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Empowering digital entrepreneurial skills of unemployed or in transition adults through microlearning

digitmi

International Report on Digital Entrepreneurship Training and Key Skills to Succeed in the Digital Economy

PROJECT NUMBER: 2023-1-AT01-KA220-ADU-000153178

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PROJECT INFORMATION

Project acronym:	DIGITMI
Project title:	Empowering digital entrepreneurial skills of unemployed or in transition adults through microlearning
Agreement number:	2023-1-AT01-KA220-ADU-000153178
Authoring partner:	SYNCNIFY
Work Package:	WP2-Research on the DIGITMI Skills
Date of preparation:	18.03.2024
Version number:	V2 (Final)
Disclaimer	Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or OeAD-GmbH. Neither the European Union nor the granting authority can be held responsible for them.

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THE IMPORTANCE OF THE INTERNATIONAL REPORT

Digital entrepreneurship represents a pivotal segment of the modern economy, characterized by the pursuit of new ventures or transforming existing businesses through innovative digital technologies. This form of entrepreneurship leverages the internet, mobile computing, and all forms of digital media, aiming to create and capitalize on new business opportunities. Unlike traditional entrepreneurship, which often relies on physical assets and face-to-face interactions, digital entrepreneurship emphasizes the digital space as its primary platform for business operations, including marketing, sales, product delivery, and customer engagement. With advancements in artificial intelligence, blockchain, cloud computing, and big data analytics, entrepreneurs today are equipped with tools that can dramatically enhance efficiency, reduce costs, and personalize customer experiences. These technologies also enable businesses to scale quickly and reach global markets with relatively lower capital investment compared to traditional businesses.

Digital entrepreneurship is not confined to the tech industry alone. It spans across various sectors including retail, finance, education, healthcare, and entertainment, transforming conventional business models, and creating new value propositions. This broad applicability highlights the versatility and critical role of digital entrepreneurship training in driving innovation and economic growth. It encourages a culture of flexibility, autonomy, and creativity, attracting individuals who are adaptable, tech-savvy, and eager to disrupt traditional business models. However, it also demands a new set of skills and a mindset oriented towards continuous learning and adaptation to technological advancements. In addition to individual skills and mindset, collaboration, and networking play a significant role in thriving within this ecosystem. Entrepreneurs must cultivate a network of contacts that includes mentors, peers, and industry experts to share knowledge, resources, and support. Effective communication and team management skills are equally important, as digital projects often involve cross-functional teams working remotely across different time zones.

In this context, the publication of the present international report on digital entrepreneurship training holds immense value for the global economic landscape, particularly in its capacity to outline the educational frameworks and skill sets necessary for thriving within the digital economy. Such a report not only aggregates data and insights from diverse geographical regions but also provides a comparative analysis of how different European countries and economies are adapting to the digital transformation of business practices. It underscores the importance of digital literacy, technological proficiency, and innovative thinking in fostering a successful digital entrepreneurship ecosystem. By identifying the key skills required, this report serves as a vital resource for unemployed or in transition adults, educators, policymakers, and entrepreneurs, offering a roadmap for curriculum development, policy formulation, and strategic business planning.

Beyond mapping the current state of digital entrepreneurship training, this report plays a part in highlighting gaps and disparities in digital skills education across different regions. This aspect is crucial for understanding the uneven distribution of digital entrepreneurship opportunities and the barriers that individuals might face. Identifying these gaps allows for targeted interventions, aimed at bridging disparities and fostering a more inclusive global digital economy. Consequently, the report can stimulate international cooperation and investment in digital education and infrastructure, ensuring that individuals worldwide can develop the necessary skills to participate in and contribute to the digital economy.

THE DIGITMI PROJECT

The ‘International report on digital entrepreneurship training and key skills to succeed in the digital economy’ encapsulates the findings of the Work Package 2 activities - Research on the DIGITMI Skills- of the DIGITMI-Empowering digital entrepreneurial skills of unemployed or in transition adults through microlearning-project. This transnational initiative, co-funded by the Erasmus+ program, addresses the critical issue of upskilling unemployed

and transitioning adults on digital entrepreneurial competences and e-commerce by developing a targeted training package over five (5) European countries: Austria, Italy, France, Spain, and Czech Republic.

Over its 24-month duration, DIGITMI is set to yield significant outcomes, including the present international best practice repository on digital entrepreneurship training programs, micro-learning courses covering a range of relevant topics, and a comprehensive mentoring phase where trainees will be able to apply their skills in crafting a digital business plan. The competences acquired will be further certified using a micro-credentials system, ensuring relevance and external recognition.

AUDIENCE

The present International Report is intended to engage with a multifaceted audience across the digital entrepreneurship landscape, aiming to influence a wide range of stakeholders and effectuate meaningful change across various sectors involved in digital skills training and entrepreneurship support. The identified targeted audience is extended, but not limited to, unemployed or in transition adults, educators, policymakers, and entrepreneurs all of whom are instrumental in shaping the landscape of digital entrepreneurship education and practice. The aim of the present report is to reach those who are in a position to influence the integration of digital entrepreneurship competencies into educational frameworks, policy agendas, and entrepreneurial initiatives, thereby enhancing the digital readiness of individuals and businesses alike.

For organizational leaders, management professionals, policymakers, and educational stakeholders, particularly those vested in adult learning initiatives, the report emerges as an indispensable resource. It furnishes a nuanced understanding of the labour market's evolving requisites, spotlighting the indispensability of digital entrepreneurship skills in bolstering economic fortitude and innovation. This document endeavours to arm these key stakeholders with the requisite acumen to devise policies and educational frameworks that not only respond to the current demands of the industry but are also prescient of forthcoming trends. The ultimate aim is to meliorate the dissonance between the competencies imparted by educational establishments and those coveted in the digital economy, ensuring the workforce is primed to confront future challenges and seize emerging opportunities with alacrity.

Concomitantly, for unemployed or in transition adults as well as entrepreneurial figures, including decision-makers across start-ups and Small and Medium-sized Enterprises (SMEs), the report delineates a thorough roadmap to flourishing within the digital commerce arena by endowing them with a repository of actionable intelligence, established best practices, and strategic counsel conducive to the embracing of digital entrepreneurship ethos. It seeks to instigate a paradigm of innovation and adaptability, essential for sustaining expansion and competitive advantage amidst the dynamism of the business landscape. Through the dissemination of this report, the DIGITMI initiative aspires to significantly contribute to the continuity of a resilient, digitally savvy entrepreneurial ecosystem, poised to propel economic and societal advancement.

METHODOLOGY

The research methodology employed for this report is a comprehensive blend of desk research and stakeholder analysis, meticulously designed to gather a wealth of information on digital entrepreneurship skills training for unemployed and in transition adults in a national context. The desk research involved an extensive review of existing training programs, methodologies, and outcomes, with a keen focus on understanding the current skills, learning needs, and preferences of the target group. This phase was further subdivided into several key components through the examination of best practices in digital entrepreneurship skills training programs. The capacity of these practices for transferability and adoption within local and European contexts was a critical area of investigation.

Parallel to the desk research, the stakeholder analysis component played a vital role in enriching the study with qualitative data. This part of the methodology involved a two-pronged approach. First, project partners designed and distributed a survey to a cohort of 20 adults in transition per country, amounting to a total of 100 participants across Austria, Italy, France, Spain, and the Czech Republic. The aim was to garner a deep understanding of the specific requirements and aspirations of those seeking to develop their digital entrepreneurship skills. In addition to the survey, the methodology included conducting interviews with topic experts. Each partner country engaged in dialogues with two experts, totaling 10 experts across the project. These interviews, structured in a semi-structured manner, were intended to pinpoint the key skills and knowledge areas essential for successful digital entrepreneurship.

THE ROLE OF ENTREPRENEURSHIP IN TODAY'S DIGITAL LANDSCAPE

In today's rapidly evolving digital landscape, entrepreneurship plays a pivotal role in driving innovation, creating jobs, and shaping economies around the globe. The digital revolution, characterized by the widespread adoption of digital technologies in business operations, has significantly expanded the scope and scale of entrepreneurship revolutionizing how businesses operate, interact, and receive funding. Crowdfunding platforms, for instance, allow entrepreneurs to raise capital directly from the public, bypassing traditional financial institutions and venture capital firms. Similarly, blockchain technology has given rise to Initial Coin Offerings (ICOs) providing a novel mechanism for startups to secure investment through cryptocurrency. Furthermore, peer-to-peer lending platforms leverage digital networks to connect borrowers with individual lenders, offering more accessible financing options for small businesses. These digital funding models have democratized access to capital, enabling a wider range of entrepreneurs to bring their ideas to fruition and scale their operations, thereby contributing to a more inclusive and dynamic entrepreneurial ecosystem.

On the other hand, digital communications have fundamentally reshaped the entrepreneurial ecosystem, serving as a critical enabler for businesses to reach a wider audience. With tools such as social media, digital advertising, and email marketing, entrepreneurs can now engage with a global audience, conduct market research, and build their brands beyond geographical boundaries. This has not only leveled the playing field for startups and small businesses but has also accelerated the pace of innovation and competition across industries. As a result, digital communications have become indispensable for entrepreneurs aiming to carve out a niche in the crowded digital marketplace. The advent of the COVID-19 pandemic accelerated the shift towards digital entrepreneurship, with remote work becoming a mainstay in business operations. This transition, though initially forced by circumstances, has unveiled the resilience and potential of digital business models. Entrepreneurs who adapted swiftly to online platforms were able to sustain and sometimes even expand their operations amidst global lockdowns. This change has highlighted the importance of digital agility and the ability to operate remotely as essential components of modern entrepreneurship.

Still, despite the opportunities afforded by the digital landscape, digital entrepreneurs face a plethora of challenges. Cybersecurity threats, privacy issues, and the digital divide pose significant obstacles to leveraging digital technologies. Additionally, the rapid pace of technological evolution demands constant vigilance and adaptation from entrepreneurs to stay ahead in the market. For unemployed or in-transition adults, the rapid pace of this transformation can seem daunting, with new technologies and digital practices reshaping what it means to be employable. This challenge underlines the importance of a well-rounded skill set for digital entrepreneurs, encompassing both technical prowess in digital tools and platforms and soft skills such as creativity, problem-solving, and adaptability. By acquiring digital skills, such as digital marketing, data analytics and e-commerce management, these individuals can significantly enhance their employability in a wide range of sectors. Thus, targeted training programs that focus on these areas are essential, not only to bridge the skills gap but also to unlock their potential for innovation within different industries.

THE EUROPEAN LANDSCAPE OF DIGITAL ENTREPRENEURSHIP TRAINING

The entrepreneurial landscape throughout Europe, particularly highlighted by the activities in Austria, Italy, France, Spain, and the Czech Republic, is witnessing a profound metamorphosis, propelled by the ascendancy of digital technology and the burgeoning significance of the digital economy. Each project participant nation contributes its distinctive strengths and faces unique challenges, epitomizing the multifaceted nature of transitioning into the digital era. From Paris to Prague, all five countries are at the forefront of a flourishing digital start-up landscape, energized by a blend of entrepreneurial zeal, innovative policy frameworks, and skill enhancement programs. As they navigate through the intricacies of the digital economy, their collective and individual journeys offer insightful perspectives into the prevailing trends and exemplary practices shaping digital entrepreneurship's evolution across the continent. This diverse array of experiences accentuates the necessity for a collaborative and unified approach in promoting digital entrepreneurial skills, underscoring the imperative for concerted actions at both national and European levels.

AUSTRIA

National Perception of Digital Entrepreneurship

The digital start-up landscape in Austria has been growing and evolving, particularly in cities like Vienna, Linz, and Graz. In Austria, digital entrepreneurship is generally perceived positively, reflecting a national emphasis on innovation, technological advancement, and economic growth. Cultural and societal factors influencing this perception include a strong educational system fostering tech skills, governmental support for digital initiatives, and a societal value on entrepreneurship and technological progress. These elements create a favourable environment for digital entrepreneurs (Leitner, Karl-Heinz/ Wundsam, Hannah/ DÖMÖTOR, Rudolf, 2023).

In general, in Austria, the primary driver for starting a business is often the recognition of market opportunities, known as "pull factors." Over 80% of start-ups in Austria are initiated due to opportunity motives rather than necessity, especially among solo entrepreneurs, highlighting autonomy and self-fulfilment as key reasons for founding a business. Conversely, "push factors" like job dissatisfaction or unemployment are fewer common reasons for entrepreneurship. In comparison with the EU average, necessity-driven entrepreneurship in Austria is lower, with women slightly more likely to start businesses out of necessity, though still below the EU average (OECD, 2020).

