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National Skills Gaps and Needs Analysis: Romania

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Impact Hub Bucharest

Versioning and Contribution History

Version	Date	Author/Editor/Contributor	Description/Comments
1	03.07.2024	Valentin Dimitriu	Intermediary draft
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4	06.08.2024	Raluca Grigore	Final draft

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Abbreviations and glossary of terms

AI	Artificial Intelligence
AT	Austria
ASP	Associated Strategic Partners
BH	Bosnia and Herzegovina
BG	Bulgaria
CE	Circular Economy
CZ	Czech Republic
DE	Germany
DR	Danube Region
EU	European Union
HR	Croatia
HU	Hungary
i4.0	Industry 4.0
IoT	Internet of Things
LCA	Life Cycle Assessment
LP	Lead Partner
MD	Moldova
NGO	Non-Government Organization
PP	Project Partner
R&I	Research and Innovation
RO	Romania
RS	Serbia
S3	Smart Specialization
SK	Slovakia
SL	Slovenia
SME	Small and Medium Enterprises
SO	Specific Objective
STEM	Science, Technology, Engineering, and Mathematics

1 Executive summary

Brief Overview of Romania and Women Entrepreneurship Ecosystem

Romania, located in Southeast Central Europe, is home to a vibrant entrepreneurial ecosystem with a growing emphasis on women-led businesses. The country has a population of approximately 21.8 million, with women constituting 51.2%. Small and medium-sized enterprises (SMEs) dominate the market, making up 90% of businesses, with 20% being majority-owned by women. The primary sectors include retail, manufacturing, and ICT. Despite a strong presence of women entrepreneurs, the country faces significant challenges in innovation and digitalization, with one of the lowest shares of innovative businesses in the EU and a notable gap in skilled workforce due to emigration.

Main Findings from the Survey Among Women Entrepreneurs (WEs)

Skills and Digitalization Needs: The survey reveals that a substantial number of women entrepreneurs are familiar with circular economy (CE) concepts, with 72.97% reporting awareness. Key practices include waste minimization and the use of sustainable materials. However, challenges remain, particularly in accessing finance and applying CE practices in specific sectors. Digital skills gaps are evident, with many respondents highlighting a need for training in digital marketing, cybersecurity, and the development of digital business models. The adoption of digital technologies is high, particularly in mobile technologies and e-commerce, yet a significant portion of WEs feel inadequately skilled in advanced digital tools.

Main Findings from Stakeholder Interviews

Needs and Gaps in Skill Acquisition: Stakeholder interviews underscored the lack of specialized training programs tailored to the needs of women entrepreneurs, particularly in CE and Industry 4.0 (i4.0) transitions. There is a notable deficit in networking and mentorship opportunities, which are crucial for providing guidance and support. Financial support mechanisms are also insufficient, with limited access to grants and loans specifically designed for women entrepreneurs. Furthermore, barriers such as limited access to modern digital infrastructure and tools hinder the ability of WEs to compete effectively.

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Main Findings – Motivation Factors and Successful Support Measures

Successful women entrepreneurs, such as those highlighted in interviews, demonstrated that motivation factors include a desire to streamline business processes and respond to consumer demand for sustainability. Key support measures that facilitated success included access to digital marketing expertise, IT consulting, and informal networks. However, there is a recognized need for more structured support, such as specialized training programs and dedicated mentorship networks.

Recommendations

To address the identified needs and gaps, the following recommendations are proposed:

1. **Develop Comprehensive Training Programs:** Focused on CE and i4.0 technologies, these programs should include practical applications and be accessible to women entrepreneurs.

2. **Establish Networking and Mentorship Platforms:** Create platforms to connect WEs with industry experts and peers, fostering a supportive community.

3. **Enhance Financial Support Mechanisms:** Introduce grants and preferential loans tailored to women entrepreneurs, enabling them to invest in new technologies and business models.

4. **Improve Access to Digital Infrastructure:** Ensure WEs have the necessary digital tools and high-speed internet access to thrive in the digital economy.

5. **Promote Inclusive Public Policies:** Develop policies that promote gender equality and involve women entrepreneurs in the policy-making process to ensure their needs are addressed.

These recommendations aim to bridge the skills gap and support the transition of women entrepreneurs in Romania towards a more sustainable, digital, and innovative economy. By implementing these strategies, Romania can strengthen its entrepreneurial ecosystem, fostering economic growth and gender equity in the business landscape.

2 Introduction

This National Report for Romania is an integral component of the Transnational Skills Gaps and Needs Analysis, aimed at dissecting the unique barriers and opportunities that lie within Romania's transition to a more circular, innovative, and digital economy. Through a meticulous examination of the current state, this report endeavors to illuminate the path forward, identifying specific needs and proposing strategic interventions to empower women entrepreneurs in the realm of CE, S3, and i4.0.

Amidst the backdrop of a global pandemic and shifting geopolitical landscapes, the urgency for this analysis has never been greater. The resilience and agility of economies hinge on its ability to harness the potential of its female entrepreneurs, equipping them with the skills and knowledge to thrive in an increasingly competitive and sustainable marketplace.

This report synthesizes data collected from a comprehensive survey, stakeholders' interviews, and case studies, offering a nuanced understanding of the skills landscape in Romania. The objective is not only to chart the existing skills gaps but also to forge a roadmap for capacity building, policy intervention, and collaborative action that aligns with the nation's aspirations for economic revitalization and gender equity in entrepreneurship.

As we delve into the findings and recommendations herein, it is our hope that this report will serve as a catalyst for concerted efforts to bridge the skills divide, fostering an environment where women entrepreneurs can lead the charge towards a brighter, more sustainable future.

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3 Methodology

Desk research, surveys, stakeholder interviews, case studies, and comparative analysis are used for to ensure a robust and inclusive analysis. By employing a multi-dimensional methodology, a detailed and nuanced understanding of the skills gaps and needs among women entrepreneurs in the Danube Region is aimed to be provided. This approach ensures that the analysis is both broad in its scope and specific in its findings, providing a solid foundation for the development of effective support strategies for the transition towards a more sustainable, digital, and circular economy.

Table 1: Methodology applied

Approached applied	Description of the performed task
Desk research	Review of statistic data, national legislation and strategies, media articles about the subject in Romania is made in order to be established a baseline understanding of the current skills landscape for women entrepreneurs in Romania.
Survey among women entrepreneurs	The analysis incorporates results from survey conducted among women entrepreneurs from Romania. It was organized in the period 30.04.2024 – 31.05.2024. 1100 respondents were identified from different sectors and questionnaires were provided to them by SurveyMonkey platform. Additionally, posts in social media were shared in order to reach more people from the target group and increase the number of respondents. The survey provides both quantitative data and qualitative insights to analyze prevailing skills gaps and needs. 51 of responses are collected which is equal to 4.6% responding rate and could be accepted as quite sufficient for the main goal of the current Analysis.
Stakeholders interview	In-depth interviews with industry experts, policymakers, academia, and support organizations for better understanding the broader ecosystem and support structures for WEs are made. 3 types of stakeholders (national authorities, industry experts and support organizations for better understanding the broader ecosystem and support structures for WEs) were

	contacted, and 2 interviews are done. Through them are explored perceptions and suggestions for facilitating a successful s3 and i4.0 transition under CE aspects of WEs in Romania.
Successful case interviews	One interview with WE who have effectively implemented circular and digital transition is conducted aiming to be identified the motivational and successful factors which helped the WE through this process focusing on obtaining the necessary skills.

To effectively understand the dynamics of the skills gap and needs within Romania, a carefully curated sample of women entrepreneurs and female-led startups has been selected for this study. This sampling approach is designed to ensure a comprehensive analysis that reflects the diverse sectors and regions within the country. By examining a representative cross-section of businesses, this investigation aims to identify prevalent challenges, opportunities for growth, and specific skills necessary for thriving in the realms of the Circular Economy, Smart Specialization, and Industry 4.0. This methodological step is crucial for deriving actionable insights and tailored recommendations that will empower women entrepreneurs to navigate and succeed in the evolving economic landscape of Romania.

