



Module title	Module 4 – Logistics of the short supply chain
Developed by	Péter Bajor, Csilla Fejes
Introduction (<i>a brief summary of what participants will learn</i>)	Students on the ‘Logistics of Short Supply Chains’ module will learn about the basic principles and practical solutions that help to operate short supply chains between local producers and consumers more efficiently. During the module, they will learn how to plan freight transport, how to select the ideal distribution channels, and how to improve their logistics processes to reduce costs and promote sustainability. The module covers how small-scale producers can deliver their own products to customers in the right quality, quantity, at the right time and to the right place. Through practical examples, students will learn about the importance of the 9M principle, tools for identifying logistics problems, and methods for developing effective solutions, such as fishbone diagrams and Pareto analysis. In addition, they will learn how to reduce losses in the supply chain and how to manage risks. The aim of the module is to enable participants to organise supply chains more effectively and continuously improve logistics processes, thereby contributing to increasing the competitiveness of local producers and strengthening sustainable farming.
Duration	4 hours
Learning objectives (<i>1–2 sentences, referring to the Competence Framework</i>)	Mastering the application of analytical and development methods, recognising the impacts of logistical factors, striving to apply sustainable solutions, keeping cost-effectiveness in mind, consciously planning and developing logistical processes, and promoting effective communication with consumers
Module structure (chapter titles)	Chapter 1: Fundamentals of logistics processes: Efficiency and planning in line with the 9M principle Chapter 2: Methods for identifying logistics problems and challenges



	Chapter 3: Value stream analysis and reducing losses in logistics processes Chapter 4: Applying the logistics toolkit and the importance of logistics awareness in practice Chapter 4: The application of logistics tools and the importance of logistics awareness in practice Chapter 5: Logistics risks and their management in short supply chains
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Chapter title	1. Fundamentals of logistics processes: Efficiency and planning based on the 9M principle
Competencies to be developed <i>(selected from the Competency Framework)</i>	● Recognising the impact of logistics factors ● Embracing efficiency improvements ● Openness to new methods ● Responsible, sustainable thinking ● Developing analytical and evaluative skills
Core material	Short supply chains create a unique situation for us, as they allow us to build a direct relationship with our customers. This directness gives us the opportunity to better understand their needs and provide them with more personalised solutions. We do not merely offer a product or service, but create a kind of community of values in which customers choose not only the product, but us as well – our story, our values, and the attitude that our work embodies. However, this directness also entails greater responsibility. As there are few or no intermediaries between us and our customers, every interaction takes place directly through us. It is up to us to ensure quality, resolve any issues that arise, and constantly ensure that trust is maintained and strengthened. Furthermore, the short supply chain also means that it is not enough to focus solely on the production of the product or service . We must plan the sales processes, manage the logistics, and pay particular attention to customer relations. This versatility allows us to respond flexibly to changing demands, but at the same time places a greater burden on us,