Austria's start-up investment landscape in 2022 closely mirrored the European average, with a noticeable 18% decrease in total investment value, settling at around one billion euros. However, there was a 14% increase in the number of financing rounds, reaching 148. This positions Austria among nine of the top 15 European locations experiencing a rise in financing rounds in 2022. Despite this, including Germany, six locations saw a decrease in financing rounds. The latter half of the year saw a slowdown in start-up investments, especially in growth financing, primarily driven by international investors. This trend of investor caution is expected to continue in the near future (Eggenberger, Nina/ Loidhold, Bettina, 2023).

Austria is committed to embed digital competencies in its educational system and providing inclusive learning opportunities for diverse demographics. Since 2020, Austria has been implementing quality-assured procedures to integrate qualifications from non-formal sectors like adult education and CVET into the National Qualifications Framework (NQF) based on the European Qualification Framework (EQF). NQF service points have been established to identify and reference these non-formal qualifications. The aim is to include a significant number of qualifications, particularly those highlighting green skills, to enhance their visibility in sustainability discussions. This approach emphasizes both formal and non-formal qualifications in the Austrian NQF (Eurydice, 2024). More

examples of how Austria integrates digital skills frameworks into formal education and other learning initiatives include:

- **Digital Competence Framework for Educators (DigCompEdu):** Implemented in teacher training and professional development programs to enhance digital teaching skills (Redecker, Christine, 2017).
- **FIT – Women in Tech:** A program aimed at increasing female participation in IT through training and education (AMS FiT).
- AMS Training Initiatives: The Austrian unemployment service (AMS) offers digital skills training for unemployed or transitioning adults (BMAW).
- **Universities of Applied Sciences in Austria** offer specialized degree programs focused on digital skills and entrepreneurship e.g. the FH Joanneum the program "Digital Entrepreneurship" or at the FH St. Pölten "Management and Digital Business".

National Digital Start-up Landscape

Currently, the Austrian start-up scene is thriving, particularly in the fintech and health-tech sectors. In recent years, start-ups have successfully attracted investment, reflecting the resilience and potential of Austrian tech ecosystems. Prominent start-ups such as Refurbed or Storebox have made impacts in their respective fields, ranging from refurbished electronics marketplaces to external storing solutions (Seedtable, 2024).

Austrian start-ups, particularly in tech and innovation, align with national economic priorities of digitalization and sector-specific innovation (fintech, health tech, green tech). Government investment and policies support these start-ups, contributing to Austria's economic development and global market competitiveness. This synergy between start-ups and economic goals reflects Austria's strategic focus on the digital economy (Federal Ministry for Digital and Economic Affairs (2020).

Austrian start-ups face several key challenges. Securing venture capital for scaling up, particularly in innovative sectors like fintech, can be tough. Navigating complex EU regulations, especially for fintech and health tech start-ups, poses administrative and legal challenges. The high demand for tech talent, like AI specialists, means start-ups often compete with larger firms for skilled professionals. The necessity of global expansion due to Austria's smaller market size introduces challenges related to different regulatory and cultural environments. Additionally, maintaining innovation amidst rapid technological changes requires substantial resources and effort. These challenges are pivotal in shaping strategies for the growth of Austria's start-up ecosystem (Leitner, Karl-Heinz/ Wundsam, Hannah/ DÖMÖTOR, Rudolf, 2023).

According to the database" "Start-up Landscape Austria" of the WKO (Austrian Chamber of Economics), there are currently 3.141 start-ups listed, among them are 284 listed in e-commerce and 193 in ed-tech (see https://austria.dealroom.co/intro-curated-content). Since 2011, Austria has seen the establishment of numerous start-ups, with the annual number stabilizing at around 360 since 2017. Despite start-ups comprising only 1% of all new businesses annually, they contribute significantly to the economy, accounting for 29% of the value added by all newly founded companies. The total value contribution between 2018-2020 is estimated at 1.015 billion euros. Additionally, newly founded start-ups provide employment to over 31,000 people (WKO, 2023).

Emerging trends in Austria's digital entrepreneurship skills landscape include a focus on AI, data analytics, and sustainable technology, reflecting global tech advancements. These trends are impacting Austria's economy by driving innovation in key sectors, fostering job creation, and promoting a tech-savvy workforce. This reflects also the statistics of who becomes an Entrepreneur in Austria. According to the WKO start-up founders are on average 37,2 years old, 40% of them have founding experience already, 78% have an academic background, 78% found a start-up in a Team and there has been a small increase in the proportion of female founders by 39% (WKO, 2023).

In Austria, mentorship and networking are crucial for the growth of digital entrepreneurship skills. These elements provide start-ups with access to experienced guidance, industry insights, and most importantly valuable connections. Here are some of the mentoring and networking platforms listed:

- **AustrianStartups:** An NGO acting as a platform for entrepreneurs to network and exchange ideas (https://austrianstartups.com/).
- **Start-up Live:** It is a program that offers events where entrepreneurs can network and receive mentorship and feedback from experienced founders (https://www.startuplive.org/).
- **i2b Business Plan Competition:** Connects entrepreneurs with experienced business professionals nationally and international (https://www.i2b.at/startup-szene/).

Government Support for Digital Entrepreneurship

In Austria, the responsibility for entrepreneurship policy primarily falls under the jurisdiction of the Federal Ministry for Digital and Economic Affairs (BMDW). This ministry is dedicated to enhancing the environment for business start-ups and provides various forms of support to new entrepreneurs. One of its key initiatives is the Start-up Service (Unternehmensserviceportal), which offers guidance and assistance to aspiring entrepreneurs embarking on the path to self-employment. (OECD, 2020). Regarding funding, Austria offers a range of national policies and government support mechanisms aimed at bolstering digital entrepreneurship.

- **Government funds for start-ups:** Austria has several top government grants for start-ups, including the aws Growth investment, FFG Impact Innovation, Markt.Start, aws Preseed, and aws Seedfinancing. These grants offer financial support for innovation projects, helping startups strengthen their market position, and funding for research and development (R&D) projects. In addition, The Austrian government provides support through initiatives like the Austrian Business Agency (ABA) and various incubators and accelerators like weXelerate which help start-ups scale and secure funding (Remi, 2020).
- **Support for Digital Transformation of Businesses:** The Austrian Recovery and Resilience Plan (European Union, 2023) includes measures to support the digital transformation of enterprises and SMEs. This involves funding for businesses investing in the digitalisation of business models, processes, and cybersecurity measures. Specific programs, like KMU.DIGITAL, provide advisory and implementation support for these digitalization projects. There you can also find specific funding opportunities for SMEs operating in e-commerce (see https://www.kmudigital.at/). Also, to mention is the Qualifizierungsoffensive, which is a federal program aimed at developing IT and digital competencies among employees in areas like IT management, cybersecurity, cloud services, and e-commerce (see https://www.ffg.at/qualifizierungsoffensive).

For the identified target group there are programs available for entrepreneurship. Often these programs have a more general focus on entrepreneurship, but if there is the need for a specific expertise, it will be adapted.

- **The Unternehmensgründungsprogramm (UGP)** by the AMS (Arbeitsmarktservice) in Austria is a program designed to support individuals seeking to establish their own businesses. It offers professional start-up consulting by experts and financial support for existence after founding a business. The program is tailored for unemployed individuals planning to become self-employed and is financed by the AMS ensuring there are no costs for participants. Depending on the business idea, the focus can be on digital entrepreneurship and the program will provide the according expert from this field (see https://unternehmensgruendungsprogramm.at/).
- In regard to digitalisation Austria has implemented the **"Digital competency strategy"**. The goal is to improve digital skills of all Austrians by 2030. The initiative includes funding for digital skills training and education programs for all interested parties, along with the creation of a unified system of competency levels and certifications. The digital competence strategy is not only restricted to the citizens but also to fields as education, the public institutions, or the economy with SME's (Federal Ministry for Digital and Economic Affairs, 2024).

In Austria (digital) entrepreneurs developing online sales strategies are significantly guided by national regulations. These rules span consumer protection, data privacy, e-commerce, and digital transactions. They must ensure consumer rights are upheld, including transparent terms and conditions, product warranties, and return policies. Additionally, adherence to GDPR for data protection is crucial. E-commerce regulations affect transaction security, payment processing, and online advertising. Furthermore, compliance with national tax laws and financial reporting standards is essential (see https://www.usp.gv.at/).

National Skill Development Programs

The Austrian government has released in "Digital Action Plan" which emphasizes digital transformation across sectors, including education and the professional field. Addressing challenges such as curriculum updates, practical skill development, and inclusivity is integral to this plan. It aims to foster a digitally skilled workforce that can support and drive innovation in Austria's economy (Federal Ministry for Digital and Economic Affairs, 2020).

The Austrian Economic Chamber offers also aims to equip individuals with the skills needed in order to start or sustain a digital business. They have developed the digital education platform called "wîse up" through which they offer start-ups as well as SMEs simple solutions for digitizing company-specific learning materials and accessing over 15.000 courses. The platform emphasizes flexible, self-directed learning, making digital education accessible for companies with a focus on entrepreneurship education (see www.wise-up.at).

In addition, the Austrian Economic Chamber created the platform LOOKAUT, which offers short formats on economic stories or market trends and e.g. explains what is important when founding a business or how to write a business plan. The platform serves as a resource for Austrian entrepreneurs, providing inspiration and insights for business ventures and keeping them informed about global economic events and trends (see www.lookaut.tv).

In Austria, there isn't a standardized, universal, or national curriculum for digital entrepreneurship across all educational institutions. Instead, various universities and training centres offer their own tailored programs focusing on digital entrepreneurship. These programs typically include a mix of technological skills like software development, data analytics, and cybersecurity, alongside business and entrepreneurial skills such as business model development, marketing strategies, and financial planning. Additionally, many programs emphasize soft skills like leadership, communication, and problem-solving, which are crucial for entrepreneurial success. Here are some examples of skill development programs and their curriculum for digital entrepreneurship:

- **Master in Sustainability, Entrepreneurship & Technology:** This program covers digital innovation management, business model development, and the application of new technologies in business (WU Vienna and the Tomorrow University),
- **AWS Digital Innovation Program:** Aimed at SMEs, this program includes training on digital technologies and their application in business (see https://aws-experience.com/emea/smb/e/90e8a/aws-digital-innovation-program)

It can be stated, that within the field of digitalisation Austria's performance is mixed. In the industry 4.0 technologies regarding the manufacturing and innovation and technology sector, Austria scores high. However, in comparison to other countries, Austria needs to catch up in the service and digitalisation sector. Therefore, the Austrian government called for a centralised digitalisation strategy. Austria's industry dynamics, especially in high growth and entry rates, lag behind innovation leader countries, except in the ICT sector. This impacts digital technology diffusion, with slower adoption in sectors with more SMEs. Microenterprises and smaller enterprises face digitalization challenges due to information gaps about available technologies and their deployment. The “KMU Digital” program exemplifies low threshold support for SME digitalization (WIFO/ Hölzl, Werner, 2019).
As the "Digital Action Plan" is focusing on improving digital skills across the workforce, general population, and educational sector, it also aims to optimize digital skills within the national formal education system and includes the certification of digital skill development programs. This plan also emphasizes lifelong learning and

strengthening digital basic training with interdisciplinary approaches in all training and education areas (Jākobsone, Māra, 2021).

In Austria, universities and the industry collaborate closely to align educational programs with the evolving needs of the digital business environment. This partnership involves incorporating practical industry experiences into academic curriculums, offering internships, and facilitating joint research and development projects. Universities often have business incubators and accelerators that connect students with industry mentors and investors. These collaborations ensure that students acquire relevant, up-to-date skills that meet the current demands of the digital marketplace. Furthermore, the Technical University of Graz has been awarded as the University in which the students founded the most start-ups. This is due to its strategic project "Entrepreneurial University" where new formats of entrepreneurial education and extracurricular courses are established close to the industry (Filzwiser, Susanne, 2021).

In addition, Skills anticipation in Austria primarily involves the AMS Skills Barometer and skill demand forecasting by WIFO and other institutes. The Skills Barometer, an online tool, offers data on skill demand trends and detailed job profiles. It targets a wide audience, including youths, career counsellors, and policymakers. Skills forecasting looks at short- and medium-term market demand. Additionally, the Skilled Labour Radar by ibw Austria provides an analysis of employment trends and skilled worker demand. The process involves significant stakeholder participation, reflecting Austria's strong social partnership approach between industry and governmental partners with then focusing on the demands on further developments (see CEDEFOP, 2023).