4 ROMANIA

4.1 General presentation of Romania

Romania is a country located in the south-east of Central Europe, bordered by Bulgaria to the south, Serbia to the south-west, Hungary to the north-west, Ukraine to the north, the Republic of Moldova to the east and the Black Sea coast to the south-east.

With a territory of 238.397 square kilometres (92,046 sq mi), Romania is the 12th largest country in Europe. Its capital and largest city is Bucharest, followed by Cluj-Napoca, Iași, Timișoara, Constanța, Craiova, Brașov, and Galați.

By 01.01.2024[1], the population of Romania is 21 833 227 persons, of which 10 652 064 men (48.79%) and 11 181 163 women (51.21%). The largest share in the total population was held by the 45-49 age group (8.6%). The same age group had the highest share among both females (8.3%) and males (9.0%). (Figure 1)

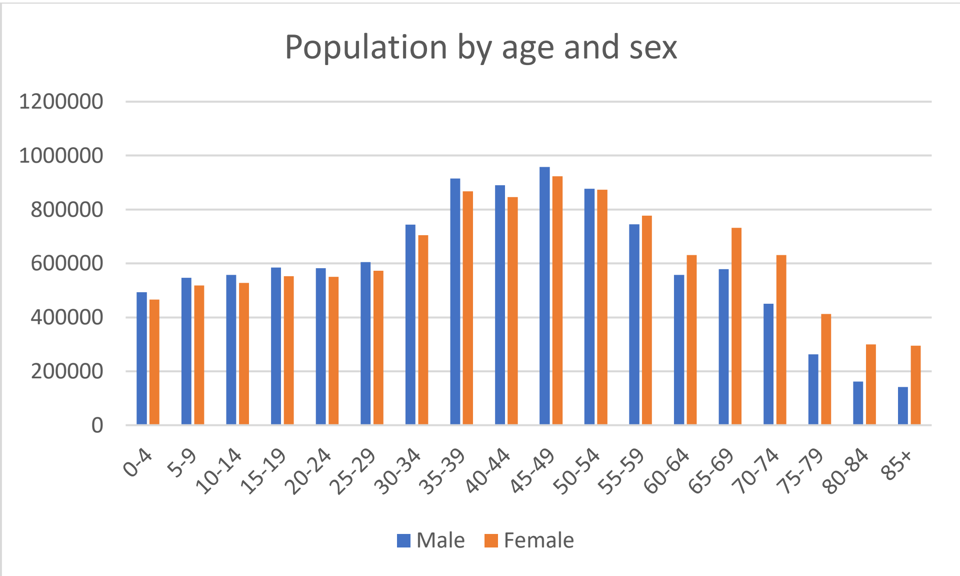

Figure 1. Population of Romania by age and sex

[1] National Statistical Institute (2024), *Population by residence on January 1, 2024* – https://insse.ro/cms/sites/default/files/com_presa/com_pdf/popdom1ian2024r_0.pdf

In the 2023 – 2024 school year, the school population in the national education system was 3 466 548 pupils and students[2]. Among them:

- 46.1% in primary and secondary education;
- 17.4% in high school education;
- 15.8% in early education.

Of the total school population included in the education system, 50.2% were female.

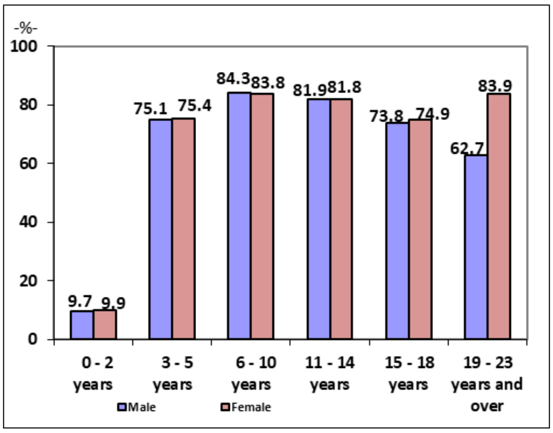

Figure 2. Education inclusion degree of the school-age population in the school/university Year 2023/2024

The same source states that in the academic year 2023 – 2024, 544 623 students were enrolled in higher education, of which 55.4% were female students.

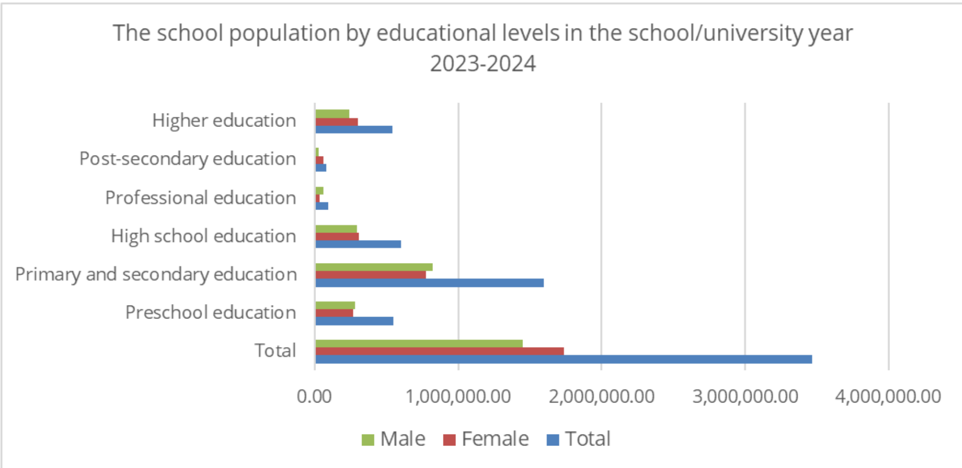

Figure 3. School population - 2023 – 2024 school year

[2] National Statistical Institute (2024), *The school population in school/university year 2023 – 2024* – https://insse.ro/cms/sites/default/files/com_presa/com_pdf/sistemul_educational_2024_r.pdf

In the school/university year 2022 – 2023, 505 991 pupils and students graduated from the educational levels: gymnasium, high school, professional, post-high school, respectively higher (bachelor, master and doctorate, postgraduate courses and advanced research postdoctoral programs). Female graduates were predominant, in number of 265 940, representing 52.7%.

According to the Adult Education Survey[3] conducted in the 4th quarter of 2022 and which has the last 12 months prior to the interview as a reference period, 3548.8 thousand people aged 18-69 participated in a form of institutionalized education and formal and non-formal training. The participation rate of adults in formal or non-formal education was 27.7%. By gender, the indicator had identical values (male - 27.7%, female - 27.7%). (Figure 4)

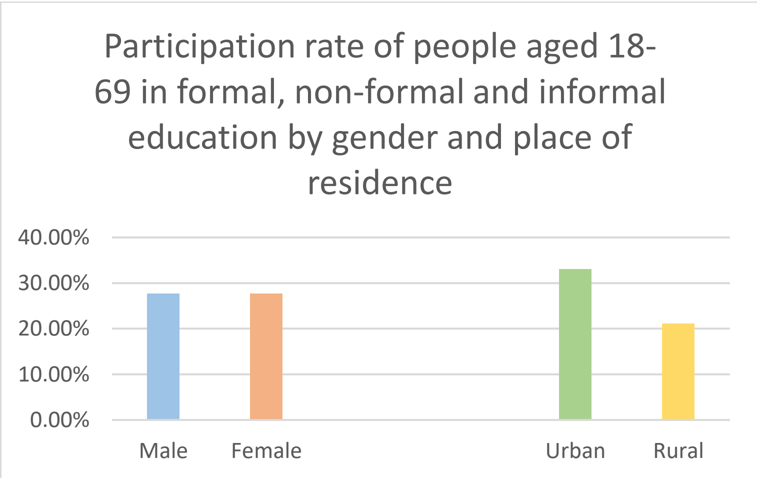

Figure 4. Participation rate of adults from Romania in education

Also, according to the results of the Adult Education Survey, from the number of 3548.8 thousand adults (18-69 years):

- 15.9% participated only in formal education;
- 75.6% participated only in non-formal education;
- 8.5% participated in both forms of education during the 12 months period.

