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Analysis of internal and external factors in establishing inter-and-trans-disciplinary training and research framework in Amhara Region, Ethiopia

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Abstract

This study examines the readiness of higher education and research institutions in the Amhara Region, Ethiopia, in establishing inter-and-trans-disciplinary (ITD) trainings/research. Specifically, the study looks at the strength, weakness, opportunity and threat variables that could promote or impede the establishment of responsive trainings and researches which are relevant to smallholder farmers. The study draws on the data gathered using structured questionnaire conducted in the higher education's (Bahir Dar and Gonder Universities) and research institutions (Amhara Region Agriculture Research Institute [ARARI] and Gonder Agriculture Research Center) in the Amhara Region. Sample sizes of 90 respondents were selected using purposive and stratified sampling techniques. Data were analyzed using statistical package for social sciences version 17 (SPSS-17). Results of the SWOT analysis indicates that concerned institutions should capitalize on their strength to exhaust opportunities and work on their weaknesses to convert threats to opportunities, so that their system will be responsive to the needs of smallholder farmers. Therefore, to respond to the complex needs of the society in the face of the rapidly changing environment the higher education and research institutions in the Amhara region should work on the development of ITD training/research. The study came up with many conclusions which includes: higher education institutions should work on creating environs that promote accountability, strong relationship with stakeholders and good research culture; better resource utilization or fund rising scheme should be employed to alleviate infrastructure/facility supply gap; local higher education institution instructors should be capacitated through the provision of on job training so as to alleviate quality problem; the government should play a great role in creating awareness on the side of students starting from primary school level by mainstreaming agricultural related contents in the curriculum so as to increase student's interest to join agricultural academic programs at the university level; and the government should work on promoting agricultural related private investments to absorb unemployed professionals.

Keywords: Ethiopia, inter-and-trans-disciplinary trainings/research, framework, factors

INTRODUCTION

Ethiopia, with a population of over 80 million, is the second most populous, and one of the poorest in sub-Saharan Africa. About 85% of the total population is rural and practices subsistence agriculture (Ministry of Finance and Economic Development [MoFED], 2010). Although

the country has abundant resources and good potential for development, poverty is pandemic and often linked to unimproved agricultural practices and natural resource degradation amongst others (International Fund for Agricultural Development [IFAD], 2011). In order to increase agricultural production and productivity, enhance rural commercialization, minimize effects of the resource degradation and eradicate poverty, the govern-

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ment of Ethiopia has been implementing various types of reform programs.

Since the last one and a half decades, agricultural sector has received due policy attention in the development agenda of the government of Ethiopia. The fundamentals of agricultural development are preserved in the country's overall economic development policy known as Agricultural Development Led Industrialization (ADLI). Agriculture is thus believed to be the major source of the country's economic growth (Tesfaye *et al.*, 2011) and its development is expected to adequately drive the process of industrialization. Apart from having a comprehensive and consistent set of agricultural policies and strategies, the country has been investing appreciably towards agricultural growth (Rahel, 2003; Amdissa, 2006). For the last 15 years, for instance, public investment towards the expansion of higher education (Tesfaye *et al.*, 2011), research and extension has been so enormous to stimulate agricultural growth.

Public universities in the last 15 years increased from 2 to 30, of which 8 of them are still under construction. Similarly, private colleges/universities increased from 0 to 71. Technical and vocational education and training (TVET) centers increased from 17 to 505 (Ministry of Education [MoE], 2010), of which 25 are public agricultural TVET colleges (Davis *et al.*, 2007). Annual student admission rate for tertiary education has also been increased exorbitantly. According to a report of the MoE (2010), total student admission for undergraduate and postgraduate programs increased from 58,026 and 1,949 in 2002/03 to 203,399 and 7,057 in 2006/07, respectively. Most governmental universities provide trainings in agricultural and/or natural resources management programs, while private universities and colleges involve rarely in agricultural training programs (Davis *et al.*, 2007). Following decentralization, besides the federal ones, regional agricultural research institutes, centers and stations have also flourished across the country. Similarly, agricultural extension has been structured all through from national to village levels and, at least in theory, reaches farmers and end users effectively.