	as we must take personal responsibility for the success of every single sub-process. To plan our logistics tasks carefully, we must first consider the logistics activities associated with our processes, which may include the following: Procurement: Imagine a bakery wants to bake a new type of bread. To make this happen, we need to source the right flour, yeast, or even special moulds. Procurement covers not only raw materials but everything needed to produce the product. Production logistics: In a winery, the harvest season dictates the entire year. Timing and monitoring of processes are crucial, as if the grapes remain on the vine for too long, their quality deteriorates. Production logistics ensure that every step takes place at the right time. Distribution: For a cheese maker, it is essential that their products reach the market or customers fresh and safely. During distribution, we plan the product's journey from the farm right to the customer. Customer service: Our customers are not just buying the product, but the story behind it too. If, for example, we sell artisanal honey, the product will be more valuable to customers if we tell them about the bee colonies and the natural environment where we work. Inventory management: An ice-cream parlour cannot afford to run out of ingredients in the summer, yet there is no need for large stocks in the winter. Inventory management helps to balance out seasonal demand. Storage: A herbal soap maker must ensure that products are stored in a dry and clean place until they reach customers. Improper storage can easily compromise quality.
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	Delivery: It is vital for a florist that freshly cut flowers arrive at the wedding venue on time. Delivery ensures that the product reaches its destination as quickly and safely as possible. Logistics IT: A courier service uses electronic systems to track parcels so it always knows exactly where they are. This helps with automation and increases customer satisfaction. Reverse logistics: When a drinks manufacturer collects empty bottles for refilling, this is a reverse logistics process. This reduces waste and contributes to sustainability. Packaging: An elegant wine label not only protects the bottle but also conveys quality and uniqueness. Packaging therefore serves not only to protect the product but also functions as a marketing tool. The aim of logistics is to ensure that products and services reach customers in the right quality, on time and cost-effectively. Understanding its principles helps us plan our costs and use our resources more efficiently. The 9M principle focuses on the nine most important ‘M’ factors of logistics processes, which ensure that the supply chain – that is, the chain of producers, suppliers, retailers and other stakeholders that moves products from the producer to the consumer – functions properly. The individual elements are closely interlinked, and efficient operation can only be achieved if all nine factors and their mutual interactions are taken into account during the planning process. M1: the right product, <i>For a beekeeper, it is essential that the customer receives the type of honey they have chosen, whilst packaging the honey in jars or other containers that ensure quality is preserved and can be transported safely (and, if possible, reused later)</i> In logistics, ‘material’ refers not only to the product being transported, but also to the associated packaging
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	materials, storage equipment and means of transport. Choosing the right material helps to minimise waste and reduce costs. M2: delivered to the right place, <i>Depending on the customer's requirements, the product can be handed over either by the customer collecting it from the producer (in which case the producer's delivery costs are lowest, as they do not have to handle the last-mile – and most expensive – delivery), but handover can also take place at a suitable distribution point (parcel locker, mobile shop, retail outlet, shared warehouse, market), or via home delivery. (This represents the greatest cost for the producer, but efficiency can be improved here too if producers form a cooperative and carry out delivery tasks on a round-trip basis using a shared transport vehicle).</i> Careful planning of distribution channels requires assessing consumer needs regarding product handover and collection, and developing solutions that are mutually beneficial for both the producer and the buyer. (The same type of product can even be sold through multiple channels!) M3: At the appropriate time, <i>Vending machines for the sale of fresh dairy products must be stocked in such a way that members of the target consumer group, such as shoppers returning home from work, can access the products conveniently and without waiting.</i> Consumers' sensitivity to time depends to a significant extent on household lifestyles and also exhibits product-specific characteristics (they may be willing to wait longer for a special, unique or long-lasting
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	product, but are sensitive if products intended to meet daily needs are not available at the right time). M4: of the right quality, <i>When a farmer delivers fresh vegetables to the market, it is important that the produce remains fresh and undamaged. If transport or storage is inadequate, quality deteriorates and the buyer becomes dissatisfied.</i> It is important that products reach consumers in the right quality. To this end, during harvest-related operations (harvesting, cleaning, sorting, grading, etc.), as well as during transport, storage and packaging, it must be ensured that the produce is not damaged and that the customer receives a product that meets their expectations. M5: in the right quantity, <i>A greengrocer must estimate in advance how much produce they will need on a market day. If they bring too little, they may lose customers; if too much, the produce will spoil. Whether collecting from a collection point or receiving home delivery, it is disappointing for the customer if they do not receive the quantity they requested.</i> To ensure that customers can obtain the quantity they require, it is important that products are available in the right quantities . Stock management tasks are linked to the appropriate timing of production, so early-season produce (before the season begins) can be sold at significantly lower prices; however, attention must also be paid to seasonal demand associated with weekends and public holidays, as well as consumer expectations regarding how the produce will be used (fresh consumption or preserving).
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	M6: at the right cost. <i>A farmer who delivers goods to multiple locations and sells through multiple channels can consolidate their deliveries and organise their route to use less fuel, thereby reducing transport costs.</i> Logistics processes must be organised so that costs remain as low as possible without compromising service quality. Making costs transparent, continuously monitoring cost components and reducing unnecessary expenditure are key for small-scale producers to be able to supply at competitive prices. M7: the right buyer/consumer <i>A local producer sells directly at village markets, thus reaching local residents directly, who prefer fresh, local produce. (It is not necessarily a question of competing with the range and low prices of supermarkets, but rather of identifying those target groups for whom the small-scale producer's offering is attractive).</i> <i>When selling at a collection point, it is not permissible for consignments to be mixed up.</i> To meet customer needs, individual expectations must be taken into account and fulfilled. A small-scale producer who maintains close personal contact with customers is better able to adapt to individual needs and can flexibly match the appropriate sales channel to those needs (during market sales, they can take pre-orders, which can even be fulfilled with home delivery). M8: equipped with the right information <i>If a farmer knows which products a particular customer has pre-ordered, they can prepare the goods in advance, attach the necessary information (this could be a barcode or QR code, or a printed Excel spreadsheet or handwritten list), and serve the customer more</i>
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quickly (This could be a basket or container labelled with the customer's name, or the information could be on a unique label).

Tracking the lifecycle of products (order taking, demand aggregation, production, harvesting, storage and transport, sales, consumer feedback) creates the opportunity to monitor consumer demand and forecast it more accurately, thereby enabling the appropriate timing and organisation of production and logistics processes. Information related to the product that is also available to consumers increases trust and strengthens customer loyalty.

