MODULE 1

plant power

Boosting Innovation for Food SMEs

Opportunities in Innovation for SMEs & the Power of Digitalisation and Innovative Technology

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01

Purpose and Objectives

Purpose

This module provides an introduction to current trends in innovation for SMEs, with a focus on leveraging digitalisation, technology, and innovation for growth and sustainability in the plant-based sector. The module is connected to real-world examples and uses accessible language to explain how SMEs can innovate their processes and products, increase efficiency, become more sustainable, and better respond to market demands.

Objectives

By the end of the module, learners will be able to:

- Explain key concepts related to innovation and digitalisation in SMEs.
- Identify main areas where SMEs can apply technology and innovation.
- Recognise the opportunities of digital tools such as e-commerce, automation, or blockchain for food traceability.
- Gain an overview of sustainable and smart technologies for processing and selling plant-based products.
- Connect theory with practice through case studies and interactive activities.

02

INNOVATION IN SMEs – BASICS AND IMPORTANCE

What are SMEs and why are they important?

Small and Medium-sized Enterprises (SMEs) are defined by the European Commission as businesses with fewer than 250 employees and an annual turnover not exceeding €50 million. They represent 99% of all enterprises in the EU, providing two-thirds of private sector jobs and contributing over half of Europe's GDP. In many regions, particularly rural and semi-rural areas, SMEs are the primary engines of employment, innovation, and local development.

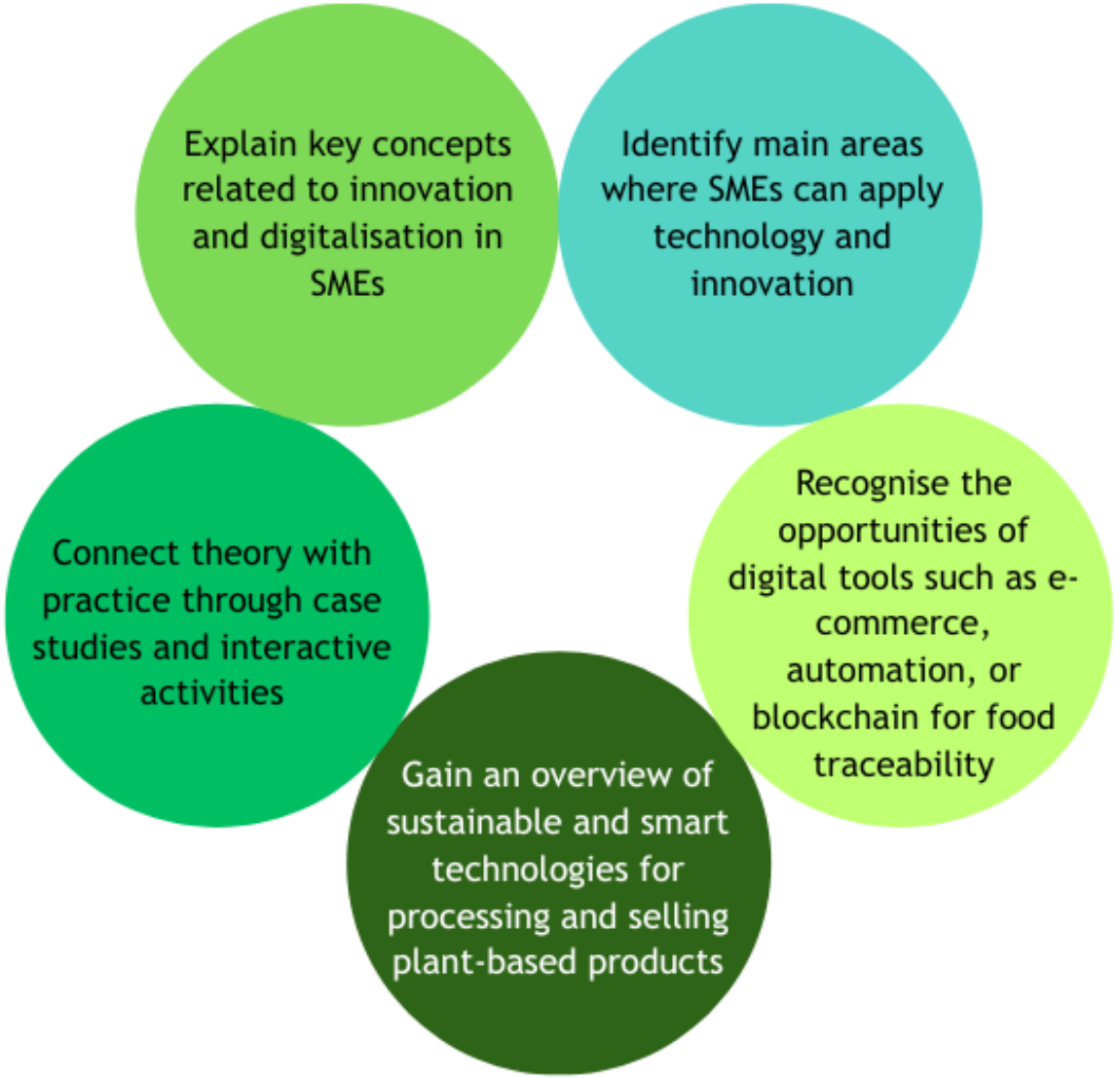
What are SMEs and why are they important?