[3] National Statistical Institute (2023), *Participation rate of adults in formal or non-formal education in 2022* – https://insse.ro/cms/sites/default/files/com_presa/com_pdf/educatia_adultilor_2022_r.pdf

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Regarding Romanian companies, according to statistics published by the National Office of the Trade Registry[4], between January and May 2024, 58,876 individuals and legal entities were registered.

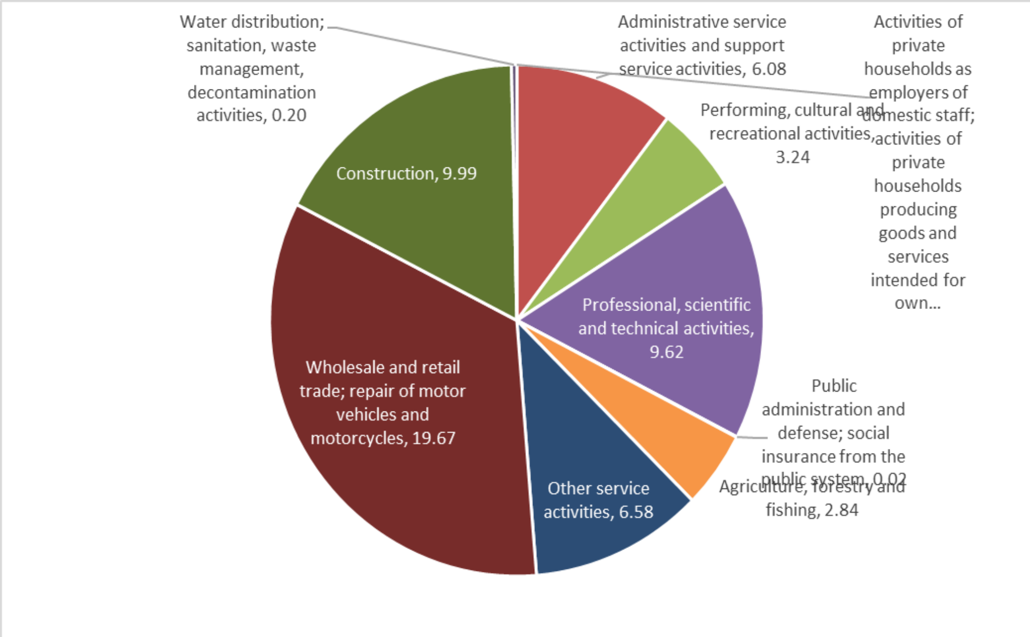

Figure 5.1 Registrations between 01.01.2024 - 31.05.2024 – percentage

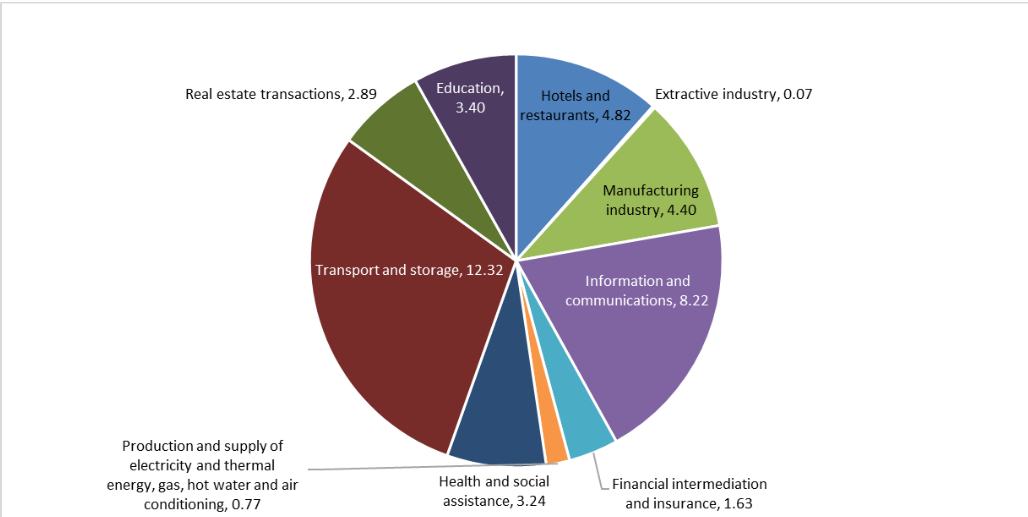

Figure 5.2 Registrations between 01.01.2024 - 31.05.2024 – percentage

At the end of 2023, according to the statistics of the National Institute of Statistics[5], the share of women from the total amount was distributed:

[4] https://www.onrc.ro/index.php/ro/statistici
[5] http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table

- Employee – 44.27%
- Business owner – 25.65%
- Self-employed – 24.42%
- Unpaid family worker – 64.87%

According to the market study carried out by Impact HUB and Bravva Angels for ING Bank Romania, "Entrepreneur Profile"[6], 55% of all the companies with female shareholders in Romania are owned by women as sole shareholders (145,000 companies).

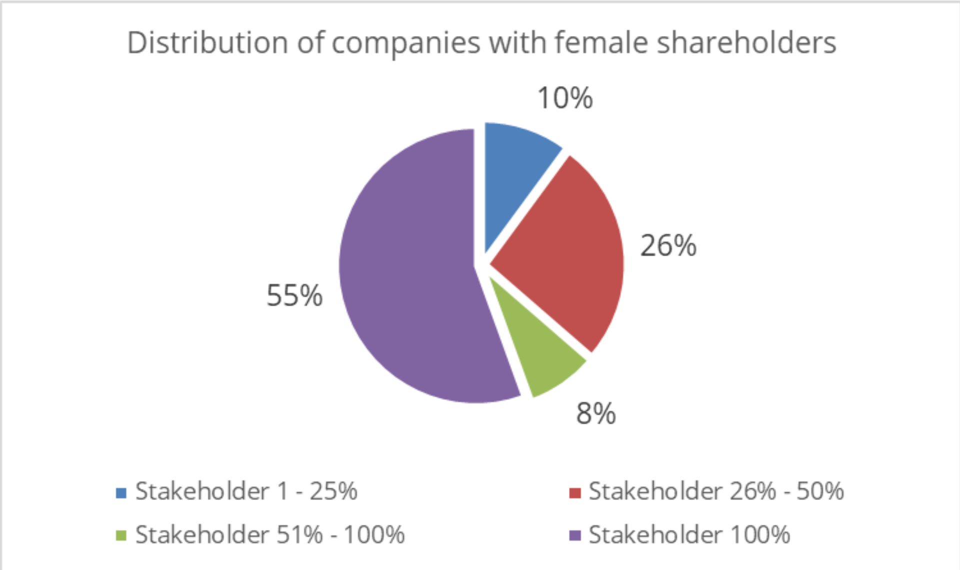

Figure 6. Distribution of companies with female shareholders

4.2 Female entrepreneurial ecosystem in Romania

In Romania's entrepreneurial environment, women are making significant strides as business owners and leaders. Here are some key insights:

1. High Percentage of Women-Owned Businesses:

    - According to the Mastercard Index of Women Entrepreneurs 2018**,** Romania ranks ninth globally in terms of the percentage of businesses owned by women.

[6] Impact HUB, Bravva Angels, "Entrepreneur Profile" – https://startarium.ro/articol/studiu-profil-de-antreprenor

- 28.9% of all businesses in Romania are owned by women, surpassing last year's figure of 27.5%[7].

