



Further Learning, Outreach and Working Skills

PSYCHOMETRIC EVALUATION:

Evaluation of the construct validity of the FLOWS activity domain survey instrument and comparative data analysis

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Executive Summary

Overview

The **FLOWS project** aims to equip marginalized young jobseekers with essential skills for inclusion in the digital and technological labor market. This report presents findings from the psychometric evaluation of the **FLOWS activity domain survey instrument**, which measures competencies across **eight activity domains**. The validated instrument provides insights into participants' strengths and areas for improvement, supporting the design of targeted career guidance and skill development programs.

Key Findings

1. Construct Validation of the Survey Instrument

- **Methodology:**
 - **Principal Component Analysis (PCA)** was applied to identify 25 key factors across the eight domains, ensuring the tool's construct validity.
 - Items with low communalities (<0.4) were excluded to ensure statistical robustness.
- **Results:**
 - High variance explained (56.2%–68.5%) across domains indicates the survey effectively captures targeted competencies.

2. Exploration of Activity Domains

1. Shopping

- **Factors Identified:** Online Shopping, Organizing Shopping.
- **Implications:** Highlights the dual nature of shopping skills—digital literacy and practical organization. Programs should enhance online shopping capabilities for underserved groups.

2. Learning/Work

- **Factors Identified:** Curiosity and Collaboration, Social Responsibility.
- **Implications:** Emphasis on curiosity-driven learning and teamwork is critical for fostering employability and community engagement.

3. Communication

- **Factors Identified:** Intentional Communication, Cross-Cultural Communication, Nonverbal Communication.
- **Implications:** Strong verbal and written skills were observed; however, gaps in cross-cultural and nonverbal communication highlight areas for growth.

4. Care

- **Factors Identified:** Supportive Care and Advocacy, Culinary Engagement.
- **Implications:** Training should balance practical caregiving skills with fostering altruism to support personal and professional growth.

5. Media Usage

- **Factors Identified:** Digital Literacy, Arts and Entertainment Media, Knowledge and Discovery Media, Literature Consumption.
- **Implications:** Programs should focus on enhancing critical media consumption while promoting balanced usage across information and entertainment channels.

6. Leisure and Travel

- **Factors Identified:** Social Coordination, Sustainable Mobility, Sports, Cultural Participation.
- **Implications:** Encouraging cultural engagement and sustainable mobility supports personal growth and aligns with environmental goals.

7. Use of Technology

- **Factors Identified:** Digital Communication, Information Access, Organization.
- **Implications:** Technological literacy is strong but can benefit from enhanced skills in digital organization and data management.

8. Personal Wellbeing

- **Factors Identified:** Domestic Order, Wellness and Style, Home Enhancement.
- **Implications:** Promoting self-care and balanced lifestyles will foster mental and physical well-being among participants.

Comparative Analysis

- **Cultural Insights:**
 - **Significant differences** across countries highlight the need for tailored approaches. For example, Romania excelled in creativity, while Turkey demonstrated high curiosity.
 - **Universal strengths** include **self-control, conflict resolution, and learning strategies.**
- **Opportunities for Improvement:**
 - **Targeted interventions** are needed in Curiosity, Stress Tolerance, Perspective Taking, and Writing to address identified gaps.

Practical Applications

1. **Localized Interventions:**
 - Programs should reflect cultural and regional patterns to maximize relevance and impact.
2. **Competency Development:**
 - Focus on fostering emotional intelligence, adaptability, and cross-cultural skills.
3. **Enhanced Guidance Tools:**
 - Leverage the validated framework to design tools that address universal and context-specific needs.

Introduction

Further Learning, Outreach, and Working Skills (FLOWS)

The FLOWS project is dedicated to fostering inclusive career guidance strategies tailored for young jobseekers marginalized in the labour market. By emphasizing forward-thinking approaches, the project equips guidance practitioners with the tools and methodologies to create future-focused career plans. These strategies aim to integrate disadvantaged jobseekers into an increasingly technological and digitalized work environment.

The primary objective of the FLOWS project is to assist young jobseekers in identifying and enhancing their soft skills, ensuring their integration into the labour market. To achieve this, the project focuses on developing tools and methods for identifying transversal skills—skills that are transferable across various job roles and industries. These competencies are essential for future-proofing careers and supporting sustainable employment opportunities. The project also emphasizes building the capacities of experts and youth workers through specialized vocational education and training (VET) qualifications.

Key Project Outputs

- 1. Framework Development:**
Identifying key competencies essential for future labour markets and addressing the employability needs of disadvantaged young jobseekers.
- 2. Tool Specification and Content Creation:**
Developing core elements and methodologies adaptable to technological workplace demands, focusing on training requirements and key competencies for young jobseekers.
- 3. Training Modules and Online Platform:**
Designing training materials to enhance communication, interpersonal, and digitalization skills among young jobseekers. The platform facilitates knowledge sharing and practical application by guidance practitioners.
- 4. Piloting and Psychometric Evaluation:**
Implementing and assessing the FLOWS approach with the target group of disadvantaged young jobseekers. This phase results in validated methodologies to support future-focused career planning.

Project Partners

- **Çarşamba ISKUR Hizmet Merkezi Müdürlüğü** (Türkiye)
- **Universitatea Politehnica din Bucureşti** (Romania)
- **Ballymun Job Centre** (Ireland)
- **Hafelekar Unternehmensberatung** (Austria)
- **Mozaik İnsan Kaynakları Geliştirme Derneği** (Türkiye)

Data Collection

Data collection within the FLOWS project is integral to developing and validating the psychometric evaluation framework. This process ensures the reliability, validity, and usability of the tools designed for identifying and enhancing the employability skills of disadvantaged young jobseekers. The project combines a blended-learning approach with practical piloting activities, integrating both qualitative and quantitative methods to evaluate the effectiveness of the tools.

Description of Activities

The Flows tool was developed to support young jobseekers in identifying their transversal skills and preparing them for sustainable employment in a technology-driven labor market.

Role of Psychometric Evaluation

Psychometric evaluation enhances the scientific robustness of the tools by ensuring:

- **Reliability:** Establishing internal consistency within the tool's scales.
- **Validity:** Ensuring the tool accurately measures the intended constructs (content and criterion validity).
- **Sensitivity:** Identifying individual differences within the target groups.
- **Practicality:** Gathering qualitative insights to improve usability and client satisfaction.