In the food and agri-food sector, SMEs include a broad range of businesses, from family farms, food processors, and artisans to new-generation foodtech startups and local service providers. Their smaller scale, flexibility, and adaptability make them ideal platforms for testing and implementing innovative solutions, especially in response to rapidly changing consumer demands and sustainability challenges.

What are SMEs and why are they important?

SMEs play a **critical role** in ensuring food diversity, supporting circular economy principles, and preserving traditional know-how while also embracing modern techniques. Moreover, SMEs are often more embedded in their communities than large corporations, meaning their innovations can have direct, meaningful impacts at the local level — from sustainable sourcing and eco-packaging to the development of novel plant-based products.

Characteristics of innovation in SMEs



Why is innovation critical in the food sector?

The **food and agri-food sector** faces some of the most pressing challenges of our time: climate change, biodiversity loss, global population growth, changing dietary patterns, and increasing pressure on water, land, and energy resources. Innovation is not a luxury — it is a **necessity** for achieving both **economic viability** and **sustainability goals**.

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Boosting Innovation for Food SMEs

Innovation types relevant to SMEs

SMEs in the food sector can benefit from many forms of innovation, not only in products but also in processes, business models, and customer experience. Key types of innovation include:

- **Product Innovation** – Developing new plant-based foods, functional ingredients, or alternative protein sources.
- **Process Innovation** – Introducing more efficient, safer, or more sustainable production methods (e.g., cold-pressing, upcycling by-products).

Innovation types relevant to SMEs

SMEs in the food sector can benefit from many forms of innovation, not only in products but also in processes, business models, and customer experience. Key types of innovation include:

- **Packaging Innovation** – Using biodegradable, compostable, or reusable packaging solutions.
- **Organisational Innovation** – Implementing circular economy principles, lean production, or new supply chain strategies.
- **Marketing Innovation** – Using storytelling, transparency, and digital tools to connect with conscious consumers.

