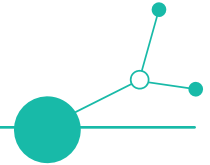


SHORT FOOD SUPPLY CHAINS CHARACTERISTICS AND NEEDS IN SLOVENIA

Short report summary





Food4CE

Disclaimer

The views and opinions expressed in this document are solely those of the author(s) and do not necessarily reflect the views of the European Union or Interreg Central Europe. The European Union and the Managing Authority shall not be held liable for any errors or omissions in the content of this document.

While every effort has been made to ensure the accuracy of the information contained in this document, the authors and any other participant in the Food4CE consortium make no warranty of any kind, express or implied, including but not limited to the warranties of merchantability and fitness for a particular purpose.

The Food4CE consortium and its members, including their officers, employees, and agents, shall not be held responsible or liable in negligence or otherwise for any inaccuracies or omissions in this document. Furthermore, the Food4CE consortium and its members shall not be liable for any direct, indirect, or consequential loss or damage arising from the use of or reliance on any information or advice contained in this document.

AUTHORING, REVISION & QA INFORMATION

Deliverable Contributors		
Type of author	Name and surname	Organisation (short name as in AF)
Main author	Metka Dernovšek	UM
Contributor	Maršenka Marksel	UM
Contributor	Danijela Kocuvan	RRAPM

Template v2.0

Copyright message

©Food4CE Consortium. The content of this document is the original work of the Food4CE Consortium, unless otherwise indicated. Proper citation and/or quotation have been used to acknowledge any previously published material and the work of others. Reproduction of this deliverable is permitted as long as the source is properly acknowledged.



Table of contents

1. EXECUTIVE SUMMARY	3
2. SHORT FOOD SUPPLY CHAINS (SFSC) CHARACTERISTICS AND NEEDS IN SLOVENIA.....	4
2.1. RESEARCH OVERVIEW	4
2.2. AN ANALYSIS OF SFSC LOGISTICS CHARACTERISTICS AND NEEDS.....	5
2.2.1. ORDER PROCESSING.....	5
2.2.2. WAREHOUSING	6
2.2.3. TRANSPORT PROCESSING.....	7
2.2.4. DIGITAL COMPETENCE	9
2.2.5. BUSINESS PRACTICES.....	9
2.2.6. CHALLENGING AREAS FOR AFNS	10
2.3. CHALLENGES AND OPPORTUNITIES FOR SFSC	10

www.interreg-central.eu/food4ce/





1. Executive summary

This report identifies the primary challenges Alternative Food Networks (AFNs) face in their daily operations and highlights potential opportunities for improvement. AFNs in Slovenia operate through diverse business models, ranging from direct producers to advanced networks with online sales platforms and dedicated logistics. Each model deals with unique distribution and logistical complexities, shaped by the size of their customer base, purchase frequency, buying habits and the variety of local products available. Seasonal orders add another layer of complexity to warehouse management, equipment requirements, and fleet logistics.

Despite the mentioned challenges, there are also notable opportunities for growth. By clearly defining target groups and developing precise marketing strategies, AFNs can establish trust with regular customers, leading to long-term cooperation and steady income. Collaboration among local producers, intermediaries, and logistics providers can optimize transportation resources and improve operational efficiency. Embracing digital tools for order processing, warehouse management, and supply chain visibility can spur growth and market expansion. While AFNs in Slovenia are advancing towards sustainability and efficiency, there remains significant potential for further development, particularly in adopting advanced logistics and technological solutions.

About the Food4CE project:

Food4CE is a European project funded by the INTERREG Central Europe Programme, aimed at supporting Alternative Food Networks (AFNs) in their efforts to create sustainable and resilient food supply systems. Within Food4CE 5 local and 1 Transnational Innovation Hub (IH) will be established and will focus on advancing AFNs logistics efficiency through the development of innovative tools and solutions.