Implementation and Data Collection Methodology

Each project partner conducted the training with young jobseekers in their country, followed by piloting the Flows tool with both jobseekers and career counselors. Data collection involved:

1. **Sample Composition:**
 - 131 young jobseekers participated in the **Flows Piloting** and used the **Flows tool** providing data for this analysis.
 - Career counselors from partner organizations provided insights on usability and practical application.
 - Participants included diverse sociodemographic backgrounds, ensuring representation across age, gender, and educational levels.
2. **Survey Instrument:**
 - Custom-designed **Flows tool** measuring competencies across eight activity domains (e.g., Shopping, Communication, Media Usage, and Personal Wellbeing).
 - Domains were assessed using questionnaires subjected to Principal Component Analysis (PCA) to extract key factors.

Methods of data analysis

Testing the construct validity of the individual activity domains

To verify that the survey items effectively measure the intended activity domains, **Principal Component Analysis (PCA)** was applied. This statistical method identifies patterns within the data and groups related items into factors, representing underlying constructs such as skills or behaviors.

Steps in the Analysis

1. Assessing Data Suitability for Analysis:

- The **Kaiser-Meyer-Olkin (KMO) test** was used to evaluate whether the dataset was appropriate for PCA. A KMO value greater than 0.5 was considered the minimum requirement for proceeding.
- The **Bartlett's test of sphericity** assessed whether the variables were sufficiently correlated to justify using PCA.

2. Selecting Relevant Items:

- **Communalities** indicate the proportion of variance in each item explained by the factors. Only items with communalities of at least 0.4 were included, as lower values suggest that an item is not strongly related to the identified factors.

3. Extracting Factors:

- **Eigenvalues** were used to decide how many factors to retain. Factors with eigenvalues greater than 1 were considered significant because they explained more variance than a single item.
- Items needed a **factor loading** of at least 0.3 to be considered meaningful contributors to a factor. Factor loadings measure the strength of the relationship between an item and a factor.

This method allowed for the identification of valid and meaningful factors, ensuring the survey accurately captured the targeted domains.

Descriptive and comparative data analysis

Overview of Sociodemographic Data

The analysis began with a presentation of the participants' age and gender distribution across the entire sample and within each country-specific subgroup. This provided a foundation for understanding the demographic characteristics of the sample.

Analysis of Competence Domains

Each competence domain was analyzed by calculating:

- **Mean values (averages):** Representing the central tendency of responses for each domain.
- **Standard deviations:** Indicating the variation in responses around the mean.

For each participating country, the descriptor with the highest rating in each competence domain was highlighted, offering insights into the strengths perceived by respondents in different regions.

Comparisons Between Countries

To examine potential differences in responses across countries:

- Descriptors with the highest and lowest ratings in each competence domain were selected for comparison.
- **Statistical Testing:**
 - The **Kruskal-Wallis test** was used to identify significant differences between countries for each descriptor. This non-parametric test is suitable for comparing groups when data do not meet the assumptions of normality.
 - If the Kruskal-Wallis test identified significant differences, **Bonferroni-adjusted post-hoc tests** were performed to pinpoint which countries differed.

Significance Threshold

The significance level was set at **Alpha \leq 0.05**, meaning that findings with a probability of error below 5% were considered statistically significant.

This approach ensured a clear understanding of both the overall trends in the data and the specific differences between participating countries.

Description of the sample

Sociodemographic variables

The study involved 131 participants across four countries (Austria, Ireland, Turkey, and Romania). The analysis focused on the participants' **age** and **gender**, presenting both the total sample and country-specific data. Missing data refers to cases where participants did not provide information on certain variables.

Key Terms Simplified

- **Mean:** The average age of participants in the group.
- **Standard Deviation (\pm SD):** Shows how much the ages vary. A smaller number means the ages are closer together, while a larger number indicates more variation.
- **n (%):** Represents the number and percentage of participants in each category (e.g., female or male).

Total Sample Overview

- The **average age** across all participants was approximately **24.8 years**, with a **standard deviation of 8.4**, meaning some participants were significantly younger or older.
- **Gender Distribution:**
 - **36.6% female** (48 participants).
 - **54.2% male** (71 participants).
 - **9.2% missing data** (12 participants did not report their gender).

Country-Specific Insights

1. Austria:

- Participants were older compared to other countries, with an **average age of 29.7 years** and a **wide variation in ages (SD: 11.07)**.
- **Gender Distribution:**
 - Predominantly male (**69% male, 10.3% female**).
 - **20.7% missing data** (6 participants).

2. Ireland:

- The youngest country group with an **average age of 22.75 years** and a higher variability in ages (**SD: 9.88**).

- **Gender Distribution:**
 - Mainly male (**85% male, 15% female**).
 - No missing data for gender.
- 3. Turkey:**
- Average age was **24.6 years**, with relatively less variability (**SD: 6.74**).
 - **Gender Distribution:**
 - More females participated (**65.4% female, 34.6% male**).
 - No missing data for gender.
- 4. Romania:**
- Participants were younger on average (**22.64 years**) with less variability in age compared to the total sample (**SD: 5.33**).
 - **Gender Distribution:**
 - **57.1% male, 28.6% female, and 14.3% missing data** (4 participants).

Table: Sociodemographic variables

Variable	n (%)	Mean	± SD
TOTAL SAMPLE			
Age in years	131	24,80	8,40
Female	48 (36,6)	25,29	7,75
Male	71 (54,2)	25,72	8,70
Missing	12 (9,2)	-	-
AUSTRIA			
Age in years	29	29,70	11,07
Female	3 (10,3)	32,67	4,04
Male	20 (69,0)	32,50	9,64
Missing	6 (20,7)	-	-
IRELAND			
Age in years	20	22,75	9,88
Female	3 (15,0)	32,67	22,14
Male	17 (85,0)	21,00	5,73
Missing	-	-	-
TURKEY			
Age in years	52	24,60	6,74
Female	34 (65,4)	23,82	4,93
Male	18 (34,6)	26,06	9,27
Missing	-	-	-
ROMANIA			
Age in years	28	22,64	5,33
Female	8 (28,6)	26,00	9,26
Male	16 (57,1)	21,87	0,96
Missing	4 (14,3)	-	-

Construct validation of the survey instrument

Domain Shopping

Overview

The goal was to validate the survey items related to shopping behaviors and to group them into meaningful categories (factors). Principal Component Analysis (PCA) was used to identify these factors and to evaluate the construct validity of the items.