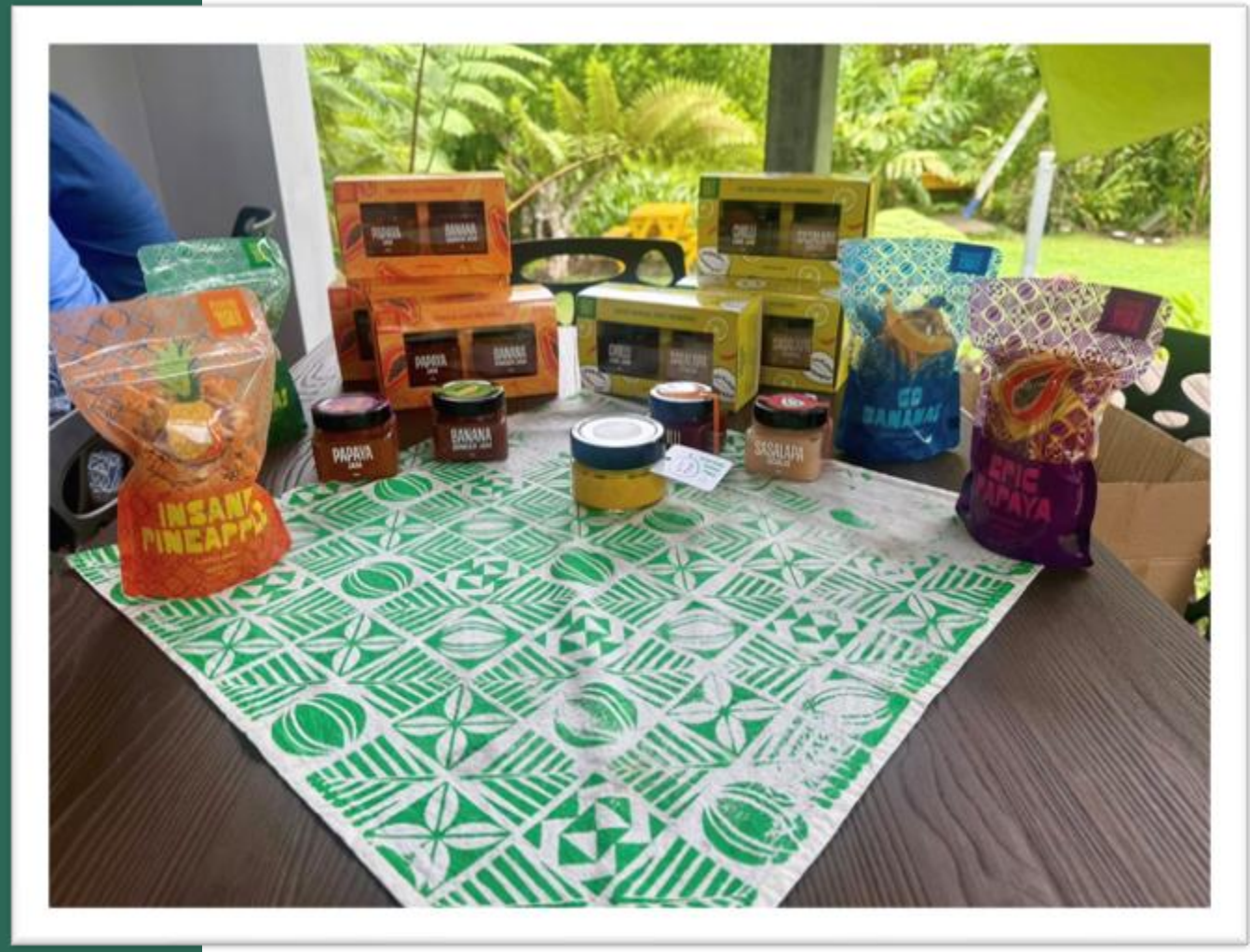
Innovation challenges for SMEs

Despite their potential, SMEs often face **barriers to innovation**, including:

- **Limited financial resources** to invest in R&D, digital tools, or certifications.
- **Lack of specialised staff** or innovation managers.
- **Insufficient access to market intelligence** or consumer insights.
- **Regulatory complexity**, especially when dealing with novel foods or exports.
- **Low awareness of funding opportunities**, such as EU or national support schemes.

Innovation challenges for SMEs

For this reason, many innovation support programmes — such as Horizon Europe, Erasmus+, and national development funds — specifically target SMEs with training, mentoring, infrastructure access, and networking. It is also why the Plant Power project puts strong emphasis on building the innovation capacity of food SMEs through tailored Open Education Resources and stakeholder engagement.



03

Why Innovate?

Forms of Innovation

- **Product innovation -** This innovation refers to the development of new or significantly improved goods or services. In the food sector, this might include new recipes for vegan cheeses, gluten-free bakery items, or protein-rich snacks made from pulses.
- **Process innovation** - Process innovation involves improvements in the production or delivery method. This can include the adoption of energy-efficient cooking systems, the use of AI-driven quality control mechanisms, or the integration of cold-chain logistics to reduce spoilage.

Forms of Innovation

- **Marketing innovation -** Marketing innovation focuses on new packaging designs, product placement strategies, or communication techniques. The use of QR codes for transparency, eco-labels, or social media storytelling are common examples.
- **Organisational innovation** - Organisational innovation refers to changes in business models, partnerships, or internal processes. For example, shifting to circular business models, co-creating products with customers, or using flexible team structures.