Two innovative tools, the Knowledge Transfer Platform and the Matchmaking Platform will be developed within the project. The former is intended for sharing logistics best practices and solutions, while the latter is intended for creating new B2B logistics solutions and services. The aim is to facilitate knowledge transfer and exchange between different regions and actors, and to create a unique mutual support network for AFNs in Central Europe.

Food4CE will also provide jointly developed regional action plans for each participating region and transnational (CE) policy guidelines for AFN support. The project aims to establish a sustainable and lasting AFN support mechanism, which will continue working even after the project end.

By establishing local and transnational Innovation Hubs and developing innovative tools and solutions, Food4CE project aims to facilitate knowledge exchange and cooperation between different actors and regions, leading to a sustainable and lasting AFN support mechanism.



2. Short Food Supply Chains (SFSC) characteristics and needs in Slovenia

Short food supply chains (SFSC) in Slovenia are characterized by **direct relationships between producers and consumers, focusing on local and sustainable food production**. This highlights the need for efficient logistics solutions to support these relationships, manage small-scale production, and facilitate local distribution networks. The primary goal of SFSC is to re-establish a closer connection between food producers and consumers, enhancing transparency, food quality, and economic viability for local producers.

This research explores the logistics needs of SFSC in Slovenia, aiming to understand how efficient and innovative logistics solutions can support direct relationships, handle small-scale production, and ensure effective local distribution. The study emphasizes the importance of logistics in maintaining producer-consumer connections, improving transparency, food quality, and the economic viability of local producers.

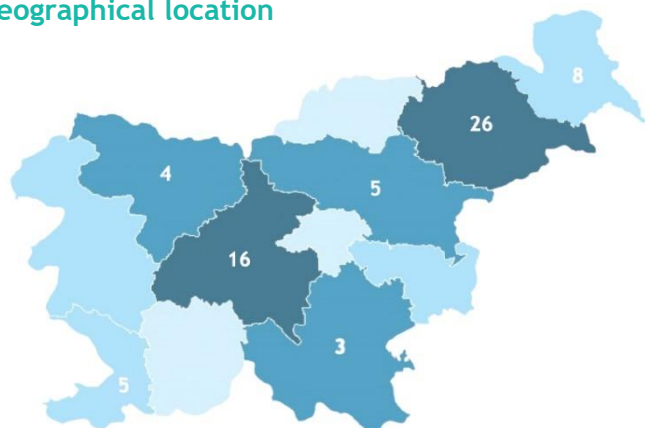
Key logistics requirements for SFSC in Slovenia include **handling small-scale production and distribution, facilitating direct producer-consumer relationships, ensuring efficient and sustainable transportation methods, and supporting local distribution networks**. Solutions might involve localized storage and distribution centres, efficient routing and delivery systems, and collaboration among producers to optimize transportation resources. Additionally, logistics systems should prioritize traceability and food safety to meet consumer demands for transparency and quality assurance.

Efficient and sustainable logistics solutions for SFSC in Slovenia should therefore foster direct relationships, handle small-scale operations, and promote sustainability while minimizing environmental impact. This requires innovative approaches and collaborations among local producers, intermediaries, and logistics providers, along with IT solutions to enhance logistics operations.

2.1. Research overview

In the research, 67 AFNs were identified throughout Slovenia. Most of the identified AFNs are located in Podravska region, followed by Osrednjeslovenska and Pomurska region. In terms of complexity level 24% were categorized as **direct**, 27% as **intermediary**, and 49% as **advanced**.

Geographical location



Level of complexity



Most of the AFNs are classified as Small and Medium-sized Enterprises (SMEs), with the majority (71%) having from 1 to 199 employees. Associations, representing 15% of the AFNs, typically have smaller teams of 1 to 19 employees, while cooperatives, constituting 14% of identified AFNs, employ between 1 and 149 individuals.