M9: through the appropriate use of energy

Consolidating transport tasks is a more sustainable solution not only in terms of the time required for fulfilment but also in terms of energy consumption, compared to the transport of fragmented partial loads. Naturally, using an electric delivery vehicle powered by solar panels is more favourable than using a conventional van, but the use of electric vehicles alone represents only part of energy-conscious savings.

Energy awareness is part of sustainable management. When considering the energy requirements of logistics processes, we must simultaneously take into account the amount of energy used, the type of energy, and its environmental impact.

Tasks related to this section of the syllabus:

1. What does compliance mean? Applying the 9M principle of logistics using the example of a cheese-making farm

Work together to create a mind map whose branches collect the elements/characteristics related to the 9M logistics principle in the case of a cheese-making farm!



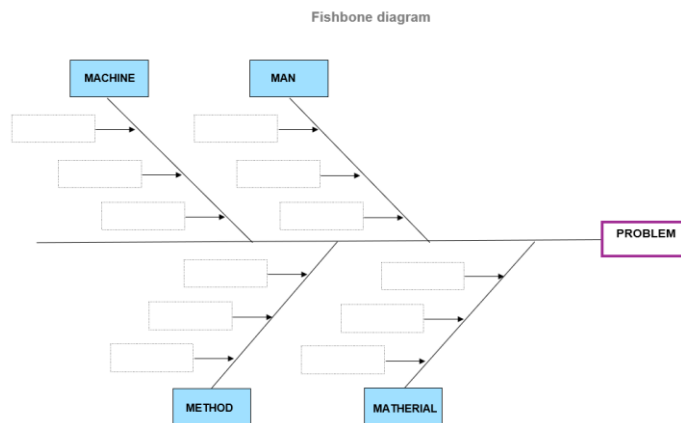
	Optional homework: How could the 9M be applied to your own logistics processes? 2. My channels Describe the sales channels you use and provide a brief explanation for each channel as to why you chose it! If you would like to try a new channel, please describe that as well.
Summary <i>The theoretical section should conclude with a summary, highlighting the most important points and emphasising the learning objectives (max. 2–3 sentences)</i>	This chapter demonstrates that the aim of logistics is to deliver products to consumers in the right quality, quantity, at the right time and in a cost-effective manner, for which the 9M principle provides guidance. Students will learn how to plan their logistics processes more effectively, how to reduce costs, and how to make their operations more sustainable. By applying these principles, they will be able to optimise supply chains and better meet consumer needs.
Sources (all sources used in the development of the training material must be cited, including both printed and online sources)	Mihály-Lelkes-Dósai (2019): Basic Logistics (https://oszkdk.oszk.hu/storage/00/03/17/35/dd/1/05_Mihaly_Zsolt_Dr_Lelkes_Zolt_n_D_sai_Tam_s_Logisztikai_alapismeretek.pdf) Benedek-Fertő (2015): Why do producers choose short supply chains? (https://unipub.lib.uni-corvinus.hu/2219/1/2015_06_580.pdf)

Chapter title	2. Methods for identifying logistics problems and challenges
Competencies to be developed (selected from the Competence Framework)	Ability to identify root causes Effective decision-making and prioritisation Effective use of resources Identifying opportunities for cost reduction Developing independent solutions Openness to using analytical tools
Core material	In short supply chains, we often encounter recurring problems, such as high transport costs, late deliveries or deteriorating product quality. The superficial causes of these



faults are easy to spot, but the real challenge lies in identifying the root causes of the problems. The fishbone diagram, or Ishikawa diagram, helps with this; it is a visual tool for organising possible root causes.

The diagram resembles a fish skeleton, where the spine and head represent the problem itself (e.g. late delivery), the side branches represent possible typical root cause groups (a detail of this is shown in the diagram: people, machines, methods, materials), and onto these side branches we can list the potential root causes identified for the current problem, such as human error, inadequate packaging or organisational faults.



The fishbone diagram works particularly well when problems are examined from multiple perspectives. To this end, the most common sources of error in '' are classified into seven main categories – these categories cover the areas where errors are most likely to occur, and by examining these factors (or those relevant to us) one by one, we can more easily identify the root cause of the problem and develop effective solutions to prevent or remedy them.

- Man – Human-induced non-conformities, sources of error (lack of attention, lack of information, motivation, etc.)
- Material – Non-conformities in materials, semi-finished or finished products, as a potential source of error



- Method – Non-conformity of the method used (inappropriate storage, cooling, etc.)
- Machine – A fault arising from the malfunction or non-conformity of a machine
- Measurement – Inadequacy of measurement, a fault goes unnoticed (measuring instrument error, etc.)
- Management – A fault arising from the inadequate management or organisation of processes
- Mother Nature – An error resulting from unexpected changes in natural conditions (unexpected hot or cold weather, precipitation, etc.).