Digitalization vs. Digital Transformation

Digitalization and **digital transformation** are often confused, yet they represent very different stages of technological progress.

Digitalization focuses on converting analogue tasks into digital ones to improve efficiency—such as replacing paper-based farm records with spreadsheets or using a digital calendar to manage planting schedules. These changes streamline work, reduce errors, and make data easier to retrieve, but they do not fundamentally alter how an SME operates. They enhance access to information and support better organisation, but the core business model remains the same.

Digitalization vs. Digital Transformation

Digitalization and **digital transformation** are often confused, yet they represent very different stages of technological progress.

Digital transformation goes much further, reshaping how value is created and delivered by integrating advanced digital technologies across the entire business. In agriculture, this could mean using IoT sensors, AI-driven tools, and automated irrigation systems that respond to real-time soil and weather data. Such systems reduce resource use, increase yields, and generate environmental metrics that can be shared with consumers to enhance transparency and trust. Digital transformation does not simply improve existing processes—it redefines them, enabling SMEs to innovate, strengthen their market position, and align with sustainability expectations in the evolving plant-based food ecosystem.

Digital Farm vs. Digital Business: Practical Tools for SMEs

The digital revolution has created an entirely new layer of possibilities for innovation. However, it is important to distinguish between two key domains where SMEs can apply digital tools:

- **Digital Farm** (focusing on production)
- **Digital Business** (focusing on sales and communication).

Digital Transformation in the Plant Food Industry

Through watching this video explore the fascinating world of food technology and discover how technology is revolutionising the food industry. From vertical farming to lab-grown meat, robotics to blockchain, learn about the latest advancements in food production and sustainability.

04

Digital Business – Digitized Sales and Communication Channels for SMEs

Business and Digital Transformation

Digital transformation in the food sector extends far beyond production. It reshapes how small and medium-sized enterprises (SMEs) sell their products, communicate with customers, and manage internal operations. By embracing digital tools, these businesses can streamline sales through e-commerce platforms, target niche audiences with tailored marketing messages, and reduce administrative burdens using accounting software, CRM systems, or collaborative online workspaces. In the plant-based market, this transformation is especially visible in digital campaigns that promote health, sustainability, and ethical values, building consumer trust through storytelling and influencer engagement.

Business and Digital Transformation

Successful transformation relies on a digitally literate workforce capable of adapting to new tools and continuously improving processes. When properly implemented, digital transformation enables even the smallest enterprises to compete with larger companies, driving innovation, customer satisfaction, and long-term growth.

Digital Farm – Tools Supporting Production Efficiency

The digital revolution has introduced new opportunities for innovation across the entire agri-food value chain. For small and medium-sized enterprises (SMEs), it is useful to distinguish between **Digital Farm** and **Digital Business**, as each area focuses on different aspects of growth and efficiency.

- **Digital Farm** refers to the use of digital tools that support **production, resource management, and on-farm decision-making**.
- **Digital Business** focuses on how enterprises digitise their **sales, communication, and internal operations**. E-commerce platforms, social commerce, and digital storefronts allow SMEs to reach customers beyond local markets.

Digital Farm – Tools Supporting Production Efficiency

Basic digital tools

- **Environmental monitoring** using soil sensors and weather stations
- **Automated irrigation systems**
- **Digital farm management tools**
- **Drones and remote sensing**

Digital marketing and e-commerce

- **Building a digital storefront**
- **Using digital marketing tools**
- **Implementing cloud-based tools** for inventory management andaccounting,