In Austria mechanisms for tracking the long-term success and impact of individuals who have completed these programs are not widely publicized or standardized. Some programs may conduct follow-up surveys or maintain alumni networks to assess career progress, but a systematic, nationwide tracking mechanism is less common.

CZECH REPUBLIC

National Perception of Digital Entrepreneurship

In the Czech Republic, the digital entrepreneurship landscape is evolving rapidly, becoming a pivotal element of the modern business ecosystem. The increasing number of internet users and their growing interest in online services and shopping have ignited the emergence of a vibrant start-up culture, underpinned by robust support for innovation. This environment not only nurtures the creation of new digital businesses and online services but also positions the Internet as a potent platform for business growth and customer outreach. The presence of a dynamic digital market, coupled with significant advancements in digital infrastructure, fosters an ecosystem where entrepreneurs can thrive. Government initiatives further bolster this environment by offering financial assistance, advice, and training tailored to the needs of digital entrepreneurs, thus enhancing the overall perception and viability of conducting business online in the Czech Republic.

Despite its promising digital business landscape, the Czech Republic faces certain challenges that temper the growth and proliferation of digital start-ups compared to the broader European scene. The nation's relatively small market size, albeit with a high population density and quick technology adoption rates, presents both obstacles and opportunities for digital entrepreneurship. The innovation climate, especially vibrant in Prague and other major cities with numerous tech incubators and accelerators, facilitates start-up growth. However, the limited availability of venture capital and funding options compared to more mature ecosystems can hinder the scale and development of digital ventures. Nonetheless, increasing regional cooperation within the European Union's start-up ecosystem offers Czech start-ups access to broader markets and investment opportunities, potentially mitigating these challenges and supporting their expansion.

The integration of national and European competence frameworks into the Czech educational system signifies a proactive approach to cultivating digital skills essential for the digital economy. From primary education through to adult learning programs, the emphasis on digital literacy is evident, encompassing a wide range of subjects that prepare students for the nuances of digital entrepreneurship. Adult education and professional training programs specifically designed to enhance online business competencies reflect a comprehensive strategy to empower individuals across various demographics, including the unemployed or those transitioning between careers. This strategic incorporation of digital skills into the educational fabric not only equips future entrepreneurs with the necessary tools to navigate the digital business landscape but also ensures a resilient, skilled workforce ready to contribute to the nation's digital economy.

National Digital Start-up Landscape

The National Digital Start-up Landscape in the Czech Republic is evolving in alignment with the country's economic ambitions, underscoring the pivotal role of digital start-ups in spurring economic development, innovation, and job creation. This positive momentum is propelled by a national support framework for innovation, technology, and entrepreneurship. At the heart of this framework lies the recognition of digital start-ups as crucial engines of economic growth. This approach not only enhances innovation but also facilitates the creation of high-quality jobs, aligning seamlessly with the nation's economic goals and priorities. The burgeoning digital start-up ecosystem benefits from an array of technology parks, incubators, and accelerators, providing financial backing, expert advice, and access to extensive networks of potential partners and investors. This ecosystem is further supported by the country's emphasis on high-quality technical and scientific education, alongside a growing focus on digital skills, laying a solid foundation for innovative entrepreneurship.

Furthermore, the Czech landscape of digital start-ups is characterized by a dynamic growth trajectory, driven by an increasing influx of both domestic and international investments. This surge in investment underscores the potential investors see in the Czech digital start-up sector, enabling better access to funding for emerging companies. The current estimate of around 2,100 start-ups, as gauged through platforms like StartupJobs.cz, reflects a vibrant and flourishing start-up environment. Despite the absence of official statistics, this number signifies a substantial pool of innovative enterprises poised to transition from start-ups to established businesses. This growth narrative is closely interwoven with the country’s economic objectives, particularly the emphasis on promoting sustainable economic growth, innovation, and technological development, as well as prioritizing digitalization and cybersecurity. These priorities dovetail with the objectives of diversifying the economy and nurturing a high-skilled workforce, thereby amplifying the contribution of digital start-ups to the Czech Republic's economic vigour.

Lastly, the emphasis on cultivating entrepreneurial mindsets through education programs underscores the commitment to nurturing innovation and fostering new business ventures. This skill development trajectory is complemented by the transformation of traditional sectors through digitization, highlighting the need for new competencies and offering avenues for efficiency improvements. Essential to this ecosystem's vitality are mentorship and networking, facilitated by various platforms and programs that bridge connections between aspiring entrepreneurs and seasoned veterans. These elements of knowledge transfer, emotional support, access to resources, and collaboration opportunities underscore the critical role of mentorship and networking in steering the growth of digital entrepreneurship skills in the Czech Republic, setting a solid groundwork for a thriving digital economy.

Government Support for Digital Entrepreneurship

The Czech Republic has positioned itself as a supportive environment for digital entrepreneurship, leveraging a variety of national programs and initiatives aimed at fostering innovation and technological advancement. The Operational Programme Enterprise and Innovation for Competitiveness (OPIE) stands out as a cornerstone for such support, providing substantial financial backing through European Structural and Investment Funds. This

program is dedicated to bolstering entrepreneurship and innovation across the spectrum, with a special focus on digital domains. It facilitates access to essential resources like grants, soft loans, and guarantees specifically tailored for research, development, and innovation projects. This strategic approach not only nurtures the growth of digital ventures but also strengthens the country's competitive edge in the global digital economy.

In parallel, the Czech Republic's commitment to cultivating digital skills is evident through its comprehensive training programs and educational initiatives. The National Recovery Plan earmarks significant resources for digital training across all age groups, aiming to uplift the national workforce's digital competency. Government and private entities collaborate to offer a range of digital training programs, covering essential skills from basic IT knowledge to specialized domains such as programming, digital marketing, and cybersecurity. These efforts are complemented by targeted incentives like R&D tax breaks, encouraging businesses to invest in digital innovation. Furthermore, the Labour Office's retraining courses for the unemployed are instrumental in facilitating a smooth transition into the digital labour market, offering free programs that cover a wide array of digital skills necessary for today's job seekers.

National initiatives are meticulously designed to promote digital entrepreneurship education across diverse demographic groups, ensuring that targeted support mechanisms are in place to cater to the specific needs of various segments of the population. This includes specialized programs for young people, women, the unemployed, and seniors, aimed at maximizing their participation in the digital economy. Moreover, the framework of mentoring, networking, and financial support is tailored to empower these demographic groups, fostering an inclusive and vibrant digital entrepreneurship ecosystem. Entrepreneurs in the Czech Republic, while navigating through their online sales strategies, are also guided by a robust set of national regulations covering consumer protection, data protection, e-commerce, cybersecurity, and tax regulations. This regulatory environment ensures that digital businesses operate within a legal framework that protects both the entrepreneurs and their customers, contributing to a trustworthy and dynamic digital market.

National Skill Development Programs

National skill development programs in the Czech Republic are structured with a keen focus on nurturing the necessary competencies for burgeoning digital entrepreneurs. Recognizing the pivotal role of technology in the modern economy, these initiatives are designed to arm individuals with both the technical know-how and the entrepreneurial acumen needed to navigate the digital landscape. Specialized courses and training form the backbone of the technological education provided, spanning essential areas like coding, web design, digital marketing, data science, artificial intelligence, and cybersecurity. The inclusion of online self-study platforms ensures that learning is accessible and flexible, catering to the diverse needs and schedules of participants. Entrepreneurial skills are further honed through mentoring programs, workshops, and seminars that delve into the intricacies of starting and sustaining a business, alongside acceleration and incubation programs aimed at fostering start-up success.

The evolution of technology has significantly reshaped the skill set required for digital entrepreneurship. In response, the Czech Republic's educational institutions have agilely adapted, ensuring that their curricula remain at the forefront of technological advancement and market needs. This dynamic environment emphasises not only the mastery of new technologies such as artificial intelligence and blockchain but also the development of soft skills like critical thinking and adaptability. Partner programs with industry giants and hands-on project-based learning approaches play a crucial role in this adaptation, bridging the gap between academic learning and real-world application. Furthermore, the emphasis on soft skills, critical for navigating the digital business landscape, complements the technical education provided.

Partnerships between national skill development programs and industry players are integral to maintaining the relevance and efficacy of these educational endeavours. Such collaborations ensure that the training provided

aligns closely with the evolving demands of the digital business world. Through initiatives like cooperative research projects, internships, and curricula designed in collaboration with industry leaders, these programs offer a practical and informed pathway to digital entrepreneurship. Moreover, the establishment of business incubators and accelerators, alongside lifelong learning, and retraining programs, underscores the commitment to fostering an innovative and skilled digital workforce. Through these multifaceted efforts, the Czech Republic is laying the groundwork for a thriving digital economy, driven by well-equipped and innovative entrepreneurs.

FRANCE

National Perception of Digital Entrepreneurship

In France, digital entrepreneurship, in general, is highly regarded, reflecting the nation's strong inclination towards innovation and creativity, which is deeply rooted in its cultural and historical heritage. Over the years, France has strategically positioned itself as an innovation-driven nation, recognising the crucial role of digital skills training in economic growth and addressing societal challenges. This shift is driven by the recognition of digital technology's pivotal role in fostering innovation, streamlining business operations, and opening new markets. The French government and private sector alike view digital entrepreneurship as a critical component of the country's economic future, instrumental in driving growth, creating jobs, and enhancing France's competitiveness on the global stage.

In this context, the French educational sector plays a significant role in shaping the national perception of digital entrepreneurship. Universities and business schools have integrated digital entrepreneurship and innovation into their curricula, aiming to equip students with the skills and mindset required to succeed in the digital economy. By partnering with industry leaders, they offer practical experiences, internships, and exposure to real-world digital business challenges. Furthermore, specialized programs and accelerators focusing on digital entrepreneurship provide a platform for budding entrepreneurs to develop their ideas, gain mentorship, and access funding.

The French public policy also reflects a strong endorsement of digital entrepreneurship, with the government implementing measures to simplify the business creation process, provide tax incentives, and reduce bureaucratic hurdles for startups. Additionally, significant investments in digital infrastructure, such as high-speed internet and cloud computing services, ensure that digital entrepreneurs have the tools they need to thrive. The government's active role in promoting digital literacy and supporting innovation hubs across the country further reinforces the positive national perception of digital entrepreneurship. These policies not only attract domestic talent but also position France as an attractive destination for international digital entrepreneurs looking for a supportive environment to launch and grow their ventures.

National Digital Start-up Landscape

France's national digital start-up landscape is distinguished by its dynamic growth and innovative prowess, firmly positioning the country as a significant player on the global economic stage. The nation's status as the world's fifth-largest economy is bolstered by the presence of 31 of the world's 500 most powerful companies, a testament to its industrial dynamism and capacity for innovation (Industrial Dynamism and French innovation, 2023). This vibrant economic landscape is further enriched by France's commitment to fostering a competitive and supportive ecosystem for digital startups. With 71 competitiveness clusters across the country, France provides a fertile ground for the development and scaling of approximately 13,000 startups (France Digitale, 2023). These clusters, strategic in nature, facilitate collaboration between startups, established companies, research institutions, and educational facilities, thereby driving innovation and technological advancement within the French digital economy.

The resilience and upward trajectory of the French start-up ecosystem are evident in the remarkable revenue growth observed among its digital startups. According to France Digitale (2023), startups in the country experienced a significant revenue increase of more than 32% between 2021 and 2022. This growth is attributable not only to the robustness of the domestic market, where innovative digital solutions find ready adoption across various sectors but also to the aggressive international expansion strategies pursued by French startups. The ability of these enterprises to transcend local boundaries and tap into global markets underscores the universal appeal and scalability of their digital innovations. It reflects a strategic alignment with global digital trends and a keen understanding of the diverse needs of international consumers and businesses.

Moreover, the success and vibrancy of the French digital start-up landscape are supported by a comprehensive framework of government initiatives, investment opportunities, and policy measures designed to stimulate growth and innovation. The French government's proactive approach to creating a conducive environment for digital entrepreneurship includes offering tax incentives, simplifying regulatory procedures for startups, and investing in digital infrastructure. Additionally, the country's active venture capital scene and the availability of public and private funding mechanisms ensure that new ventures have access to the financial resources necessary for growth and expansion.

Government Support for Digital Entrepreneurship

The DIGITMI interview results showcased the central role of the French government in facilitating digital entrepreneurship training. A key initiative is the French National Plan for Digital Inclusion. This plan is aimed at supporting the digital transformation of businesses and developing a human-centric digital society. It focuses on providing training and support to approximately 1.5 million people, particularly those lacking basic digital skills, with the objective of achieving digital inclusion for at least one-third of the French population over the next decade (National Plan for Digital Inclusion, 2022). The government’s approach is aligned with the European Commission's 2030 targets, which aim for 80% of European citizens to develop basic digital skills in the next decade (European Commission, 2023). Additionally, the plan involves various activities, such as training and reskilling people to develop basic digital skills, supporting citizens in improving digital infrastructures, and promoting the use of digital technology among all societal groups, including the disadvantaged and unemployed.

