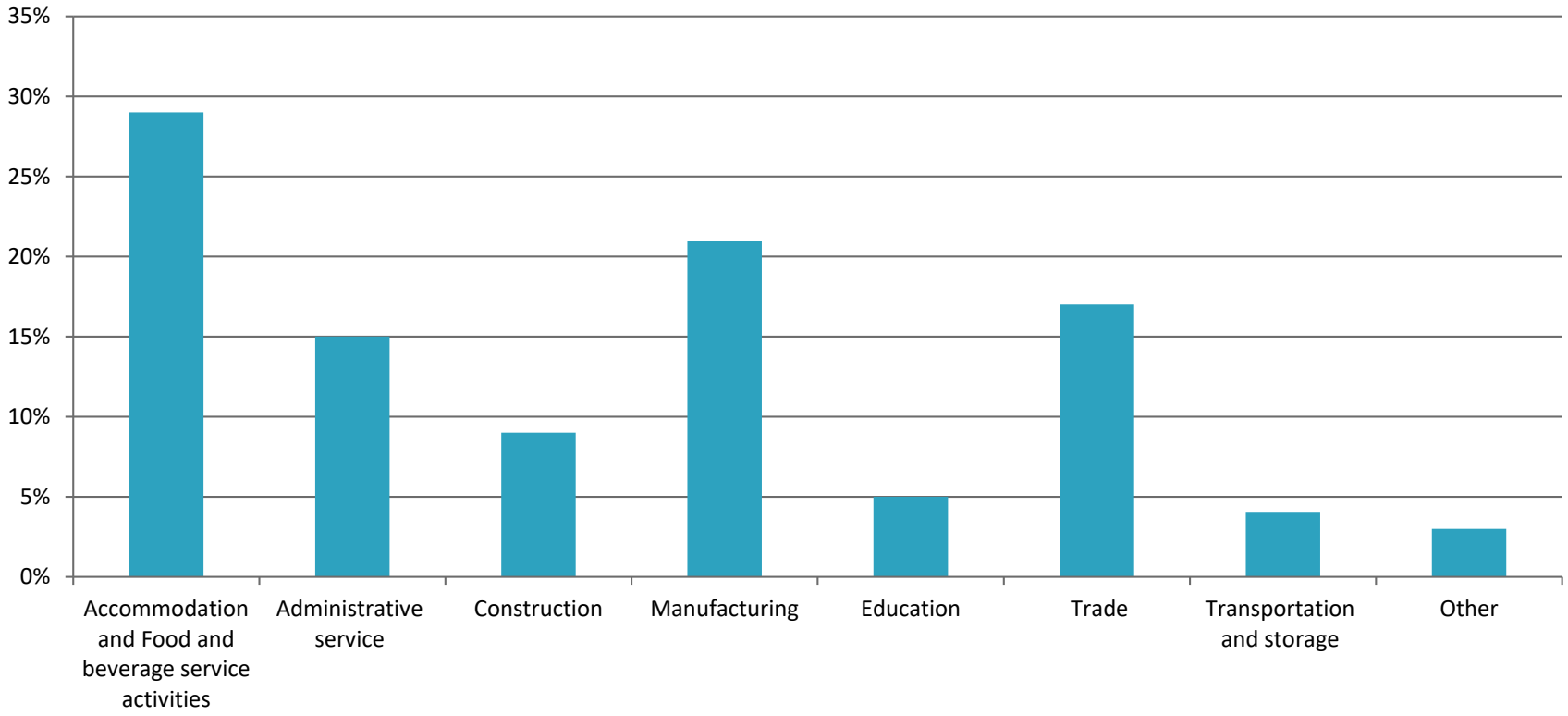
Methodology

- This study employs a mixed-methods approach to investigate the impact of emerging technologies on the digital transformation of Small and Medium Enterprises (SMEs). The research methodology encompasses both qualitative and quantitative methods to provide a comprehensive understanding of the subject.
- A structured survey is designed and distributed to a representative sample of SME owners and managers across various industries.

