



CREDENCE ATTRIBUTES AND CONSUMER WILLINGNESS TO PAY: A CROSS-COUNTRY ANALYSIS OF DRIED FRUIT AND NUT MARKETS IN CENTRAL ASIA

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AGENDA

Introduction

Problem statement

Literature support

Product attributes

Timeline of the research process

Methodology

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Conclusion

INTRODUCTION

Dried fruits and nuts are vital for nutrition and incomes in rural Central Asia (CA):

- Mainly collected in **wild forests** and cultivated in intensive **orchards**
- Rarely in sustainable **Agroforestry Systems (AFS)**

The expansion of AFS is slow and hindered due to:

- Lack of knowledge,
- Poor processing,
- Absence of **Environmental and Social Standards (ESS)**



PROBLEM STATEMENT



Food processing SMEs in CA often do not fully exploit and benefit from ESS

- Growing demand for sustainable and ethical food
- Rising living standards of populations across the world
- Institutional market transformations in Central Asian food markets



High costs of adopting ESS create uncertainties among food processing SMEs.



Despite the **global demand** for sustainable food and the **benefits of ESS**:

- Unclear whether consumers in CA follow modern consumption practices and sustainability trends
- Existing demand for products with sustainable attributes remains uncertain



LITERATURE SUPPORT

- Credence attributes - product attributes not directly observable, even after purchase
 - Food safety, environmental sustainability, ethical labor, origin
- Rely on third-party assurance (certification, labeling, branding)
 - Requires institutional trust and consumer awareness.
- Drivers of credence attribute valuation:
 - Individual level: Income, education, values urban vs. rural location
 - System-level: market regulation, certification systems, cultural food norms
- In emerging markets like Central Asia:
 - Hybridization of preferences: mix of traditional values and modern quality concerns.
 - Weak regulatory institutions – high reliance on informal trust (e.g. local vendors and visual inspection)
 - But growing awareness of health risks sustainability and fairness in food production

PRODUCT ATTRIBUTES

Credence attributes

Product attributes

Food Safety – the degree to which a product adheres to food safety standards

Environmental attributes – the extent to which production contributes to soil and water conserv.

Social attributes – fair distribution of benefits, wages, and work safety

Country of origin – region of production

Price per 500 gr.

Attribute levels

1. **Low:** uncertain food safety compliance
2. **Medium:** compliance with national minimum standards
3. **High:** Certification according to EU food safety standards.

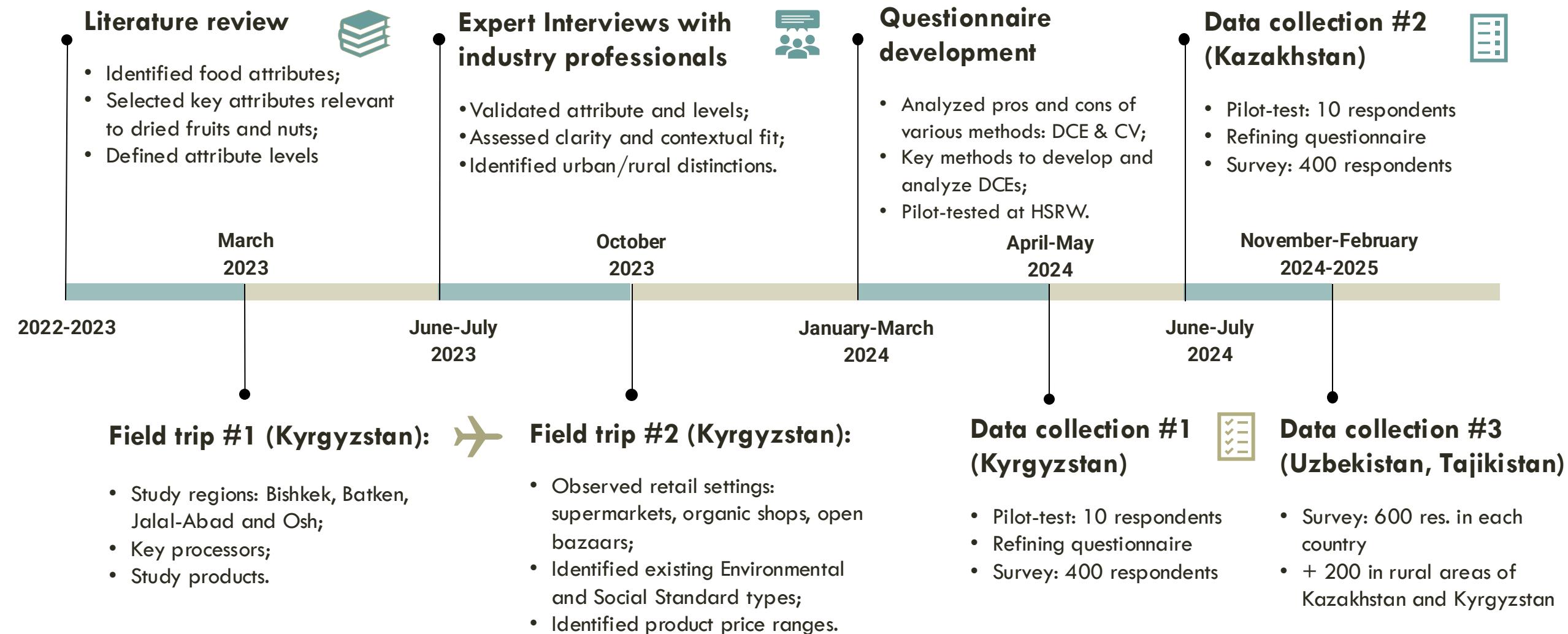
1. **Low:** unknown compliance with environmental safety
2. **Medium:** adherence to basic legal environmental regulations
3. **High:** advanced practices promoting soil and water conservation