For example, if we find that delivery costs are too high, a fishbone diagram can help identify the possible causes. In this case, the main categories in the analysis might include:

- **Method:** Transport routes (Unplanned routes, empty runs, incorrect geographical grouping of delivery addresses)
- **Machine:** Vehicle condition (lack of maintenance, high fuel consumption, ageing fleet)
- **Management:** Fuel prices (Rising market prices, No price comparison between different petrol stations)
- **Management:** Time management (Frequent, small-volume deliveries, sub-optimal delivery times, poor scheduling throughout the day)
- **Man (Human factors):** Non-conformities arising from human inattention or carelessness (Inadequate communication with customers or partners, inadequate problem-solving, lack of planning)

As can be seen, the aim of the method is not to identify at least one specific cause for every branch. Indeed, it may even happen that, during the analysis, a single cause of error proves to be applicable to several branches. The definition of fault groups serves much more to ensure that no important aspect is overlooked due to inattention during the analysis, and to help us avoid clinging to our first idea or the root causes we initially formulated, regarding them as the only possible ones.



The fishbone diagram is an important analytical tool because it helps us identify the real causes, not just the symptoms. By uncovering the root causes, we can find targeted solutions, such as by redesigning routes or rethinking delivery times. In this way, we not only improve our efficiency but can also significantly reduce our costs.

Pareto analysis (the 80/20 rule)

The Pareto principle, also known as **the 80/20 rule**, originates from the economist Vilfredo Pareto, who observed in the early 1900s that 80% of a city's wealth was owned by 20% of the population. It was later demonstrated in other fields that the majority of results or problems are caused by a small number of factors.

The essence of the principle is that, based on experience, the vast majority of results are attributable to a small number of factors, or conversely: the majority of problems are caused by a few key factors. Therefore, in most cases, we do not need to address every issue with equal effort, but should instead focus on the factors with the greatest impact.

Pareto analysis helps us set priorities so that we can focus on the most important problems or opportunities. For example, a jam maker might observe that 80% of their revenue comes from a few regular customers. By paying more attention to these customers—for instance, by offering them a loyalty discount—they can increase their revenue without having to target every occasional customer individually. (It may also be the case that 15 regular customers with larger orders account for 70%, and a further 150 smaller individual orders account for the remaining 30%. This does not contradict the principle; the 70-30 ratio still highlights the key area deserving attention, and we need not rigidly adhere to the 80-20 ratio).

Pareto analysis can also help in reducing expenditure. A cheese maker, for example, may find that 75% of their sales costs are accounted for by delivery (fuel 35%, driver's wages 20%) and packaging (20%), with the other cost categories each



representing only a few per cent. By reducing costs in these two key areas—for example, by consolidating delivery routes or introducing refillable packaging—significant savings can be achieved.

The Pareto principle can be applied in almost any area where problem-solving or improvement is needed. The examples below demonstrate the principle's usefulness in various situations:

- Time management: If we examine our daily tasks, we can easily see that a small proportion of tasks accounts for the majority of our daily output. It is therefore worth focusing on those activities that yield the greatest benefit and reducing time-wasting tasks.
- Quality control: A vegetable farmer may find that 80% of crop losses are caused by just a few recurring problems, such as pests or inadequate irrigation. If they find a solution to these problems, their overall crop yield could improve significantly.
- Complaints management: A producer selling at a local market may find that the majority of customer complaints relate to the same three issues: damaged packaging, late delivery and a lack of information. If they find solutions to these issues, customer satisfaction and the number of returning customers will increase.

So how do we go about the analysis?

1. Define the area under investigation!
2. Let's collect data!
3. Sort the data in descending order!
4. Let's create a chart!
5. Let's identify the most important factors!
6. Let's find solutions to the critical factors!

Pareto analysis helps **us identify the real problems** and draws attention to the factors that have the greatest impact. This allows us to save time, energy and money, whilst making our



	operations more efficient. As a small-scale producer, it is particularly important to recognise that not every minor issue needs to be resolved immediately – we can achieve significant results simply by addressing the root causes. Tasks related to this section of the course: Carry out a fishbone diagram analysis of the high number of customer complaints received by a producer offering a weekly vegetable box subscription, which relate to the quality of the products reaching the consumer! Optional homework: Carry out a fishbone diagram analysis for a problem of your own! Identify which of your activities you consider necessary to perform a Pareto analysis on!
Summary <i>The theoretical section should conclude with a summary, highlighting the most important points and emphasising the learning objectives (max. 2–3 sentences)</i>	This chapter presents the practical application of the fishbone diagram and Pareto analysis to identify and address the logistical problems faced by small-scale producers. Students will learn how to identify root causes and how to focus on the most impactful problems, thereby increasing their efficiency and reducing their costs. Analytical tools help them find targeted, practical solutions to the difficulties encountered in day-to-day farming.
Sources <i>(all sources used in the development of the training material must be cited, including both printed and online sources)</i>	Fehér (2022): Quality tools in the problem-solving process – The fishbone diagram, Magyar Minőség, pp. 12–21. (https://perepo-publikacio.uni-pannon.hu/id/eprint/1695/1/2022_06_MM_pp_12-21.pdf) https://www.kvalikon.hu/cikkek-tudastar/lean-szotar/pareto-diagram-abc-elemzes