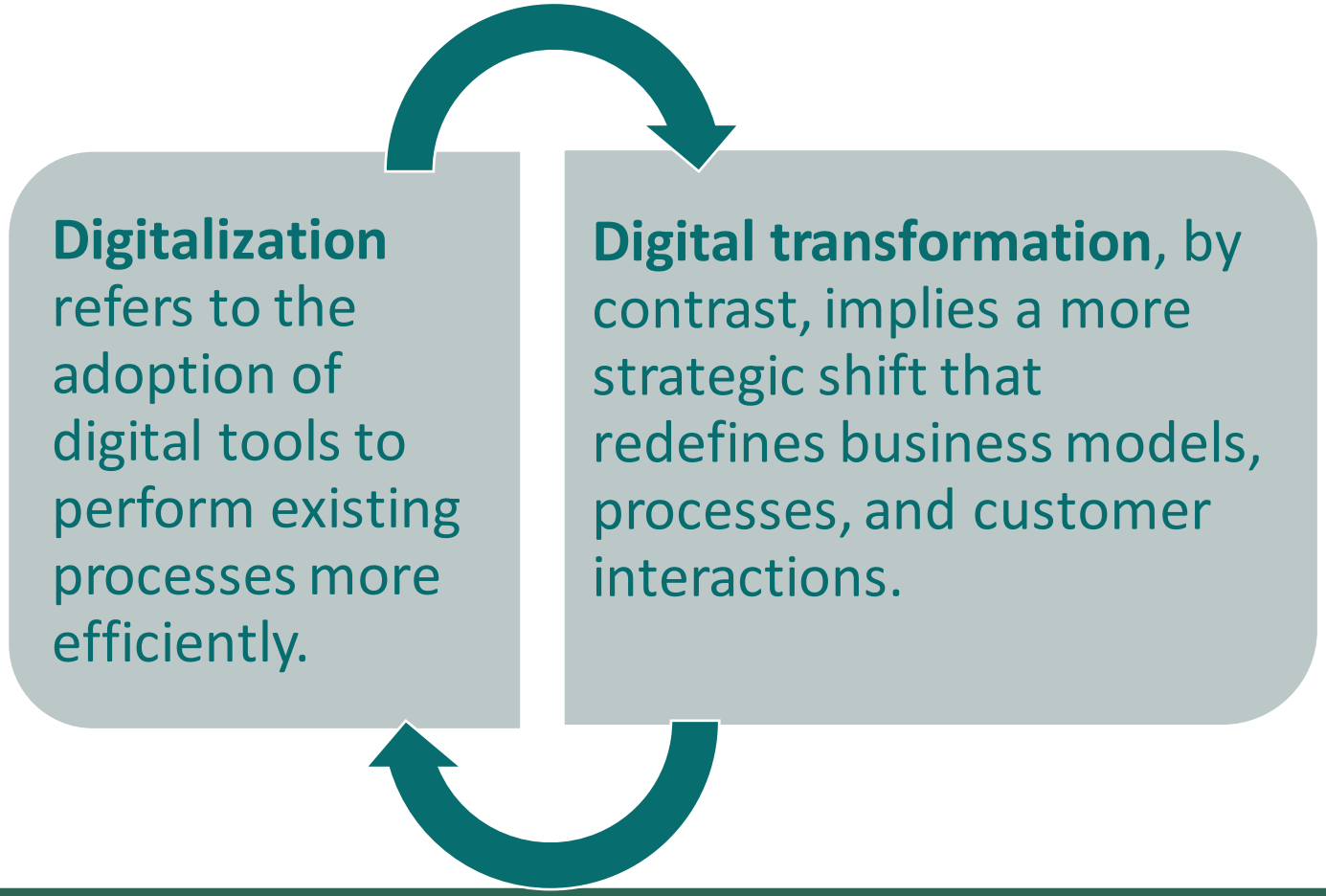
How Drones and Artificial Intelligence Are Transforming Agriculture

Join us as we explore the endless possibilities and benefits of Revolutionizing Farming with Precision Agriculture and Drone AI Technology. From increased productivity to sustainability, this video dives deep into how these advanced tools are shaping the future of agriculture. Don't miss out on being part of this agricultural revolution!

What Is E-Commerce and how the digital marketing can change the agricutlure?

Agriculture is no longer just about growing crops! it’s about connecting with consumers in a digital world. From social media branding to e-commerce platforms, digital marketing is transforming how farmers and agribusinesses sell their products.

From Digitalization to Digital Transformation



From Digitalization to Digital Transformation

Key Digital Tools for SMEs

- **Cloud services** (e.g., Google Workspace, Dropbox): Enable secure storage, sharing, and access to business documents anytime and from anywhere. They support collaboration, version control, and reduce dependency on physical archives.
- **Customer Relationship Management (CRM) systems**: Tools like HubSpot or Zoho CRM allow SMEs to track customer interactions, manage contact databases, streamline communication, and automate sales processes. This results in better customer retention and more targeted marketing.

