

AGRICULTURE FOR LIFE, LIFE FOR AGRICULTURE



VIRAL Workshop

**“The role and importance of ICT in Agriculture future development”**

Grobelnik Mlakar S., Gselman A., Unuk T., Hadžiabulić A.

**Forms and channels of knowledge transfer in agricultural sector – gaps and challenges**



**VIRAL**

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## WP 1.1: COMPARATIVE ANALYSIS OF UNIVERSITY-BUSINESS COOPERATION IN AGRICULTURE IN THE WESTERN BALKANS AND EU AND DEVELOP POLICY RECOMMENDATIONS ([link](#))

⇒ surveys in academia (students + teachers)

⇒ on-line interviews (forms and challenges of knowledge transfer)

## WP 1.2: NEEDS ASSESSMENT/KNOWLEDGE TRANSFER UPDATE REPORT ([link](#))

⇒ surveys among farmers and extension service providers (agricultural advisors)



08/05/2020  
**Usage of ICT in teaching**  
Activities on work package one (WPI) of project VIRAL are ongoing, and as part of those activities surveys for students an...

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25/05/2020

**Questionnaire for advisors on the use of ICT in the agricultural sector**

The advisory sector is one of the best ways to transfer information to the farmers and enables their successful adoption in productio...

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# WP I



08/05/2020

Usage of ICT in teaching

**On-line** questionnaires (1KA, Google Forms), students, teachers, farmers, advisors:

- 1 (3-6 Q): accessibility of ICT, institution's ICT strategy, use of ICT
- 2 (3-5 Q): experience in using ICT
- 3 (3 Q): attitude towards ICT
- 4: demographic data

**On-line interview:** compare and outline forms of knowledge transfer from university to stakeholders in agricultural sector (and *vice versa*), identify gaps

- participating HEIs = person in charge for WP1
- English
- some possible forms of knowledge transfer were listed in the questionnaire

## ❑ **Bosnia and Hercegovina (BA)**

- **UNIBL:** University of Banja Luka
- **UNMO:** University of Mostar Džemal Bijedić
- **SUM:** University of Mostar
- **UBN:** Bijeljina University

## ❑ **Montenegro (ME)**

- **UDG:** University Donja Gorica

## ❑ **Netherlands (NL)**

- **WUR:** Agricultural University of Wageningen

## ❑ **Slovenia (SI)**

- **UM:** University of Maribor

## ❑ **Romania (RO)**

- **USAMV:** University of Agronomic Sciences and Veterinary Medicine of Bucharest

# KT: academia > stakeholders

✓Farmers  
 ✓Cooperatives  
 ✓SMEs

✓Advisors  
 ✓Associations  
 ✓Industry

Form of knowledge transfer	Higher education institution							
	UNIBL	UNMO	SUM	UBN	UDG	WUR	USAMV	UM
Presentation, lectures	✓✓✓		✓✓✓✓		✓✓✓✓	✓	✓✓✓✓✓	✓✓

- ❖ Mainly address farmers and advisors,
  - ❖ to lesser extent other stakeholders
- ❖ Most common ways: field days, presentations and demonstrations of good practices, web-based methods (web-pages, social media), mass communication methods (radio, TV and articles in newspapers)

**USAMV** (exception): presentations, demonstration of good practices, workshop, field days, mass communication, web-based methods **ALSO** when addressing cooperatives, associations, SMEs and industry

\*radio, TV, video, posters, newspapers, leaflets

\*\*web page, webinar, e-publication, social media, blog



✓Farmers

✓Cooperatives

✓ SMEs

✓Advisors

✓Associat.

