Challenges and Opportunities for Universities-based Agricultural Extension Services from an Agro-ecological/Organic Perspectives: the Case of Indonesia

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PRESENTATION OUTLINE

Introduction

1. Background and Issues
2. Research objectives
3. Theoretical Review

Methods

Results and Discussion

1. Profile of respondents
2. Scope of activities
3. SWOT Analysis

Conclusions

1. INTRODUCTION

The Law of Government of Indonesia Number 16/2006 on Agriculture, Fishery and Forestry Extension System (AFFES) has guided agricultural extension as educational approach towards farmers' welfare

as an umbrella in providing extension services to drive up productivity without neglecting environmental functions.

The concept of farming as an integrated system have been widely practiced by farmers' groups in Indonesia.

The Law of Government of Indonesia Number 12/2012 on Higher Education (1):9 states that, a university is responsible to implement education, research and community services (three pillars of higher education) or "Tridharma Perguruan Tinggi"

The commitment for practicing agro-ecological principle is in line with the 2nd Sustainable Development Goals that is "End hunger, achieve food security and improved nutrition, and promote sustainable agriculture."

Issues i.e.

The challenges for agro-ecological principles to be fully adopted by farmers including: the effectiveness use of organic farming system, the massive promotion from agro-chemicals companies, and the certification cost.

However, the farmers are very responsive to practice zero tillage, composting, mixed fodder from vegetable, and limited used for chemicals.

This is an opportunity for university – based extension services to accelerate diffusion of organic-agriculture

Research objectives:

(1) to gather information about the scope of university-based agro-ecological extension services,

(2) to formulate strategy for universities-based extension from agro-ecology perspective based on SWOT analysis.

THEORETICAL REVIEW

1) Agro-ecology: Concept and Practice

- Farming practices without use of chemical or synthetic agent (King, 1911 calls this practice as permanent agriculture, Paull, 2011; Nelles, 2014)
- agro ecology or organic agriculture more resilient with climate change (Rodale Institute 2012)
- increasing productivity (Rodale Institute 2012, Pretty *et al.* 2003),
- favorable economically (Agunga and Igodan 2008),
- increasing food security (Altieri and Toledo 2011, Pretty *et al.* 2003)
- support the sustainability of agriculture (Pretty *et al*. 2003, Agunga and Igodan 2008)
- empowering and moving farmers organization (Altieri and Toledo in 2011).
- Extension-education play an important role in promoting the principle of agro-ecological system.
- The Law of Government of Indonesia Number 16/2006 on Agriculture, Fishery and Forestry Extension System (AFFES) states that extension services can be also provided by community groups (farmer to farmer extension services) and by private sectors.
- As part of implementing the three pillars of higher education, the university has also managed community services in many forms including agricultural extension services and rural innovation systems

THEORETICAL REVIEW… cont)

2) University-based extension services

- Engaged in Farmer Field School (FFS), Integrated Pest Management (IPM) and Climate Field School (CFS), action research and farmers' organization development, and providing services through university cyber extension.
- innovation and technology development and adoption need involvement of research institutes and universities (Zilberman *et al.* 2012)
- knowledge products of universities → is one of the sources for people to enhance and to adapt (Green Ville *et al*. 2016).
- The services can been seen as public investment to agricultural research and extension (Jin and Huffman, 2016)
- There is interrelation between research and extension (Huffman and Evenson, 2006)
- Agricultural research has contributed to agricultural productivity (Jin and Huffman, 2016)

2. METHODS

Survey
November 2016 to January 2017

ONLINE SURVEY

Google Forms

75% responses
(21 respondents)

DIRECT INTERVIEWS

35 respondents

10 closed-ended & 5 open-ended questions/statements
Descriptive Statistics, Kendal-Tau Correlation

Total 56 respondents

A FOCUSED-GROUP DISCUSSION (FGD)

December 22 2016

20 participants

A SWOT analysis

Closed and open-ended questionnaire of the survey universities-based agricultural extension services from an agro-ecological/organic perspective

No	Statement or Question	Abbreviation
A	Closed-ended Questions	
1	Involvement of Indonesian universities in implementing agro-ecological extension-education with farmers.	Exted1
2	University has appropriate course contents in sustainable agriculture	Coursebach2
3	Universities have played a significant role in increasing agriculture production (through organic farming)	Roleprod3
4	Demonstration plot (demplot) and supporting infrastructure are available in university to practicing agro-ecology or organic farming	Demplot4
5	Research on agro-ecology related aspects and extension services	Research5
6	Programs on community services focusing in organic farming	Organicext6
7	Extension-education curriculum having the topics or contents on agro-ecology/organic farming	Coursext7
8	Involvement of the respondent to university extension services about practicing agro-ecology/organic farming	Partisipext8
9	Supporting from all stakeholders of the university to agro-ecology/organic farming	Agrosupport9
10	Agro-ecology/organic farming is the best solution for ecosystem sustainability and human welfare.	Agropercept10
B	Open-ended Questions	
11	Description of agricultural extension system in Indonesia, including explanation about its role in supporting the principle of organic farming	
12	Type of the extension services in agriculture and advisory services	
13	Quality and effectiveness of agricultural extension system in Indonesia	
14	Involvement of respondent in agricultural extension services (from the perspective of organic farming) in the last of five years	
15	Strengths and weaknesses in implementation of extension services from agro-ecological/organic farming perspective.	