2. Shareholders and Company Ownership:

- The survey conducted by Impact Hub and Bravva Angels for ING Bank Romania revealed that:

    - Women are shareholders in 47% of active companies with a turnover of over 10,000 lei (almost on par with men).
    - Additionally**,** <u>one in four companies</u> in Romania is <u>100% owned by women</u>[8].

3. Support and Opportunities:

- While Romania ranks 32nd out of 57 countries in terms of support and entrepreneurial development opportunities for women, there's room for improvement.
- The focus areas include progress registered by women, knowledge and access to financial resources, and support for entrepreneurial initiatives[9].

In summary, women entrepreneurs in Romania are indeed a powerful force, contributing to economic growth and innovation.

Romania is making strides toward a circular economy, aiming to shift from a linear model to one that promotes sustainability and resource efficiency. Some key points include:

1. Sectors with High Circular Potential:

- Romania has identified several sectors with significant circularity potential:

    - Agriculture and forestry
    - Automotive
    - Construction

[7]Romania in top ten countries with highest share of women-owned businesses – https://www.romania-insider.com/romania-women-entrepreneurs
[8] Romania in top ten countries with highest share of women-owned businesses – https://www.romania-insider.com/romania-women-entrepreneurs
[9] Romania in top ten countries with highest share of women-owned businesses – https://www.romania-insider.com/romania-women-entrepreneurs

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- Consumer goods (such as food and beverages)
- Packaging
- Textiles
- Electrical and electronic equipment (EEE)[10].

2. National Strategy for the Circular Economy:

   - The Romanian Strategy for the Circular Economy (NSCE)[11] serves as a roadmap for this transition. Its action plan focuses on nine economic sectors:

     - Agriculture and forestry
     - Automotive
     - Construction
     - Food and beverages
     - Packaging
     - Textiles
     - Electrical and electronic equipment
     - Waste
     - Water and wastewater.

3. Entrepreneurial Landscape:

   - Women entrepreneurs play a crucial role in Romania's business ecosystem.
   - According to a survey, women are shareholders in 47% of active companies with a turnover of over 10,000 lei, nearly on par with men.
   - Additionally, one in four companies is 100% owned by women.

Women Entrepreneurs in Romania:

- Initiatives like the "She's Next"[12] program, launched by ING Bank Romania and Visa, with Impact Hub Bucharest as key-partner, aim to support women entrepreneurs.

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10 ETC CE Report 2022/5 – Romania, "Circular economy country profile – Romania" - https://www.eionet.europa.eu/etcs/etc-ce/products/etc-ce-products/etc-ce-report-5-2022-country-profiles-on-circular-economy/romania-ce-country-profile-2022_for-publication.pdf

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- Ten women entrepreneurs have been selected for personalized mentoring and coaching sessions, fostering professional development and networking opportunities.
- Sectors like fashion, design, and sustainable products are areas where women entrepreneurs are making an impact.

In summary, Romania's circular economy efforts intersect with the entrepreneurial spirit of women, creating a powerful force for positive change.

5 Analysis of skills gaps and needs of women entrepreneurs for digital and circular transition

5.1 General Information

Number of Received Responses: There were approximately 32-34 responses received per question out of a total of 51 responses.

Distribution per Sectors: 57.14% of the respondents have activity in other sectors than the ones described in the survey, 11.90% of respondents have their activity in health sector, 9.52% in manufacturing and production, 7.14% in textile and fashion, 4.76% in food and agriculture, 4.76% in technology, electronics, IT, 2.38% in energy and 2.38% in retail and e-commerce.

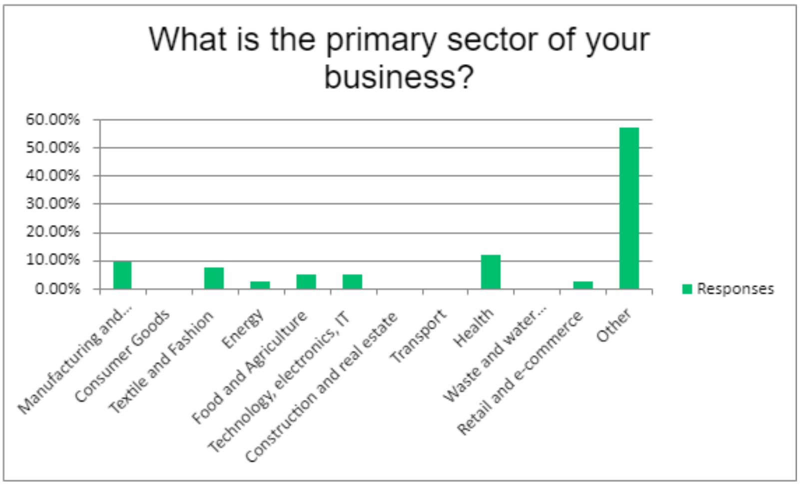

Figure 7. Distribution of respondents on sector of business

Years on the Market: 7.14% of the respondents are running their company for less than an year, 40.48% of respondents for 1 to 3 years, 35.71% of respondents for 3 to 10 years and 16.67% of respondents for more than 10 years.

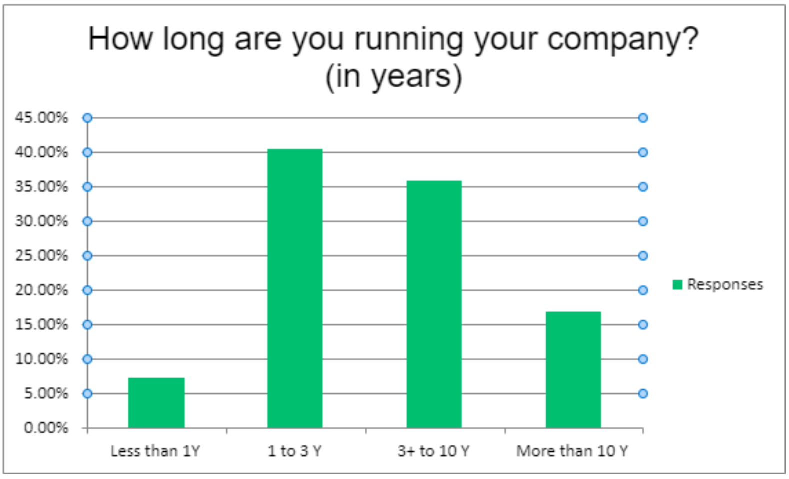

Figure 8. Distribution of respondents for years on the market

Size of the Company: 88.10% of the respondents have a company with less than 10 employees, 9.52% have a company with 10 to 49 employees, 2.38% have a company with 50 to 249 employees.

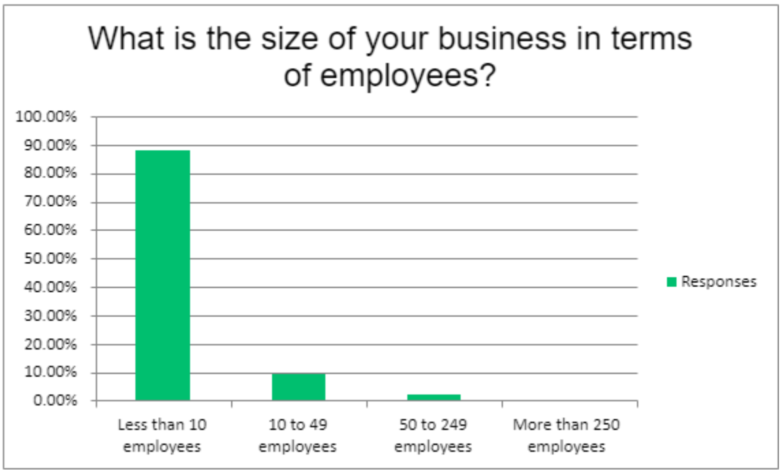

Figure 9. Distribution of respondents for number of employees

5.2 Circular Economy (CE)

Familiarity and Engagement with CE

When it comes to familiarity with circular economy (CE) concepts, the majority of respondents have a good understanding of various CE concepts, especially those related to waste minimization, product longevity, and the use of sustainable materials. The areas with the highest familiarity are the general concept of CE and strategies to extend product lifespans, suggesting strong overall engagement with foundational CE principles.