✓Industry

❖ **Farmers** (field days, workshops):

“Technical precision of pesticides application”

“Application of ICT to improve integrated pest management” (+ for industry)

❖ **Certified advisors** (annually): theoretical and practical training (lectures and demonstrations of good practice) in all areas of their counselling

❖ **Beekeepers’ associations** (lectures and demonstration of good practice)

❖ **SMEs**: workshops in the frame of project MD.net (Development of now innovative Mediterranean diet products)

❖ **Industry**: trainings of person responsible for trading plant protection products

Form of knowledge transfer	SUM
	Presentation, lectures
Demonstration, presentation of good practice	✓✓
Workshop	✓✓✓
Field day	✓
Presentation (event) at fair	
Mass communication methods*	
Web-based methods**	
Conference	
Project	✓
Publication	
Vocational training	
Teacher-student model	
Government	✓

- ❖ **Farmers** (presentation, demonstration, field days, events, web-based methods)
  - ❖ platform: Focus on farming
  - ❖ platform: Improving the knowledge of farmers
- ⇒ farmers have direct access to innovations and research results
- ⇒ they can pose direct questions to scientists
  
- (on-site demonstrations):
  - ❖ Dairy campus
  - ❖ Unifarm

Form of knowledge transfer	WUR
Presentation, lectures	✓
Demonstration, presentation of good practice	✓
Workshop	✓✓✓
Field day	✓
Presentation (event) at fair	
Mass communication methods*	
Web-based methods**	✓
Conference	
Project	✓
Publication	
Vocational training	
Teacher-student model	
Government	



✓ Farmers  
 ✓ Cooperatives  
 ✓ SMEs

✓ Advisors  
 ✓ Associat.  
 ✓ Industry

- ❖ Farmers, advisors (presentation, demonstration, field days, events, radio and television broadcasts, web-based methods, vocational trainings, T-S model)
  - ❖ faculty' estate – University Agricultural Centre
  - ❖ professional books / publications for farmers, advisors, students (freely available for readers)
  - ❖ annual trainings for organic farmers (4 + 2 h)

Form of knowledge transfer	UM
Presentation, lectures	✓✓
Demonstration, presentation of good practice	✓✓
Workshop	✓✓✓
Field day	✓✓
Presentation (event) at fair	✓✓✓✓
Mass communication methods*	✓✓
Web-based methods**	✓✓
Conference	
Project	✓✓✓✓ ✓✓
Publication	✓✓
Vocational training	✓
Teacher-student model	✓✓✓✓
Government	✓



# Projects: 5/8 HEIs

- ❖ **UNMO:** workshops (F +A + C) under AGRITECH and CityOS Mostar projects (problems in production of medicinal and aromatic herbs)
- ❖ **UM:**
  - ⇒ National projects = 'linear model of KT' (stakeholders as end beneficiaries)
  - ⇒ EIP-AGRI projects (new approach under the Europe 2020 strategy) = 'interactive innovation model' = 'knowledge exchange': forming demand-driven partnerships, using bottom-up approach, linking farmers, advisors, researchers, businesses, and other actors in Operational Groups
  - ⇒ projects involved students: pedagogical mentors + expert from the sector + students (4-10) = interdisciplinary group => create innovative solutions to the challenges in local environment

- ✓F
- ✓A
- ✓C
- ✓As
- ✓SMEs
- ✓I

Form of knowledge transfer	UNIBL	UNMO	SUM	UBN	UDG	WUR	USAMV	UM
Project	✓✓		✓		✓✓✓✓	✓	✓✓✓✓✓✓	✓✓✓✓✓✓

## Agricultural fairs (3/8 HEIs)

❖ **UNIBL + USAMV + UM:** agricultural fairs = meeting places for business representatives

**UM:** regularly present at AGRA – the most visited fair event in SI presenting results of ongoing and finished projects, participates in various round tables and other accompanying events

Form of knowledge transfer	Higher education institution							
	UNIBL	UNMO	SUM	UBN	UDG	WUR	USAMV	UM
Presentation (event) at fair	✓						✓✓✓✓✓	✓✓✓✓

## KT to government (2/8)

❖ **SUM:** presentation on GIS application in soil science and environmental studies, soil monitoring and mapping,

❖ **UM:** experts participate in various working groups set up by the Ministry of Agriculture, Forestry and Food

Form of knowledge transfer	UNIBL	UNMO	SUM	UBN	UDG	WUR	USAMV	UM
Government			✓					✓