3. RESULTS AND DISCUSSION

Profiles of the Respondents and Factors related to University-based Extension Services from Agro-ecology/Organic Farming Perspective

Scope of activities of university-based extension services from organic perspectives

Results of SWOT Analysis for University-based Extension from Agro-ecology/Organic Farming Perspective

Profiles of the Respondents and Factors related to University-based Extension Services from Agro-ecology/Organic Farming Perspective

Figure: Distribution of respondents according to gender and level of Education

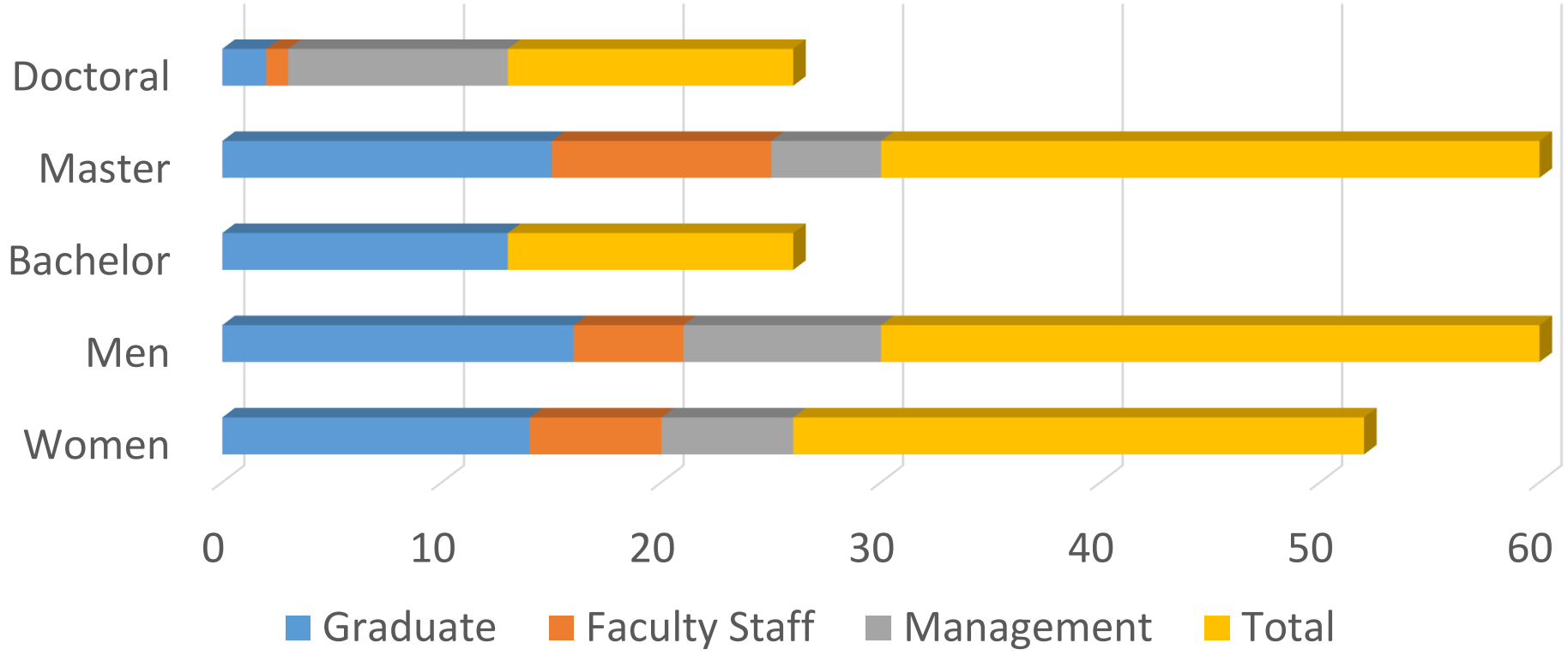
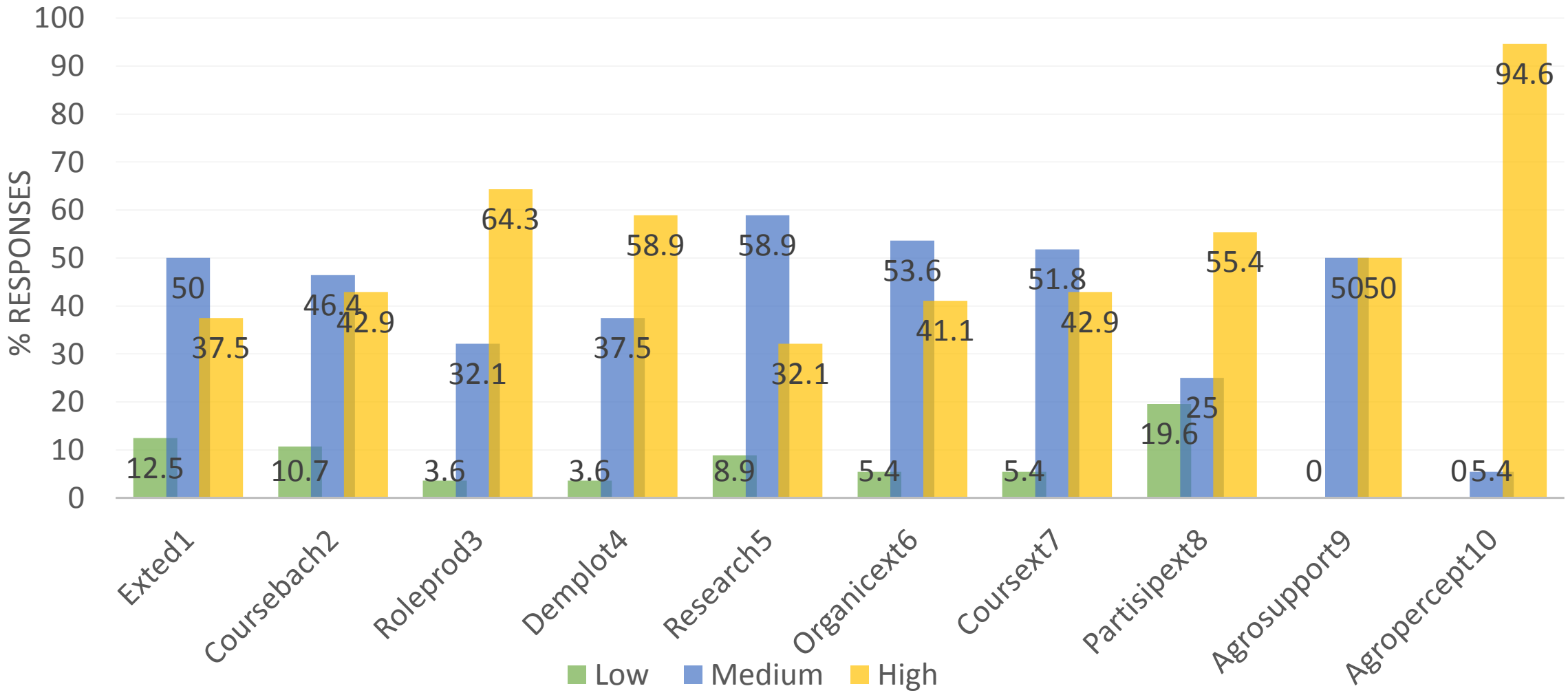