To assess the logistics characteristics and needs of SFSC, a detailed examination of transport, distribution, packaging, and quality control aspects was taken in consideration. These factors were crucial in understanding the operational challenges and efficiencies within the SFSCs. The analysis included extensive desktop research, complemented by surveys that provided deeper insights into each of these areas. This comprehensive approach allowed a better understanding of the logistical frameworks underpinning these chains and their specific requirements for optimal operation. The results will be presented in the continuation.

2.2. An analysis of SFSC logistics characteristics and needs

The researched sample consisted of 16 advanced AFNs, who participated in the survey. Only AFNs with advanced level of complexity have been chosen for the survey as it is most likely that their practices could serve as potential cases of best practices. Note: advanced level of complexity means that AFNs have their online platforms for selling their products and offer delivery with its own vehicles and/or through logistics operators.

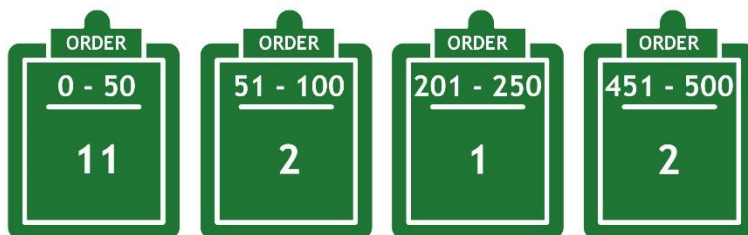
2.2.1. Order processing

In Slovenia, SFSCs exhibit a diverse approach to order processing, integrating both conventional and digital communication channels. Among the AFNs, the preferred method of taking orders is by **telephone**, accounting for the **81%** share, followed by **e-mail with 75%**, underscoring its importance for formal communication and record-keeping. **Online platforms** and websites also play a significant role with **63%**, indicating a substantial inclination towards digital services.

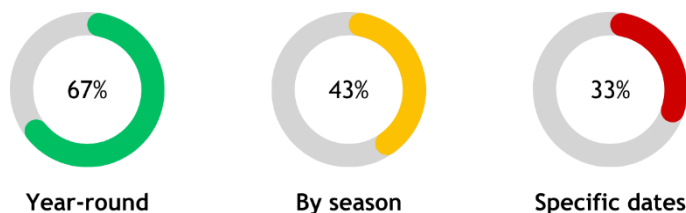


The integration of traditional and digital communication channels for order processing is closely tied to the frequency of order receipts. The majority of these AFNs, **87%**, receive **orders on a daily basis**, indicative of a high and ongoing demand for their products or services. A smaller segment, **7%**, **receives orders a few times a week**, and another **7% several times a month**, reflecting a more sporadic ordering pattern. This variation might be catered to by the less utilized but still present channels like instant messaging and social media, offering flexibility for less frequent interactions. Overall, these findings indicate **a consistent and regular demand pattern**, with daily orders being the norm for most AFNs in Slovenia, supported by a balance of electronic, telephonic, and digital communication methods.

Analysis of order frequencies of AFNs show an average of **107 orders per week** however, the variability is high, indicating an extensive range in quantity and volumes. **A minimum of 2 orders and a maximum of 500 orders per week** was reported, underscoring the diverse scale of operations within these networks. This wide range of order volumes suggests that while most respondents typically handle a relatively low number of orders, there exists a notable disparity. A small proportion of these respondents are likely catering to a higher demand or operating on a larger scale compared to the majority. This data points to **a dynamic and heterogeneous landscape in Slovenian AFNs, where different companies experience distinct demand patterns and adapt their order processing methods accordingly.**