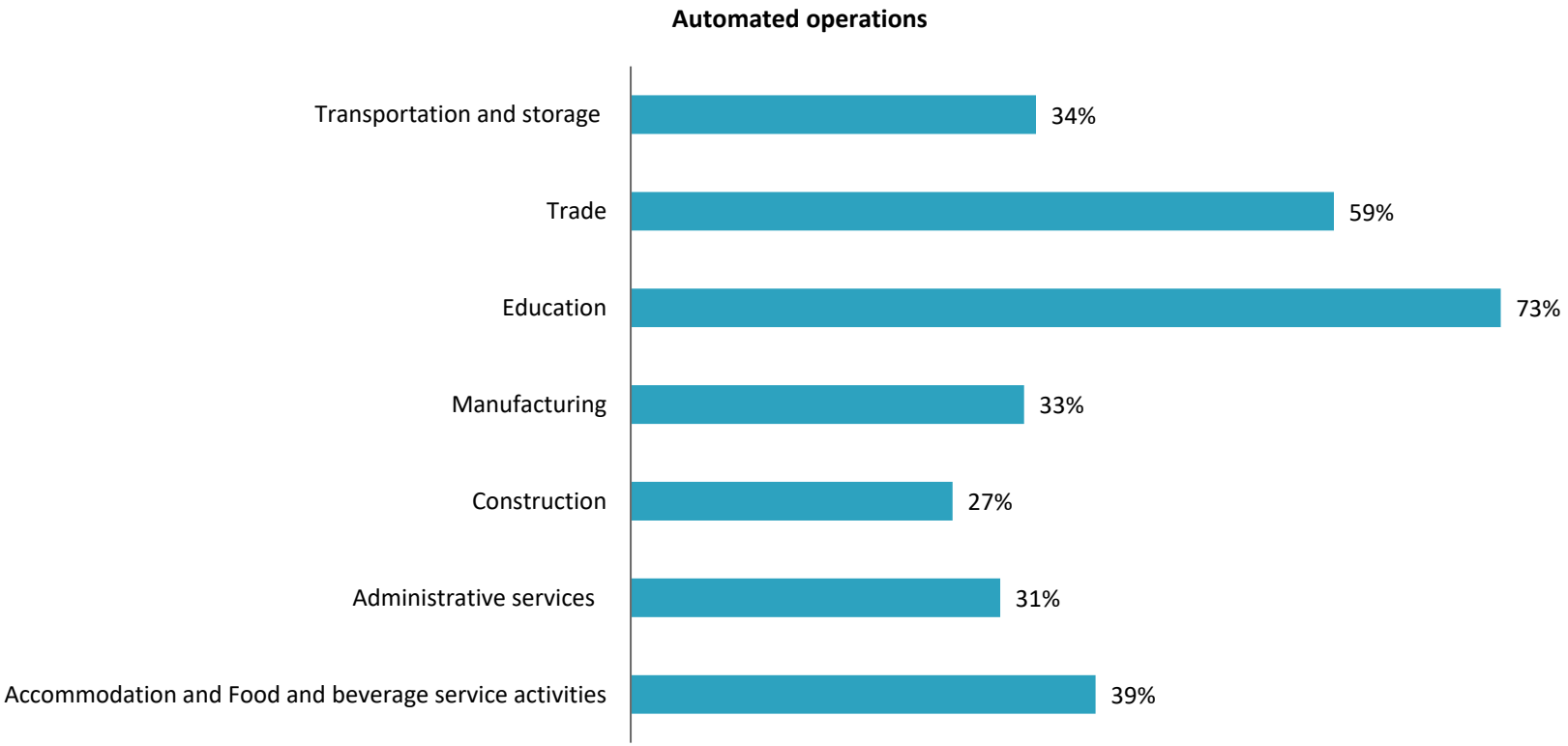
Methodology

- The survey included 372 companies from different sectors throughout the Republic of North Macedonia. The survey is distributed via email and online survey platforms to a diverse group of SMEs across different sectors, including manufacturing, retail, healthcare, services, ect.

