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## OPPORTUNITY AND CHALLENGES FOR SMES IN LAST-MILE DELIVERY

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**Key words:** *last-mile delivery, SME, logistics, innovative solutions, COVID-19, pandemic, regulatory support.*

**Abstract:** *The paper discusses the rapid expansion of urban areas, driven by a growing population. It has led to increased demands from citizens for more personalized services. In response to these evolving needs, the retail sector continually adapts to meet the changed requirements of clients. This dynamic environment has resulted in an increasingly complex last-mile delivery process, necessitating new methods and innovative solutions. Small and Medium Enterprises (SMEs) are emerging as key players in the logistics chain, benefiting from the transformative potential of last-mile delivery and unlocking new avenues for growth. The article commences by examining the current state of logistics and forecasting future demands before delving into a detailed analysis of the strategic significance of SMEs and the modernization of last-mile delivery. In the subsequent section, the authors explore modern e-commerce and the opportunities for SMEs to engage in global markets and logistics networks. It also examines the challenges that SMEs encounter in this domain. The authors' in-depth examination of security, financing, innovative solutions, and regulations as pivotal factors influencing SMEs' participation in last-mile delivery is particularly notable.*

### INTRODUCTION

The world is rapidly changing, with a surge in e-commerce during the COVID-19 pandemic due to restrictions on physical stores. E-commerce emerged as a solution for lockdowns, but customers now demand efficient same-day delivery, presenting challenges for companies of all sizes. Legal regulations and environmental concerns, particularly CO<sub>2</sub> emissions, are further shaping the evolving landscape of e-commerce. [1, p. VIII]

Different modes of transportation have varying environmental impacts, making it essential for advanced societies to prioritize environmentally friendly transport policies.

While the European Commission provides guidelines on traffic development, Central and Eastern European countries still give less emphasis to environmental protection in their transport policies. [2]

Last-mile delivery, the final step in the logistics chain, focuses on efficient and cost-effective delivery of goods to customers' doors. The last-mile delivery challenges include environmental factors and shipment volumes, with urban deliveries comprising a significant portion of the total travel distance [3]<sup>1</sup>.

Electric vehicles are optimal for last-mile delivery in urban areas to mitigate air pollution. However, the electricity generation from fossil fuels may limit the environmental benefits. While internal combustion engines could be more fuel-efficient than thermal power plants, the context of electricity generation is critical in determining the environmental impact of electric vehicles. [4]

Modern last-mile delivery has revolutionized supply chain operations by involving many stakeholders beyond carriers. Public actors, advocacy groups, residents, and retail activities play crucial but often conflicting roles in shaping the last-mile delivery dynamics. [5]

**The Importance of Small and Medium Enterprises**

Micro, small, and medium-sized enterprises (SMEs) are recognized as key drivers of economic growth, contributing significantly to employment, production, and innovation skills, particularly in developing countries. Despite potential failures, the entrepreneurial spirit among SME owners remains strong, driving them to establish new ventures. [6] [7]

European SMEs represent 99.8% of non-financial businesses, employing around 100 million people and contributing significantly to GDP. Innovation activities are undertaken by 50% of SMEs. (Eurostat, 2020; EC, 2020)

The Transport and Storage sector is a vital and fast-growing industry in Europe. For example, in Latvia and Lithuania it represents 9.5% and 12.3%, respectively. [8] In EU countries, Transportation and storage services employed approximately 8% of the workforce in 2020, with SMEs in ground transport employing around 70% of workers in the sector (see Fig. 1). The aviation transport sector, on the other hand, employs the fewest SMEs at approximately 15%. (Eurostat, 2020)