Figure: Distribution of the respondents according to perception on university-based extension services from agro-ecology/organic perspective



Some of activities of university-based extension services from organic perspectives

Source: results of FGD attended by participants from 18 universities in Indonesia (FGD, Dec 22 2016)

No	Scope of activities	% Conducted*	Stakeholders Involved
A	Research topics		
1	Farmers' empowerment based on agro-ecosystems	70	University, research center, students, lecturers
2	Policy review on extension systems and approach Performance of Extension Services	75	National government, related ministry, university
3	Farmers field school	80	Ministry of Ag, farmers, university, students, extension workers, civil society organizations
4	Farmers accessibility to microfinance institution	60	University, research centers, students, and farmers groups
5	Verti-culture (planting techniques)	60	Farmers, extension workers, Agricultural Extension College, students
6	Agro-forestry for conserving land and increasing income of the farmers	75	Ministry of Forestry, University, Research center, CIFOR, ICRAF
7	Model for extension-system for food security	80	University, farmers, Extension organization
8	Land quality index on organic farming	50	Agricultural Extension College, Farmers, Ministry
9	Plant extraction as biological pest management	75	University, farmers, extension workers
10	Agribusiness partnership and farmers entrepreneurship	80	Ministry of Ag, University, Farmers Students
11	Consumers' willingness to pay for agricultural products	70	Research center, Farmers, Private Sectors, university, community
12	Plant varieties, biodiversity, sustainability issues	75	University, farmers, local government, and national government, research center, private sectors
13	Others (Good agricultural/fisheries practices, bioenergy, sustainability fisheries, forest sustainability, payment for environmental services and so on)	60	Research centers in related Ministries, ICRAF, University, CSO

Some activities of university-based extension services (organic perspectives) … continued

B	Extension Practices		
1	Training on Bio-fertilizer, organic pesticide	80	University, CSO, farmers,
2	Facilitation to farmers and women farmers by lecturers and students	85	University through outreach and services learning program
3	Strengthening farmers' organization	80	University, Ministry of Ag, Local government
4	Media campaign/awareness for organic agriculture (incl. information delivery)	75	University media, students, public figures, the government, CSO
5	Piloting (such as: Agricultural Development Services)	60	University, private sectors, international foundation
6	Bio-pori practices (for the betterment of soil structure)	70	University, Extension Workers, Community

Table 2. Coefficients of Kendal Tau Correlations between aspects related to perception of the respondents to university-based extension services and agro-ecology/organic farming