Parallel to governmental initiatives, professional networks, and competitions offer vital support for French aspiring entrepreneurs. The BGE network plays a significant role in assisting very small businesses from their creation stage to development, providing a structured coaching system tailored to the business's progress level. Initiative France also emerges as a network comprising local entrepreneurs, offering financial solutions such as loans of up to €10,000 coupled with personalized support, thus addressing the critical needs of nascent businesses. Another notable entity, the Moovjee network, specifically targets entrepreneurs aged 18 to 30, offering mentoring services and annual awards of up to €10,000. These awards and the mentoring program are designed to strengthen young entrepreneurs, providing them with the necessary resources and guidance to ensure their business ventures are both successful and sustainable. In addition, for French citizens looking to transform innovative ideas into tangible businesses, a variety of financing tools offer essential support and resources:

- **ACRE (Aide aux Créateurs et Repreneurs d'Entreprise)** stands out by providing relief from certain social charges over the first year of business, facilitating a smoother start-up phase. It's particularly beneficial for those in the early stages of developing or acquiring a business, helping to lessen the financial burden by providing a 50% reduction in social contributions for up to the first 12 months. Eligibility hinges on being at the onset of business activity and not having utilized ACRE for a different business venture within the preceding three years, making it a targeted measure to encourage fresh entrepreneurial endeavours.
- **ADIE (Association pour le Droit à l'Initiative Économique)** addresses the needs of entrepreneurs who might not qualify for traditional bank loans. This organization offers microloans and tailored advice, targeting unemployed individuals or those on social benefits through free guidance for business creation, access to

micro-credits of up to €12,000, and comprehensive training programs designed to enhance entrepreneurial capabilities.

- **Honorary loans** provided by organizations such as Réseau Entreprendre and Initiative France furnish zero-interest financial support, ranging from €5,000 to €50,000, to strengthen business equity without necessitating a personal financial investment, thereby facilitating a smoother transition from idea to enterprise.

Other regional aids across various parts of France provide substantial financial incentives to entrepreneurs, aiming to stimulate business growth in targeted areas. For instance, the "exonération en zone franche urbaine (ZFU)" offers a tax exemption on profits for the first five years following a company's establishment, provided specific conditions are met, encouraging business activities within urban zones. In rural areas, aid for taking over a business can include tax exemptions and rebates, alongside direct financial support, fostering economic development in these regions.

The social security contribution exemption system in "zones de revitalisation rurale (ZRR)" enables businesses to benefit from an exemption on certain employer social security contributions for 12 months when hiring specific categories of employees, promoting employment in rural areas. Additionally, regional aid tailored for young entrepreneurs or tax credits are available, varying by region and project, demonstrating the localized support aimed at nurturing entrepreneurial ventures across the country. These measures collectively form a diverse toolkit of aids, designed to address the unique needs of businesses in different geographic and economic contexts.

National Skill Development Programs

The evolving trends in the French digital startup scene have reinforced the value of digital entrepreneurship training programs as a means to prepare aspiring entrepreneurs to meet the challenges of this dynamic sector. Based on this principle, the French digital entrepreneurship training landscape has been shaped by various initiatives and strategies, reflecting a strong focus on incorporating digital capabilities into the business sector and broader society. This integration, which spans various educational levels and includes specialised digital boot camps and online courses (e.g. HEC Paris Digital Entrepreneurship Certificate Program), is particularly focused on making digital entrepreneurship accessible to a wide demographic, ensuring that the training meets the needs of a diverse and evolving workforce. The French Digital Skills and Jobs Coalition, launched in 2017, for example, aims to meet the increasing demand for digital literacy. It focuses on compiling an inventory of existing competences and good practices in the field of digital skills. This initiative is part of a broader commitment by both the public and private sectors to enhance digital transformation (Digital Skills and Jobs Coalition, 2023).

In the same direction, the French government has implemented various state strategies to bolster digital comptetences. For instance, the digital strategy for education 2023-2027 focuses on strengthening students' digital skills and accelerating the use of digital tools for student success. The national strategy for artificial intelligence, launched initially in 2018 with a significant budget allocation, aims to position France as a leader in AI and other digital technologies (Ministère de l'Education Nationale et de la Jeunesse, 2023). This strategy includes promoting the creation of AI institutes, supporting AI research, and training talents in this field. In general, France's approach to digital entrepreneurship training, through a blend of government initiatives, strategic partnerships, and significant investments, is creating a fertile environment for nurturing digital skills and entrepreneurship.

The industry's contribution, especially in terms of providing practical insights and real-world applications, is equally important. Companies and professional organisations are actively engaged in initiatives to reskill employees and adapt their skills to meet new digital requirements (e.g. Station F). The industry's involvement is essential for ensuring that training programs are relevant and meet the current and future demands of the digital economy. NGOs in France complement government and educational efforts by focusing on community building and the inclusion of various societal groups in the digital transformation process. They play a crucial role in reaching out to

and supporting disadvantaged groups, promoting digital literacy, and facilitating access to digital technologies and entrepreneurship training.

ITALY

National Perception of Digital Entrepreneurship

As of today, the perception of digital entrepreneurship in Italy is not well understood or even defined. The main reason lies in the fact that, according to the Digital Economy and Society Index 2023 data, less than 50% of the population have even basic digital skills; this phenomenon, along with a slightly above average percentage of households subscribing to fixed broadband of at least 100 Mbps (59.60%). In this sense, the gap in perception is both cultural and societal, let alone infrastructural.

Considering the level of development of digital enterprises (of which, to make a representative example, we will consider data concerning the SMEs involved in e-commerce), the Italian situation is far behind the other Member States of the EU. In fact, if we consider the last DESI (Digital Economy and Society Index) monitoring, we can see that the percentage of SMEs selling online in Italy is one of the lowest rates among the Member States, with a percentage of 13%; what is more, this percentage is below the EU average of more than 6%. However, there is another important indicator displayed by the latest DESI report: the percentage of SMEs selling online in a cross-border market. In this context, we see how the Italian percentage, albeit still low (7.10%), is higher in comparison to other Member States' percentages and less distant from the EU average (only 1.60% difference).
The Italian strategy (called "Strategia Nazionale per le Competenze Digitali" or "National Strategy for Digital Competences") to bridge the gap in digital literacy and entrepreneurship is developed in various priorities and pillars, each one addressing one specific target group with a specific methodology. More in detail, the priorities identified are: School and Higher Education, Active Workforce (including unemployed and transitioning adults), ICT specialisation, Digital Citizenship.

National Digital Start-up Landscape

The Italian Ministry of Enterprises defines an innovative start-up as a young enterprise that invests much of its capital in technology and R&D, identifying in it one of the major political priorities for the Italian economic development. As such, the landscape portrayed by the official register of enterprises is that there are roughly 14,000 start-ups, most of which are concerned with b2b services (representing 76.6% of these enterprises) and manufacturing (15.0%), followed by a mere 3% of start-ups dealing with commercial activities. Regardless of the sector concerned, these start-ups are unevenly distributed in the Italian territory, with a major density in the Lombardia and Lazio regions.

As of the year 2023, in Italy there are approximately 14,000 start-ups, with a steady increase in the years until 2021 (with more than 3,500 registered start-ups) and a progressive decline in the following years (629 as of 2023). What is most important in this situation is that in the last years an important investment has been made to support Italian innovative start-ups in the pre-seed and seed phases; the main rationale behind this investment is due to the scarce survival rate of start-ups after the seed phase. Therefore, in the last years the seed and pre-seed start-ups have been increasing in number.

An article published by Open Fiber reports in the last years an increased interest among the digital SMEs in e-commerce, which has been growing exponentially in the last decade. A similar trend has been reported concerning the Campania region, which has witnessed an unprecedented increase (+72% from 2012 to 2022) in digital SMEs that has changed the polarisation among Lombardia and Lazio regions in favour of the Italian South.

As of today, the current tools provided to the digital entrepreneur are the Competence Centers, Digital Innovation Hubs and the “Punti Impresa Digitale” (hotspots for digital enterprises), which are all aimed at the development of knowledge, networks and at the testing of products and services. However, since they have been implemented less than five years ago, their impact on the development of digital entrepreneurship in Italy is still yet to be assessed.

Government Support for Digital Entrepreneurship

In 2020, the Italian government has launched a National Strategy for Digital Start-ups. In this strategy are defined all the resources, policies, funds, and facilitation that Italian start-ups can benefit from in their first 60 months of life. As for the policies that address the needs of unemployed and transitioning adults, in Italy, we witness the development of the so-called “ITS academy”. This training entity is meant to encounter the needs of the market (mostly in terms of digital skills) by providing courses for the unemployed and transitioning people in need of upskilling paths.

The national strategy for digital competences (launched in 2021 and still ongoing) has designed different areas of intervention to invest in a greater engagement towards digital entrepreneurship. In fact, both in terms of reforming the education sector and improving the field of lifelong learning, the strategy plans on enhancing the current curricula on ICT (so that they better match the entrepreneurial field) and on encouraging the development of managerial roles in a highly innovative dimension.

The current regulatory framework in the matter of e-commerce is based on the 2000/31/EC directive, which has been converted to law in Italy with the legislative decree 70/2003. In this sense, there is not much guidance for the entrepreneurs that approach the online sales dimension; in fact, even the current training programmes do not include in their curricula a guide on how e-commerce works and how to tailor it correctly, thus leaving a gap between the technical know-how and the legal and commercial knowledge required to manage an online commerce legally.

National Skill Development Programs

The Italian national skill development programme is diversified accordingly to the target of the actions proposed; as an example of this, we can find the fact that the most technically specialised training and courses are available mainly for enterprises, implying that the entrepreneurial skills required to start a business are not a topic sought after by enterprises themselves. This goes along with those fields where more accurate curricula on entrepreneurship are realised and implemented; these are: Higher Education, with tailored study courses containing notions of both technology and business management; School, with practical experiences aimed at enhancing both digital and entrepreneurial skills; Lifelong learning for unemployed and transitional adults, with specific and tailored courses aimed at enhancing the digital competences to best engage with the Enterprise 4.0.

The main framework adopted in the field of education by the Italian government for what pertains to digital entrepreneurship skill development is the one embodied by the European framework for digital competences (DigComp). Moreover, although the main scope of the framework is to transfer knowledge and expertise in the fields of digital technologies and ICTs, most of the programmes carried out by this framework are put in place in cooperation with private enterprises, so that the people engaged (mostly in the educational field) would have a direct approach to the entrepreneurial dimension and competences.

As reported in the National Strategy for digital competences, the Italian government acknowledges that the latest developments in technology have most certainly shaken to the core the very concept of digital entrepreneurship (considering concepts like IoT, blockchain, AI, etc). Consequently, the Italian solution to these new challenges consists of empowering ad enhancing the digital skill acquisition process, enabling a greater access to the internet

for the citizens (representing one of the greatest watersheds amongst the population for the digital divide), and connecting the world of entrepreneurship to that of the academia. As for educational solutions, the government aims mainly at developing state-of-the-art Higher Education curricula for those who plan to study in the ICT-related sectors.

The Italian government has launched a collaboration between public and private sectors in realising High Specialisation Competence Centres, aimed at upskilling enterprises in all the specific matters that pertain to Hi-Tech and digital entrepreneurship. Most of the courses that they provide are aimed at newly developed enterprises (Micro to Small), although they are also open to medium digital enterprises.

As of today, the mechanisms put in place to track the progress of the national digital competence framework are the monitoring parameters included in the strategy itself. As such, these indicators do not track the impact of the knowledge acquired, which would have to take into consideration the evolution of the landscape of digital enterprises in the years to come. However, it does take into consideration the number of individuals successfully engaged in the strategy; this indicator could work as a baseline value for potential future developments in the field of digital entrepreneurship.

SPAIN

National Perception of Digital Entrepreneurship

Digital entrepreneurship emerges as an opportunity to drive a more dynamic, innovative, and competitive economy in the country. The crisis stemming from COVID-19 had a detrimental impact on the entrepreneurial ecosystem, creating a scenario of profound uncertainty that hindered the establishment of innovative businesses. In response to this challenge, both the approval of the Start-ups Bill and the formulation of the Spain Entrepreneurial Nation program represent the initial responses to this uncertain context. These initiatives aim to establish a more favourable regulatory framework for the emergence of technology companies while strengthening incentives for innovative entrepreneurship.