Chapter title	3. Value stream analysis and reducing losses in logistics processes
Competencies to be developed <i>(selected from)</i>	• Ability to understand and analyse processes • Identifying and reducing losses



<i>the Competency Framework)</i>	● Effective use of resources ● Efficiency improvement through practical solutions ● Development of problem-solving and decision-making skills ● Developing independent improvement proposals ● Flexible adaptation to the changing economic situation ● Striving for more sustainable operations
Core material	Value stream mapping is a method that helps to identify and analyse which processes in the production of a given product or service create value for the customer, and which steps merely waste time, money or energy; moreover, these appear as costs on both our side and the consumer's side. The aim of the analysis is to identify and eliminate unnecessary activities whilst improving useful processes. In value stream mapping, we distinguish between two types of processes: ● Value-adding process: An activity for which the customer is willing to pay (e.g. harvesting, packaging). ● Non-value-adding process: An activity that adds nothing to the product but requires resources (e.g. waiting, unnecessary transport). Why is value stream mapping useful for small-scale producers? ● It makes processes more transparent: Value stream mapping helps you understand exactly which steps the product goes through to reach the customer, and where time or money is being wasted. ● It helps identify losses: The analysis reveals unnecessary steps, such as long transport routes, idle time, or excessive administration. ● It improves efficiency: By reducing processes that do not add value, more time and resources are left for activities that actually increase revenue.



Steps in value stream mapping:

1. Identify the process you wish to analyse, such as the delivery process or the steps involved in manufacturing a product.
2. List the steps in the process, going through the entire process from start to finish. For example:
 - Harvesting
 - Sorting
 - Packaging
 - Storage
 - Transport
 - Sales
3. Identify which steps create value: For example, harvesting and packaging create value, because the customer is willing to pay for them. Warehousing or long waiting times, on the other hand, do not create value for the customer.
4. Identify opportunities for improvement: Following the analysis, develop solutions to reduce or eliminate processes that do not create value.

The 7+1 wastes in logistics processes and how to manage them

The concept of the 7+1 losses refers to processes that cause unnecessary resource consumption, time wastage or increased costs without creating real value for us or our customers. These losses can frequently occur in the day-to-day operations of small-scale producers and often increase our expenses without us even noticing. If we consciously identify and manage them, we can achieve significant improvements in our operations. Let's see what these losses are, how they can manifest in farming, and what we can do about them!

1. Overproduction

This is one of the biggest losses, which occurs when we produce more goods than there is actual demand for. We



	have to store the surplus goods; they may spoil, or we may end up throwing them away. How does this manifest in everyday life? • When we grow more vegetables than we can sell. • When our forecasts are inaccurate and we overstock. What can we do about it? • Collect advance orders to get a more accurate picture of demand. • Let's use simple records to help plan production volumes. • Keep an eye on seasonal trends to avoid overproduction. • Arrange for preservation or processing, or find partners for surplus produce (catering, hospitality) 2. Stock losses Storing unnecessary stock can be costly and increases the risk of spoiled or unsold produce. How does this manifest in everyday life? • If we don't have adequate storage facilities and our products spoil quickly. • If we do not know exactly how much stock we have, and as a result, we do not sell it in time. What can we do about it? • Check our stock regularly and use a simple stock-taking system. • Try to avoid overstocking and opt for smaller, more frequent production cycles instead. • Use collection points or a pre-order system to sell our products more quickly and in a planned manner. 3. Losses arising from unnecessary transport¹
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¹ 'Last-mile delivery' refers to the final stage of the logistics process, when the product is transported from the warehouse or distribution centre to the customer. This is the most costly and time-consuming part of the supply chain, as it often involves individual deliveries, which increases transport costs, since we frequently have to travel long distances with small quantities of goods to get our products to every customer.