	Age	Gender (m=1, f=2)	Edu-cation	Mana-ger	Exted1	Course bach2	Role prod3	Dem plot4	Rese-arch5	Organic-ext6	Cours-ext7	Partisi-pext8	Agro suprt9	Agro prcpt10
Age	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Gender (m=1,f=2)	0.11	1	-	-	-	-	-	-	-	-	-	-	-	-
Education	0.39**	-0.15	1	-	-	-	-	-	-	-	-	-	-	-
Manager	0.42**	0.03	0.60**	1	-	-	-	-	-	-	-	-	-	-
Exted1	0.01	0.05	0.04	0.20	1	-	-	-	-	-	-	-	-	-
Coursebch2	-0.07	-0.01	-0.04	0.09	0.34**	1	-	-	-	-	-	-	-	-
Roleprod3	0.20	0.07	0.23	0.22	0.28*	0.18	1	-	-	-	-	-	-	-
Demplot4	-0.03	0.05	0.19	0.31**	0.28*	0.04	0.10	1	-	-	-	-	-	-
Research5	-0.10	-0.30*	0.05	0.14	0.22*	0.19	-0.01	0.25*	1	-	-	-	-	-
Organicext6	-0.07	-0.21	0.12	0.16	0.23*	0.14	0.02	0.19	0.65**	1	-	-	-	-
Coursext7	0.01	0.22	0.14	0.19	0.49**	0.55**	0.22	0.14	0.12	0.14	1	-	-	-
Partisipext8	0.12	-0.05	0.19	0.19	0.18	0.20	0.17	0.16	0.08	0.19	0.23*	1	-	-
Agrosuprt9	0.07	-0.15	0.15	0.11	0.14	0.10	0.00	0.34**	0.27*	0.33**	0.25*	0.26*	1	-
Agroprcpt10	-0.02	-0.11	0.16	0.08	0.02	-0.02	0.07	0.14	0.20	0.30*	0.22	0.21	0.47**	1

Note: for the meaning of abbreviations used, please refer to Table 1, n = 56, m= male, f=female, **Correlation is significant at α 0.01 level (2-tailed), *Correlation is significant at α 0.05 level (2-tailed)

Table 3. Rating, weight and score of strengths and weaknesses of the university-based extension services from an agro-ecology/organic farming perspective

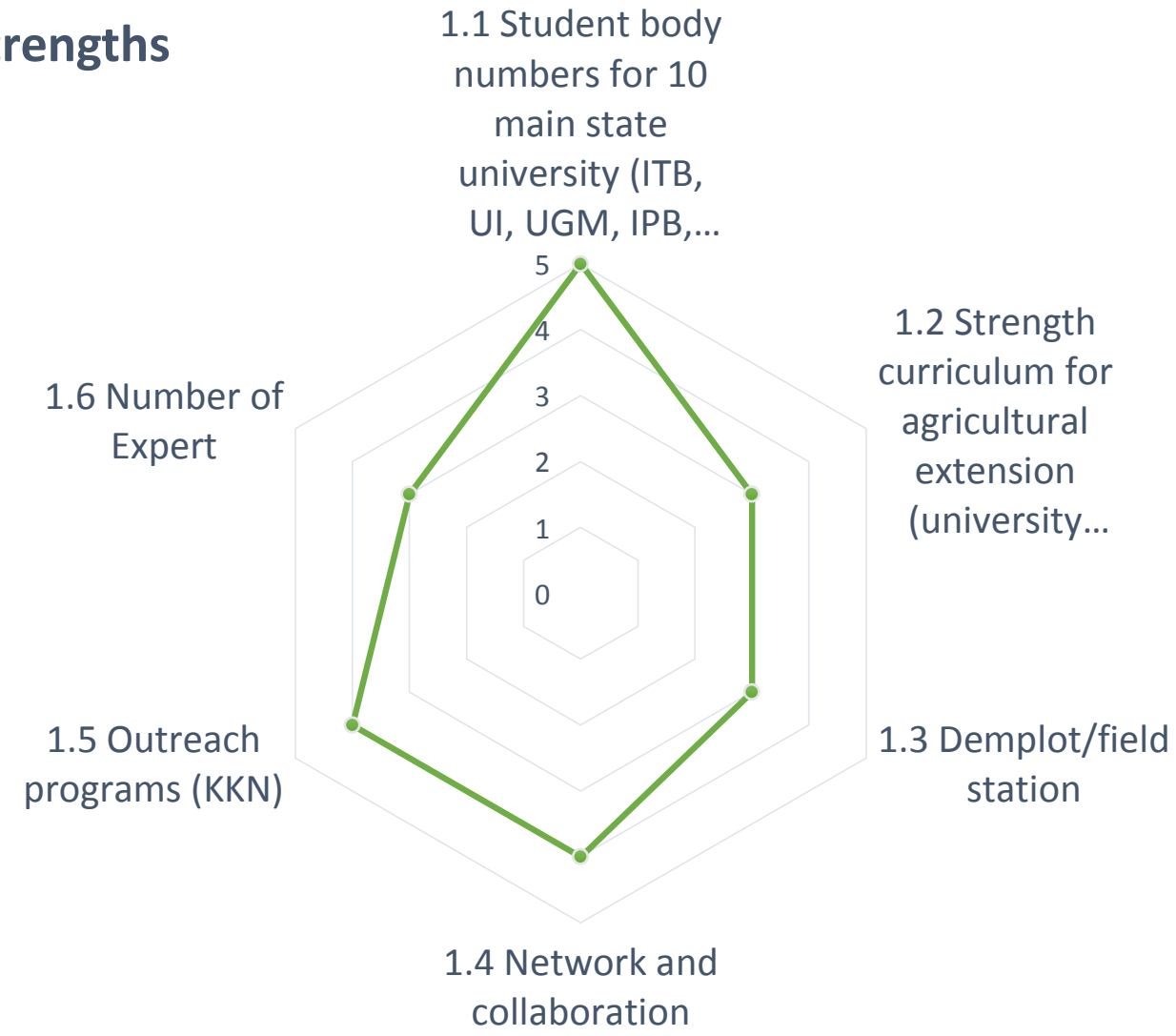
No.	SWOT factors selecting by respondents		Rating to recent situation	Weight	Score
i	ii		iii	iv	v
1	Strengths	(*1-5)			
	1. Student body numbers for 10 main state universities (ITB, UI, UGM, IPB, UNDIP, UB, UNPAD, USU, UNAIR, UNS)	S	5	0.03	0.15
	2. Strength curriculum for agricultural extension (university having agricultural faculty, agricultural extension college)	S	3	0.07	0.21
	3. Demo plot/field station	S	3	0.05	0.15
	4. Network and collaboration	S	4	0.1	0.4
	5. Outreach/service learning programs (KKN)	S	4	0.2	0.8
	6. Number of experts	S	3	0.1	0.3
	Total strengths score				2.01
2	Weaknesses				
	1. Limited financial support	W	-5	0.2	-1
	2. Infrastructure	W	-3	0.1	-0.3
	3. Productivity of organic agriculture are lower than conventional system	W	-3	0.1	-0.3
	4. The producers have difficulty in accessing the market	W	-4	0.05	-0.2
	Total weaknesses score				-1.8
	Total S+W			1	0.21