In the same vein, efforts will continue to foster digital entrepreneurship with the goal of consolidating a more dynamic, interconnected, innovative, and robust ecosystem. This strategy aims to facilitate a structural shift toward a more entrepreneurial model in all sectors and regions, supporting the development of skills and tools for entrepreneurs. Furthermore, the economic impact of the pandemic has accelerated technological change, making the adaptation of businesses to new business models, environmental sustainability demands, distribution channels, digital tools for remote work, e-commerce, and digital marketing even more imperative.

Spain has seen a positive evolution in key international indicators of digitization in recent years, particularly excelling in connectivity and digital public services. However, progress in the integration of Digital Technology by businesses has not been as pronounced, placing Spain at 13th in the European ranking in 2020. According to the Digital Economy and Society Index (DESI) report for 2020, Spanish SMEs still have untapped potential in fully embracing e-commerce. Spain also falls below the European average in the usage of cloud services and the adoption of big data analytics by companies with more than 10 employees. Overall, Spain exhibits a limited presence of tech companies in the productive fabric, posing an obstacle to its growth, internationalization, and consequently, the overall increase in productivity in the economy. On the national front, the Digital Agenda 2025 prioritizes digital empowerment as one of its 10 key pillars. The goal is to "strengthen the digital skills of workers and the entire population," aiming for 80% of the Spanish population to possess basic digital competencies by the end of the program period.

La Agenda Digital 2025, titled "A roadmap for Spain's digital transformation," outlines digital competencies as the third of its ten strategic pillars designed to drive sustainable and inclusive economic growth. It categorizes four types of digital competencies, each tailored to specific target populations:

- **Basic digital skills for the general population**. These skills are essential for full participation in the digital society, enabling individuals to operate confidently in tasks such as communication, information access, and transactions like purchasing goods, interacting with public administrations, or engaging with businesses.
- **Advanced digital skills**, encompassing activities of a more intricate technological nature, such as conducting sophisticated online content searches, publishing digital content, or programming and configuring simple digital systems. Due to their nature, these competencies are particularly relevant for the active workforce (employed and unemployed).
- **Specialized digital skills**, focusing on specific ICT competencies that enable the use of advanced digital tools. These competencies are crucial to meet the labour market demand for digital technology specialists directly involved in designing, implementing, operating, and/or maintaining digital systems. This skill set includes cutting-edge areas such as data analytics, artificial intelligence, cybersecurity, supercomputing, quantum computing technologies, or blockchain technology, among others.
- **Digital skills in education**: Lastly, but equally important, are the digital competencies that facilitate lifelong learning. Both primary and secondary education studies and non-digitalization-focused vocational training should provide the necessary digital competencies to ensure full integration and active participation in societal life. These competencies are particularly significant as they equip individuals with the tools needed to stay updated and develop personally and professionally, adapting to continuous change (Agenda Digital 2025, p.12).

The priority given to these skills is intended to place special emphasis on groups with greater difficulties in acquiring these skills, such as the elderly, those with low-income levels, those living in non-urban areas, or those with a lower level of education. Moreover, considering that part of these groups may be within the active working-age population, this initiative aims to address the 8% of the Spanish population that has never been connected to the Internet and the almost 20 million individuals who lack basic digital skills. Given these specific challenges, it is essential to design bottom-up measures, involving local actors through the Autonomous Communities and Local Authorities, as the local dimension is particularly crucial, aligning with international best practices (in particular, benchmarking with Finland, Sweden, and Luxembourg, leading countries in this field according to the DESI 2020 index).

As many of these groups (people aged 65-75, non-urban dwellers with limited connectivity, or low-income households) lack electronic devices (phone, tablet, or laptop with an internet connection) and therefore connectivity, the creation of national digital literacy centres is recommended. These centres are crucial for those who lack digital skills, as they offer face-to-face support. In addition, the proposal suggests establishing an online platform with MOOCs (Agenda Digital 2025, p.21).

National Digital Start-up Landscape

Digital entrepreneurship emerges as an opportunity to boost a more dynamic, innovative, and competitive economy in the country. Recent entrepreneurial activity (TEA) has regained pre-pandemic levels, indicating an increase in potential entrepreneurship. Throughout 2022, approximately 6% of the adult population in Spain is starting new business projects with less than three and a half years of existence, a percentage similar to that recorded in 2019, before the health challenges and tensions in Ukraine. But there's more. The intention to undertake in the next three years is held by 9.4% of the population, the highest percentage since 2012, suggesting a growth in entrepreneurial activity comparable to that experienced after the 2008 financial crisis. Eight out of ten people involved in the entrepreneurial process claim to have the knowledge and skills necessary to carry it out (GEM Spain Report 2022-2023, p. 16).

Entrepreneurial activity in Spain is lower but more resilient than in other countries, with lower closure rates compared to its reference group. The number of start-ups grows significantly in our country each year. In fact, 2023 concluded with a slightly higher number of companies, surpassing 23,000. However, a significant portion of these start-ups is concentrated in specific Autonomous Communities, such as Madrid, Catalonia, and Andalusia. Entrepreneurship in Spain in 2023 is booming, driven by technology, sustainability, and innovation across various sectors. Opportunities abound, and both the government and entrepreneurship support organizations are committed to helping entrepreneurs succeed. Regarding a study conducted between 2015 and 2020 by Informa D&B (a subsidiary of CESCE), it was established that during the study period, 561,025 companies were created, of which 420,144 (approximately 75%) are currently active. Out of these, we consider 22,771 companies, or 5.42%, as potential start-ups. It was evident that start-ups have a higher survival rate, with 81.26% of these companies still active today compared to 73.83% in the control group.

While the digitalization of the Spanish population has rapidly progressed since the beginning of the century, digital transformation in the business realm has primarily depended on the size of the companies and the sector to which they belong. While adoption levels of digital technologies are high in SMEs and large enterprises, in smaller companies (micro-enterprises with 0 to 9 employees), digitalization is progressing more slowly. Additionally, the degree of digitalization varies significantly across different sectors, with some, such as scientific-technical, hospitality, or information and communications, reaching high levels, while others, like construction, real estate activities, or retail, remain behind.

As mentioned in the introduction to the chapter, Spain scores unfavourably in one dimension of the Digital Economy and Society Index, specifically in the integration of digital technologies into businesses. The challenge for the coming years is to support the digitalization of the country's smaller enterprises (those with 0 to 9 employees), which constitute over 95% of the business fabric. The goal is to enhance their processes to improve productivity and competitiveness, thereby fostering their growth (Villar, J.P., and Mendoza, C., 2023, p.32).

The drive to digitise SMEs is highly conditioned by the availability of financing, as well as by the lack of training for the acquisition of digital tools to face the new technological challenges. In this sense, the SME Digitalisation Plan 2021-2025 sets the roadmap to address the challenge of SME digitalisation. This challenge has also been included in component 13 "Boosting SMEs" of the Recovery Plan, whose investment 3 "Digitalisation and innovation" includes several programmes to boost the digitalisation of SMEs. The Plan has a total investment of 4,656 million euros, with 14 measures spread over four lines of action that will enable companies in general, not just digital ones, to address the needs: Basic digitalisation for SMEs, Support for change management, Disruptive innovation and digital entrepreneurship and Support for sectoral digitisation.

Government Support for Digital Entrepreneurship

The Activa Start-ups programme will be implemented with a planned investment of €44 million to foster collaboration between start-ups and consolidated companies. In addition, the Network of Entrepreneur Service Points will be strengthened, and the National Entrepreneurship Office will be established to support the creation and management of technology companies. To boost the international projection of technological entrepreneurship in Spain, initiatives such as the Bandera Programme will be launched and a national brand as an entrepreneurial nation will be promoted. The Women's Talent Attraction Programme (The Break) will also be implemented. In parallel, the National Digital Skills Plan will focus on educational digitisation, job re-skilling, and closing the gender gap. This plan, integrated in the Digital Agenda Spain 2025, seeks to strengthen the digital skills of the population and reduce the percentage of people without basic digital skills.

Spain starts from a relatively advanced position in the Digital Economy and Society (it ranks 11th out of 28 in the global DESI1 index) but nevertheless exhibits mixed results in terms of human capital: almost half of the Spanish population (43%) lacks basic digital skills and 8% have never used the internet. The proportion of ICT graduates is

only 4% of the total number of graduates. The share of ICT specialists in total employment is 3.2%. The share of female ICT specialists has remained stagnant over the last four years at around 1% of total female employment (p.4).

In Spain, 8% of the working population has never been online, and 45% of the Spanish population has insufficient digital skills. Therefore, long-term unemployed people, women, and older adults, who are no longer in the labour force but still actively participate in society, should be encouraged to acquire basic digital skills for citizenship (p.16). Therefore, although the evolution of Spain is positive, the lack of digital skills, both basic and advanced, is a brake on the digital transformation. In this context, the National Digital Skills Plan currently in place in Spain aims to overcome each of these challenges, providing a roadmap to identify the necessary measures to ensure that all citizens have the necessary tools to acquire and develop digital skills.

The public-private collaboration will be key for the identification of needs and the development of the different measures and projects of the training programmes. In addition to online and face-to-face resources, big data techniques will be used for content analysis and classification of training actions carried out in the workplace. Digital skills stand out for their cross-cutting nature, which affects sectoral policies of different nature and, therefore, different areas of the Public Administrations. To coordinate actions by the public sector and also to promote public-private collaboration, a "digital skills hub" will be created as a workspace, a forum for dialogue, a knowledge network, a laboratory of ideas, and a channel for disseminating the measures and results of the Plan (p.7).

National Skill Development Programs

As digitalisation can also help to facilitate information management and the improvement of environmental knowledge and parameters, the integration and systematisation of processes, the modernisation of management, the prevention of climate risks, and the provision of comprehensive environmental services, it has been established that the acquisition of digital competences in the different areas will be essential.

Within the framework of the National Digital Skills Plan, in particular component 19, it addresses the entire population, from the digitisation of school to university, including upskilling and reskilling at work, with a special focus on closing the gender gap and boosting training in areas of demographic decline. The plan aims to guarantee digital inclusion, leaving no one behind in the digitalisation process and advancing the development of basic citizen skills, so that all people can, among other actions, communicate, shop, carry out transactions, or interact with administrations using digital technologies with autonomy and sufficiency. Thus, the current national plan is organised into four axes, which in turn are divided into seven lines of action:

1. **Transversal digital competences:**
   - Digital skills for citizens (with emphasis on groups at risk of digital exclusion).
   - digital exclusion).
   - Fight against the gender digital divide.

2. **Digital Transformation of Education:**
   - Digitalisation of education and development of digital competences for learning in education.

3. **Digital skills for employment:**
   - Digital skills training for unemployed and employed people in the private sector, with a focus on in the private sector, with a special focus on young unemployed people.
   - Training in digital skills for people in the service of public administrations.

- Development of e-skills for small and medium-sized enterprises (SMEs) to enable them to cope with (SMEs) so that they can successfully face their digital transformation processes and adapt to the new economy.

4. **Digital professionals:**
   - Promotion of ICT specialists, Information and Communication Technologies (Vocational Training graduates).

The implementation of the national digital skills plan will mean that 80% of the Spanish population will be trained in digital skills. Currently, 34% of the workforce in Spain lacks adequate digital skills, and approximately 40% of people without basic digital skills are unemployed. In addition, 8% of the working population has never accessed the internet, and 45% of Spaniards lack digital skills. Therefore, the aim is to encourage the long-term unemployed, women, and older adults (who, although not part of the labour force, are still actively participating in society) to acquire basic digital skills to adapt to the demands of today's world and the constant technological evolution.

In this context, it has become essential to increase the number of highly qualified professionals in Information and Communication Technologies (ICT) to ensure the necessary skills in the transition to a digitalised economic environment subject to new environmental demands. In addition, all companies, especially SMEs, are required to have entrepreneurs who understand the importance of being present online through sales channels, dissemination, and the use of various platforms. In line with these goals, the investment projected by Component 19 (Digitalisation Plan) is directly aligned with the need to create or maintain an average of 15,986 jobs annually during the planned investments between 2021 and 2023. It is estimated that 29,000 jobs will be required in 2021 alone to address the workload associated with the €2,222 million investment planned for that year.