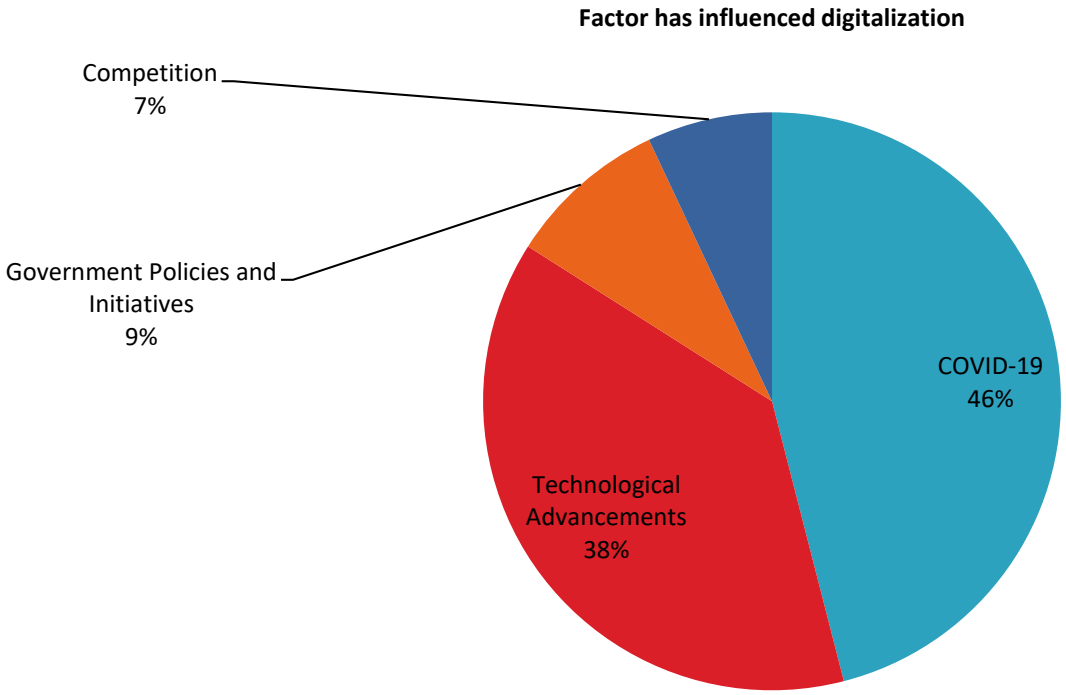
Results


35%
30%
25%
20%
15%
10%
5%
0%
Accommodation and Food and beverage service activities
Administrative service
Construction
Manufacturing
Education
Trade
Transportation and storage
Other