No.	SWOT factors selecting by respondents		Rating to recent situation	Weight	Score
i	ii		iii	iv	v
3	Threats				
	1. Chemical industries play dominant role in supply pesticides and chemical fertilizers	T	-5	0.2	-1
	2. Effects of climate change	T	-3	0.1	-0.3
	3. High cost for organic products certification	T	-4	0.1	-0.4
	4. Non-organic agricultural practices are likely to threat the commodity of organic agriculture	T	-3	0.05	-0.15
	5. Non-affordable price of organic product for consumers	T	-4	0.1	-0.4
	Total threats score				-2.25
4	Opportunities				
	1. Collaboration between universities and related stakeholders to promote, conduct joint program (R&D) on organic agriculture	O	5	0.2	1
	2. Training for farmers organization and students about organic agriculture	O	4	0.1	0.4
	3. Enrichment of course contents substance	O	4	0.1	0.4
	4. Market for safe and healthy products	O	3	0.05	0.15
	Total opportunities scores				1.95
	Total T+O			1	-0.3

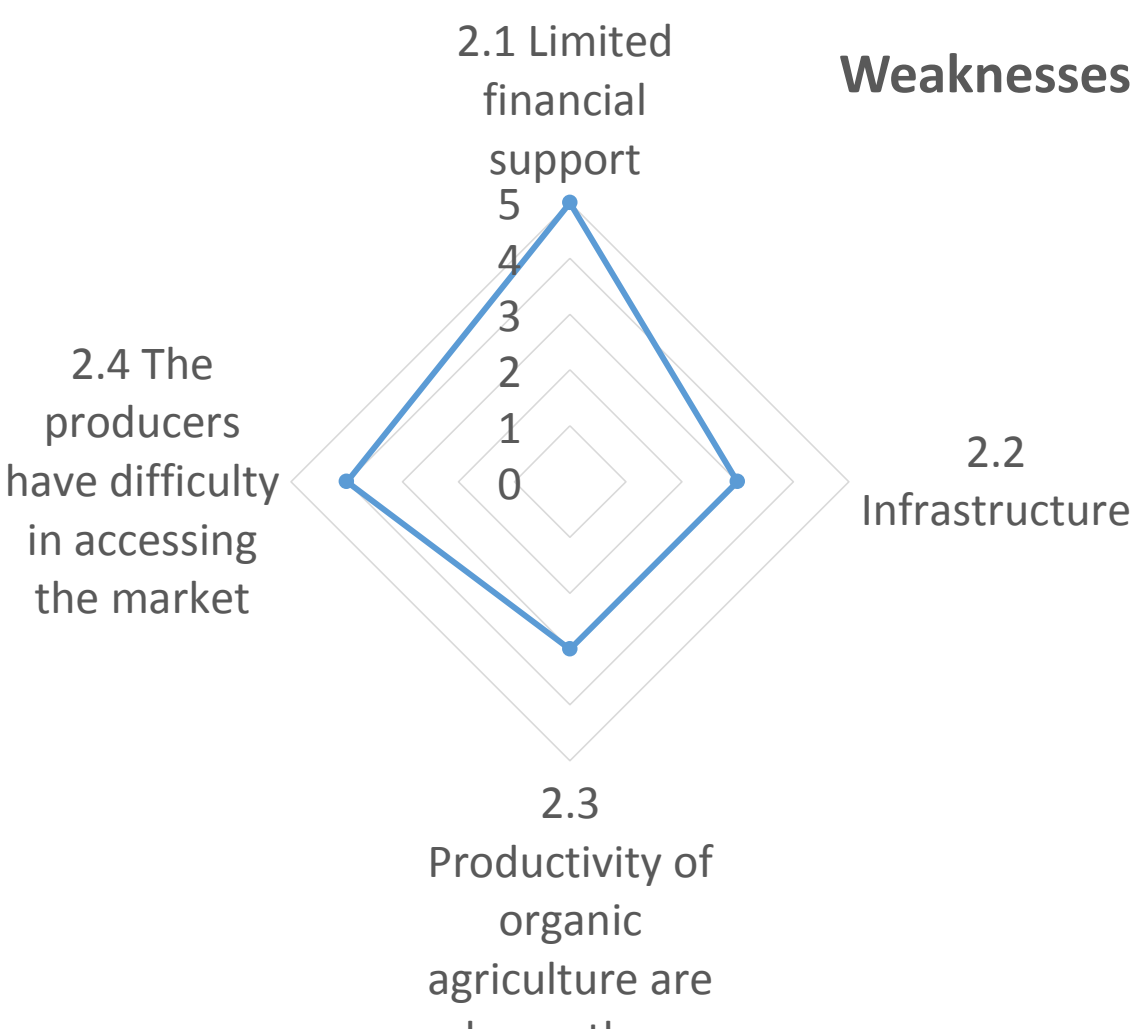
Note: ITB=Bandung Institute of Technology, UI= University of Indonesia, UGM= Gadjah Mada University, IPB= Bogor Agricultural University, UNDIP= University of Diponegoro, UB= University of Brawijaya, UNPAD= University of Padjadjaran, USU= University of North Sumatera, UNAIR= University of Airlangga, UNS= University of Sebelas Maret Surakarta

Results of SWOT Analysis for University-based Extension from Agro-ecology/Organic Farming Perspective …cont)