Initial PCA

Table: factorisation prerequisites initial PCA

Kaiser-Meyer-Olkin	,703
Bartlett test for sphericity	,000

Table: Communalities after initial PCA

#	Item	Communalities
#1	Do you plan when to go shopping?	,455
#2	Do you make shopping lists?	,586
#3	Do you shop online?	,492
#4	Do you set a budget and stay within it when you go shopping?	,245 [▲]
#5	Do you use the ATM Machine	,270 [▲]
#6	Do you use online banking, Paypal or Revolut for transactions or to check your account balance?	,616
#7	Do you ask shop assistants for help?	,452
#8	Do you compare prices?	,177 [▲]
#9	Do you separate your items into different bags?	,579

▲ Item excluded from further PCA since $h^2 < 0,4$

1. Testing Data Suitability for PCA:

- **Kaiser-Meyer-Olkin (KMO):** A value of **0.703** indicates that the dataset is adequate for PCA (threshold > 0.5).
- **Bartlett's Test for Sphericity:** A highly significant result ($p < 0.001$) shows that the items are sufficiently correlated for factor analysis.

2. Item Evaluation (Communalities):

- **Communality values** reflect how much of each item's variance is explained by the identified factors.
- Items with communalities below **0.4** (e.g., “Do you set a budget and stay within it?” and “Do you compare prices?”) were excluded as they did not contribute enough to the factor structure.

Final structure of domain Shopping

The final two-factor model comprises six items, which are assigned to factors **Online Shopping** and **Organising Shopping** and explain 56,2% of the total variance.

Table: Final factorial structure of domain Shopping

Factor	#	Item	Factor-loadings
Online Shopping	#1	Do you use online banking, Paypal or Revolut for transactions or to check your account balance?	,760
	#2	Do you shop online?	,700
Organising Shopping	#3	Do you ask shop assistants for help?	,781
	#4	Do you separate your items into different bags?	,763
	#5	Do you make shopping lists?	,479
	#6	Do you plan when to go shopping?	,316

The analysis identified **two factors** explaining **56.2% of the total variance**:

1. Online Shopping

- **Items:**
 - "Do you use online banking, Paypal, or Revolut for transactions or to check your account balance?" (**loading: 0.760**)
 - "Do you shop online?" (**loading: 0.700**)
- **Interpretation:** These items describe behaviors related to digital transactions and e-commerce.

2. Organizing Shopping

- **Items:**
 - "Do you ask shop assistants for help?" (**loading: 0.781**)
 - "Do you separate your items into different bags?" (**loading: 0.763**)
 - "Do you make shopping lists?" (**loading: 0.479**)
 - "Do you plan when to go shopping?" (**loading: 0.316**)
- **Interpretation:** These items represent practical planning and organizational skills for in-person shopping.

Domain Learning/work

Initial PCA

Table: factorisation prerequisites initial PCA

Kaiser-Meyer-Olkin	,720
Bartlett test for sphericity	,000

Table: Communalities after initial PCA

#	Item	Communalities
#1	Are you interested in learning new skills and new hobbies?	,545
#2	Are you interested in learning new facts and updating your knowledge?	,627
#3	Are you interested in learning new skills and gaining new qualifications, for your job or career?	,361 [▲]
#4	Are you interested in helping and volunteering in your community?	,737
#5	Do you use social media sites such as Facebook or LinkedIn, to stay in touch with the world of work?	,453
#6	Are you interested in computer coding, Apps development or Website design?	,307 [▲]
#7	Do you enjoy working in a team?	,438
#8	Do you communicate with others to solve problems?	,528

▲ Item excluded from further PCA since $h^2 < 0,4$

Final structure of domain Learning/work

The final two-factor model comprises six items, which are assigned to factors **Curiosity and Collaboration** and **Social Responsibility** and explain 59,2% of the total variance.

Table: Final factorial structure of domain Learning/work

Factor	#	Item	Factor-loadings
Curiosity and Collaboration	#1	Are you interested in learning new facts and updating your knowledge?	,794
	#2	Are you interested in learning new skills and new hobbies?	,733
	#3	Do you communicate with others to solve problems?	,722
	#4	Do you enjoy working in a team?	,687
	#5	Do you use social media sites such as Facebook or LinkedIn, to stay in touch with the world of work?	,543
Social Responsibility	#6	Are you interested in helping and volunteering in your community?	0,581

Domain Communication

Initial PCA

Table: factorisation prerequisites initial PCA

Kaiser-Meyer-Olkin	,568
Bartlett test for sphericity	,000

Table: Communalities after initial PCA

#	Itemformulation	Communalities
#1	Do you write letters, emails or online blogs?	,607
#2	Do you debate issues with your friends, online or in person?	,668
#3	Do you speak a second language?	,738
#4	Do you switch off personal devices when you are spending time with friends or family?	,624
#5	Do you pay attention and listen to others before replying?	,651
#6	Do you communicate with your friends using sign language?	,820

▲ Item excluded from further PCA since $h^2 < 0,4$

Final structure of domain Communication

The final three-factor model comprises six items, which are assigned to factors **Intentional Communication and Social Awareness**, **Cross-Cultural Communication** and **Nonverbal Communication** and explain 68,5% of the total variance.

Table: Final factorial structure of domain Communication

Factor	#	Item	Factor-loadings
Intentional Communication and Social Awareness	#1	Do you debate issues with your friends, online or in person?	,728
	#2	Do you write letters, emails or online blogs?	,693
	#3	Do you pay attention and listen to others before replying?	,591
	#4	Do you switch off personal devices when you are spending time with friends or family?	,510
Cross-Cultural Communication	#5	Do you speak a second language?	,767
Nonverbal Communication	#6	Do you communicate with your friends using sign language?	,837

Factor	#	Item	Factor-loadings
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Domain Care

Initial PCA

Table: factorisation prerequisites initial PCA

Kaiser-Meyer-Olkin	,794
Bartlett test for sphericity	,000

Table: Communalities after initial PCA

#	Item	Communalities
#1	Do you research new recipes to try?	,822
#2	Do you cook meals for yourself or for others?	,792
#3	Do you help others to learn?	,420
#4	Do you play with children	,581
#5	Do you help others with personal care and hygiene?	,657
#6	Do you help or take care of an elderly person?	,596
#7	Do you take part in activism or advocate for others?	,425

▲ Item excluded from further PCA since $h^2 < 0,4$

Final structure of domain Care

The final two-factor model comprises seven items, which are assigned to factors **Supportive Care and Advocacy** and **Culinary Engagement** and explain 61,3% of the total variance.