However, concepts like the sharing economy and the role of digital technology, while still familiar, have slightly lower average scores, indicating potential areas for further education and awareness.

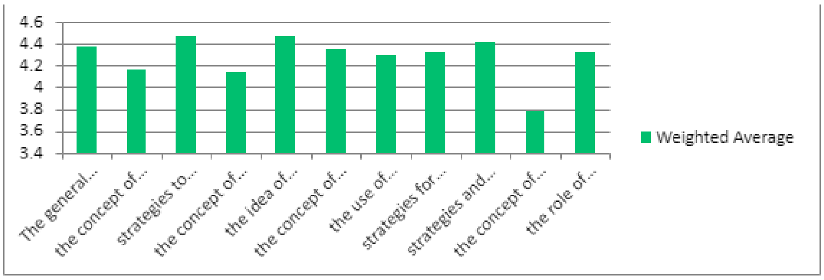

Figure 10. Familiarity with CE concepts

Comparison of Familiarity Across Sectors and Business Size: There is a noticeable engagement across different sectors, with higher familiarity levels observed in manufacturing and health sectors. Smaller companies (<10 employees) show proactive involvement, driven by the need for resource efficiency and sustainable practices.

Application of CE Technologies/Models: A significant 72.97% of respondents reported that they apply circular technologies or models in their business. The primary practices adopted include minimizing waste and pollution (80.77%) and using renewable, recyclable, or biodegradable materials (69.23%).

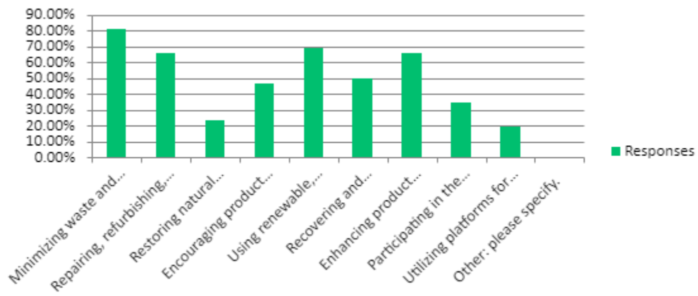

Figure 11. CE technologies/ models applied by respondents

Type of Applied Practices and Motivations: The main motivators for adopting CE practices include a shift in management mindset (80.77%) and the necessity to respond to consumer expectations (53.85%).

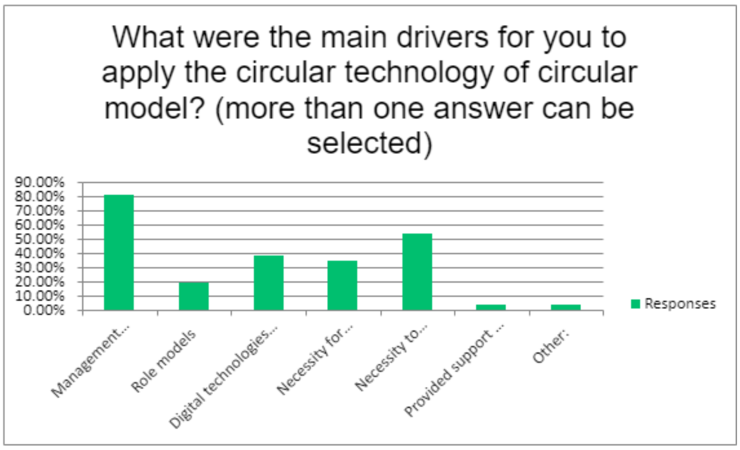

Figure 12. Motivators for adopting CE practices

Challenges Faced by WEs: The data reveals several significant challenges hindering the adoption of circular technologies or models among respondents. A substantial portion, 50%, indicate a lack of awareness about suitable circular economy (CE) opportunities for their business, while 40% report insufficient knowledge about Industry 4.0 technologies that support CE practices. Additionally, 30% of respondents are uncertain about legal requirements and restrictions, reflecting a need for clearer regulatory guidance. Another 10% face challenges in changing the mindset and culture within their companies, and a similar percentage feel overwhelmed with daily business survival tasks, limiting their capacity to explore new initiatives.

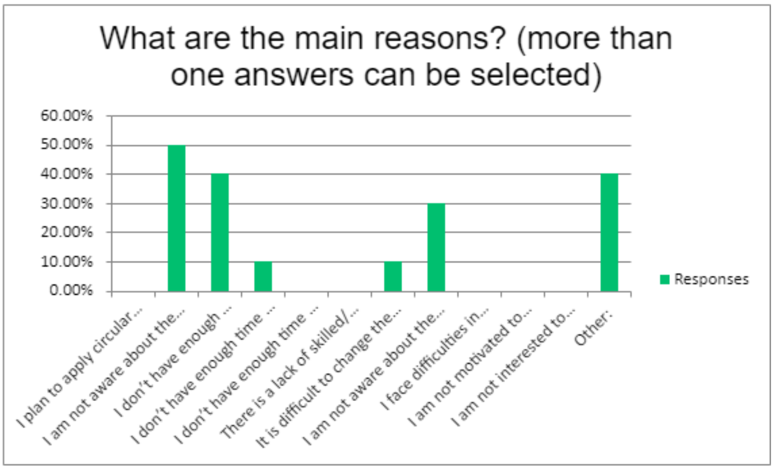

Figure 13. Challenges in adopting CE practices

Training Needs: The data indicates a strong need among respondents for training in various aspects of the circular economy (CE), with a particular emphasis on sector-specific applications (67.65%) and access to finance (76.47%). There is also significant interest in digital skills related to CE (58.82%), the use of digital technologies for circular transitions

(55.88%), and understanding the legal framework (52.94%). Additionally, a substantial portion of respondents seeks foundational knowledge in CE (55.88%) and the integration of artificial intelligence (AI) into CE practices (52.94%).

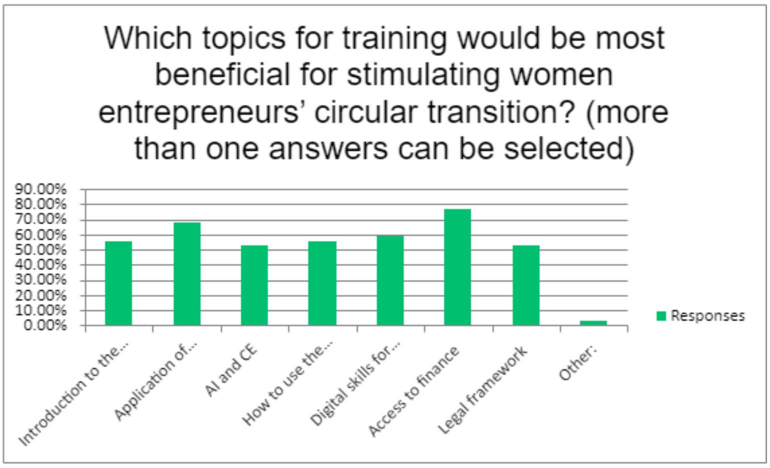

Figure 14. Training needs for CE practices implementation

Expected Support for Circular Transition: Respondents expect support in the form of financial assistance, access to technology, and specialized training programs. This expectation underscores the necessity for targeted policies and programs to support the transition.

5.3 Industry 4.0 (i4.0)

Adoption of Digital Technologies: A high adoption rate of digital technologies is reported, with 87.5% of respondents utilizing mobile technologies, e-commerce platforms, and collaboration tools. The usage is prevalent across sectors, with smaller businesses showing significant engagement in leveraging these tools for growth.