	Transport accounts for one of the largest portions of logistics costs. If we fail to plan ahead or ship small quantities too frequently, this results in unnecessary costs. How does this manifest in day-to-day operations? • When we deliver individual orders on routes with low load factors, involving many empty runs and frequent return journeys. • If we fail to organise a return journey and end up driving empty. What can we do about it? • Organise routes so that multiple orders are delivered on a single journey. • Organise group deliveries with other farmers, so that we can often ensure a meaningful delivery task on the return journey as well • Use collection points where customers can collect their orders in one place. 4. Losses resulting from unnecessary movement Movements that do not advance our work lead to a waste of time and energy. How does this manifest in everyday life? • When we cannot quickly find what we are looking for in the warehouse. • When tools or products are not stored properly on the farm. What can we do about it? • Organise tools and products logically so they are easy to access. • Use organised storage systems to minimise the time spent searching.
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Last-mile delivery places a burden not only on the economy but also on the environment. Individual deliveries require a lot of fuel, which increases carbon dioxide emissions. Furthermore, empty runs (when the delivery vehicle returns empty) further increase both costs and the environmental impact, as in such cases we are transporting ‘air’ rather than a useful load. Reducing the environmental impact is important not only because of the level of pollutant emissions, but also because customers are increasingly looking for environmentally conscious solutions. If we deliver our products in a more sustainable way, this can create a positive image of us in the eyes of customers, which can increase our customer base and customer loyalty.



- Automate processes where possible (e.g. use of forklifts or hand trucks).

5. Losses due to waiting

Waiting time is one of the most common types of waste, arising from process interruptions, delays or poor timing.

How does this manifest in everyday operations?

- When we cannot deliver products on time because there are not enough orders.
- When customers are unavailable at the time of delivery and we have to wait for them, while all other customers have to wait for us.

What can we do about it?

- Agree on precise delivery times with customers.
- Use a pre-order system so we can plan ahead.
- Organise the delivery schedule to avoid unnecessary waiting.

6. Losses due to defects and rejects

Defective products or rejects can cause significant losses, especially if we cannot sell them.

How does this manifest in everyday life?

- If our products are of poor quality and customers reject them.
- If products are not properly packaged and get damaged during transport.

What can we do about it?

- We should carry out quality checks during harvesting and packaging.
- Use suitable packaging materials to ensure our products arrive intact.
- Regularly collect feedback from our customers so that we can improve quality.

7. Losses due to over-processing

This loss occurs when we spend an unnecessary amount of energy and time on a task that adds no value.



	How does this manifest in everyday life? • When we overcomplicate packaging or administration. • When we carry out unnecessary steps that are not required to produce the final product. What can we do about it? • Simplify processes wherever possible. • Automate administrative tasks (e.g. pre-prepared records). • Identify which steps do not add value and eliminate them. 8. Neglected talent and development ideas Many processes are characterised by the ‘business as usual’ approach, and by our tendency to overlook ideas from colleagues, family members or customers regarding how to organise our processes more efficiently. How does this manifest itself in everyday life? • It is only after months or years have passed that we realise an idea that was once raised, or a further development of it, could have yielded significant benefits • We receive constant and recurring suggestions for improvement from those involved (we may not consider the proposed solution feasible or effective, but it would still be worth addressing the issue in question) • We’re no longer receiving applications from staff (many of them are leaving, or we can’t even get them to take on seasonal work) What can we do about it? • Let’s be open to suggestions for improvement • Organise an internal or open forum, and respond substantively to comments • Let’s initiate brainstorming sessions ourselves and reward the best ideas
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	Tasks related to the lesson content: Value stream analysis and losses: On the attached worksheet, you will see the elements of a value stream analysis for a family-run beekeeping business. Link the related elements, indicate the direction of the value, material, product and information flows between them, and list possible sources of loss for each process element! Optional task: Carry out a value stream analysis of your own processes !
Summary <i>The theoretical section should conclude with a summary, highlighting the most important points and emphasising the learning objectives (max. 2–3 sentences)</i>	This chapter presents methods for value stream analysis and managing the 7+1 wastes, which enable small-scale producers to identify which processes deliver real value to customers and which cause unnecessary costs or time wastage. Students will learn how to improve their logistics processes by reducing waste of time and resources, whilst increasing revenue and efficiency. By applying these analytical tools, they will be able to consciously manage sources of waste and develop more sustainable solutions.
Sources (all sources used in the development of the training material must be listed, including both paper-based and online sources)	Virág (2016): Lean Knowledge (https://oszkdk.oszk.hu/storage/00/01/58/91/dd/1/Lean_is_meretek.pdf)