Table: Final factorial structure of domain Care

Factor	#	Item	Factor-loadings
Supportive Care and Advocacy	#1	Do you help others with personal care and hygiene?	,797
	#2	Do you help or take care of an elderly person?	,767
	#3	Do you play with children	,712
	#4	Do you help others to learn?	,624
	#5	Do you take part in activism or advocate for others?	,559
Culinary Engagement	#6	Do you research new recipes to try?	,892
	#7	Do you cook meals for yourself or for others?	,854

Domain Media usage

Initial PCA

Table: factorisation prerequisites initial PCA

Kaiser-Meyer-Olkin	,737
Bartlett test for sphericity	,000

Table: Communalities after initial PCA

#	Item	Communalities
#1	Do you search and watch movies, online or on TV?	,600
#2	Do you watch current affairs or the news programmes, online or on TV?	,775
#3	Do you watch nature and history programmes online or on TV?	,709
#4	Do you watch reality TV programmes, online or on your TV?	,587
#5	Do you watch Learning to do Programmes online or on your TV?	,759
#6	Do you watch drama programmes, online or on TV?	,592
#7	Do you watch or listen to art and music programme?	,488
#8	Do you watch sports programmes online or on TV?	,739
#9	Do you read magazines or online publications?	,716
#10	Do you read the newspapers, or online news?	,612
#11	Do you listen to audio books?	,742
#12	Do read novels or online books?	,568
#13	Do you listen to the radio or podcasts?	,557
#14	Do you listen to stream music?	,666

▲ Item excluded from further PCA since $h^2 < 0,4$

Final structure of domain Media usage

The final five-factor model comprises fourteen items, which are assigned to factors **Print and Digital Literacy**, **Music and Arts Media Consumption**, **Entertainment Media Consumption**, **Knowledge and Discovery Media Consumption** and **Literature Consumption** and explain 65,1% of the total variance.

Table: Final factorial structure of domain Media usage

Factor	#	Item	Factor-loadings
Print and Digital Literacy	#1	Do you read the newspapers, or online news?	,748
	#2	Do you read magazines or online publications?	,746
Music and Arts Media Consumption	#3	Do you watch or listen to art and music programme?	,546
	#4	Do you listen to stream music?	,799

Factor	#	Item	Factor-loadings
Entertainment Media Consumption	#5	Do you listen to the radio or podcasts?	,575
	#6	Do you watch drama programmes, online or on TV?	,376
	#7	Do you watch sports programmes online or on TV?	,849
	#8	Do you watch reality TV programmes, online or on your TV?	,657
	#9	Do you search and watch movies, online or on TV?	,307
Knowledge and Discovery Media Consumption	#10	Do you watch nature and history programmes online or on TV?	,771
	#11	Do you watch Learning to do Programmes online or on your TV?	,754
	#12	Do you watch current affairs or the news programmes, online or on TV?	,549
Literature Consumption	#13	Do read novels or online books?	,447
	#14	Do you listen to audio books?	,791

Domain Leisure and Travel

Initial PCA

Table: factorisation prerequisites initial PCA

Kaiser-Meyer-Olkin	,601
Bartlett test for sphericity	,000

Table: Communalities after initial PCA

#	Item	Communalities
#1	Do you do individual sports or exercise, such as running, GYM, Yoga, Swimming?	,677
#2	Do you do team sports?	,652
#3	Do you use social media to plan activities with friends?	,751
#4	Do you take part in group activities with friends, sometimes using social media?	,588
#5	Do you eat out with family or friends?	,489
#6	Do you hang out with friends often, either face-to-face or online?	,562
#7	Do you use public transport?	,730
#8	Do you drive a car?	,512
#9	Do you cycle?	,733
#10	Do you walk to the places you need to go to?	,674
#11	Do you drive a scooter, a moped or a motorbike?	,834
#12	Do you take part in cultural events and visits?	,712

#	Item	Communalities
#13	Do you use a map or mobile applications such a google maps, to find your way around?	,434

▲ Item excluded from further PCA since $h^2 < 0,4$

Final structure of domain Leisure and Travel

The final five-factor model comprises thirteen items, which are assigned to factors **Friendship and Social Coordination, Sustainable Mobility, Sports, Cultural Participation and Mobility** and **Two-Wheeled Mobility** and explain 64,2% of the total variance.

Table: Final factorial structure of domain Leisure and Travel

Factor	#	Item	Factor-loadings
Friendship and Social Coordination	#1	Do you use social media to plan activities with friends?	,840
	#2	Do you take part in group activities with friends, sometimes using social media?	,733
	#3	Do you hang out with friends often, either face-to-face or online?	,696
Sustainable Mobility	#4	Do you use public transport?	,847
	#5	Do you walk to the places you need to go to?	,791
Sports	#6	Do you do individual sports or exercise, such as running, GYM, Yoga, Swimming?	,807
	#7	Do you do team sports?	,784
Cultural Participation and Mobility	#8	Do you drive a car?	,321
	#9	Do you take part in cultural events and visits?	,832
	#10	Do you eat out with family or friends?	,558
	#11	Do you use a map or mobile applications such a google maps, to find your way around?	,456
Two-Wheeled Mobility	#12	Do you drive a scooter, a moped or a motorbike?	,883
	#13	Do you cycle?	,646

Domain Use of Technology

Initial PCA

Table: factorisation prerequisites initial PCA

Kaiser-Meyer-Olkin	,717
Bartlett test for sphericity	,000

Table: Communalities after initial PCA

#	Item	Communalities
#1	When there is something you do not know how to do on your computer do you read the instructions?	,403
#2	Do you use search engines like “Google” or Chatbots to search for things online?	,522
#3	Do you find and download information onto your computer or mobile device?	,729
#4	Do you use the cloud calendar on your computer or device ?	,709
#5	Do you play online computer games?	,581
#6	Do you use online cloud services to store important documents, pictures or music?	,624
#7	Do you use social media or video-calls to communicate with other people?	,706
#8	Do you share your personal information on networking sites like Instagram, Snapchat, Twitter and Facebook?	,496

▲ Item excluded from further PCA since $h^2 < 0,4$

Final structure of domain Use of Technology

The final three-factor model comprises eight items, which are assigned to factors **Social Digital Communication**, **Digital Information Access**, and **Digital Organisation** and explain 59,6% of the total variance.