Indeed, there are links between national programmes and the demands of the digital business sector. One example is the National Digital Skills Plan (PNCD), which lacks a budget allocation and does not provide direct support to companies to gain a competitive advantage. However, it seeks to promote transversal digital skills through the creation of a network of digital training support centres, the strengthening of the Aulas Mentor network, and the accreditation of new centres for training in basic and advanced digital skills. According to the second report on opportunities and challenges for the self-employed and small businesses in the digital environment in 2020, 90% of Spanish SMEs still do not use electronic sales channels, mainly due to a lack of the necessary digital skills. This lack of knowledge is exacerbated in traditionally analogue industrial sectors, thus demonstrating the link between digital skills programmes and the current needs of industry and the digital entrepreneurial environment. On the other hand, within the framework of the National Digitalisation Plan, the Digital Skills for Employment programme aims to intervene in the qualification and requalification of employed and unemployed people. This involves strengthening active employment policies, which include guidance, employment and training services, and programmes to improve job opportunities, both in employment and self-employment, and to promote entrepreneurship and the social economy.

As regards the monitoring and evaluation of the National e-Skills Plan, this will be carried out employing a set of indicators that will be aligned with those proposed at the European level (DESI components). The aim is to ensure the achievement of the strategic objectives set. These indicators do not only seek to measure the result of the implementation of the proposed measures but also the evolution of the digital transformation of Spanish society. Once the barriers of connectivity and access to electronic devices have been overcome, they will focus on assessing the development of the digital skills needed to take advantage of the available opportunities. In short, these indicators will be key to highlighting the behaviour of society during the transformation process towards an inclusive, skilled, competitive, and sustainable digital society (Plan Nacional Competencias Digitales, p.7)

ENTREPRENEURIAL BLUEPRINT: IDENTIFYING CORE DIGITAL TRAINING NEEDS

The examination of the digital entrepreneurship training landscape as a result of the field research conducted across Austria, Italy, France, Spain, and the Czech Republic uncovered a commonality in training needs that are pivotal for fostering a robust digital entrepreneurial ecosystem. These common training needs indicate the essential skills and competencies that are pivotal for entrepreneurs to thrive in the digital economy, reflecting the shared challenges and opportunities that digital transformation presents across all five European contexts:

1. **Digital Literacy and Technological Proficiency:** Across the board, there is a unanimous call for enhanced digital literacy and technological proficiency. This includes understanding and leveraging digital tools, platforms, and technologies essential for starting and growing a digital business. Skills such as e-commerce, social media marketing, search engine optimization (SEO), and the ability to use various digital analytics tools are seen as fundamental. This need reflects the growing importance of online presence and digital marketing strategies in reaching global markets and understanding consumer behaviour through data analytics.
2. **Establishing an Entrepreneurial Mindset:** Cultivating an entrepreneurial mindset is about more than instilling business acumen; it's about nurturing qualities such as resilience, creativity, and the ability to recognize and seize opportunities in the face of challenges. An entrepreneurial mindset encourages continuous learning, adaptability, and the willingness to take calculated risks. For digital entrepreneurs, this mindset is pivotal in navigating the fast-paced and often unpredictable digital landscape. Training programs need to go beyond technical and managerial skills, integrating experiences that build these soft skills. This involves workshops on creative problem-solving, resilience training, and opportunities to engage with successful entrepreneurs who can share their journeys, challenges, and insights. By doing so, aspiring entrepreneurs are better prepared to approach the digital economy with confidence, determination, and a proactive attitude, essential for success and innovation.
3. **Collective Understanding of the Digital Economy:** The digital economy encompasses a wide array of activities that use digitized information and knowledge as key factors of production, the internet as the main vehicle to support its spread, and digital business models to create value. It's imperative for digital entrepreneurship training to provide a comprehensive overview of what constitutes the digital economy, delineating its components such as e-commerce, digital finance, and the gig economy, among others. Training programs should, therefore, include modules that explore the structure, dynamics, and trends of the digital economy, offering insights into consumer behaviour, digital marketing strategies, data analytics, and the regulatory environment affecting digital businesses.
4. **Data Analytics and Cybersecurity Awareness:** The importance of data analytics for making informed business decisions and the need for cybersecurity awareness to protect business and customer data are emphasized. These competencies are critical in an era where businesses increasingly rely on data for operational and strategic decisions and face growing threats from cyberattacks. Training programs focusing on these areas are crucial for equipping digital entrepreneurs with the skills to navigate the complexities of data management and security.
5. **Innovation and Adaptability Skills**: The fast-paced nature of the digital economy necessitates a strong emphasis on innovation and adaptability. Entrepreneurs must be equipped with skills to continuously innovate, adapt to new technologies, and pivot their business models in response to market changes. This includes fostering a mindset that embraces change, encourages creative thinking, and supports problem-solving in uncertain and dynamic environments.
6. **Leadership and Team Management in a Digital Context:** As digital ventures often involve virtual or remote teams, there is a recognized need for leadership and team management skills tailored to the digital context. This includes understanding how to motivate, manage, and lead diverse and distributed teams, facilitating effective communication, and fostering a culture of collaboration and inclusivity in a digital-first workplace.
7. **Understanding Digital Regulations and Compliance**: A common training need identified is the understanding of digital regulations, compliance, and ethical considerations, especially in areas such as data protection (GDPR in Europe), e-commerce laws, and digital transaction regulations. Entrepreneurs need to

navigate the legal landscape of conducting business online, ensuring their ventures comply with local and international laws to avoid penalties and build trust with customers.

8. **Access to Knowledge and Practical Application:** Equally important is ensuring that digital entrepreneurship training is grounded in solid theoretical knowledge while being flexible enough to adapt to the rapidly changing digital landscape. Training programs must offer a balance between conceptual understanding and hands-on, practical experiences that enable entrepreneurs to apply what they have learned directly to their business ventures. This includes case studies, simulations, project-based learning, and mentorship programs that bridge the gap between theory and practice. Access to current, real-world examples and the opportunity to engage with successful digital entrepreneurs can provide invaluable insights, inspiration, and practical guidance.
9. **Microlearning as a Key Educational Strategy:** The incorporation of microlearning into digital entrepreneurship training programs addresses the need for accessible, bite-sized learning opportunities that fit the busy schedules of aspiring and established entrepreneurs. Microlearning involves delivering content in small, specific bursts that allow for focused learning without overwhelming the learner. This approach is particularly effective for covering digital skills and competencies, as it allows learners to quickly acquire and apply new knowledge in specific areas of need, such as mastering a new digital tool, understanding a particular aspect of digital marketing, or implementing cybersecurity best practices. Microlearning platforms can provide just-in-time learning, supporting ongoing skill development and immediate problem-solving, thereby enhancing the agility and responsiveness of digital entrepreneurs in the fast-evolving digital economy.

INTERVIEW RESULTS

01 Digital Entrepreneurship Training Landscape

Strengths: Existing training programs are appreciated for updating the use of social networks and digital platforms, integrating cross-sectional competencies crucial for both startups and established organizations. The emphasis on mentorship and practical examples was highlighted as a core strength, aiding in bridging the theory-practice gap.

Weaknesses: A common critique across all 5 participating countries is the lack of updated content in training programs, with trainers often delivering only basic content. The high cost and accessibility barriers to higher education programs in digital entrepreneurship were identified as significant challenges, limiting wider participation.

02 Digital Entrepreneurship Training Needs

Skills Gap:
Interviewees across all countries noted a skills gap, particularly in the practical application of digital tools and technologies. The need for a balance between specialization and broad skill sets is emphasized, with a call for more interdisciplinary training that prepares individuals for the multifaceted nature of digital entrepreneurship.

Soft Skills and Interdisciplinarity:
Resilience, creativity, leadership, and effective networking emerge as crucial soft skills. Training programs are encouraged to incorporate interdisciplinary approaches, combining digital skills with marketing, legal knowledge, and strategic planning.

03 Ongoing Assessment and Validation

Alignment with Industry Needs:
Continuous updating of training content to align with fast-evolving digital trends and industry needs is deemed essential. The use of state-of-the-art tools and methodologies, such as the Business Model Canvas, is recommended.

Skill Assessment and Certification:
Interviewees highlight the growing relevance of micro-credentials, particularly for demonstrating specific competencies. However, the cultural and contextual value of traditional certifications remains significant, especially in regions like Austria where formal qualifications are highly valued.

04 Overall Evaluation

The landscape of digital entrepreneurship training across Austria, the Czech Republic, France, Italy, and Spain is characterized by a dynamic interplay between evolving digital technologies, the need for comprehensive skill sets including both technical and soft skills, and the emerging role of micro-credentials in validating and sustaining lifelong learning.

The DIGITMI interview findings, as a result of interviewing 10 individuals (in total) of various backgrounds, underscore the importance of adaptability, continuous learning, and the need for training programs and mentorship to remain closely aligned with industry developments to effectively empower aspiring digital entrepreneurs.

Demographic Breakdown (109 respondents)
Age Group: Most respondents are in the 25-35 age group (43.28%).
Gender: 76.12% are females, making them the dominant gender group.
Education: 25.37% of respondents have a master's degree or higher.

SURVEY RESULTS

29% of respondents identified Social Media Marketing, Website Development, and SEO as skills already possessed.

27% of respondents identified Digital Marketing and Business Strategies for Digital Platforms as top areas of attention.

33% of respondents are interested in improving their digital skills across all indicated areas (personal, career, and entrepreneurial development).

30% of respondents showed a preference for a mix of practical and theoretical learning when it comes to skills training.

53% of respondents value practical experience as more important or equally important compared to certifications.

46% of respondents agree that microcredentials can demonstrate a crucial role in addressing skill gaps in digital training.

86% of respondents declare that they have never obtained certifications related to digital entrepreneurship

31% of respondents believe certifications positively impact professional opportunities.

38% of respondents believe that employers or clients recognize and value microcredentials.

48% of respondents remain uncertain about the recognition of microcredentials in professional settings

1. **Prevalent Social Media Skills:** A notable portion of respondents already have a solid foundation in social media marketing.
2. **Gap in Advanced Digital Skills:** There's a significant need for advanced training in areas like Digital Marketing and Business Strategies for Digital Platforms.
3. **Growing Importance of Security and Online Sales:** Acknowledgment of cybersecurity and e-commerce strategies highlights their critical role in expanding online businesses.
4. **High Demand for Comprehensive Skill Enhancement:** Many respondents are eager to improve their digital skills across various dimensions, highlighting a broad interest in leveraging digital technologies for personal and professional growth.
5. **Hands-on Learning Preferences:** The preference for practical exercises and direct practice suggests a desire for learning methods that offer immediate skill application.
6. **Practical Experience Over Certifications:** A majority of respondents value practical experience as more important than certifications, emphasizing the importance of real-world skills over formal qualifications.
7. **Potential of Microcredentials in Skill Development:** There's a recognition of the role of microcredentials in addressing specific skill shortages, though there remains some uncertainty about their overall acceptance in the business community.