Chapter title	4. Logistics risks and their management in short supply chains
Competencies to be developed <i>(selected from the Competency Framework)</i>	● Risk identification and analysis skills ● Development of proactive problem-solving skills ● Decision-making ability based on priorities ● Minimising unexpected costs and increasing efficiency ● Flexible adaptability to changing circumstances ● Ensuring sustainable operations through risk management methods
Background	Numerous risk factors may arise in our logistics processes, which could jeopardise the timely delivery of goods, product quality or the cost-effectiveness of operations. If left unmanaged, these risks can easily lead to lost revenue, customer dissatisfaction and business uncertainty – however, by applying risk management methods, most of these problems can be prevented or their impact mitigated. In short supply chains, products often go directly from the producer to the customer, so every step in the process is critical. Even a minor error or unexpected event can cause significant problems, particularly in the following areas: ● Delivery delays – Customers do not receive their products on time. ● Stock shortages – We are unable to fulfil orders, leading to customer dissatisfaction. ● Unexpected costs – For example, vehicle breakdowns or rising fuel prices. ● Customer communication issues – If customers are not informed of the delivery date, they may request a new delivery. Identifying and analysing risks in advance helps us prepare for potential problems and develop solutions that minimise their impact. One of the most effective methods for this is FMEA analysis. FMEA (Failure Mode and Effects Analysis) is a failure analysis method that helps to identify in advance the potential failures that may occur



in logistics processes, and determines their impact, severity and probability of occurrence.

The aim of FMEA is to:

- Identify potential faults in processes.
- Assess how these failures might affect our business operations.
- Prioritise risk management so that the most serious problems are addressed first.

Steps in the FMEA analysis

1. Identify the logistics processes²

2. Identify potential failures (failure modes). Consider what kinds of failures might occur in these processes. For example:

- Delivery delay – Due to poor route planning.
- Vehicle breakdown – Due to a lack of regular maintenance.
- Stock shortages – Due to inaccurate order forecasting.

3. Assess the severity, probability and detectability of errors

Factor	What does it assess?	Rating scale (1–10)
Severity (S)	How serious is the impact of the fault?	1 = Minimal, 10 = Very severe
Probability (P)	How often does the fault occur?	1 = Rare, 10 = Frequent
Detectability (D)	How easily can the fault be detected before it occurs?	1 = Easily detectable, 10 = Difficult to detect

4. Calculate the Risk Priority Number (RPN)

Calculating the RPN helps to prioritise the handling of faults. The RPN value is obtained by multiplying the severity, probability and detectability values:

$$\text{RPN} = \text{S} \times \text{O} \times \text{D}$$

The higher the RPN, the more urgent it is to address the fault in question.³



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² Harvesting / Packaging / Storage / Transport / Customer communication

³ Example of an FMEA analysis for small-scale producers

Failure Mode, Effect, S, O, D, RPN

Vehicle breakdown, Delay in delivery, 8, 6, 4, 192

Customer cannot be reached, Requires another delivery, 6, 7, 5, 210

Poor route selection, Higher fuel costs, 5, 5, 3, 75



	The benefits of FMEA analysis for small-scale producers • Helps anticipate problems – FMEA analysis enables us to identify risks before a fault occurs. • Prioritises risk management – Using the RPN, we can determine which problems need to be resolved most urgently. • Reduces costs and losses – If we prepare in advance for common problems, we face fewer unexpected costs. • Increases customer satisfaction – If deliveries are accurate and products arrive on time, this results in a positive customer experience. What can we do based on the FMEA analysis? • We can develop specific solutions to manage the highest-priority risks. For example: • Vehicle breakdown → Regular maintenance, provision of a spare vehicle. • Customer cannot be reached → Agreeing on an exact delivery time, sending advance notification. • Poor route choice → Use of route optimisation apps (Google Maps, Waze) Tasks related to this section of the syllabus: A small-scale producer of cream cheese and sandwich spreads is conducting an FMEA analysis to prepare as effectively as possible for the risks arising during market days with its perishable products. Help them evaluate the results of the table below and develop recommendations for managing the 3 most risky non-conformities!
Summary <i>The theoretical section should conclude with a summary, highlighting the most important points and emphasising the</i>	This chapter highlights the significance of risks arising in logistics processes and introduces the FMEA (Failure Mode and Effects Analysis) method, which helps small-scale producers identify and manage potential faults. Students will learn how to conduct a risk analysis, prioritise problems based on severity and probability, and then develop specific solutions. Through forecasting and preparation, they can significantly reduce losses, increase customer satisfaction, and ensure sustainable operations in short supply chains.