Table: Final factorial structure of domain Use of Technology

Factor	#	Item	Factor-loadings
Social Digital Communication	#1	Do you use search engines like “Google” or Chatbots to search for things online?	,709
	#2	Do you share your personal information on networking sites like Instagram, Snapchat, Twitter and Facebook?	,640
	#3	Do you play online computer games?	,491
Digital Information Access	#4	Do you use social media or video-calls to communicate with other people?	,822
	#5	Do you find and download information onto your computer or mobile device?	,765
Digital Organisation	#6	Do you use online cloud services to store important documents, pictures or music?	,433

Factor	#	Item	Factor-loadings
	#7	Do you use the cloud calendar on your computer or device ?	,837
	#8	When there is something you do not know how to do on your computer do you read the instructions?	,448

Domain Personal Wellbeing

Initial PCA

Table: factorisation prerequisites initial PCA

Kaiser-Meyer-Olkin	,699
Bartlett test for sphericity	,000

Table: Communalities after initial PCA

#	Item	Communalities
#1	Do you look at clothes, accessories and fashion in social media and magazines?	,609
#2	Do you make time for self care and partake in stress relief activities?	,677
#3	Do you manage your mental health and wellbeing?	,685
#4	Do you keep your house tidy?	,490
#5	Do you use cleaning equipment like Hoovers and mops?	,727
#6	Do you do the washing?	,740
#7	Do you carry out DIY jobs at home?	,720
#8	Do you decorate your Home?	,610

▲ Item excluded from further PCA since $h^2 < 0,4$

Final structure of domain Personal Wellbeing

The final three-factor model comprises eight items, which are assigned to factors **Domestic Order**, **Wellness and Personal Style Engagement**, and **Personalized Home Enhancement** and explain 65,7% of the total variance.

Table: Final factorial structure of domain Personal Wellbeing

Factor	#	Item	Factor-loadings
Domestic Order	#1	Do you do the washing?	,838
	#2	Do you use cleaning equipment like Hoovers and mops?	,764
	#3	Do you keep your house tidy?	,625

Factor	#	Item	Factor-loadings
Wellness and Personal Style Engagement	#4	Do you make time for self care and partake in stress relief activities?	,819
	#5	Do you manage your mental health and wellbeing?	,722
	#6	Do you look at clothes, accessories and fashion in social media and magazines?	,675
Personalized Home Enhancement	#7	Do you carry out DIY jobs at home?	,828
	#8	Do you decorate your Home?	,694

Summary of the extracted factor structures of the activity domains

Through statistical analysis, 25 distinct factors were identified across eight activity domains. These factors represent the key behavioral and skill categories that emerged from the survey data, providing a high-level summary of the activities measured. The following table outlines the final factor structure for each domain, including the number of factors and the percentage of variance explained by them.

The following table shows the final structure of the activity model.

DOMAIN <i>Assigned Factor</i>	Number of factors	Explained variance %
SHOPPING	2	56,2
<i>Online Shopping</i>		
<i>Organising Shopping</i>		
LEARNING/WORK	2	59,2
<i>Curiosity and Collaboration</i>		
<i>Social Responsibility</i>		
COMMUNICATION	3	68,5
<i>Intentional Communication and Social Awareness</i>		
<i>Cross-Cultural Communication</i>		
<i>Nonverbal Communication</i>		
CARE	2	61,3
<i>Supportive Care and Advocacy</i>		
<i>Culinary Engagement</i>		
MEDIA USAGE	5	65,1
<i>Print and Digital Literacy</i>		
<i>Music and Arts Media Consumption</i>		
<i>Entertainment Media Consumption</i>		
<i>Knowledge and Discovery Media Consumption</i>		
<i>Literature Consumption</i>		
LEISURE & TRAVEL	5	64,2
<i>Friendship and Social Coordination</i>		
<i>Sustainable Mobility</i>		
<i>Sports</i>		
<i>Cultural Participation and Mobility</i>		
<i>Two-Wheeled Mobility</i>		
USE OF TECHNOLOGY	3	59,6
<i>Social Digital Communication</i>		
<i>Digital Information Access</i>		
<i>Digital Organisation</i>		
PERSONAL WELLBEING	3	65,7
<i>Domestic Order</i>		
<i>Wellness and Personal Style Engagement</i>		
<i>Personalized Home En-hancement</i>		

Summary Analysis of Construct Validation

This chapter presented the validation of the survey instrument used to evaluate behavioral and skill domains. A total of **25 factors** across **eight activity domains** were identified through **Principal Component Analysis (PCA)**, which grouped related survey items into meaningful categories. Below is a comprehensive summary of the findings for each domain, highlighting key insights and their implications.

1. Domain: Shopping

- **Key Factors:**
 - **Online Shopping:** Includes behaviors like online banking and e-commerce.
 - **Organizing Shopping:** Focuses on in-person shopping preparation, such as making lists and interacting with shop assistants.
- **Variance Explained:** 56.2%.
- **Implications:** The results emphasize the dual nature of shopping behaviors—digital convenience and in-store organization. Training could focus on enhancing both skills, particularly for populations unfamiliar with online platforms.

2. Domain: Learning/Work

- **Key Factors:**
 - **Curiosity and Collaboration:** Encompasses interest in new knowledge, hobbies, teamwork, and problem-solving.
 - **Social Responsibility:** Reflects volunteering and community involvement.
- **Variance Explained:** 59.2%.
- **Implications:** The findings highlight the importance of fostering curiosity and collaborative skills while encouraging social responsibility, crucial for employability and personal growth.

3. Domain: Communication

- **Key Factors:**
 - **Intentional Communication and Social Awareness:** Includes debating, writing, and active listening.
 - **Cross-Cultural Communication:** Focuses on speaking second languages.
 - **Nonverbal Communication:** Involves the use of sign language.
- **Variance Explained:** 68.5%.

- **Implications:** Effective communication encompasses verbal, written, and nonverbal skills. Emphasis on cross-cultural communication can enhance employability in globalized settings.