# Most important (farmers) and most usual (advisors) source of information on ICT (response in %)

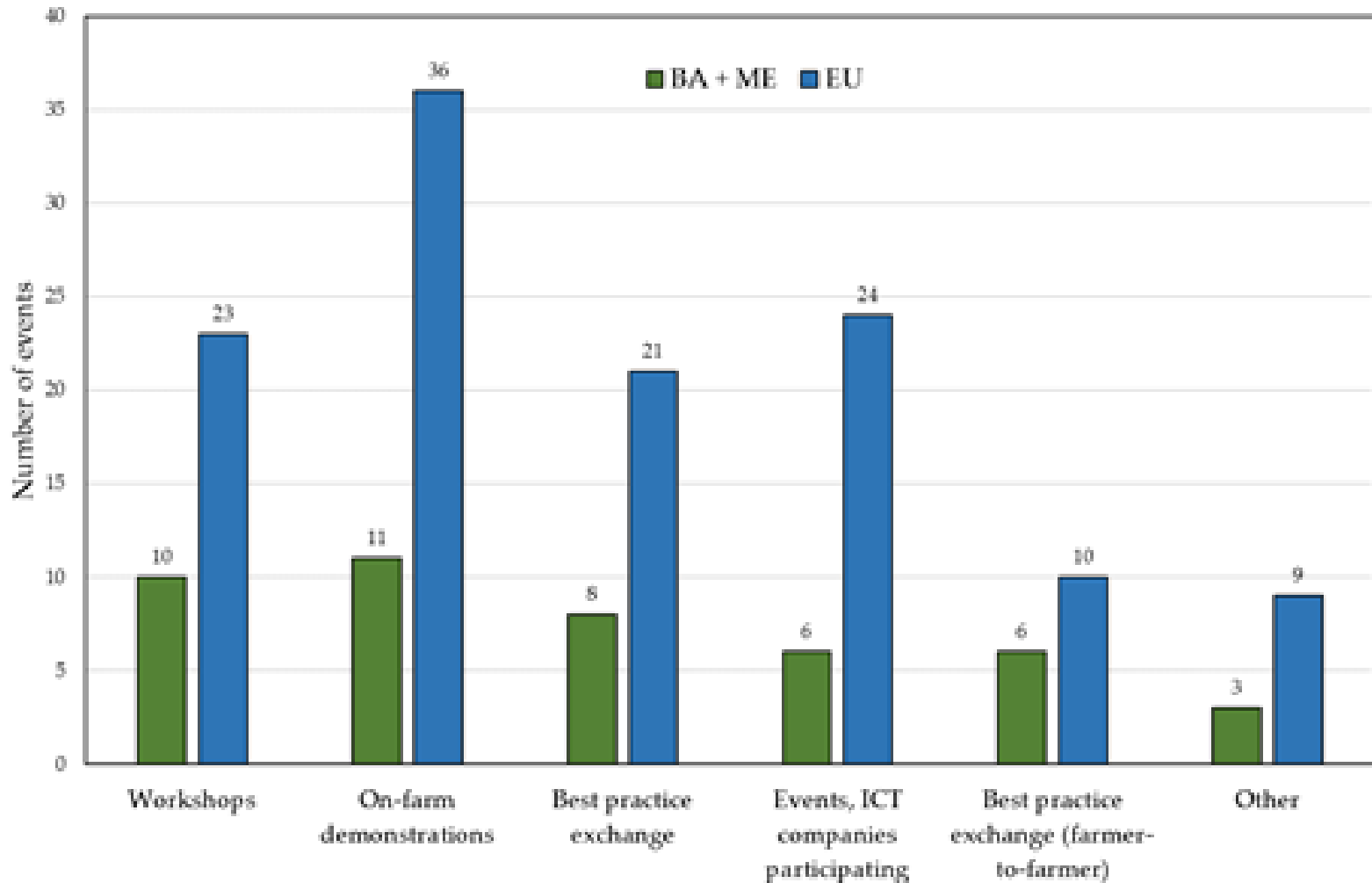
SOURCE	FARMERS		ADVISORS	
	BA + ME	EU	BA + ME	EU
(Other) Farmers	35.8	30.8	2.63	9.59
Fairs	28.9	26.9	31.58	43.84
R&D institutions	11.2	32.7	52.63	61.64
Industry – ICT manufacturers	7.0	21.2	31.58	31.51
Educational institutions	17.7	28.9	42.11	54.79
Advisory service	31.0	30.8		
Agricultural pharmacy	19.8	11.5		
Events*	15.5	28.9	34.21	63.01
Governmental institutions	13.9	7.7	28.95	8.22
Agrochemical industry**	7.0	7.7	13.16	10.96
ICTs suppliers (traders)	12.3	13.5	15.79	38.36
Newspaper, television	25.7	30.8	36.84	20.55
Farmers' associations	13.4	5.8	2.63	4.11
ICTs support services***	4.3	7.7	7.89	17.81