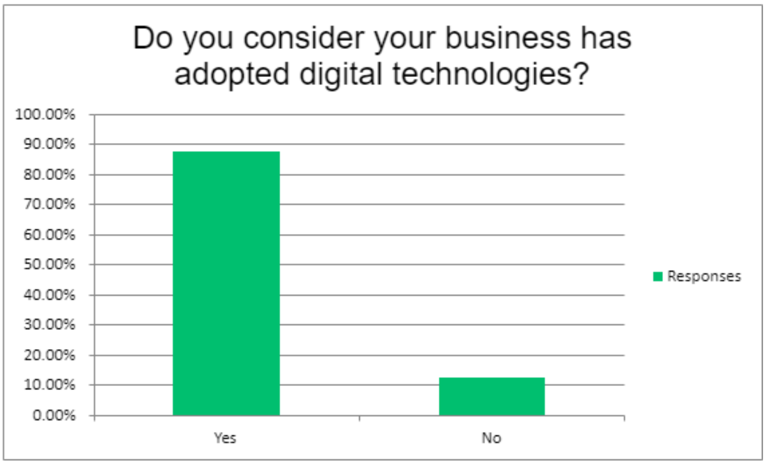

Figure 15. Adoption of digitalization

Type of Adopted Digital Technologies and Motivations: Digital marketing (77.78%), resource optimization (77.78%), and developing digital business models (66.67%) are the key areas of focus. A bar chart ranks the motivations behind adopting these technologies, highlighting efficiency and market reach as primary factors.

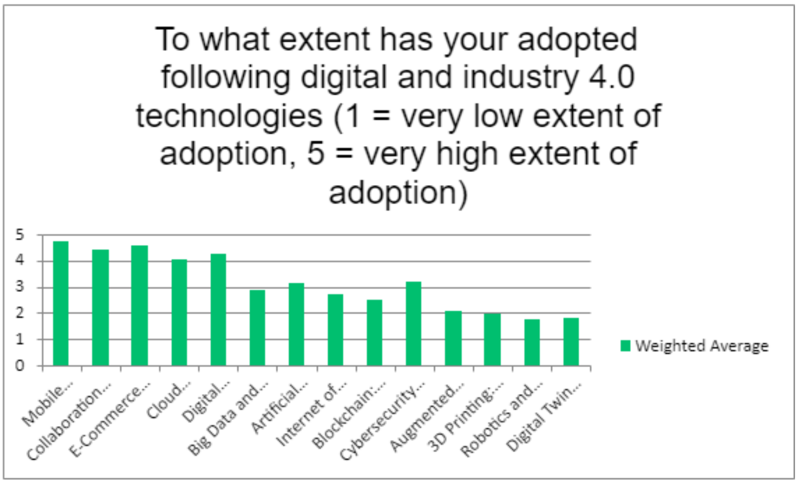

Figure 16. Type of adopted digital technologies

Motivators: Respondents are primarily motivated by the expected improvements in operational efficiency and quality (39.29%) and the potential for reducing operational costs (25.00%) when considering modernization. A notable portion, 21.43%, is driven by the desire to ensure a competitive advantage in the market. Interestingly, external pressures from clients and suppliers are relatively minimal, at only 7.14%, suggesting that these stakeholders are not significantly pushing for modernization. Additionally, the lack of reported support from policy measures, such as funding and training, indicates an absence of governmental or institutional incentives to encourage modernization.

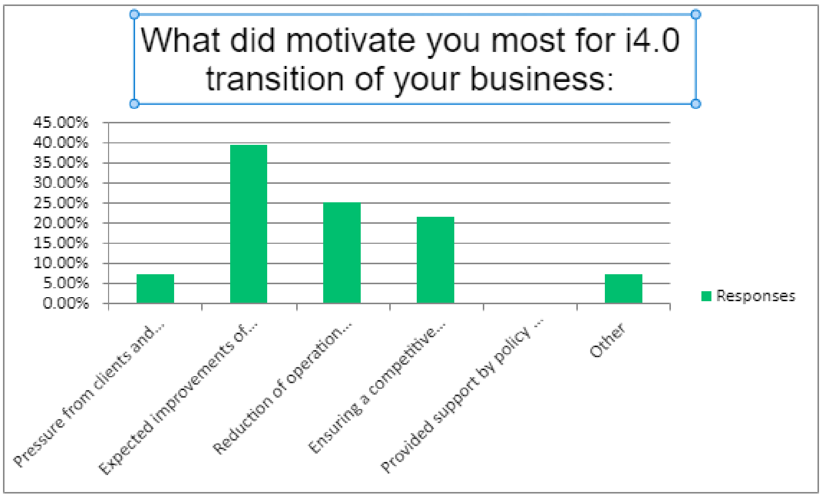

Figure 17. Motivators for digitalization adoptation

Barriers and Challenges: The data reveals that high investment costs are a significant barrier, with 80% of respondents citing it as a major challenge to adopting new digital technologies. Additionally, 40% of respondents indicate a lack of skills and knowledge on how to implement these technologies, suggesting a need for more educational resources and training. The same percentage, 40%, also report a lack of public support, such as funding and training, highlighting a gap in external assistance that could facilitate technology adoption. Other barriers include a lack of skilled staff (20%) and negative perceptions about the technology (20%), indicating some resistance or uncertainty within organizations. Interestingly, none of the respondents indicated a lack of appropriate planning as a barrier, suggesting that planning may not be as critical an issue compared to the financial and knowledge-related obstacles.

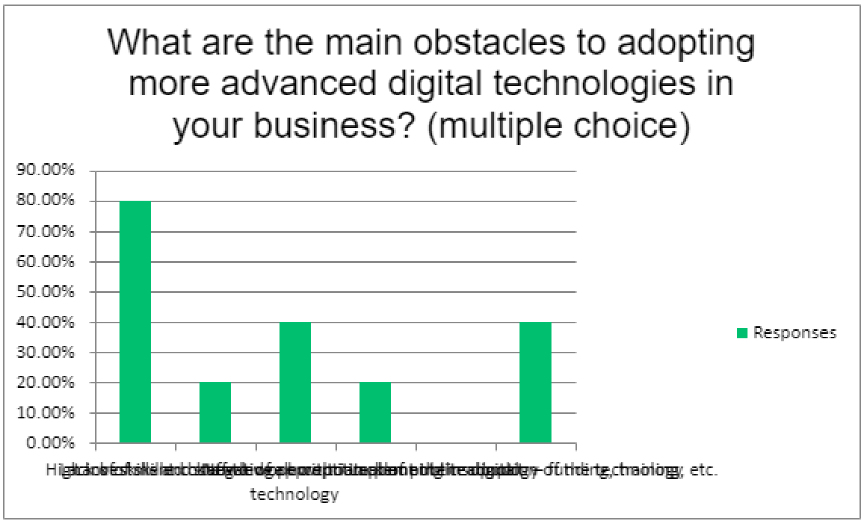

Figure 18. Challenges for digitalization adoptation

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Support and Skill Needs: A relatively small percentage, 7.41%, feel the need for further training in using Microsoft Office and similar software products, suggesting a basic proficiency in these tools. A larger portion, 14.81%, highlights the need for better skills in using email, social media, and video calls for business communication, indicating a gap in effective digital communication practices. Notably, a significant number of respondents identify a need for skills in cybersecurity (44.44%) and software for design or simulation (48.15%), highlighting concerns about security and advanced technical capabilities. Additionally, 22.22% express a need for programming and software development skills, reflecting a growing interest in more specialized digital competencies. Interestingly, 40.74% of respondents consider themselves sufficiently skilled digitally, indicating a confidence in their current abilities, though the substantial need for advanced skills suggests room for improvement and growth.