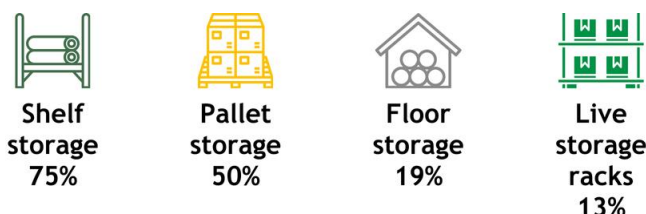


Furthermore, an average product availability within AFNs shows that **year-round availability** is quite high (**67%**), suggesting that a majority of AFNs offer a consistent supply of products throughout the year. **Seasonal availability**, however, is noted by **43%** of AFNs, with a higher variability, reflecting greater diversity in how products are affected by seasonality. This could imply that a notable portion of AFNs adjusts their offerings based on seasonal changes. **Products available only on specific dates or periods** represent the lowest average share at **33%**, indicating that only a selected few AFNs focus on products tied to specific times or events. Given the majority of products being available year-round suggests that surveyed AFNs primarily focus on products that are not time-sensitive, while others may be highly specialized, focusing on products available only at certain times of the year or for specific occasions. This reflects the diverse strategies of AFNs in catering to different market needs and consumer preferences.



2.2.2. Warehousing

When analysing the warehousing strategies of businesses, it is crucial to understand the types of storage solutions they employ. **Shelf storage** is the most prevalent option, chosen by 75% of AFNs, likely due to its adaptability and efficiency in a variety of storage scenarios. **Pallet storage**, used by 50%, caters to the necessity of storing bulkier or heavier items. In contrast, **floor storage**, preferred by only 19%, might be a less popular option due to space constraints or the specific nature of the stored items. Less commonly used are **live storage racks** and other unspecified methods, each at 13%, suggesting these are specialized solutions for specific storage and picking needs. This array of storage options underscores the varied approaches businesses take to optimize their warehousing and storage strategies.



The range of warehouse or storage equipment solutions utilized by AFNs highlights the diversity in their warehousing operations. Carts emerge as the most used equipment (56%), indicating a prevalence of manual transportation of goods within warehouses. Additionally, forklifts are used by 44% of respondents, implying that handling heavier items or pallets is a regular task in many warehouses. 44% of respondents report not using any specific warehouse or storage equipment. This could point to either a dependence on manual



handling methods, the nature of the goods being such that they do not require specialized equipment or due to economic efficiency.

Insights into storage facilities of AFNs shows that **cold storage** emerges as the most prevalent option, with 52% of respondents indicating they have such facilities. This high usage suggests a considerable demand for products that require refrigeration, likely due to the perishable nature of the goods handled or specific market needs. In contrast, **conventional storage** without specialized temperature control is available in 37% of the surveyed AFNs. This indicates that a substantial portion of goods handled by these networks do not necessitate refrigerated conditions. On the other hand, **frozen storage** is comparatively less common, utilized by only 11% of respondents, indicating its role in catering to more niche storage requirements.



37%



52%



11%

AFNs typically utilize either conventional or cold storage—or a combination of both—highlighting a tailored approach to storage that aligns with the specific needs of their products and the demands of their market segments. Overall, the data underscores **a strong focus on temperature-controlled storage solutions** within these networks, **particularly cold storage**. This trend reflects the **critical need for maintaining the quality and integrity of perishable goods** in the supply chain of AFNs.

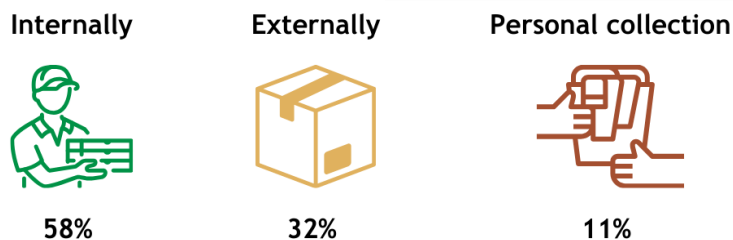
2.2.3. Transport processing

In exploring the logistics and supply chain management of AFNs, a key component to examine is their approach to transport processing. This aspect is crucial as it **directly impacts the efficiency and effectiveness of product distribution, influencing both operational success and customer satisfaction**. The data related to transport processing provides valuable insights into how these networks manage the movement of goods from point of origin to the final consumer.