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LEARNING PARTNERSHIP
FOR SUSTAINABLE
SHORT FOOD SUPPLY

<i>learning objectives (max. 2–3 sentences)</i>	
Sources <i>(all sources used in the development of the training material must be cited, including both printed and online sources)</i>	TÜV Academy (2015): What is FMEA? (http://www.mibi.hu/doc/FMEA.pdf) Fehér (2022): Quality tools in the problem-solving process – The fishbone diagram, Magyar Minőség, pp. 12–21. (https://perepo-publikacio.uni-pannon.hu/id/eprint/1695/1/2022_06_MM_pp_12-21.pdf) https://www.kvalikon.hu/cikkek-tudastar/lean-szotar/pareto-diagram-abc-elemzes



Chapter title	Chapter 5: The application of logistics tools and the importance of logistics awareness in practice
Competencies to be developed <i>(selected from the Competence Framework)</i>	
Core material	Logistics has a direct impact on profitability, as every point in the supply chain – from production to sales – involves costs and risks . Short supply chains offer numerous logistical advantages to small-scale producers, but their operation requires appropriate awareness and planning. Serving local markets, direct customer relationships and lower transport costs all contribute to increased competitiveness, but this is only sustainable if we continuously improve our logistics processes. Identifying and managing logistics challenges is not a complicated task if we use simple tools and methods. Record-keeping, route planning, the use of pre-order systems and analytical tools (such as FMEA or Pareto analysis) all help to make our operations more transparent and efficient. Building partnerships is also key. Joint transport arrangements with other producers, setting up local collection points, or even sharing communal storage facilities can all reduce costs and increase the flexibility of logistics processes. For small-scale producers, logistics awareness can mean the difference between stable, sustainable operations and a constant struggle. If we plan ahead, measure our costs and continuously improve our processes, we can not only strengthen our business but also increase customer trust and satisfaction. The small-scale producer of the future is someone who can adapt to changing circumstances, anticipates potential risks, and focuses on solutions rather than problems. Conscious logistics planning is not merely a cost-cutting tool, but in the



	long term the key to competitiveness and sustainability in short supply chains. If we begin to consciously address our processes, we can identify where opportunities for improvement lie and start to consider exactly what improvements are or might be needed. It is important to understand that progress can be made simply by making our costs visible and consciously beginning to systematise and organise our processes. This helps us, as small-scale producers and entrepreneurs, to place our operations on a stronger footing. By understanding and analysing our processes, we can achieve the following benefits: ● Cost transparency and reduction ● More efficient time management ● Higher customer satisfaction ● Increased and predictable revenue ● Reduced environmental impact ● Risk reduction ● Increased competitiveness Easy-to-implement and easy-to-use methods and tools for process improvement: ● Paper-based or electronic records: It is not necessarily essential to use expensive software – if nothing else is available, even a simple notebook or Excel spreadsheet may suffice for tracking stock and delivery costs. The key is to record all costs and times accurately so that they can be retrieved and traced later. ● Organising group deliveries: We can collaborate with other farmers, for example by sharing a vehicle, which can significantly reduce delivery costs for both the participating parties and consumers. Such cooperation can also be organised via social media (e.g. Facebook groups), or we can opt for a more sophisticated software-based solution in collaboration with our
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	partners, such as Deliveo, which operates on a subscription basis. ● Simple route planning: Free tools such as Google Maps or Via Michelin help you plan optimal routes. Simply avoiding unnecessary detours and empty runs, or delivering at times when you are unlikely to encounter traffic obstructions or heavy traffic, can already help reduce costs. ● Collecting pre-orders: We can set up a simple pre-order system via telephone or online (such as Facebook Messenger), which helps us plan deliveries and stock levels more accurately, but we can also use cloud-based solutions, such as a free Google Drive document or Google Forms. If we have our own website, we can set up dedicated forms or separate pre-order pages there. ● Sharing local storage facilities: A storage room or cold store rented jointly with local farmers can provide suitable storage for products, which is particularly important for perishable goods. ● Sending a phone notification or an online tracking link before delivery: A simple yet effective method is to notify customers of the expected arrival time via phone or text message on the day of delivery, or to send them an online tracking link (e.g. https://www.locate2u.com/). This helps avoid unnecessary deliveries, saving time and fuel, and allows the customer to let us know in good time if they are unable to collect their goods on that day, or if they can only do so at a different location. ● Use of parcel lockers or collection points: We can set up collection points in local shops or other community venues. This allows customers to collect their products more flexibly, whilst we save time and money by not having to deliver every order individually to the customer's home.
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	Tasks related to this section: Select two logistics tools from those listed in the chapter that are easy to implement (e.g. inventory management system, route planning, pre-order system)! ● Explain how you would apply these in practice! ● What benefits would these tools bring to your operations?
Summary <i>The theoretical section should conclude with a summary, highlighting the most important points and emphasising the learning objectives (max. 2–3 sentences)</i>	This chapter highlights that the conscious planning and development of logistics processes plays a key role in ensuring the competitiveness and sustainable operation of small-scale producers. Students will learn about the practical tools they can use to reduce costs, increase efficiency and improve customer satisfaction. By applying pre-order systems, group delivery, route planning and record-keeping solutions, they will be able to make their operations more transparent and predictable.
Sources <i>(all sources used in the development of the training material must be listed, including both paper-based and online sources)</i>	