\* field days, workshops, conferences, webinars, farminars

\*\* pesticides and fertilizers manufacturers

\*\*\* repair and maintenance services

# Precision agriculture: No. + types of trainings for farmers organised by advisory service



## Important actor in knowledge transfer (from 1 – the least important to 5 – the most important)

STAKEHOLDER	FARMERS' OPINION		ADVISORS' OPINION	
	BA + ME	EU	BA + ME	EU
Farmers	3.37	3.37	3.58	3.46
R&D institutions	4.21	4.15	4.24	4.17
Industry – ICT manufacturers	3.95	3.83	4.26	4.11
Educational institutions	4.12	4.08	4.39	4.14
Advisory service	4.09	3.88	4.37	3.97
Agricultural policy	4.11	3.90	4.00	4.04
Agrochemical industry (pesticides and fertilizers manufacturers)	3.71	3.52	3.97	3.60
ICTs suppliers (traders)	3.55	3.62	3.74	3.76
Farmers' associations	3.81	3.73	3.87	3.67
ICTs support services (repair and maintenance services)	3.61	3.52	3.58	3.72

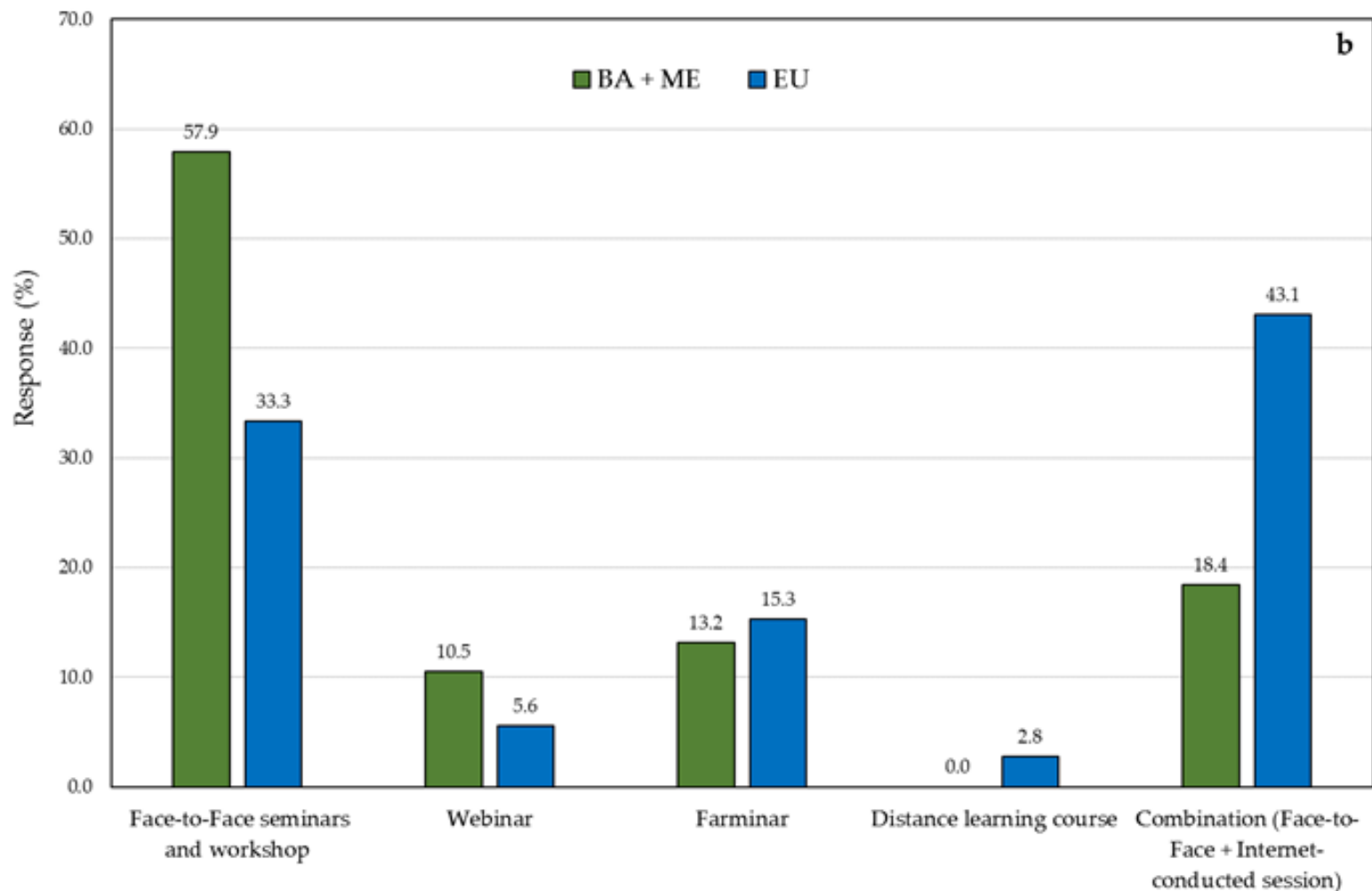
ATTENDANCE AT EVENT (IN 2019)	BA + ME	EU
<b>Yes</b>	18.4	32.9
<b>No</b>	73.7	61.6
<b>I do not know</b>	7.9	5.5