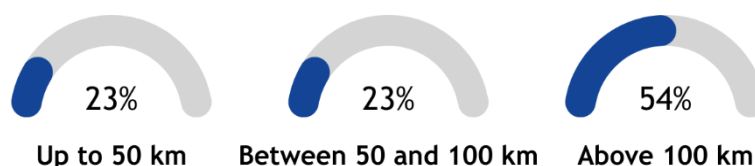
81% of surveyed AFNs incorporate transport processes as a part of their service offerings, underscoring the significance of logistics and the movement of goods as integral components of their operations, such as shipping, delivery, and distribution services. 19% do not provide transport processes, which might suggest either a focus on various aspects of the supply chain or a reliance on outsourcing this segment of their operations.

Based on the delivery management practices a considerable majority **manage deliveries internally (58%)**, utilizing their own resources, personnel, and infrastructure. This approach indicates a preference for maintaining control over the delivery process, likely motivated by the benefits of direct oversight on quality and customer service. On the other hand, **32% of AFNs employ external third-party providers** for delivery, showing that nearly half of the AFNs tap into specialized logistics services, possibly for reasons related to cost-effectiveness or the need for scalability in their operations. **Personal collection** by customers is a less common practice, reported by only **11% of AFNs**, which could be attributed to the specific nature of the goods or customer preferences.

Overall, the data suggests **a trend towards self-management in delivery processes among AFNs**, with a substantial **reliance on specialized third-party services also** playing an important role.

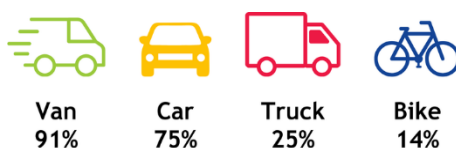


In terms of the catchment area an analysis shows interesting trends in their customer reach. 23% of AFNs cater customers within a 50 km radius, indicating a focus on local or nearby markets. However, 54% of the respondents have a catchment area extending beyond 100 km, suggesting that a substantial segment also operates on a larger regional scale. This distribution suggests a significant trend where a notable portion of these businesses or respondents is **not limited to local markets but extends their operations to cover larger regional areas**, possibly to reach a wider customer base or to meet diverse market demands.



Analysed data on the weekly number of deliveries by surveyed AFNs reveals key insights into their operational scale. The average number of deliveries is approximately 107, with a high variability, extending from a minimum of 1 - 50 to a maximum of 400 - 500 deliveries. The wide range of delivery frequencies indicates a fragmented market with diverse logistical challenges and capacities. This heterogeneity suggests the presence of both highly efficient, large-scale operators and smaller, perhaps more localized, delivery services. Understanding these dynamics is crucial for addressing the logistical and operational needs across the spectrum of delivery services, potentially informing targeted support and interventions to enhance efficiency and coverage in the delivery sector.

The predominant mode of transportation for deliveries among AFNs are vans with 91% of respondents (10 out of 11) utilizing them. Cars are also a popular choice, used by 75% of respondents (6 out of 8). However, trucks and bikes are employed less frequently, with only 25% (2 out of 8) using trucks and 14% (1 out of 7) opting for bikes. AFNs usually employ a combination of delivery methods, either being vans and cars or vans and trucks, depending on the volume of sales and the product sensitivity.



The dominance of vans and cars highlights a general preference for flexibility and adaptability to varied delivery demands. The limited use of trucks and bikes underscores the specific operational contexts in which these vehicles are most beneficial. This distribution of transportation preferences indicates the diverse strategies AFNs adopt to meet their delivery commitments.

Additionally, the fact that 67% of respondents ensure cold chain continuity emphasizes the importance of temperature control for certain products, while the remaining 33% not adhering to cold chain requirements could indicate a focus on non-perishable goods. This scenario underscores the adaptability of AFNs to diverse product ranges and customer expectations, presenting both challenges and opportunities in optimizing delivery models to enhance efficiency and customer satisfaction.