4. Domain: Care

- **Key Factors:**
 - **Supportive Care and Advocacy:** Reflects caregiving and advocacy behaviors, such as helping others and promoting activism.
 - **Culinary Engagement:** Focuses on cooking and experimenting with recipes.
- **Variance Explained:** 61.3%.
- **Implications:** The dual focus on caregiving and culinary skills underscores the importance of balancing practical life skills with altruistic tendencies in personal and professional contexts.

5. Domain: Media Usage

- **Key Factors:**
 - **Print and Digital Literacy:** Reading newspapers and online publications.
 - **Music and Arts Media Consumption:** Engagement with art, music, and streaming services.
 - **Entertainment Media Consumption:** Viewing sports, movies, and reality TV.
 - **Knowledge and Discovery Media Consumption:** Watching educational or current affairs programs.
 - **Literature Consumption:** Reading novels and listening to audiobooks.
- **Variance Explained:** 65.1%.
- **Implications:** The diversity of media usage behaviors reflects varying information consumption preferences. Interventions can target enhancing digital literacy and promoting balanced media engagement.

6. Domain: Leisure and Travel

- **Key Factors:**
 - **Friendship and Social Coordination:** Planning and participating in social activities.
 - **Sustainable Mobility:** Using public transport and walking.
 - **Sports:** Individual and team sports participation.
 - **Cultural Participation and Mobility:** Attending cultural events and using navigation tools.
 - **Two-Wheeled Mobility:** Cycling and riding scooters.

- **Variance Explained:** 64.2%.
- **Implications:** Encouraging sustainable mobility and cultural engagement aligns with green and inclusive mobility goals. Sports and social activities highlight health and social well-being priorities.

7. Domain: Use of Technology

- **Key Factors:**
 - **Social Digital Communication:** Using search engines, chatbots, and social networks.
 - **Digital Information Access:** Downloading information and using social media for communication.
 - **Digital Organisation:** Cloud storage, calendars, and troubleshooting digital tools.
- **Variance Explained:** 59.6%.
- **Implications:** Technological literacy is vital for digital workforce readiness. Programs targeting digital organization and information access skills can empower participants to thrive in technology-driven environments.

8. Domain: Personal Wellbeing

- **Key Factors:**
 - **Domestic Order:** Managing household tasks like cleaning and washing.
 - **Wellness and Personal Style Engagement:** Focusing on self-care, mental health, and fashion interests.
 - **Personalized Home Enhancement:** DIY and home decoration.
- **Variance Explained:** 65.7%.
- **Implications:** Emphasis on personal well-being and self-care highlights the importance of balanced lifestyles for mental and physical health.

Cross-Domain Analysis

- **Strengths:**
 - High variance explained (56.2%–68.5%) across domains demonstrates robust construct validity.
 - Key competencies such as digital literacy, social responsibility, and adaptability were effectively captured.
- **Opportunities for Development:**

- Domains like **Curiosity** and **Stress Tolerance** scored relatively lower, suggesting areas for targeted interventions.
- Emphasizing cross-cultural and nonverbal communication can address gaps in global employability skills.
- **Applicability:**
 - The validated structure can guide program development and evaluation across diverse educational, social, and professional settings.

Conclusion

The construct validation successfully identified distinct factors across eight domains, providing a comprehensive understanding of participant behaviors and competencies. These insights offer a foundation for developing tailored interventions, ensuring alignment with diverse participant needs and fostering inclusive growth in the labor market. By leveraging these findings, the FLOWES framework can effectively enhance employability and life skills in an increasingly complex world.

Exploration of Competence domains

Creating New Value

The **Creating New Value** competence domain assesses key traits and skills that foster innovation and adaptability in dynamic environments. This domain includes descriptors such as adaptability, creativity, fluency of ideas, and problem-solving. The analysis focused on understanding the extent of these competencies across participants from four countries (Austria, Ireland, Turkey, and Romania) and identifying both the highest and lowest-rated descriptors for the total sample and individual countries.

This section provides insights into the overall trends, country-specific strengths, and significant differences between countries regarding the descriptors within this competence domain.

Highest country-specific extent of domain related descriptor

- **Austria:** Adaptability was rated highest (mean = 8.50, SD = 0.30).
- **Ireland:** Fluency of Ideas was the strongest descriptor (mean = 8.69, SD = 0.53).
- **Turkey:** Adaptability was again rated highest (mean = 8.51, SD = 0.22).
- **Romania:** Fluency of Ideas had the strongest rating (mean = 8.78, SD = 0.33).

Country	descriptor	mean	±SD
Austria	Adaptability	8,50	0,30
Ireland	Fluency of ideas	8,69	0,53
Turkey	Adaptability	8,51	0,22
Romania	Fluency of ideas	8,78	0,33

Creating New Value – total sample

- A total of 12 descriptors were evaluated, with **Fluency of Ideas** scoring the highest on average (mean = 8.59, SD = 0.42) and **Curiosity** scoring the lowest (mean = 8.05, SD = 0.35).
- Other descriptors like adaptability, creativity, and flexibility also demonstrated strong ratings, reflecting the participants’ readiness for innovative thinking.

Table: Extent of descriptor values related to competence domain Creating New Value (total sample)

	Descriptor	mean	SD
#1	Flexibility	8,42	0,27
#2	Adaptability	8,49	0,25
#3	Creativity	8,25	0,39
#4	Fluency of Ideas	8,59 [§]	0,42
#5	Originality	8,34	0,36
#6	Curiosity	8,05 [#]	0,35
#7	Open mindedness	8,29	0,27

#8	Critical Thinking	8,31	0,32
#9	Problem solving	8,42	0,32
#10	Collaboration	8,20	0,45
#11	Agility	8,34	0,30
#12	Initiative	8,30	0,24

⁵ highest extent

lowest extent

Extreme Descriptor extents compared by countries (domain Creating New Value)

Fluency of ideas (highest descriptor in competence domain)

Total Sample Insight:

Fluency of Ideas emerged as the most prominent skill across all participants, reflecting a capacity for generating diverse and creative solutions.

Table: Summary Kruskal-Wallis-Test for independent samples

Total sample size	129
Test statistics	12,104
Degrees of freedom	3
Significance (Alpha ≤ ,05)	,007

Significant Differences Between Countries:

- Romania demonstrated significantly higher scores in Fluency of Ideas compared to Austria (**p = 0.023**) and Turkey (**p = 0.012**), as confirmed by Kruskal-Wallis testing and Bonferroni-adjusted post-hoc comparisons.
- No significant differences were observed between Ireland and other countries.