- ❖ **BA and ME:** Cybersecurity, Carpo system – plant disease prognosis system, plant nutrition, and farm management
- ❖ **EU:** precision agriculture; precision irrigation, precision spraying (reduction of pesticide use), digitalisation in agriculture, the role of ICT and adoption of ICT in agriculture, IC applications in agriculture, implementation of ICT in consulting, how to conduct effective webinar/farminar, use of Zoom application, use of Moodle, the importance of clustering in rural development
  - ❖ **SI:** EIP project “Smart farming innovation brokers“: fostering the digital innovation hubs approach to increase modern farming potential

# Advisors' motivation in trainings on ICT (responses in %)

INTENTION TO PARTICIPATE AT EVENT (in the future)	BA + ME	EU
Yes	68.4	68.5
No	2.6	5.5

- ❖ **BA and ME:** precision agriculture (spraying and irrigation), adoption of GPS, drones and remote sensing in agriculture, ICT in vegetable production and in processing, agrometeorological information, plant prognosis systems, e-agriculture
- ❖ **EU:** precision agriculture (spraying, fertilisation, irrigation), automation and robotics, digitalisation of agricultural knowledge, ICT in vegetable production, vineyards and in horticulture, adoption of GPS, various applications, sensors and drones in agriculture, ICT adoption in consulting, adoption of ICT on farm (also management systems)