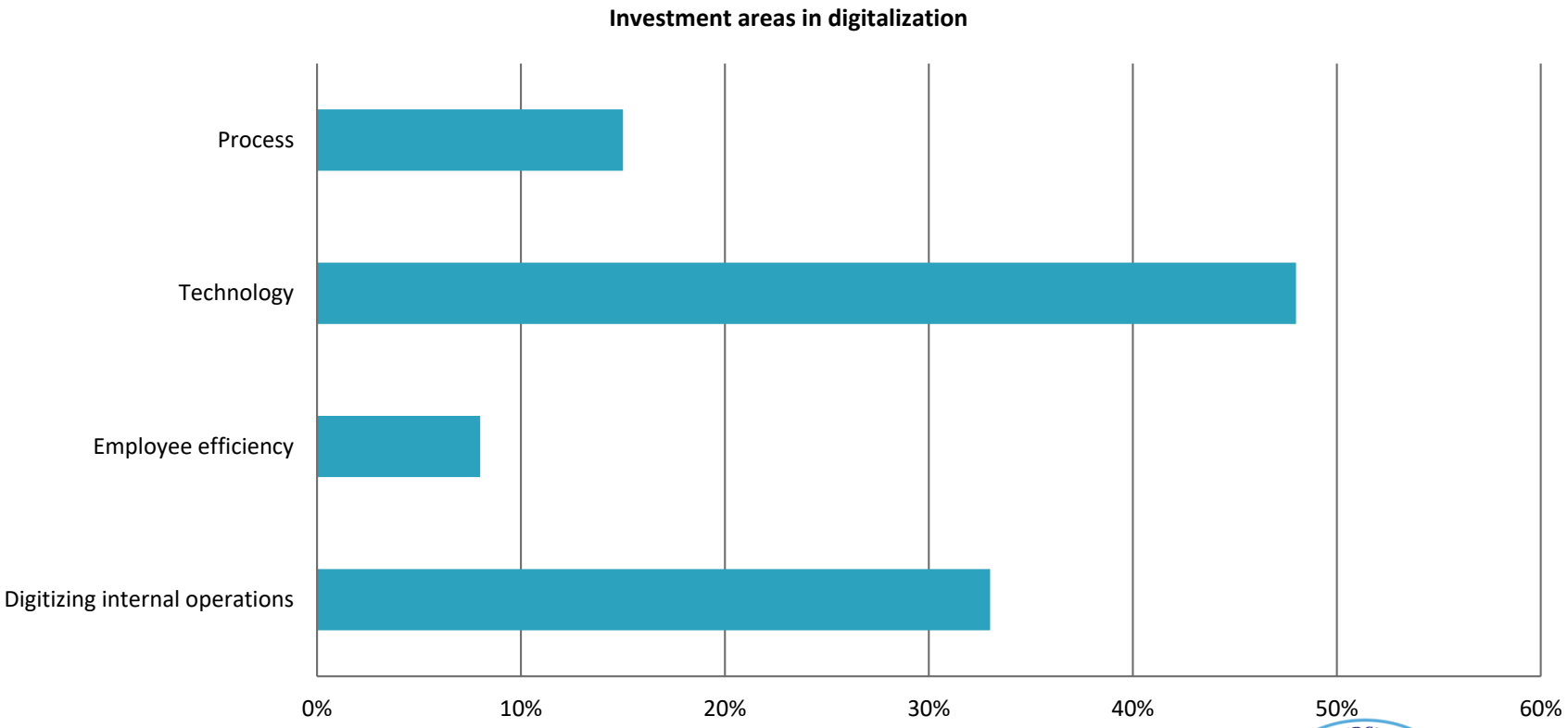
Results


Automated operations
Transportation and storage
34%
Trade
59%
Education
73%
Manufacturing
33%
Construction
27%
Administrative services
31%
Accommodation and Food and beverage service activities
39%