2.2.4. Digital competence

Examining the adoption rates of various IT tools and technologies within AFNs, it becomes evident that **IT solutions for ordering processes** are the most frequently employed. **36%** of AFNs report using these solutions always, which suggests a significant reliance on IT for order management, a critical component of supply chain management. In contrast, **warehouse management IT tools** are among the least utilized, with the lowest average rating of 2, and the majority of respondents (**54%**) **never** using them. This finding may indicate potential areas for improvement or a lack of awareness regarding the benefits of these IT tools in warehouse management. **IT tools for transportation management and demand planning and forecasting** receive similar average scores, **indicating moderate usage**.

While IT solutions for the ordering process are widely adopted within AFNs, there is a varied level of engagement with other IT tools and technologies. Notably, **warehouse management and reverse logistics technologies appear to be underutilized, indicating potential opportunities for increased efficiency and optimization in these areas**. Additionally, the data implies that, although there is some interest in advanced supply chain visibility and food passporting technologies, these areas have not yet reached prominent levels of implementation.

2.2.5. Business practices



Transparency and traceability. Transparency and traceability measures employed within AFNs reveal a varied adoption of different practices among organizations. While QR codes and GPS tracking are less frequently used, measures such as **supplier documentation and audits, collaboration with trusted partners, and open communication with customers** are more commonly implemented, as indicated by their high average scores, emphasizing their critical role in ensuring **transparency**. Additionally, there is a significant effort towards **consumer education** and **third-party certifications**, reflecting an awareness of the importance of transparency and the value placed on **consumer trust** and **product authenticity**. The variability in the adoption of these measures suggests that while some organizations are leading in transparency practices, there is still room for wider adoption and standardization across the industry.



Business strategies. AFNs primarily rely on **local sourcing** and **direct procurement** as their key strategies to bridge the gap between production and consumption, signalling a strong inclination towards localized supply chains. While measures such as farmer's markets, online platforms, and educational events are also employed, they do so with less frequency and consistency. The limited use of urban agriculture may be attributed to logistical challenges or suitability issues within specific geographic or urban contexts. The sector as a whole may benefit from a more consistent application of these measures, especially as consumer demand for transparency and local produce grows. The disparity in the use of these strategies also points to opportunities for innovation and development in areas like urban agriculture and online platforms, which could further enhance the efficiency and reach of SFSCs.



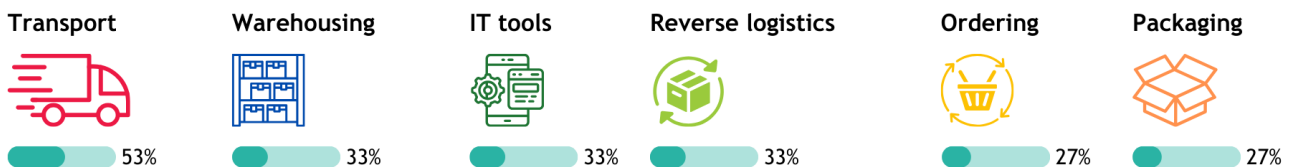
Product quality. **A significant emphasis on supplier quality, proper storage, and clear expiration labelling can be highlighted as essential strategies for maintaining product quality and freshness.** Additionally, just-in-time production and consistent employee training, coupled with regular quality checks and traceability systems are widely adopted. The incorporation of consumer feedback further underscores the importance placed on customer satisfaction in quality assurance processes.