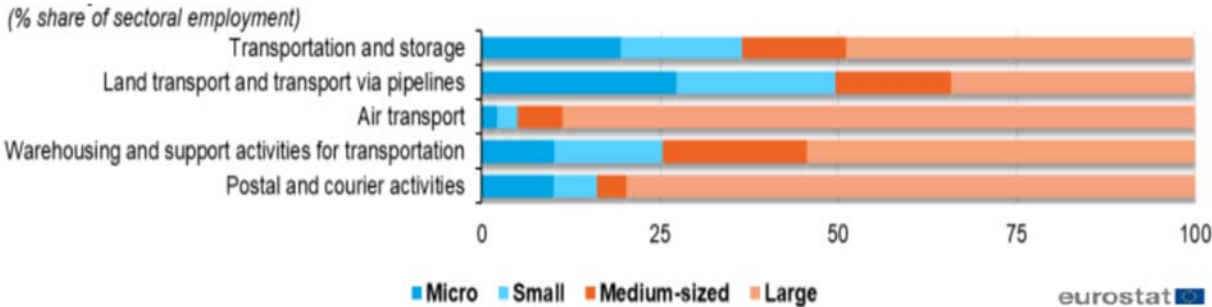


Fig. 1. Sectoral analysis of employment by enterprise size class [6]

Challenges for SMEs in the air transport sector include intense market competition, high start-up and operational costs, limited expansion opportunities, and difficulties in accessing financing. These factors contribute to the relatively low presence of SMEs in this industry.

Let us explore how the added value dynamics of small and large companies vary by country.

<sup>1</sup> Mileage traveled by ship or plane is not considered here.

Factors such as company size, industry type, geographic location, innovation, technology, and competitive landscape impact the value-creation dynamics of companies. Generally, large companies tend to have higher added value than small and medium-sized enterprises (SMEs) due to their substantial resources (human, financial, material). That enables them to innovate, introduce advanced technologies, and enhance product/service quality. Large companies also have access to top specialists and experts, facilitating faster and more efficient business growth.

However, in some industries, small enterprises have the potential to surpass large corporations in generating value. As examples, we can mention IT and the high-tech manufacturing sector. It is essential to recognize that success is not solely determined by added value but also by effective management strategies and the ability to adapt to market changes and customer demands.

OECD data from 2023 highlights the significance of analyzing 2020. In four of eight countries studied, SMEs surpassed large businesses in added value, indicating a noteworthy trend likely influenced by the COVID-19 pandemic. This is how the pandemic has contributed to this change:

1. Surging demand for goods and services compelled many SMEs to ramp up production and diversify offerings to meet market needs.
2. SMEs embraced technological advancements during the pandemic, leveraging tools like process automation, AI, and production robotization to enhance efficiency and quality.
3. Rapid adaptation to economic shifts and changing consumer demands enabled SMEs to thrive during uncertain times by adjusting production, pricing, and marketing strategies promptly.
4. The presence of skilled personnel within SMEs facilitated the quick adoption of new technologies and agile responses to market changes, ensuring competitive offerings and customer satisfaction.

During the COVID-19 pandemic, SMEs saw higher added value due to increased product demand, advanced technology, innovation, flexibility, skilled workforce, and other factors. In all studied countries, except Hungary, SMEs' employment share has increased steadily. A noteworthy observation is that in Europe, SMEs contribute 50% of GDP. Additionally, the turnover of SMEs in transportation and storage outweighs that of large enterprises in all analyzed countries. SMEs often hold significant market share, enabling them to generate substantial profits. On the other hand, large companies encounter profit constraints because of market competition. SMEs excel in flexibility, innovation, and lower market share, allowing them to provide superior products and services at competitive prices.

### **The Importance of Last-Mile Logistics**

In 1950, about 750 million, or 30% of the world's population lived in cities. By 2018, 54.8% of the global population (about 7.66 billion) resided in urban areas. Earth currently supporting over 8 billion inhabitants. Projections indicate that the urban population will reach 68% by 2050. This growth poses challenges in providing essential services like water, food, clean air, energy, waste management, and more [9]. Crucial for meeting these needs and significantly impacting citizens' quality of life, last-mile delivery is predominantly handled by SMEs. Assessing service quality requires defining criteria and quantitative indicators since subjective factors can be measured through surveys, while objective factors like fuel consumption and CO<sub>2</sub> emissions pose challenges [10]. Reliable last-mile services, essential for daily life, become noticeable only when malfunctioning, as exemplified by disrupted waste collection services. The increasing demand for immediate goods delivery, particularly in the food sector, emphasizes the necessity for courier and express services to meet customer expectations.