❖ Experts from ICT and from agricultural sector should be educators



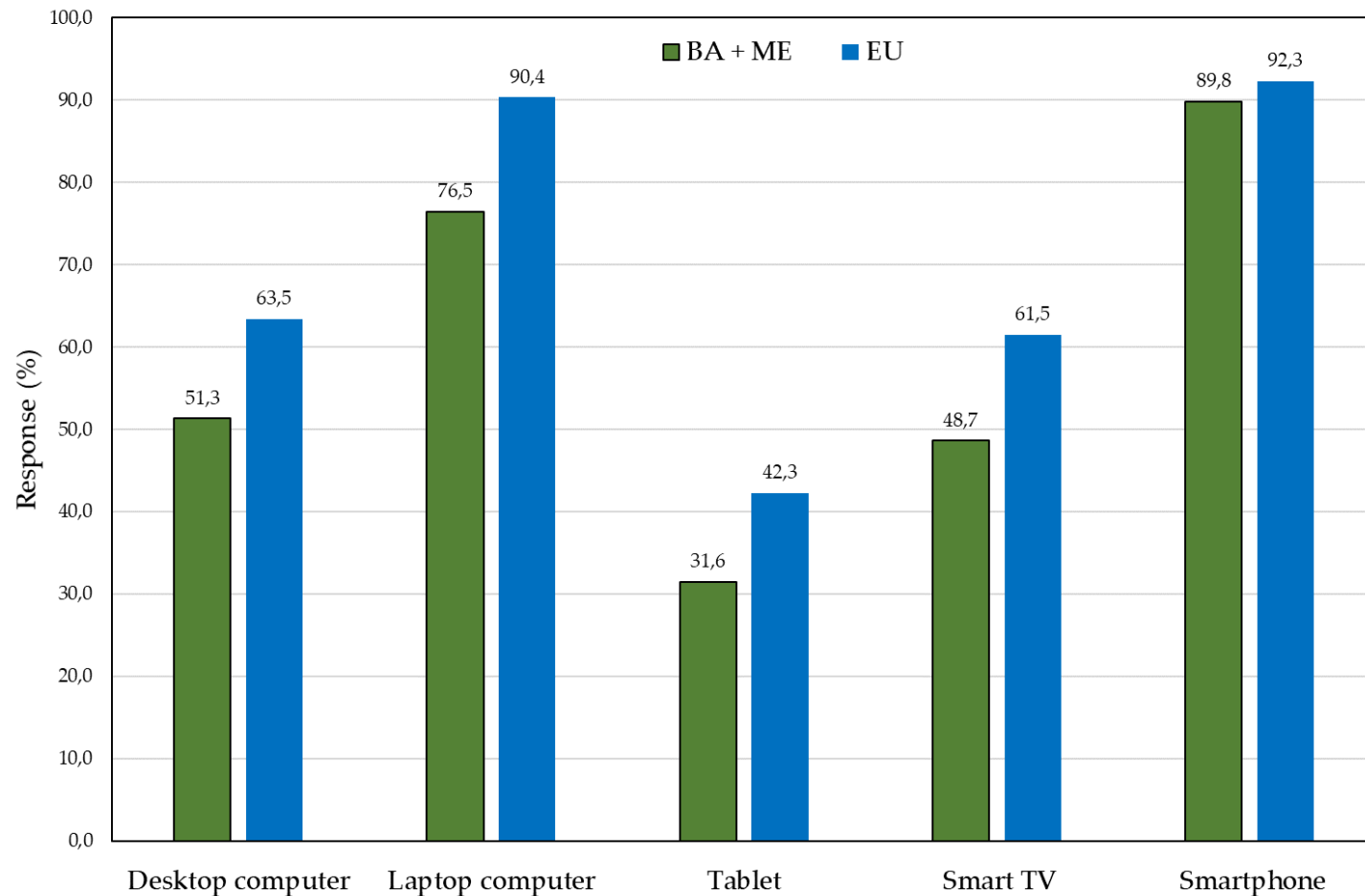
## ❖ HEIs:

- ❖ time
- ❖ money
- ❖ interest on stakeholders' side
- ❖ specific knowledge (ICT, new 'student-oriented' didactic approach)

## ❖ Internet coverage

INTERNET ACCESS (% OF FARMERS COMMUNITY)	BA + ME	EU
>75	15.8	45.2
50–75	26.3	32.9
25–50	34.2	12.3
1–25	15.8	1.4
I do not know	7.9	8.2

❖ institutions should create or rethink the educational content to make it adapted to mobile phones (m-learning)



❖ institutions should design platforms and/or become more active in sharing accurate information and knowledge via social media

SOURCE	BA + ME	EU
Television	28.3	32.7
Radio	4.3	13.5
Agricultural periodicals	19.8	42.3
Dailies	3.7	0.0
Social networks (Facebook, Instagram etc.)	72.2	55.8
Other farmers	40.6	50.0
Family members, friends	21.9	23.1
Books	39.0	32.7
Local clubs, organisations	5.9	3.9
Agricultural extension service	32.6	28.9
Traders, suppliers	12.3	15.4
Conferences, product presentations	19.3	26.9
Wholesale buyers	6.4	3.9

**Thank you !**



VITALISING ICT RELEVANCE IN  
AGRICULTURAL LEARNING