Strengths

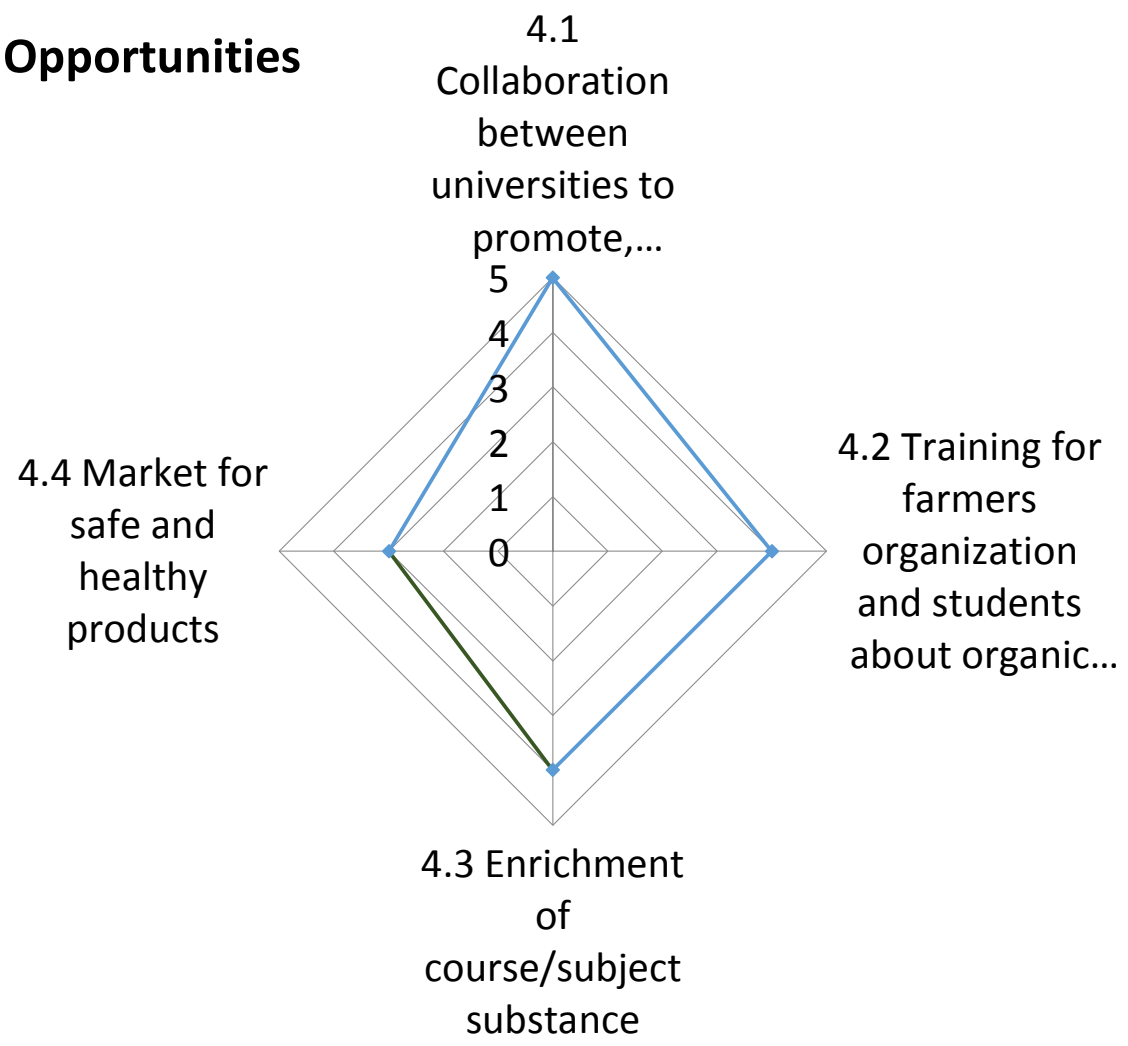


Weaknesses



Results of SWOT Analysis for University-based Extension from Agro-ecology/Organic Farming Perspective….cont)