## **LAST-MILE DELIVERY AND SMEs**

Small and medium-sized enterprises (SMEs) play a crucial role in production and logistics chains. They can engage in e-commerce and last-mile delivery by offering delivery services for their products and serving as last-mile warehousing and delivery providers for other businesses. While participating in global production and supply chains offers numerous advantages, it also presents obstacles that must be addressed.

### **SME Opportunities in Global Supply Chains**

When small and medium-sized enterprises (SMEs) engage in global production chains, they unlock numerous opportunities, including:

1. *Expanded market access:* Access to diverse international markets leads to a broader customer base and increased demand.
2. *Enhanced competitiveness:* Collaboration with multinational corporations aids in adopting best practices, technology, and knowledge to bolster competitiveness.
3. *Technology transfer and innovation:* Exposure to advanced technologies and innovation processes fosters productivity and innovation.
4. *Networking and collaboration:* Engagement in global chains cultivates partnerships, access to resources, and collaboration with industry stakeholders.
5. *Learning and capacity building:* Exposure to international standards and best practices enhances operational efficiency and product quality.
6. *Growth and scalability potential:* Integration into global chains enables SMEs to scale up operations, expand reach, and boost profitability.

Yuhua and Baihaki [11] outline the following benefits of SMEs engaging in the global production chain (GPC):

1. *Enhanced technical capacity:* Participation in GPCs enables SMEs to adopt new production methods and knowledge from MNCs, improving their operational skills. Training with partner companies accelerates adherence to business standards and is essential for sustained growth and advancement.
2. *Supplier advantage:* Being a supplier to MNCs and part of the GPC boosts demand for SME products and services, offering various advantages as expansion into diverse markets helps mitigate business risks, particularly during economic downturns.
3. *Enhanced credibility and access to resources:* Collaborating with leading firms enhances SME prestige, attracting investment, talent, and financial support. This access empowers SMEs to invest in higher value-added ventures and infrastructure upgrades.
4. *Internationalization and indirect exports:* GPC involvement facilitates international exposure, aiding SMEs in meeting global standards and adapting to market demands swiftly.

Primarily located in urban settings, SMEs can leverage their locations by utilizing their facilities as micro-hubs for efficient last-mile deliveries. This strategic positioning allows them to offer shorter distribution channels, benefiting local populations. To maximize these opportunities, SMEs must assess their capabilities, identify suitable avenues, and develop effective strategies for seamless integration into global production chains.

### **SME Challenges in Global Production Chains**

Small and medium-sized enterprises (SMEs) face a plethora of challenges in last-mile delivery operations, alongside the advantages they derive from this crucial stage of the supply chain. These obstacles range from the intricacies of cost management, efficient route planning, and meeting heightened customer expectations to infrastructural limitations, labor

shortages, fleet management issues, technology integration barriers, and the complex demands of reverse logistics. Moreover, considerations for sustainability, regulatory adherence, and the utilization of big data for strategic insights further amplify the complexities SMEs encounter as they navigate the competitive landscape of the delivery industry [12].

### **Security**

High shipment insurance costs can significantly impact SMEs in last-mile delivery by imposing a financial burden, reducing their competitive position, increasing shipping costs, elevating financial risk, and necessitating careful business planning. The challenges associated with insuring shipments in the last-mile delivery sector are crucial for SMEs, emphasizing the importance of assessing insurance needs, negotiating with insurers, and striking a balance between protection, financial viability, and market competitiveness.

### **Funding**

The growth of the company undoubtedly depends on the managers and their knowledge. SME managers are mostly less trained than managers of large companies. Due to the inability to choose the most appropriate technology and software with their knowledge, they often do not have a clear picture of the company's needs, so they underestimate the necessary financial resources. That later creates difficulties in the work of SMEs. Due to low productivity, insufficient utilization of equipment, and lack of technology improvement, SMEs are often insufficiently competitive. Most SMEs are mainly users of technology, not creators of technology. One of the reasons for these events is insufficient financial resources. Empirical research by Baragwiha Frederick [13] showed that surveyed companies agreed that financing constraints limited their ability to increase their business activities in many other areas, including marketing, R&D, and technology. External financing is often an obstacle to growth.