From Digitalization to Digital Transformation

Key Digital Tools for SMEs

- **Digital accounting software** (e.g., iDoklad, QuickBooks): Simplifies invoicing, expense tracking, payroll, and financial reporting. It reduces administrative burden and improves financial transparency, especially for small teams without dedicated accounting staff.

E-Commerce and Digital Marketing

Launching an e-shop:

- Platforms like Shopify or WooCommerce allow SMEs to easily set up an online store, manage product catalogs, and integrate payment and delivery options.

Social media promotion:

- Platforms such as Facebook, Instagram, and TikTok provide opportunities to build communities, share content (e.g., recipes, product news), and engage directly with customers. Visual storytelling is especially effective in the food sector.

E-Commerce and Digital Marketing

Targeted advertising:

- Tools like Meta Business Suite and Google Ads Express enable even small businesses to run efficient ad campaigns with limited budgets. These tools use demographic, interest-based, and geographic filters to increase the return on investment.

05

Practical Applications in Plant-based SMEs

Blockchain and Traceability Technologies

Blockchain is a type of distributed ledger technology that records transactions in a way that is transparent, secure, and tamper-proof. In the context of food production, blockchain helps guarantee the authenticity and traceability of ingredients.

Vertical Farms and Smart Greenhouses

As urban populations grow and space becomes limited, **controlled-environment agriculture (CEA)** has emerged as a sustainable solution.

Smart greenhouses automate lighting, temperature, humidity, and CO_2 levels for optimal growth.

Vertical Farms and Smart Greenhouses

Meanwhile, **vertical farming** involves growing crops in vertically stacked layers, often using hydroponics or aeroponics.

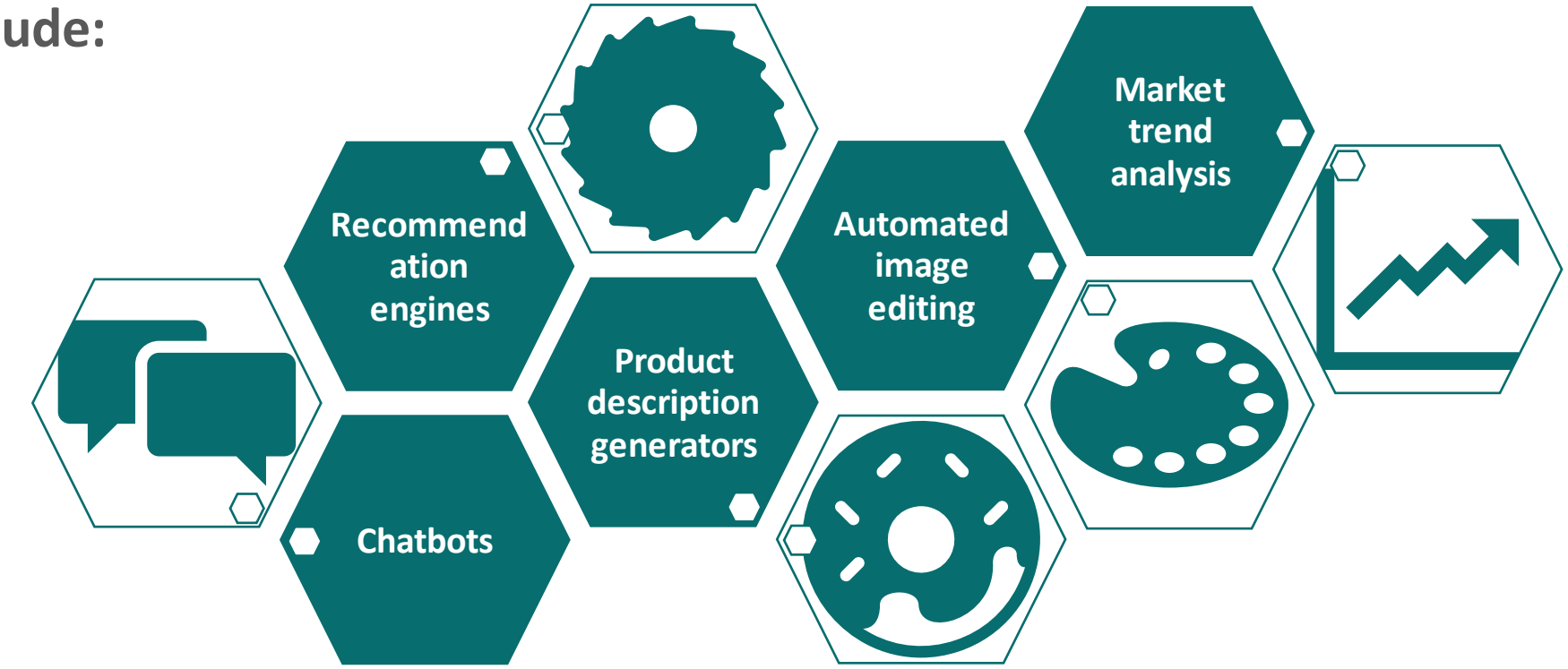
Hausnatura – Indoor Vertical Farming in Bratislava