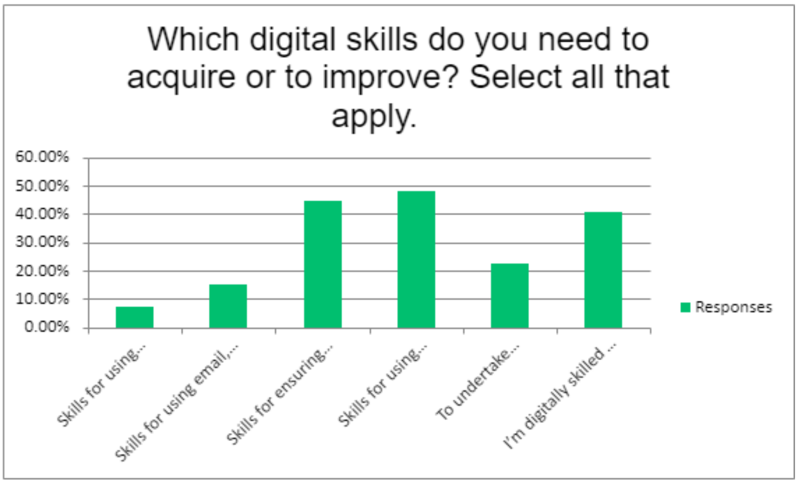

Figure 19. Support and skills needs

There is a strong focus among respondents on digital marketing (80.00%) and setting up and operating online shops (80.00%), suggesting that many businesses prioritize customer engagement and sales channels in their digital strategies. There is also a notable emphasis on developing digital business models or services (60.00%), reflecting a broader shift towards leveraging digital innovations to enhance business offerings. While 40.00% of respondents are looking towards totally integrated digital processes, only 20.00% are focused on resource optimization, indicating that process efficiency may be a secondary concern compared to expanding digital presence and sales capabilities. Interestingly, there is no reported interest in automation of manufacturing, cybersecurity, conducting online market research, or general use of digital technologies and the Internet for business needs. This suggests that while some businesses are embracing digital tools

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for specific purposes, there may be gaps in addressing broader digital transformation opportunities and security considerations.

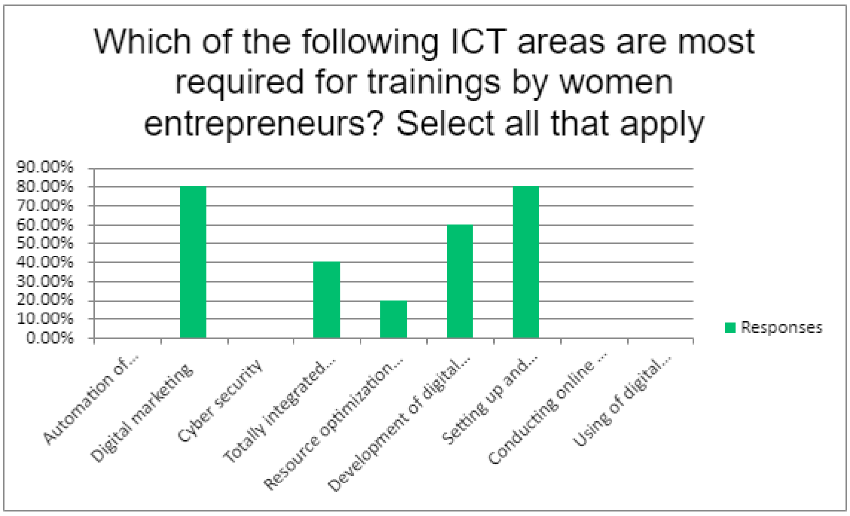

Figure 20. Training requested

5.4 Smart Specialization (S3) and external impacts

Awareness and Alignment with S3: Awareness of S3 strategies is limited, with only 15.62% reporting familiarity. However, there is a strong recognition (75%) of the potential benefits of aligning business practices with S3 priorities, particularly in training and skill development.

The challenges are multiple and include a lack of advanced digital skills, sometimes a lack of systemic vision, limited access to resources and funding, and difficulty navigating complex policies and regulations related to the circular economy.

Women entrepreneurs also face underrepresentation in the technology sector and in decision-making positions, which limits opportunities for mentorship and support. That is why it is essential to create training programs, applied tools and support networks to help women overcome these challenges and thrive in the circular and digital economy.

Impact of Crises (COVID-19 and Ukraine War): The crises have highlighted vulnerabilities, 75% of the respondents affirming that their business was impacted by the crises. A significant portion, 43.48%, turned to training related to entrepreneurial knowledge and skills, and an equal percentage participated in webinars or online skill development, indicating a strong reliance on educational resources to navigate the challenges of the restart. Training, mentoring, or coaching specifically for improving digital skills was sought by 30.43% of respondents, reflecting a need to enhance their digital competencies in the face of evolving business landscapes. Additionally, 30.43% also sought training in soft skills such as time and stress management, highlighting the importance of personal resilience during these turbulent times. Joining formal or informal communities of entrepreneurs was a support method for 39.13%, emphasizing the value placed on networking and peer support. Interestingly, 21.74% indicated that they did not access any of the listed supports, although they acknowledged a need for them, and 17.39% were unaware of available professional support, pointing to significant gaps in access and awareness. Meanwhile, 13.04% reported not requiring any of these supports, suggesting that a small portion of respondents felt self-sufficient in managing their business challenges.

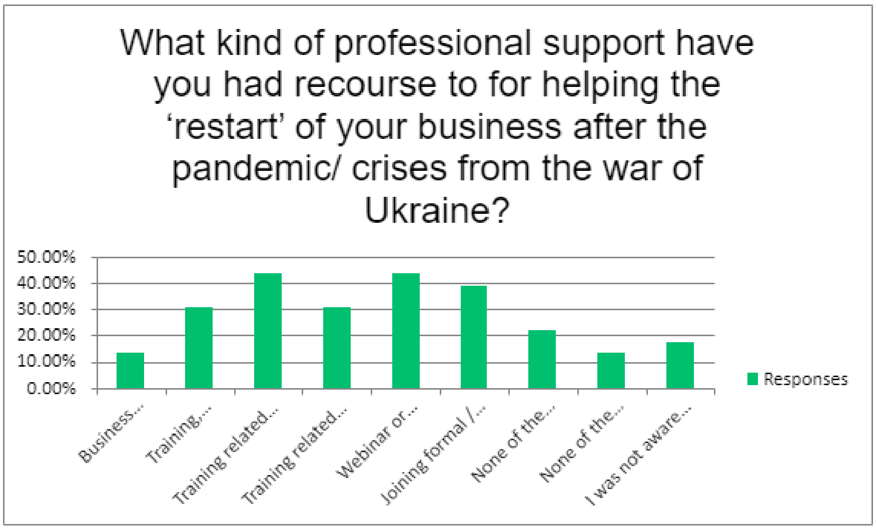

Figure 21. Professional support in crisis

6 Successful women entrepreneurs

General Information: The interview with Cosmina Dinu, co-founder of ROMO, provides insights into a business model that integrates circular and digital economy practices. ROMO, established in 2020, operates in the direct marketing sector, utilizing Facebook groups to connect local producers with consumers. The company focuses on ethical, locally produced food, supporting sustainability through reduced food waste and promoting local economic growth. ROMO is characterized by its small business size and relatively recent market entry, leveraging digital platforms for operations and marketing.

Main Motivator for Application of CE Practice: The primary driver for ROMO's adoption of circular economy (CE) practices is the need to streamline the connection between small producers and consumers, addressing issues like seasonality, limited production volumes, and the high costs associated with artisanal production. The motivation lies in creating a sustainable business model that enhances transparency, common sense, and mutual support within the community.

Implementation Insights:

Successes: ROMO successfully implements CE practices by pre-ordering systems that minimize waste and ensure product freshness. The use of local Facebook groups has been effective in simplifying marketing and sales processes without the need for additional technological infrastructure.