THE PROFILE OF A SUCCESSFUL DIGITAL ENTREPRENEUR

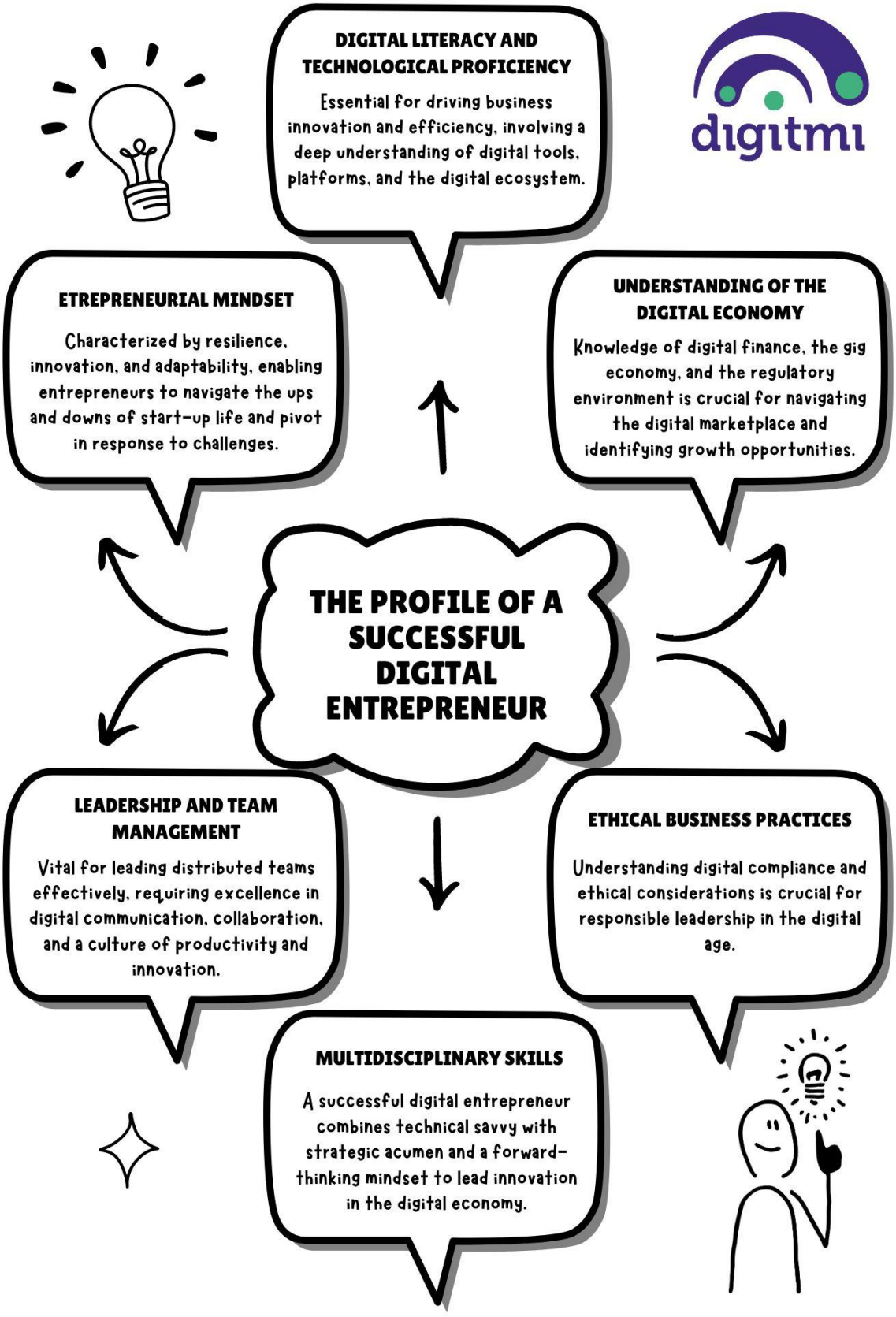
In the rapidly evolving digital landscape, the archetype of a successful digital entrepreneur is continuously reshaped by emerging technologies and market demands. This evolution has underscored the indispensability of certain core competencies and training needs critical for navigating and thriving within the digital economy. The quintessential digital entrepreneur now emerges as a composite of multidisciplinary skills, combining technical savvy with a nuanced understanding of the digital marketplace and an agile, forward-thinking mindset.

Foremost, the embodiment of digital literacy and technological proficiency is fundamental. A successful digital entrepreneur must not only grasp the basics of digital tools and platforms but also excel in utilizing these resources to drive business innovation and efficiency. This involves a deep understanding of the digital ecosystem, encompassing everything from e-commerce platforms and digital marketing tools to advanced data analytics and cybersecurity measures. The ability to harness these technologies for strategic advantage sets the foundation for sustained entrepreneurial success in a digital-first world.

Equally critical is the nurturing of an entrepreneurial mindset characterized by resilience, innovation, and adaptability. This mindset is what enables digital entrepreneurs to persevere through the highs and lows of start-up life, to see beyond temporary setbacks, and to pivot swiftly in response to new challenges or opportunities. Training programs that simulate real-world entrepreneurial challenges, encourage risk-taking and foster a culture of continuous innovation are invaluable in cultivating this mindset. Such programs help entrepreneurs not just to survive but thrive in the dynamic digital economy.

Moreover, a successful digital entrepreneur possesses a comprehensive understanding of the digital economy's structure and dynamics. This includes insights into digital finance, the gig economy, and the regulatory environment, which collectively influence digital business operations and strategy. Knowledge in these areas enables entrepreneurs to navigate the complexities of the digital marketplace, identify new growth opportunities, and implement sustainable business models that leverage digital technologies for competitive advantage.

Finally, the capacity for leadership and effective team management in a virtual or remote working environment is indispensable. As digital businesses often operate with distributed teams, entrepreneurs must excel in digital communication, collaboration, and leadership to foster a productive and innovative work culture. Understanding digital compliance and ethical considerations in business practices further strengthens an entrepreneur's ability to lead responsibly in the digital age. Through a blend of technical knowledge, strategic acumen, and leadership skills, the successful digital entrepreneur stands at the forefront of innovation, ready to shape the future of the digital economy.


DIGITAL LITERACY AND TECHNOLOGICAL PROFICIENCY
Essential for driving business innovation and efficiency, involving a deep understanding of digital tools, platforms, and the digital ecosystem.
digitmi
ETREPRENEURIAL MINDSET
Characterized by resilience, innovation, and adaptability, enabling entrepreneurs to navigate the ups and downs of start-up life and pivot in response to challenges.
UNDERSTANDING OF THE DIGITAL ECONOMY
Knowledge of digital finance, the gig economy, and the regulatory environment is crucial for navigating the digital marketplace and identifying growth opportunities.
THE PROFILE OF A SUCCESSFUL DIGITAL ENTREPRENEUR
LEADERSHIP AND TEAM MANAGEMENT
Vital for leading distributed teams effectively, requiring excellence in digital communication, collaboration, and a culture of productivity and innovation.
ETHICAL BUSINESS PRACTICES
Understanding digital compliance and ethical considerations is crucial for responsible leadership in the digital age.
MULTIDISCIPLINARY SKILLS
A successful digital entrepreneur combines technical savvy with strategic acumen and a forward-thinking mindset to lead innovation in the digital economy.

BEST PRACTISES / SUCCESS STORIES IN EUROPE

In the pursuit of advancing digital entrepreneurship skills across Europe from 2019 to 2023, a variety of training programs and methodologies have emerged as best practices, distinguished by their innovation, effectiveness, and the impactful outcomes they've achieved. These best practices, which range from online courses and workshops to micro-learning modules and skill competence frameworks, have not only been implemented successfully but also recognized and endorsed by public institutions. Each has sparked subsequent initiatives, demonstrating their capacity to influence the digital entrepreneurship training landscape profoundly. Their selection as exemplary models is based on criteria such as implementation within the specified timeframe, acknowledgment by public entities, initiation of follow-up activities, innovative approaches to digital entrepreneurship, proven success, and demonstrable impact on participants and the broader ecosystem:

Master Program in "Digital Entrepreneurship" - FH Joanneum (Austria)

Launched at FH Joanneum in Austria, the "Digital Entrepreneurship" master's program represents a cutting-edge approach to fostering the growth of digital start-ups. This part-time, interdisciplinary master's degree, conducted in both English and German, admits 20 students annually for a deep dive into the digital business landscape over four semesters. Originating from the insights gained through the Erasmus+ project "Corship - Corporate Edupreneurship", the program was designed to address the acute need for specialized education in digital entrepreneurship. Its innovative curriculum is structured to accommodate students from various disciplines, focusing on entrepreneurial mindset, service engineering, and digital and data technologies through project-based learning and intensive networking within the start-up ecosystem.

Aimed at equipping students with the necessary tools to launch or innovate businesses in the digital domain, the program emphasizes developing digital business ideas and an entrepreneurial mindset. It uniquely positions students to access and leverage the local, national, and international start-up ecosystem, fostering co-innovation and corporate entrepreneurship. By tackling the challenges of entrepreneurial skill development and the deficit of practical experience, the program integrates venture creation, co-innovation, and corporate entrepreneurship into its core, facilitated through hands-on start-up labs and multidisciplinary teamwork.

The "Digital Entrepreneurship" master's program is distinguished by its interdisciplinary approach, and didactic concept focusing on coaching, mentoring, and project-oriented work, alongside extensive networking opportunities. This model not only serves as a blueprint for educational institutions aiming to cultivate digital entrepreneurship but also offers a framework that can be adapted to train unemployed or transitioning adults. By focusing on specific modules tailored for microlearning and emphasizing industry connections through mentorship, the program's structure, and outcomes are poised to inspire similar initiatives, bridging the gap between academia and the digital start-up ecosystem effectively.

Link: https://www.fh-joanneum.at/digital-entrepreneurship/master/

Digital Entrepreneurship Innovation Lab, University of Vienna (Austria)

In Austria, the Digital Innovation Lab, hosted by the University of Vienna, stands out as a pioneering initiative aimed at equipping students from diverse academic backgrounds with the tools and knowledge necessary for digital entrepreneurship. This three-month training program, designed to blend theoretical insights with practical application, offers 150 hours of in-depth coursework and is integrated with Master's programs, allowing students to earn 8 ECTS credits. The Lab targets Master's students, PhD candidates, and post-docs, providing a unique platform where participants are not required to have a pre-existing entrepreneurial idea. The format encourages the formation of multidisciplinary teams that engage in the creation and development of business models, with the entire course conducted in person and in English to ensure wide accessibility.

The primary mission of the Digital Innovation Lab is to bridge the gap between academic theory and real-world business practices, particularly for students who may not have a background in business or entrepreneurship. This initiative successfully addresses the challenge of offering hands-on entrepreneurial education in a practical setting, thereby fostering an environment where innovative ideas can flourish. The program's emphasis on diversity, welcoming participants from a variety of disciplines, enriches the learning experience by incorporating multiple perspectives and approaches to problem-solving. This inclusivity ensures a broad participation base, enhancing the richness of discussions and the quality of business models developed.

The Lab's innovative educational model is evident in its structured yet flexible curriculum, which includes modules on entrepreneurship, innovation, science and technology, and legal mentoring, culminating in a competitive pitch event. This end-to-end approach, from ideation to pitch, is supplemented by comprehensive mentorship and the opportunity for legal support, making it a holistic learning experience. The program's adaptability and focus on practical skills development, without the prerequisite of having a business idea, make it a valuable model that can be replicated in different educational contexts.

Link: https://digital-ilab-2023.univie.ac.at/

Innovation Centre of the Ústí nad Labem Region-ICUK (Czech Republic)

Since its establishment in 2015, the Innovation Centre of the Ústí nad Labem Region (ICUK) has been instrumental in fostering a robust innovation ecosystem within the region. Founded through the collaborative efforts of the Ústí nad Labem Region, Jan Evangelista Purkyně University, and the Regional Chamber of Commerce, ICUK has dedicated itself to the mission of transforming the Ústí Region into a vibrant hub for innovation, entrepreneurship, and economic growth. By providing a comprehensive suite of services including training, co-financing, and start-up incubation, ICUK has positioned itself as a cornerstone of regional development. The only prerequisite for accessing ICUK's resources is residency within the region, ensuring that the benefits of this initiative are widely available to local entrepreneurs and businesses keen on making a significant impact.

ICUK's role extends beyond mere support for individual enterprises; it acts as a strategic partner to its founders, playing a crucial role in the formulation and execution of key strategic priorities aimed at bolstering entrepreneurship and the knowledge economy. By drawing inspiration from leading practices both domestically and internationally, ICUK actively engages in knowledge sharing with other regional partners. This collaborative approach has led to the creation and implementation of innovative solutions that not only support local businesses but also foster an environment conducive to collaboration among active members of the community. Through these efforts, ICUK has earned widespread respect as a pivotal player in the region's ongoing transformation into a preferred destination for citizens, students, and entrepreneurs alike.

The comprehensive support offered by ICUK is a testament to its commitment to nurturing entrepreneurship within the Ústí nad Labem Region. Entrepreneurs who engage with ICUK are met with a full spectrum of services designed to accelerate their growth and success. This includes access to expert mentoring, specialized training sessions, networking opportunities, innovation hubs, and a startup incubator. Such an all-encompassing approach eliminates the need for entrepreneurs to seek resources elsewhere, providing them with a one-stop solution to meet their business development needs. By facilitating connections between the business community, academic institutions, and research entities, ICUK not only aids in the launch and expansion of local companies but also enhances the region's appeal to investors looking for opportunities in high-value sectors. Through its comprehensive support system, ICUK exemplifies best practices in government-supported entrepreneurship development, setting a benchmark for similar initiatives worldwide.

Link: https://icuk.cz/sluzby/

Association of Small and Medium-sized Enterprises and Tradesmen (AMSP ČR) (Czech Republic)

The Association of Small and Medium-sized Enterprises and Tradesmen of the Czech Republic (AMSP ČR) stands as a pivotal example of how targeted support and comprehensive frameworks can bolster digital entrepreneurship among small and medium-sized enterprises (SMEs). Established in 2001 as a politically independent entity, AMSP ČR has dedicated itself to advocating for and assisting the widest segment of the Czech business community. It encompasses a range of business types, including start-ups, family businesses, craftsmen, women in business, and rural entrepreneurs, among others. This diverse focus is managed through dedicated association projects for each group, each equipped with its own website, social media presence, activities, partners, and project managers, thereby ensuring tailored support and resources.