1. **Low:** unknown compliance with labor regulations
2. **Medium:** compliance with national minimum regulations
3. **High:** ensuring fair benefit-sharing and ethical labor conditions

1. **Low:** origin is unknown
2. **Medium:** local
3. **High:** imported

Five levels

TIMELINE OF THE RESEARCH PROCESS



METHODOLOGY

Consumer survey

- Kazakhstan, Kyrgyzstan, Uzbekistan and Tajikistan – 2500 urban and rural respondents

Multi-stage stratified sampling to ensure national and regional representativeness

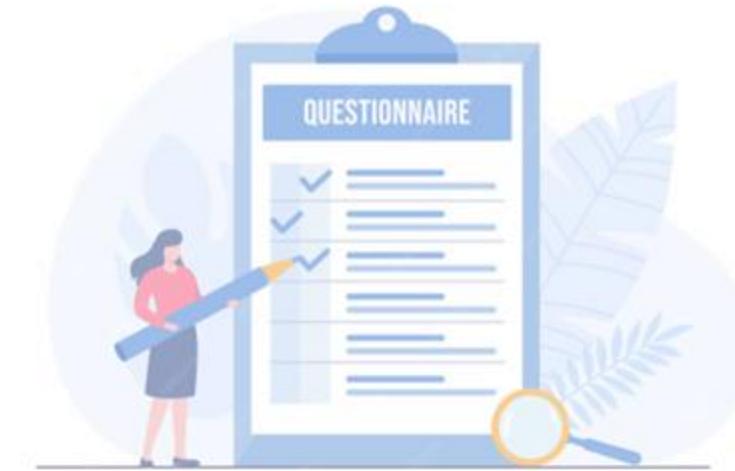
- **400 urban** respondents
- **200 rural** respondents

Questionnaire:

Section 1 - Discrete Choice Experiments

Section 2 - Eating context and buying habits

Section 3 – Socio-demographic characteristics





METHODOLOGY

Step 1:

- 405 combinations of attributes and levels

Step 2:

- Removed unrealistic combinations (e.g., international certifications at low prices, uncertain attributes at high prices).

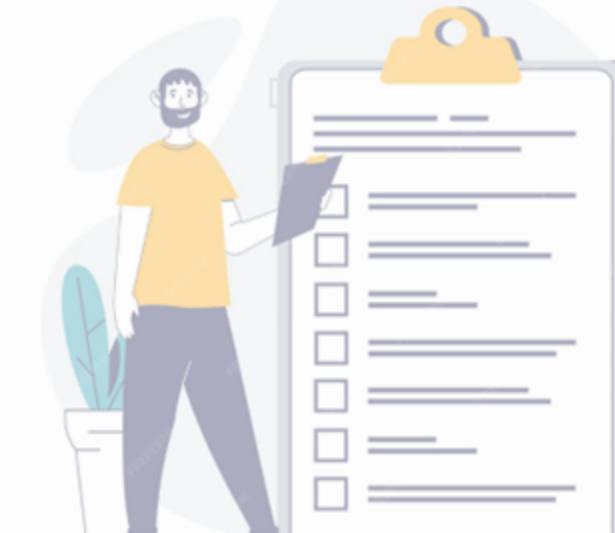
- Reduced to 80 combinations.