- **Location:** Bratislava, Slovakia
- **Company:** Hausnatura
- **Founder:** Matej Papánek
- **Year established:** 2021

Hausnatura is one of the first vertical farms in Slovakia focused on hydroponic indoor cultivation of leafy greens and herbs. Located in Bratislava, the farm operates entirely indoors using vertical racks and controlled-environment agriculture technologies.

Simple AI Tools for SMEs

Practical tools include:



06

EU Policies Supporting Innovation and Digitalisation

EU Policies Supporting Innovation and Digitalisation

Several EU-level strategies shape how SMEs access innovation, digitalisation, and sustainability opportunities.

- The **European Green Deal** supports climate-neutral and resource-efficient business models, offering incentives for eco-packaging, circular production, renewable energy, and waste reduction.
- The **Digital Decade 2030** sets clear digitalisation targets, such as widespread adoption of cloud computing, AI, and big data, and ensures that over 90% of SMEs reach a basic level of digital readiness through digital innovation hubs and upskilling programmes

EU Policies Supporting Innovation and Digitalisation

In addition, major EU programmes provide funding and collaboration opportunities.

- **Horizon Europe** supports R&I projects in areas such as food sustainability, circular economy, and AI;
- **EIT Food** accelerates innovation in the agri-food sector through grants, start-up support, and co-creation activities;
- and **Erasmus+** funds digital skills development, VET innovation, and entrepreneurship through cooperation partnerships.

Together, these initiatives create a strong ecosystem that enables SMEs to transform their processes, collaborate internationally, and stay competitive in a rapidly changing market.

Support Instruments for SMEs

The EU provides a wide range of practical support instruments that help SMEs innovate and grow, including:

- grants,
- incubators,
- advisory networks,
- and Digital Innovation Hubs.

Support Instruments for SMEs

Financial tools:

- EU-backed grants,
- cascade funding,
- and programmes like the former SME Instrument (now part of the EIC Accelerator)

enable companies to adopt clean technologies, upgrade digitally, or scale breakthrough ideas.

Sustainability and innovation are no longer separate paths — in the modern food sector, they lead to the same destination.

07

Learning Summary

Learning Overview

This module explores how innovation and digitalisation can support the growth, sustainability, and competitiveness of small and medium-sized enterprises (SMEs) in the plant-based food sector. Learners will gain an understanding of why innovation is essential in addressing challenges such as sustainability, changing consumer demands, and limited resources. The module introduces key types of innovation which include product, process, marketing, and explains how each can be applied in food and agri-food SMEs. A clear distinction is made between digitalisation, which improves efficiency by digitising existing tasks, and digital transformation, which fundamentally reshapes business models through advanced technologies.

Learning Overview

Learners are introduced to practical digital tools for both production (Digital Farm) and sales and communication (Digital Business), including e-commerce platforms, digital marketing, cloud services, CRM systems, AI tools, and blockchain for traceability. Real-world examples, such as vertical farming and smart greenhouses, illustrate how innovation can be implemented in practice. Finally, the module highlights EU policies and funding programmes that support innovation, digital skills development, and sustainable business practices.

Overall, learners should be able to identify innovation opportunities, understand relevant digital tools, and recognise how sustainability and digital transformation can create long-term value for plant-based SMEs

Thank you for completing Module 1 Opportunities in Innovation for SMEs & the Power of Digitalisation and Innovative Technologies

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Boosting Innovation for Food SMEs

Supporting Europe's food sector in adopting plant-based innovation and sustainability.

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