The association's innovative approach includes a range of services specifically designed to address the unique challenges faced by SMEs in the digital age. Among these, the SOS unit stands out for its commitment to combating the bullying of small entrepreneurs, alongside online counselling services that address timely issues. This direct support is complemented by expert committees that offer insights and assistance across various domains including export policy, research, development and innovation, financing, and education. The aim is to provide a holistic support system that not only addresses immediate concerns but also fosters long-term growth and sustainability in the digital business landscape.

What sets AMSP ČR apart and underscores its potential as a best practice model for other contexts is its all-encompassing approach. Entrepreneurs entering this organization find a one-stop shop for support, encompassing expert mentoring, training, networking opportunities, innovation hubs, and a start-up incubator. This model eliminates the need for entrepreneurs to seek disparate resources elsewhere, providing a streamlined path to digital entrepreneurship. The complexity and comprehensiveness of AMSP ČR's support system not only serves the Czech SME community but also offers a transferable model that could benefit similar associations and organizations worldwide, aiming to foster an environment where entrepreneurs can thrive in the digital economy.

Link: https://amsp.cz/asociace-malych-a-strednich-podniku-a-zivnostniku-ceske-republiky-amsp-cr/

Fostering a Culture of Innovation and Creativity - French Tech Initiative (France)

The French Tech Initiative was launched in 2013 by the French government as part of its efforts to bolster the country's competitiveness in the global tech industry. The initiative was a response to the growing need for a supportive ecosystem that could nurture and accelerate the growth of tech startups in France. It aimed to foster a culture of innovation and position France as a leading startup nation.

The initiative targets a broad range of participants within the tech ecosystem, including entrepreneurs, investors, engineers, designers, and other tech professionals. It focuses on facilitating connections, providing resources, and supporting the international expansion of French startups. The main objective is to create a thriving, cohesive community that drives innovation and economic growth through digital entrepreneurship.

The French Tech Initiative addresses the challenge of creating a vibrant startup ecosystem by offering funding, networking opportunities, and international exposure. The contents of the initiative include incubators, accelerators, and community events that promote collaboration and knowledge sharing. The innovation lies in its comprehensive, government-backed approach to nurturing the tech ecosystem. This model of a government-supported, community-driven approach to fostering a tech ecosystem could be applied in other countries looking to stimulate their own startup landscapes.

Link: https://lafrenchtech.gouv.fr/en/

Integration of Cutting-edge Technology and Tools - Station F (France)

Station F was launched in 2017 in a refurbished railway depot in Paris, under the initiative of Xavier Niel. The initial situation was a need for a centralised, comprehensive hub for tech startups in France. The aim was to create an ecosystem that supports the growth and development of digital entrepreneurship in a single, shared space.

The primary target of Station F is digital entrepreneurs and startups at various stages of their development, from early-stage to more established companies. It caters to a wide range of sectors within the tech industry, offering a vibrant and collaborative environment for networking, learning, and innovation. The main objective of Station F is to provide startups with the resources, support, and community they need to grow and succeed.

Station F addresses the challenge of providing comprehensive support to startups by offering office space, mentorship, and access to investors and corporate partners. The contents of the program include workshops, events, and a vast network of experts. The innovation of Station F lies in its scale and the diversity of services it offers under one roof. The concept of a large-scale startup campus, acting as a one-stop-shop for entrepreneurial needs, can be transferred to other urban centers worldwide to stimulate local startup ecosystems.

Link: https://stationf.co

EPICODE – Digital Marketing Technology Course (Italy)

The onset of the COVID-19 pandemic in 2020 laid bare significant gaps in digital technology access and proficiency within Italy, exacerbating social exclusion and amplifying barriers to essential services. This period highlighted Italy's urgent need for enhanced digital literacy, especially as the pandemic accelerated the digital transformation of businesses and increased the unemployment rate due to the closure of physical stores. Recognizing these challenges, EPICODE launched in 2020 to address the dire need for digital skills enhancement among the Italian population. By offering training programs in coding, web development, and digital marketing, EPICODE aimed to bridge the digital divide and support Italy's workforce in adapting to the evolving digital landscape.

EPICODE's Digital Marketing Technology course stands out for its comprehensive approach to equipping learners with both foundational knowledge and advanced competencies in digital marketing technologies. Beyond teaching the basics of digital marketing, the course focuses on the underlying technologies that drive digital marketing strategies, preparing learners for the real-world demands of the job market. This innovative curriculum is further enhanced by the integration of certified micro-credentials, including recognized certifications from Google and Meta, which provide tangible evidence of the learners' skills and improve their employability. Through this holistic approach, EPICODE not only addresses immediate employment needs but also ensures long-term career viability for its participants.

The key innovations of EPICODE's training model, particularly the use of micro-credentials and the establishment of partnerships with leading firms, offer valuable insights that can be replicated in other countries and contexts. These elements serve as a bridge between theoretical learning and practical application, creating direct pathways to employment and career advancement. The success of EPICODE in enhancing digital competencies among Italy's unemployed demonstrates the potential for similar programs to make a significant impact on digital skills training worldwide, encouraging a more interconnected and accessible approach to education in the digital economy.

Link: https://epicode.com/en/we-are-epicode/

Artes4.0: Digital Entrepreneurship Framework (Italy)

Launched in 2019, Artes4.0 has emerged as a quintessential model of Italy's strategic efforts to bolster digital entrepreneurship across its territory. This initiative was born out of a recognition within the Italian national strategy

for digital skills of the critical need for more networking hotspots and incubators for innovative digital practices—akin to the European Digital Innovation Hubs. Artes4.0 stands as an exemplar, addressing the void by creating a nurturing environment for Small and Medium-sized Enterprises (SMEs), including micro-enterprises and startups. These entities often grapple with the dual challenges of accessing capital-intensive instrumentation and building valuable social capital for networking and connection. Artes4.0's establishment aimed to meet these needs, providing a comprehensive hub for orientation, training, innovation project management, industrial R&D, and experimental development.

Artes4.0's innovative edge is underscored by its structure as a public-private partnership, initially kickstarted through ministerial support and subsequently sustained via the National Plan for Recovery and Resilience. It aims to furnish enterprises with the necessary technology, orientation, and training to foster the creation of innovative products within Italy. Unique among the seven High Specialisation Competence Centres, Artes4.0 has pioneered a space where enterprises can access critical knowledge and Key Enabling Technologies (KET). This initiative not only supports the technological advancement of Italian digital enterprises but also establishes a network spreading across Italy, involving various stakeholders from different regions. The main objective revolves around developing Artes4.0 as a holistic hub that integrates diverse actors such as research institutions, non-profit entities, foundations, and businesses of all sizes and sectors, facilitating a comprehensive ecosystem for enterprise development.

The innovative potential of Artes4.0 in transforming the Italian digital entrepreneurial landscape is profound. By acting as a propulsive hub for innovation, offering technology, networks, and training, it addresses the pivotal challenge of engaging innovative enterprises and becoming a central node for innovation. The practice's transferability to other contexts hinges on the economic and networking capacities of governments, considering the capital-intensive nature of sustaining KET and expanding such a partnership. Nevertheless, Artes4.0's success and model provide a valuable blueprint for other countries looking to stimulate their digital entrepreneurship ecosystems through similar public-private partnerships and innovation hubs. Its impact on the Italian digital enterprise landscape offers compelling evidence of the potential for such initiatives to drive technological innovation and economic growth.

Link: https://www.artes4.it/en/

Empowering Digital Competence: The Ikanos Initiative (Spain)

The Ikanos project, initiated by the government of the Basque Country in 2012 and continuously refined, stands as a testament to Spain's commitment to boosting digital competences among its citizens. Leveraging the European Digital Competence Framework (DigComp), the Ikanos project has developed an array of tools aimed at enhancing digital literacy and employability. This includes a self-assessment test utilized by over 50,000 individuals, offering tailored career and training guidance. By defining 15 digital professional profiles and creating a personal learning environment, Ikanos not only supports individual skill development but also aligns with the broader objectives of digital transformation within the public and private sectors. This comprehensive approach underscores the adaptability of DigComp in creating interoperable resources that cater to diverse stakeholders, including public administration, academia, and the private sector, particularly in manufacturing and service industries.

The methodology behind Ikanos is innovative, focusing on a systematic approach to digital skills assessment and enhancement. The project's core—the self-assessment test—serves not just as a diagnostic tool but as a gateway to a structured process for continuous learning and certification through the BAIT system. This has significantly contributed to improving the employability and interpersonal skills of the Basque Country's unemployed population. The initiative's success lies in its integrated approach, combining assessment with actionable guidance and resources for skill development. Stakeholder engagement through thematic workshops and dissemination activities at national and European levels has further enriched the Ikanos ecosystem, ensuring its relevance and impact.

Ikanos exemplifies how DigComp can be operationalized to meet the digital competence needs of today's workforce and entrepreneurs. The project's focus on labour market intermediaries to enhance digital skills among

job seekers, workers, and future entrepreneurs is particularly noteworthy. By aiming to integrate digital skill development across formal education and lifelong learning within employment and industrial strategies, Ikanos addresses the critical challenge of fostering a digitally competent and competitive workforce. The success and innovations of the Ikanos project offer valuable insights and tools that could be adapted and implemented in other contexts, demonstrating the universal applicability of self-assessment and targeted training guidance in enhancing digital entrepreneurship skills.

Link: https://ikanos.eus/modelo-ikanos/

Fostering Digital Entrepreneurship Skills Among Young Entrepreneurs: Save Start-Ups (Spain)

In response to the increasing demand for digital competencies in the European labour market, especially following the Industry 4.0 initiative and the European Commission's Digital Single Market Strategy, the "Save Start-Ups" program was launched in Spain between 2019 and 2021. Targeting young entrepreneurs and start-uppers lacking the necessary digital skills, this innovative training program and practice aim to bridge the gap in Vocational Education and Training (VET) centres. Recognizing the critical need for practical and efficient training solutions that could be readily applied in professional settings, "Save Start-Ups" sought to equip its target audience with the competencies required to thrive in the digital economy.

The heart of "Save Start-Ups" lies in its comprehensive curriculum tailored for VET providers, titled “Digital, Modern Entrepreneurship: It’s Your Best Chance!” This curriculum encompasses the objectives, rationale, and detailed descriptions of 7 training modules, including topics like "Digital Lifestyle Entrepreneurship," "Circular Economy in Your Start-Up," and "Cybersecurity in Your Start-Ups." Accompanying the curriculum, a set of Open Educational Resources (OERs) with a mobile learning interface provides accessible training materials, supporting the professional development of start-uppers and offering them avenues to validate their newly acquired digital entrepreneurship competences. This innovative approach ensures that learning is both engaging and directly applicable to the dynamic needs of the digital marketplace.

The "Save Start-Ups" initiative stands out for its innovative approach to enhancing the digital entrepreneurship competencies of young entrepreneurs and start-uppers, alongside VET Teachers and providers. Its development of VET provider capabilities in validating digital entrepreneurship competences represents a significant stride towards adapting VET environments to the demands of the digital age. Furthermore, the program's modules on critical digital entrepreneurship concepts offer valuable resources for creating micro-credentials, making its content highly transferable to other contexts. This adaptability ensures that the "Save Start-Ups" best practice can serve as a model for similar initiatives across Europe, aiming to empower the next generation of digital entrepreneurs with the skills and knowledge to succeed.

Link: https://savestartups.erasmus.site/

DIGITAL ENTREPRENEURSHIP TRAINING: MOVING A STEP FORWARD

As we culminate our exploration into the realm of digital entrepreneurship training across Europe, it's evident that a paradigm shift towards innovative, technologically-empowered learning ecosystems is not just a trend but a necessity for advancing a robust digital economy. The insights gleaned from the examination of best practices and training needs across Austria, Italy, France, Spain, and the Czech Republic illuminate a path forward for developing digital entrepreneurs who are not only adept at facing the complexities of the digital world but are also equipped to lead its evolution. The commonalities in training needs—ranging from digital literacy to leadership in digital contexts—underscore the universal prerequisites for success in the digital entrepreneurial landscape.

Furthermore, the success stories and best practices identified in this report—ranging from comprehensive digital entrepreneurship programs to initiatives fostering innovation and collaboration—offer invaluable insights for developing future training initiatives. These examples not only demonstrate the effectiveness of integrating practical experience with theoretical knowledge but also highlight the importance of innovative approaches to learning in cultivating a vibrant digital entrepreneurial ecosystem. As such, the present report provides a solid foundation for designing future programs that aim to empower digital entrepreneurs with the skills, mindset, and network needed to succeed.

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