Table: Comparative extents of “Fluency of ideas” between participating countries.

Countries compared	Test statistics	Adjusted significance
Austria-Turkey	-1,624	1,000
Austria-Ireland	-15,995	,846
Austria-Romania	-28,613	,023*
Turkey-Ireland	14,371	,864
Turkey-Romania	-26,989	,012*
Ireland-Romania	-12,618	1,000

*Significant differences based on Bonferroni-adjusted post-hoc testing

Curiosity (lowest descriptor in competence domain)

Total Sample Insight:

Curiosity, while still positively rated, showed the lowest average score, indicating that participants were less inclined toward exploratory or inquisitive behaviors compared to other traits in this domain.

Table: Summary Kruskal-Wallis-Test for independent samples

Total sample size	129
Test statistics	9,465
Degrees of freedom	3
Significance (Alpha \leq ,05)	,024

Significant Differences Between Countries:

- Turkey showed significantly higher scores in Curiosity than Ireland (**p = 0.016**).
- No significant differences were noted between other country pairs.

Table: Comparative extents of “Curiosity” between participating countries.

Countries compared	Test statistics	Adjusted significance
Ireland-Romania	-24,300	,158
Ireland-Austria	26,727	,083
Ireland-Turkey	-29,502	,016*
Romania-Austria	2,427	1,000
Romania-Turkey	5,202	1,000
Austria-Turkey	-2,775	1,000

*Significant differences based on Bonferroni-adjusted post-hoc testing

Taking Responsibility

Highest country-specific extent of domain related descriptor

Country	descriptor	mean	±SD
Austria	Reflective thinking	9,29	0,44
Ireland	Respect for others	9,21	0,18
Turkey	Respect for others	9,15	0,19
Romania	Respect for others	9,16	0,19

Taking Responsibility – total sample

Table: Extent of descriptor values related to competence domain Taking Responsibility (total sample)

	Descriptor	mean	SD
#1	Self Regulation	9,10	0,22
#2	Managing emotions	9,09	0,14
#3	Self Control/ locus of control	9,17 [§]	0,23
#4	Moral compass	9,03	0,22
#5	Integrity	9,06	0,21
#6	Stress Tolerance	8,99 [#]	0,26
#7	Respect for others	9,15	0,20
#8	Build Trust	9,12	0,24
#9	Reflective Thinking	9,07	0,34
#10	Self Awareness	9,04	0,25
#11	Compassion	9,16	0,23

[§] highest extent

[#] lowest extent

Extreme Descriptor extents compared by countries (domain Taking Responsibility)

Self-Control/ locus of control (highest descriptor in competence domain)

Self-Control/ locus of control showed the highest mean extent within this respective competence domain among all descriptors regarding the total sample. The comparative testing between the countries demonstrated no significant different extents of this descriptor across the four countries.

Table: Summary Kruskal-Wallis-Test for independent samples

Total sample size	129
Test statistics	,342
Degrees of freedom	3
Significance (Alpha ≤ ,05)	,952

Stress Tolerance (lowest descriptor in competence domain)

Stress Tolerance showed the lowest mean extent within this respective competence domain among all descriptors regarding the total sample. The comparative testing between the countries demonstrated no significant different extents of this descriptor across the four countries.

Table: Summary Kruskal-Wallis-Test for independent samples

Total sample size	129
Test statistics	7,419
Degrees of freedom	3
Significance (Alpha \leq ,05)	,060

Reconciling Tensions and dilemmas

Highest country-specific extent of domain related descriptor

Country	descriptor	mean	\pm SD
Austria	Responsibility	10,31	0,49
Ireland	Conflict resolution	10,41	0,42
Turkey	Conflict resolution	10,34	0,48
Romania	Cognitive flexibility	10,12	0,28

Reconciling Tensions and dilemmas – total sample

Table: Extent of descriptor values related to competence domain Reconciling Tensions and dilemmas (total sample)

	Descriptor	mean	SD
#1	Cognitive flexibility	10,00	0,39
#2	Perspective taking	9,63 [#]	0,28
#3	Empathy	9,94	0,32
#4	Respect	10,09	0,33
#5	Creativity	10,04	0,39
#6	Problem Solving	9,99	0,34
#7	Conflict Resolution	10,28 [§]	0,39
#8	Resilience	9,89	0,46
#9	Tolerant of contrasting ideas	9,99	0,41
#10	Responsibility	10,16	0,38

[§] highest extent

[#] lowest extent

Extreme Descriptor extents compared by countries (domain Reconciling Tensions and dilemmas)

Conflict Resolution (highest descriptor in competence domain)

Conflict Resolution showed the highest mean extent within this respective competence domain among all descriptors regarding the total sample. The comparative testing between the countries demonstrated a significant higher extent of this descriptor in Turkey versus the descriptor’s extent in Austria.

Table: Summary Kruskal-Wallis-Test for independent samples

Total sample size	129
Test statistics	11,485
Degrees of freedom	3
Significance (Alpha ≤ ,05)	,009

Table: Comparative extents of “Conflict Resolution” between participating countries.

Countries compared	Test statistics	Adjusted significance
Austria-Romania	-24,373	,083
Austria-Turkey	-26,925	,011*
Austria-Ireland	-28,544	,052
Romania-Turkey	2,552	1,000
Romania-Ireland	4,171	1,000
Turkey-Ireland	1,619	1,000

*Significant differences based on Bonferroni-adjusted post-hoc testing

Perspective taking (lowest descriptor in competence domain)

Perspective taking showed the lowest mean extent within this respective competence domain among all descriptors regarding the total sample. The comparative testing between the countries demonstrated no significant different extents of this descriptor across the four countries.