For many SMEs and entrepreneurs, borrowing from banks is the most common source of external financing. To meet needs, they rely heavily on traditional bank financing. However, it is a big challenge for new, innovative, and fast-growing companies with a high risk/return profile [14].

Most small businesses will never be able to raise enough funds from banks because they do not have good credit potential. Bank credit restrictions have become the "new normal" for SMEs and entrepreneurs, forcing them to look for ways to expand the range of available financial instruments.

Alternative forms of debt provide a distinct approach to SME financing, setting them apart from traditional lending methods and involving investors in the capital market stepping in to provide funds. That can be done through various means, both direct and indirect.

Direct tools refer to options that allow SMEs to raise funds directly from investors in the capital market. Examples of direct tools include corporate bonds, which involve issuing debt securities to investors seeking investment opportunities. By utilizing corporate bonds, SMEs can tap into the pool of available capital without relying solely on traditional bank loans.

In contrast, indirect tools encompass mechanisms like securitized debt and covered bonds. In these cases, SMEs still rely on bank loans. However, these loans are made possible by the activities of banking institutions in the capital market. Securitized debt involves bundling individual debts into a tradable financial instrument, allowing SMEs to have additional capital. Covered bonds involve securing the borrowed funds through a portfolio of assets, enhancing the creditworthiness of the SME. (Frederick, 2013; Cusmano, 2015)

The potential alternatives to conventional debt financing options include asset-based finance, alternative debt, hybrid instruments, and equity instruments. Cusmano's findings in

2015 underscore the opportunity for small and medium enterprises (SMEs) to adopt these financial instruments. By leveraging alternative debt, SMEs can access diverse funding sources beyond traditional bank loans, enhancing flexibility and reducing reliance on conventional banking channels. However, SMEs must grasp the distinct implications and prerequisites of each alternative debt form, as well as the regulatory frameworks guiding them.

SMEs face more acute capital shortfalls when seeking to accelerate debt repayment or undergoing ownership transitions. Governments responding to the challenges of the COVID-19 pandemic emphasized mechanisms enabling firms to amplify their indebtedness, inadvertently leading many SMEs into excessive debt burdens.

**Innovative Solutions**

Smart cities recognize the need for new last-mile delivery solutions. Everything indicates that SMEs will be expected to play a major role in the implementation of new solutions. Innovative solutions like smart lockers and drone deliveries can be facilitated by SMEs offering their spaces as micro-hubs and pickup points. Figures 2 and 3 show such examples.



Fig. 2. An example of a pickup point in Portugal



Fig. 3. An example of a drone pickup point [15]

Additionally, leveraging robotic technology and networked SME stores can optimize delivery processes, benefiting both merchants and customers. These and other forward-thinking solutions are explored in depth by Cekerevac, Bogavac, and Radovanovic [16]

**Regulatory**

The state plays a vital role in regulating last-mile delivery and must provide essential support for SMEs to adopt green practices. Legislation should address ambiguities related to innovative solutions, encompassing definitions, work licenses, and insurance [17].

Hoffmann and Prause [18] elaborate on potential solutions for issues concerning accidents involving delivery robots and drones, as well as data protection challenges.

Cities are crucial in ensuring smooth last-mile delivery, with a focus on total quality management (see [10]) and stakeholder involvement. City administrations should carefully plan the implementation of TQM, defining key actors and evaluating the success of activities. It is essential to involve stakeholders for a comprehensive understanding of city authorities' work [10]. Efforts are needed to draft legislation to regulate the use of delivery robots effectively, considering technical challenges and potential security risks.

## CONCLUSIONS

Last-mile delivery is a complex and dynamic issue with no universal solution. Managers aim to find optimal solutions through a case-by-case approach, often relying on drivers' expertise over artificial intelligence. SMEs have significant potential in global supply chains but face challenges such as financing, regulatory uncertainty, and operational risks. While technology plays a crucial role in last-mile delivery, the human aspect must not be overlooked. The mass adoption of robots and drones faces regulatory hurdles, highlighting the need for a legal framework that prioritizes the well-being of delivery workers.

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