Opportunities



Threats

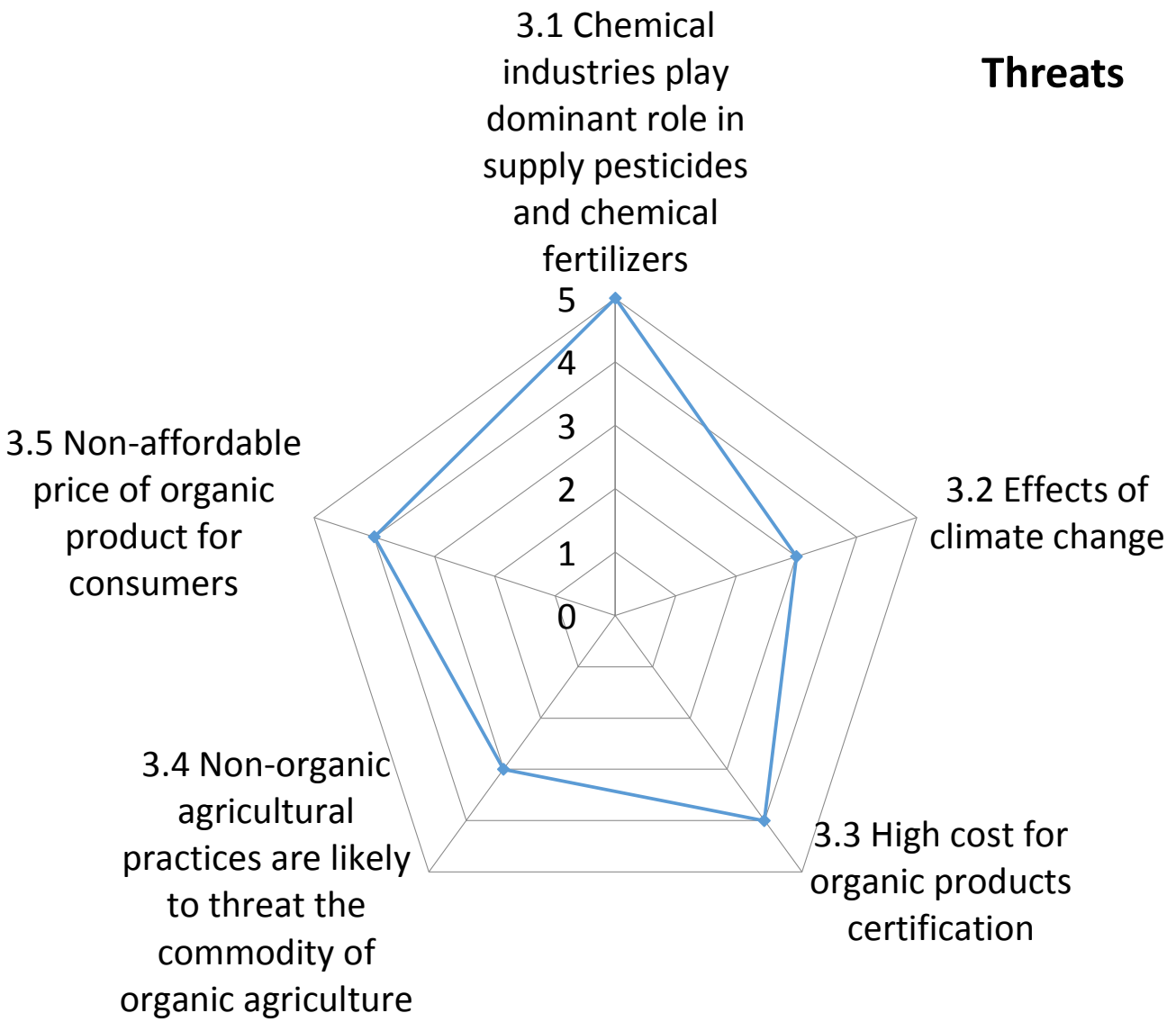
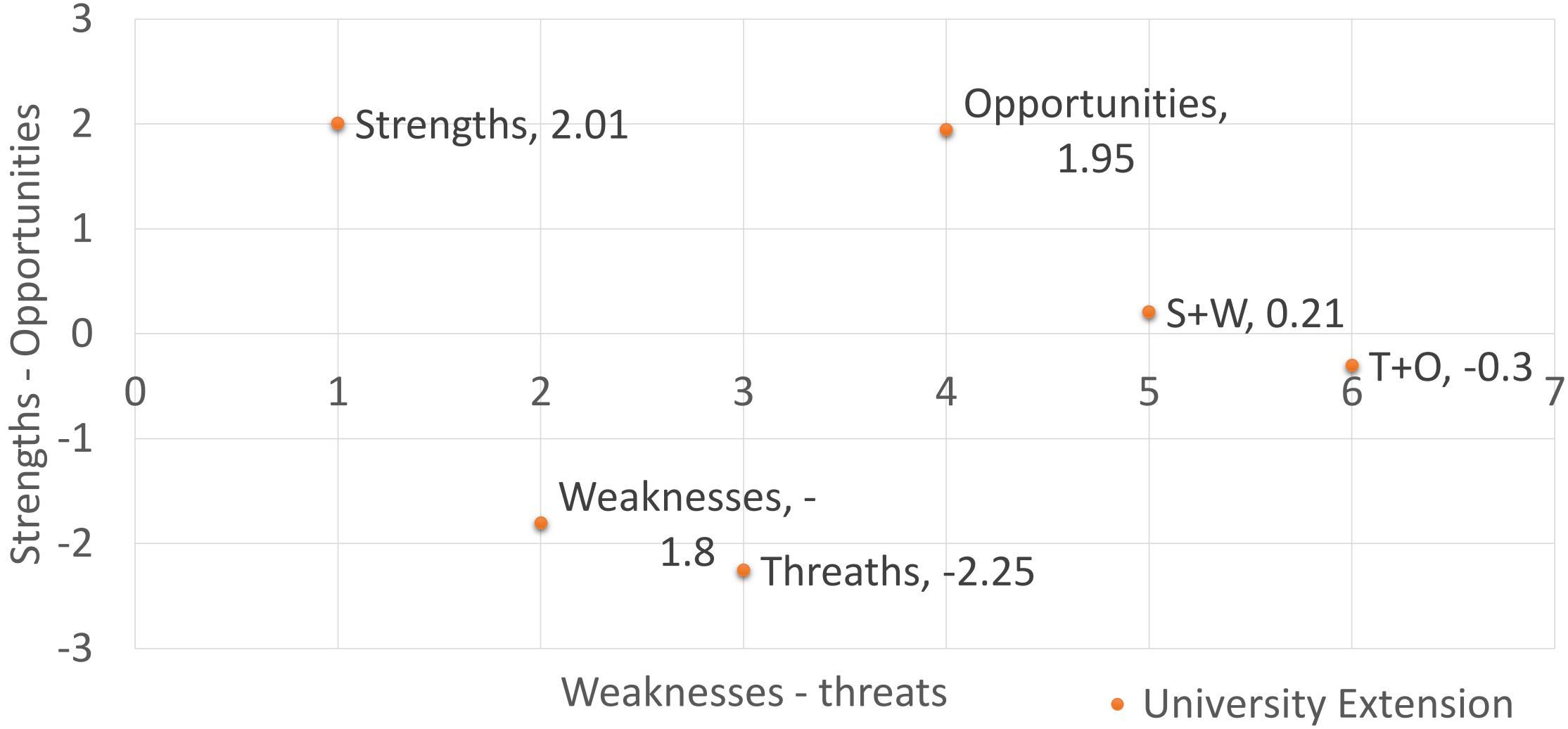


Figure: Strategy to develop university-based extension services from an agro-ecology/organic farming perspective



4. CONCLUSIONS

- Scope of university-based extension services from agro-ecology/organic farming perspectives: learning and teaching, research and community services.
- Most people tend to have view organic farming as positive actions for conserving the environment, as well as improvement of quality of human life.
- The challenges for the university-based extension: the dependency of the farmers to agro-chemicals, market for the products, cost for certification, and climate change effects
- Opportunity: collaboration between universities and related institutions to continue to serve community.
- The strategy to develop university-based extension from agro-ecology perspective: to manage the strengths and opportunities including involvement of students in facilitating farmers to practice organic farming.
- Financial support to undertake continuous actions is essential to maintain the actions.

Thank you

Khop khun Kha