Step 3:

- Final set: 45 combinations (3 x 15 choice tasks + opt-out in each)

Multinomial logit model - analysis

Example of choice set



	Dried apricot 1	Dried apricot 2	Dried apricot 3
Food Safety	EU-Level Safety Standards	National Standards	Unclear Compliance
Environment	Soil, water, and eco-conservation	National Standards	Unclear Compliance
Society	Fair benefit-sharing among farmers	National Standards	Unclear Compliance
Region	Local Product	Imported Product	Unclear Origin
Price (500 gr.)	437 KGS	350 KGS	262 KGS



Central Asia

- Women show **higher MWTP** for food safety than men in all countries
- **Higher-educated** consumers value certification
- **Higher-income** consumers prioritize food quality
- **Urban consumers** show greater trust in certified food safety claims



UZBEKISTAN - Highest MWTP: €1.21

- Preference for external certification (e.g., EU);
 - **public concerns over pesticide use.**



KYRGYZSTAN - MWTP: €0.64

- Less driven by formal certification.
- Urban and educated segments are more **open to certified claims**



KAZAKHSTAN - MWTP: €0.73

- Higher trust in local certified safety claims
 - Consumers value perceived health guarantees



TAJIKISTAN – MWTP: not significant

- Majority of consumers are price-sensitive



ENVIRONMENTAL SAFETY

Central Asia

- **Educated respondents** in all countries show a significant MWTP for environmental protection.
- **Women**, especially those in education and healthcare sectors, exhibit higher valuation of eco-friendly attributes.
- **Middle- and high-income groups** demonstrate stronger preferences.



KYRGYZSTAN - Highest MWTP: €0.73

- **Concern** for environmental issues, especially in rural areas affected by **land degradation and water scarcity**.



UZBEKISTAN - MWTP: €0.43

- Consumers value sustainability **when it is framed in health-related or food quality terms** (e.g., pesticide-free)



KAZAKHSTAN - MWTP: €0.49

- Preference driven by **urban, educated consumers**



TAJIKISTAN - MWTP: not significant

- **Due to low environmental awareness**, limited eco-label exposure, and greater focus on basic food access.



SOCIAL RESPONSIBILITY



Central Asia

- **Women** display consistently higher MWTP, particularly in Kyrgyzstan and Uzbekistan.
- Awareness of labor rights, fairness, and ethical labels is higher among university-educated.
- **Middle-income and higher-income** consumers show willingness to pay more for fairness.



KYRGYZSTAN - MWTP: €1.35

- Express strong concern for **fairness** in **local food chains**



KAZAKHSTAN - MWTP €0.92

- Among **educated** and **urban consumer**.



UZBEKISTAN - MWTP: €1.15

- Demand is especially among **younger urban consumers**.



TAJIKISTAN - MWTP: not significant

- **Informal market structures** dominate; social responsibility is not yet an active consumer concern.



COUNTRY OF ORIGIN



Central Asia

- **Male** consumers are more likely than females to prefer locally produced dried fruits and nuts
- **Urban**, higher-income dwellers prefer imported, certified, and globally sourced food products



KAZAKHSTAN - MWTP: €0.42

- Local production – **freshness and quality**



UZBEKISTAN – MWTP: €0.92

- **Urban** consumers prefer **imported** fruits and nuts



KYRGYZSTAN - MWTP: €0.36

- Local production – **cheaper, fresh and support for local farmers**



TAJIKISTAN - MWTP: not significant

- **Older** consumers prefer **locally produced** fruits and nuts

COMPARATIVE HEATMAP

Country	Food safety	Environmental sustainability	Social responsibility	Country of origin
Kazakhstan	 €0.73	 €0.49	 €0.92	 Local
Kyrgyzstan	 €0.64	 €0.73	 €1.35	 Local
Tajikistan	 Not significant	 Not significant	 Not significant	 Not significant
Uzbekistan	 €1.21	 €0.43	 €1.15	 Not significant

CONCLUSION

- **Food safety is the most valued credence attribute across Central Asia**
 - Especially in **Uzbekistan** and **Kazakhstan**
- **Environmental sustainability is moderately valued, but uneven across countries:**
 - most relevant in **Kyrgyzstan** and **Kazakhstan**
- **Social responsibility shows high willingness to pay,**
 - particularly in **Kyrgyzstan**
- **Country of origin (COO) reflects trust in local food and cultural importance**
 - only in **Kazakhstan** and **Kyrgyzstan**
- **Women, urban, educated, and middle-to-higher-income consumers consistently show higher MWTP for credence attributes.**
- **Rural and low-income consumers remain less responsive to labeling**

CONCLUSION – RECOMMENDATIONS:

- **Enhance food safety labeling** and certification visibility, especially in Uzbekistan and Kazakhstan.
- Introduce **social responsibility certifications** tied to farmer welfare and fair labor, with emphasis in Kyrgyzstan.
- **Educate consumers** on environmental and ethical labels through targeted campaigns and retail partnerships.
- Develop **local and regional COO labels** to support trust in domestic products—especially where formal standards are weak.
- Promote **affordable and credible labeling schemes** tailored to **low-income and rural populations**.

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