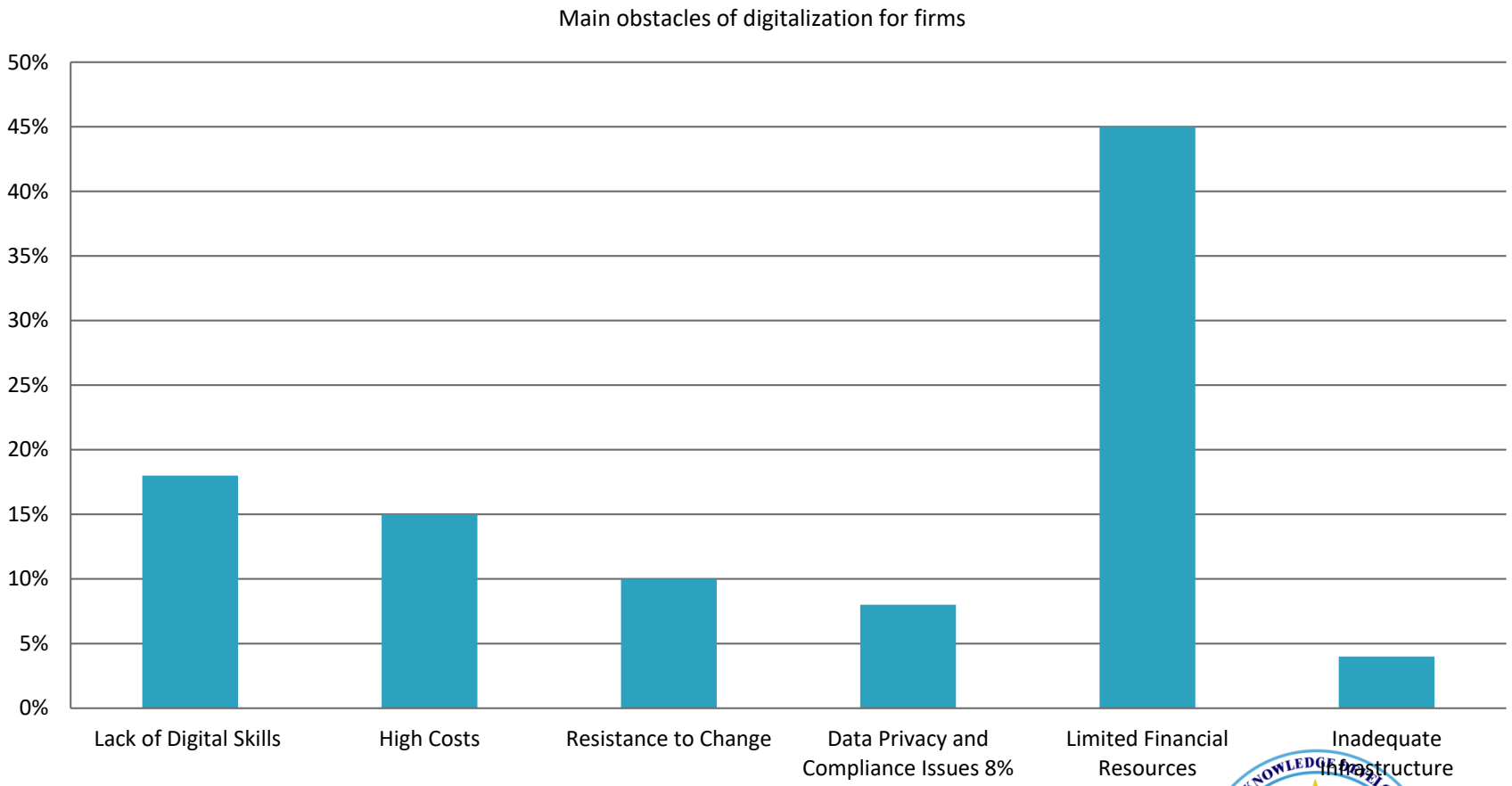
Results


Factor has influenced digitalization
Competition
7%
Government Policies and
Initiatives
9%
COVID-19
46%
Technological
Advancements
38%

Results


Investment areas in digitalization
Process
Technology
Employee efficiency
Digitizing internal operations
0%
10%
20%
30%
40%
50%
60%

Results


Main obstacles of digitalization for firms
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Lack of Digital Skills
High Costs
Resistance to Change
Data Privacy and Compliance Issues 8%
Limited Financial Resources
Inadequate Infrastructure

Results

Level of possession	Very poor	Poor	Average	Good	Excellent
Automation equipment to replace labor	15%	27%	37%	16%	5%
Information system of B&B	16%	36%	39%	7%	2%
Website	6%	14%	36%	32%	12%
Internet (e-commerce) as a sales channel	4%	27%	37%	24%	8%
Digital markting tools	10%	35%	44%	9%	2%
Website as a selling channel	2%	21%	40%	33%	4%
Social media account and social media advertising	7%	18%	39%	35%	1%
Tools for customers' data analysis	11%	29%	40%	12%	8%
Online auction	16%	33%	35%	15%	1%
Mobile/digital payment	48%	29%	16%	7%	0%

Discussion

- According to the findings from the conducted survey, the high representation of companies is from the Accommodation and Food and beverage service activities sector.
- The education sector has a high adoption rate of 73%, reflecting significant digital transformation efforts, possibly accelerated by the COVID-19 pandemic and the shift to online learning, followed by trade at 59%
- The pandemic has been a significant driver of digital transformation.

Discussion

- The largest focus of investing by SMEs area is technology, comprising 48% of the investment or impact. This includes adopting new and emerging technologies such as cloud computing, AI, machine learning, IoT, and cyber security solutions. The high percentage indicates a strong emphasis on leveraging advanced technologies to drive digital transformation and stay competitive.

Implications

- The impact of emerging technologies on digital transformation in small and medium enterprises (SMEs) is profound and multifaceted, offering both significant opportunities and challenges.
- The adoption of these technologies is not without its challenges. SMEs often face resource constraints, lack of technical expertise, and resistance to change, which can hinder their digital transformation efforts
- The integration of emerging technologies into SME operations is no longer a choice but a necessity for maintaining relevance and achieving business success in the digital age.

Recommendations

- **Prioritize Technology Needs**: SMEs should focus on adopting technologies aligned with their specific goals, starting small and scaling as benefits are realized.
- **Invest in Skills Development**: Training employees in digital skills ensures that they can effectively implement and use new technologies.
- **Strengthen Cybersecurity**: Implement robust security measures to protect data as digital systems are integrated into business operations.
- **Seek Financial Support**: Leverage government grants, loans, and incentives designed to support SME digital transformation.
- **Build Strategic Partnerships**: Collaborate with technology providers and industry experts to gain access to resources and expertise.

Suggestions for Further Research

- Future researchers could conduct similar analyzes for all businesses in North Macedonia and also to design a more in-depth questionnaire. This can help provide more accurate and comprehensive results for such research.

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