Table: Summary Kruskal-Wallis-Test for independent samples

Total sample size	129
Test statistics	5,748
Degrees of freedom	3
Significance (Alpha ≤ ,05)	,125

Communication

Highest country-specific extent of domain related descriptor

Country	descriptor	mean	±SD
Austria	Learning strategies	10,50	0,85
Ireland	Learning strategies	11,09	1,26
Turkey	Speaking	10,13	0,67
Romania	Learning strategies	10,72	0,64

Communication – total sample

Table: Extent of descriptor values related to competence domain Communication (total sample)

	Descriptor	mean	SD
#1	Team working	9,65	0,58
#2	Time Management	9,86	0,74
#3	Speaking	9,97	0,79
#4	Active Listening	9,67	0,43
#5	Instructing	6,57	1,09
#6	Service Orientation	8,51	1,49
#7	Social Perceptiveness	9,04	0,77
#8	Coordination	9,63	0,85
#9	Active Learning	9,79	0,72
#10	Learning Strategies	10,37 [§]	1,04
#11	Writing	6,95 [#]	0,96

[§] highest extent

[#] lowest extent

Extreme Descriptor extents compared by countries (domain Communication)

Learning Strategies (highest descriptor in competence domain)

Learning Strategies showed the highest mean extent within this respective competence domain among all descriptors regarding the total sample. The comparative testing between the countries demonstrated a significant lower extent of this descriptor in Turkey versus the descriptor's extents in Austria, Ireland and Romania.

Table: Summary Kruskal-Wallis-Test for independent samples

Total sample size	129
Test statistics	30,339
Degrees of freedom	3

Significance (Alpha \leq ,05) ,000

Table: Comparative extents of “Learning Strategies” between participating countries.

Countries compared	Test statistics	Adjusted significance
Turkey-Austria	27,485	,009
Turkey-Romania	-38,317	,000
Turkey-Ireland	43,192	,000
Austria-Romania	-10,832	1,000
Austria-Ireland	-15,707	,890
Romania-Ireland	4,875	1,000

^aSignificant differences based on Bonferroni-adjusted post-hoc testing

Writing (lowest descriptor in competence domain)

Writing showed the lowest mean extent within this respective competence domain among all descriptors regarding the total sample. The comparative testing between the countries demonstrated no significant different extents of this descriptor across the four countries.

Table: Summary Kruskal-Wallis-Test for independent samples

Total sample size	129
Test statistics	4,404
Degrees of freedom	3
Significance (Alpha \leq ,05)	,221

Summary Analysis: Exploration of Competence Domains

This chapter evaluated the key competence domains central to the **FLOWS framework**, focusing on participant responses from Austria, Ireland, Turkey, and Romania. The analysis provided a detailed breakdown of descriptors within each domain, highlighting cross-country differences and significant statistical findings. Below is a summary of the key insights derived from the data analysis.

1. Creating New Value

- **Purpose:** This domain assesses innovation-related competencies, such as adaptability, creativity, and problem-solving.
- **Key Results:**
 - **Fluency of Ideas** emerged as the strongest descriptor (mean = 8.59), showcasing participants' capacity for generating creative solutions.
 - **Curiosity** scored the lowest (mean = 8.05), indicating potential for improvement in exploratory behaviors.
- **Country-Specific Trends:**
 - Romania showed significantly higher ratings for **Fluency of Ideas** compared to Austria and Turkey.
 - Turkey had significantly higher scores in **Curiosity** than Ireland.
- **Implication:** Romania's strength in creativity-related descriptors suggests opportunities for innovation-focused training, while Turkey's higher curiosity levels highlight readiness for learning-centered interventions.

2. Taking Responsibility

- **Purpose:** Measures emotional regulation, integrity, and social responsibility traits essential for personal and professional accountability.
- **Key Results:**
 - **Self-Control/Locus of Control** was the highest-rated descriptor (mean = 9.17), reflecting participants' strong self-regulation skills.
 - **Stress Tolerance** scored the lowest (mean = 8.99), suggesting challenges in managing pressure.
- **Country-Specific Trends:**
 - Respect for Others dominated as the highest-rated descriptor across Ireland, Turkey, and Romania.
 - No significant differences were observed between countries for the highest or lowest-rated descriptors.

- **Implication:** High self-control levels indicate strong foundational skills, but the relatively lower stress tolerance suggests a need for resilience-building programs.

3. Reconciling Tensions and Dilemmas

- **Purpose:** Focuses on skills like conflict resolution, cognitive flexibility, and empathy in managing complex interpersonal or organizational challenges.
- **Key Results:**
 - **Conflict Resolution** was the highest-rated descriptor overall (mean = 10.28), indicating strong abilities to resolve disagreements effectively.
 - **Perspective Taking** had the lowest rating (mean = 9.63), reflecting relatively lower emphasis on understanding others' viewpoints.
- **Country-Specific Trends:**
 - Turkey scored significantly higher on **Conflict Resolution** than Austria.
 - No significant differences were found for **Perspective Taking** across countries.
- **Implication:** Strong conflict resolution skills provide a foundation for addressing workplace and social challenges, but efforts to enhance perspective-taking could further improve collaborative dynamics.

4. Communication

- **Purpose:** Assesses interpersonal and informational skills such as speaking, active listening, and learning strategies.
- **Key Results:**
 - **Learning Strategies** was the highest-rated descriptor overall (mean = 10.37), highlighting participants' ability to adopt effective approaches for acquiring knowledge.
 - **Writing** scored the lowest (mean = 6.95), indicating a gap in written communication skills.
- **Country-Specific Trends:**
 - Turkey scored significantly lower in **Learning Strategies** compared to Austria, Ireland, and Romania.
 - No significant differences were observed for **Writing** across countries.
- **Implication:** Training programs should address disparities in learning strategies and promote improvements in writing skills, particularly in Turkey.

Cross-Domain Themes and Implications

1. Strengths Across Domains:

- Descriptors such as **Fluency of Ideas, Self-Control, Conflict Resolution, and Learning Strategies** consistently scored high, showcasing participants' preparedness in critical competencies.

2. Areas for Improvement:

- Lower ratings in **Curiosity, Stress Tolerance, Perspective Taking, and Writing** suggest targeted areas where additional support and training could enhance overall competency.

3. Cultural and Regional Patterns:

- Variability between countries emphasizes the importance of localized approaches. For instance, Romania's creativity strengths and Turkey's curiosity levels can guide country-specific program development.

4. Practical Applications:

- These insights can be used to design tailored interventions that leverage existing strengths while addressing identified gaps. The findings also support the broader goals of fostering innovation, emotional intelligence, and effective communication among marginalized young jobseekers.

Conclusion

The exploration of competence domains provided valuable insights into the skillsets of participants, highlighting both universal trends and regional nuances. These findings serve as a foundation for designing targeted training and career guidance interventions, ensuring alignment with the diverse needs of young jobseekers. By leveraging strengths and addressing gaps, the FLOWS framework can effectively enhance employability and foster sustainable career development in a rapidly evolving labor market.