Challenges: The digital transition has been met with obstacles, particularly the need for advanced digital and technological skills among team members. Another significant challenge is balancing work-life commitments, which can hinder participation in ongoing education and training.

Skills Needed: Key skills identified include:

- Advanced digital skills, particularly in AI, IoT, and automation.
- Understanding of circular design and sustainable business models.
- Leadership and change management to navigate transitions effectively.

Support Sought and Received: ROMO sought support in digital marketing, IT consulting, and community engagement strategies. They received assistance in these areas through informal networks and self-initiated learning. However, there was a noticeable gap in structured, accessible training programs tailored for women entrepreneurs in these specialized areas.

Recommendations for Better Support:

1. **Specialized Training Programs:** Development of accessible courses focusing on CE and digital transformation tailored to the unique needs of women entrepreneurs.
2. **Flexible Learning Opportunities:** Flexible schedules and online platforms for professional development that accommodate work-life balance.
3. **Mentorship and Networking:** Creating networks and mentoring programs to connect WEs with industry experts and successful peers, providing guidance and support.

Stakeholders Perspective:

Insights from Stakeholders: Key stakeholders, including industry leaders and policy makers, emphasize the importance of robust support systems for WEs. They highlight the need for public policies that provide financial incentives, grants, and subsidies to encourage the adoption of sustainable and digital practices.

Recommendations and Proposed Actions:

1. **Enhanced Public Support:** Policy makers should introduce dedicated grants and funding opportunities to support WEs in their transition to CE and i4.0.
2. **Public-Private Partnerships:** Encourage collaborations between educational institutions, non-profits, and private sectors to create comprehensive support structures, including training, resources, and mentorship.
3. **Awareness and Advocacy:** Increase awareness of the benefits of CE and digital practices through campaigns and information dissemination, encouraging more WEs to adopt these models.

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7 Stakeholder Perspectives

General Information:

- **Number of Received Responses:** This analysis is based on insights from two key stakeholders: Raul Pop and Simona Geaca.
- **Distribution per Type of Stakeholder:**
  - **Raul Pop:** Vice President of the Circular Economy Coalition (CERC) and Program Director of ECOTECA. His role involves the development and implementation of circular economy programs, with a broad scope of collaboration both nationally and internationally.
  - **Simona Geaca:** Coordinator of the Puzzletex department at Atelier de Panza, an NGO program that focuses on sustainable textile products and textile recycling/upcycling initiatives.
- **Experience with CE and i4.0 Transition:**
  - **Raul Pop** has significant experience in creating programs and public policies for waste management and circular economy initiatives. He emphasizes the importance of digitization and data-driven approaches in enhancing these initiatives.
  - **Simona Geaca** has a practical approach, focusing on implementing CE principles through textile upcycling and creating sustainable alternatives to plastic bags. Her work involves direct engagement with the practical aspects of recycling and the challenges faced by women entrepreneurs in the textile industry.

Insights from Interviews with Key Stakeholders: Both stakeholders highlight the critical role of education and practical support in facilitating the transition to circular and digital economies. They stress the importance of creating inclusive platforms for dialogue and partnership between policymakers, industry stakeholders, and educational institutions. This collaborative approach can help identify best practices, develop relevant initiatives, and provide the necessary support for women entrepreneurs.

Identified Gaps in Support for WEs in S3 and i4.0 Transition: The interviews revealed several significant gaps:

1. **Limited Access to Resources and Training:** There is a shortage of specialized training programs tailored to the specific needs of women entrepreneurs in the context of Industry 4.0 and the circular economy.

2. **Insufficient Networking and Mentoring:** Women entrepreneurs often lack access to networks and mentors who can provide guidance and support in navigating the complexities of digital and circular transitions.

3. **Inadequate Financial Support:** There is a need for more accessible financial resources, such as grants and loans, to help women entrepreneurs start and scale their businesses in technological and innovative fields.

4. **Barriers to Accessing Digital Infrastructure:** Limited access to modern digital tools and high-speed internet hinders the ability of women entrepreneurs to compete effectively in the global market.

Recommendations and Proposed Actions from Stakeholders:

1. **Develop Comprehensive Training Programs:** Both stakeholders advocate for the creation of accessible training programs that cover advanced digital skills, circular economy practices, and management of innovation. These programs should be designed to meet the specific needs of women entrepreneurs and include practical applications.

2. **Enhance Networking and Mentorship Opportunities:** Establishing platforms for networking and mentorship can help women entrepreneurs connect with industry leaders, gain valuable insights, and build supportive relationships. This can include public-private partnerships and cross-sector collaborations to foster innovation.

3. **Increase Financial Support Mechanisms:** The creation of financial support mechanisms, such as grants and preferential loans specifically targeted at women entrepreneurs, can provide the necessary capital to invest in new technologies and business models.

4. **Improve Access to Digital Infrastructure:** Ensuring that women entrepreneurs have access to essential digital infrastructure, including high-speed internet and modern digital tools, is crucial for their success in the digital economy.

5. **Promote Inclusive Policies:** Policymakers should focus on developing inclusive policies that support gender equality and facilitate the participation of women in all areas of the circular and digital economy. This includes involving women entrepreneurs in policy-making processes to ensure that their needs and perspectives are adequately represented.

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8 Conclusion

Key Findings: The analysis highlights several critical findings regarding the state of women entrepreneurs (WEs) in Romania concerning their skills and needs in transitioning towards circular economy (CE) and Industry 4.0 (i4.0):

1. **Familiarity and Engagement with CE**:
    - A notable 72.97% of respondents are familiar with CE concepts, with widespread adoption of practices like minimizing waste and using sustainable materials.
    - The main motivators include management mindset shifts and consumer demand for sustainable products.
2. **Challenges in CE and i4.0 Transition**:
    - Significant challenges include limited access to finance, sector-specific CE application difficulties, and the need for enhanced digital skills.
    - There is a marked gap in training programs specifically tailored to these needs, highlighting a critical area for development.
3. **Digital Technologies Adoption**:
    - There is a high adoption rate of digital technologies, particularly in mobile technologies, e-commerce, and collaboration tools. However, the lack of advanced digital skills, such as cybersecurity and software use for simulation, poses a barrier.
4. **Impact of Crises**:
    - The COVID-19 pandemic and geopolitical tensions (e.g., the war in Ukraine) have underscored vulnerabilities, prompting a shift towards resilience and sustainability in business practices.

Recommendations and Proposed Actions:

To address the identified gaps and support WEs in their transition to CE and i4.0, several recommendations have been proposed:

1. **Comprehensive Training Programs**:
    - Develop and implement accessible training programs focusing on CE and digital transformation. These should include practical applications, such as digital marketing, resource optimization, and the development of digital business models.
2. **Networking and Mentorship Platforms**:
    - Establish platforms that facilitate networking and mentorship opportunities. These platforms should connect WEs with industry experts and peers, providing essential guidance and support.
3. **Enhanced Financial Support Mechanisms**:
    - Introduce grants, preferential loans, and other financial incentives tailored for women entrepreneurs. This financial support is crucial for enabling investments in new technologies and business models.
4. **Improving Digital Infrastructure**:
    - Ensure WEs have access to high-speed internet and modern digital tools. This infrastructure is fundamental for competing in the global digital economy.
5. **Inclusive Public Policies**:
    - Policymakers should focus on creating inclusive policies that promote gender equality and support women entrepreneurs. This includes ensuring that WEs are directly involved in policy-making processes to address their specific needs and challenges.

These actions aim to build a robust support system for women entrepreneurs in Romania, equipping them with the skills and resources needed to thrive in an increasingly digital and circular economy. By addressing these key areas, Romania can foster a more

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inclusive and innovative business environment, driving economic growth and sustainability.

❖ Annexes

Survey Questionnaire

Interview Guides

List of Interviewees

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