Business cooperation. A slight majority has expressed their willingness to cooperate with other stakeholders within SFSC. However, a substantial minority, constituting 44%, are not interested in such collaborations. This indicates that **while there is a positive inclination towards collaboration, a significant portion of the surveyed AFNs remains hesitant or unwilling to engage in cooperative ventures. These findings highlight the need for further investigation into the barriers to collaboration and the potential incentives that could effectively encourage a more collaborative approach within the food supply chain.**

2.2.6. Challenging areas for AFNs

AFNs have identified **transportation** as the most challenging for their businesses, with 53% of the respondents identifying it as the most challenging. This indicates that more than half of the respondents' face challenges with transportation. **Warehouse management** and **reverse logistics processes** are also significant areas of concern, each indicated by 33% of respondents. **Orders** and **packaging** processes are seen as less problematic in 27% of cases, while **IT tools** share a similar level of concern with warehouse and reverse logistics, identified by 33% of respondents. The data reflects a common challenge in the operational aspects of business logistics, particularly in transportation, suggesting that improvements in this area could lead to significant benefits for the respondents. The relatively uniform distribution of concerns across other areas suggests that there are multiple facets of business operations that could be streamlined or enhanced.



Overall, **transportation and cold chain management have been identified as the most challenging aspects of SFSC logistics chain.** These areas are critical because they directly influence the quality and safety of food products. The analysis suggests that **improvements in these sectors are essential for the effective functioning of AFNs.** Additionally, the **need for better technological integration and infrastructure development** is emphasized as crucial for enhancing logistical capabilities. This would not only help in addressing current logistical shortcomings but also ensure the **long-term sustainability and growth of AFNs in Slovenia.**

2.3. Challenges and opportunities for SFSC

Alternative Food Networks (AFNs) in Slovenia are faced with numerous challenges, many of which are linked to their business models. An important initial step is to determine whether AFNs are directly engaged in producing and supplying food products to consumers, selling to intermediaries and distributing through logistics operators, or if they are more advanced AFNs with their own online platforms for sales and deliveries using their vehicles and/or logistics operators. Regardless, they all confront the complexities of **product distribution** and **logistics**. The organization of these activities is influenced by the number of customers and their purchase frequency, as well as the variety and quantity of local providers' offerings.

Customer buying habits vary and often change, which presents a significant challenge for AFNs. Understanding the volume of orders and the product range, especially for products requiring refrigeration, is crucial. Season-specific orders impact decisions on warehouse management, equipment, and fleet management. Although many orders are placed via phone, email, and online shops, there is considerable potential to better utilize various communication channels and IT solutions.

Many AFNs provide delivery within a 50 km radius, and some extend over 100 km into other regions, introducing new challenges in distribution and **transport organization**. They must also navigate various



legislative requirements to ensure compliance with food safety and quality standards, facing stiff competition from larger, established food and logistics providers.

Opportunities for AFNs include making more defined decisions about target groups and developing **more precise marketing strategies**. Establishing **trust** with regular, steady customers to understand their product needs and quantities is vital, leading to long-term cooperation, such as multiannual food supply contracts with public institutions. This secures a regular income for AFNs, aiding in the planning of procurement, sales, storage, and logistics.

Significant opportunities also exist in **collaboration**. By creating cooperative networks among local producers, intermediaries, and logistics service providers, AFNs can **optimize transportation resources** and **improve operational efficiency**. Adopting digital tools and IT solutions for order processing, warehouse management, and supply chain visibility can spur growth and market expansion. Moreover, focusing on sustainability initiatives, like eco-friendly packaging and sustainable farming practices, meets the growing consumer demand for sustainable products, opening new market opportunities.

These insights illustrate a dynamic environment where logistical challenges and competitive pressures coexist with significant opportunities for collaborative growth, technological innovation, and a focus on sustainability in the AFN sector in Slovenia.

From a policy perspective, the findings suggest a need for tailored support mechanisms that consider the unique challenges and opportunities within the SFSC sector. Developing policies that foster growth, innovation, and sustainability in these networks could significantly contribute to a more robust and resilient food system in Slovenia.

Overall, the findings suggest that while SFSCs in Slovenia are progressing towards sustainability and efficiency, there remains extensive opportunity for further development, particularly in adopting advanced logistics and technological solutions to address the identified challenges and opportunities.