Despite of the huge expansion in the country as well as in the region (Amhara), higher education and research institutions have not yet brought any marked differences on agricultural productivity, natural resources conservation and livelihoods of the poor small scale farmers. University/college graduates are reported to be poor in their professional effectiveness mainly due to poor functional linkages between education, research and extension, and scant knowledge due to strict disciplinary education (Davis *et al.*, 2007) which is often not sufficient to create either knowledge or researches capable of solving today's complex problems (Klein, 2004; Davis *et al.*, 2007). Outreach of research into rural areas is also slow, and there is a distinct disconnection between the actual needs of farmers and the outcomes of

higher education and research institutions. On the other hand, Ethiopian government has denounced a rapid growth and transformation national plan (GTP). Hence, higher education and research institutions are now under enormous pressure (Tesfaye *et al.*, 2011) to undertake concrete reforms and make themselves highly responsive to rural transformation and become effective development partner. Higher education and research institutions must support the rural transformation and develop future management and policy scenarios in preparation for forthcoming changes that are likely to take place in rural areas.

The current GTP set forth by the government for rapid and sustainable development require trained manpower and researches which are responsive to rural transformation (MoFED, 2010). The existing training and research approach are as old as the educational sector in the country. It exhibited failure in responding to the felt needs of the economy in general and that of rural people in particular. Therefore, the concerned institutions that are determined to survive and maintain a sustainable competitive advantage must adapt themselves rapidly to continuous change (Navarro and Gallardo, 2003) in order to improve their participation in the development realm. One of the simple, yet effective suggestions is to employ the SWOT analysis method to further improve and enhance their role and to clearly look at their readiness (Schneider and De Meyer, 1991; Mahmoud and Farid, 2009) for establishing ITD trainings and researches. According to Stefan Baumgärtner *et al.* (2008) *interdisciplinarity* is understood as some kind of cooperation between scientific disciplines, and *transdisciplinarity* as some kind of interrelationship between science and society.

This study is an attempt at analyzing the internal and external environments of higher education and research institutions in the Amhara region, with the general objective of establishing the relative significance of the environments in establishing responsive training/research system. In the pursuit of this objective, the following questions will be addressed, among others: What constitutes the external environment of those institutions? What constitutes the internal environment of those institutions? What about the relative strength of those internal and external factors?

MATERIALS AND METHODS

Study area

Amhara region is located between 8°45'N and 13°45'N latitude and 35°46'E and 40°25'E longitude. The total area of the region is estimated at 156, 960 km². Rugged mountains, plateaus, valleys and gorges characterize its physical landscape. Elevations range from 700 meter above sea level (m.a.s.l.) to over 4600 m.a.s.l. Areas

lying below 1500 m.a.s.l. which covers 31% of the region are commonly classified as lowlands, between 1500-2500 m.a.s.l. covering 44% are classified as Woyina Dega (warm zone), and between 2500-4620 m.a.s.l. covering 25% of the region are classified as Dega (cold zone). The annual mean temperature of the region is between 15 and 21 °C, but in valleys and marginal areas the temperature exceeds 27 °C. Around 50% of the total area of the Amhara region is considered to be arable land. Currently, 60% of the total area is used for cultivation and grazing (30% each), 17% is under forests, woodlands and shrub lands, 4% is covered by water bodies, 3% is occupied by settlements and 16% is wasteland. Agriculture is the main livelihood of the people in the Amhara region. More than 89% of the population live in rural areas and engaged primarily in crop-livestock mixed farming system. The Amhara region has a share of 15% in area, nearly 20% of population and 30% of total crop production of the country (CSA, 2008). The region is characterized by erratic rainfall, high land degradation and high population density. Irrigated agriculture is negligible in the region, although 500, 000 ha of land are considered to be suitable for irrigation agriculture (IWMI, 2004).

Research design

For the present study higher education and agricultural research institutions which are found in the Amhara Region were taken as the subjects. Among higher education and research institutions available in the Amhara Region, Bahir Dar University, Gonder University, ARARI-Head office and Gonder Agriculture Research Centre were purposively selected out of the six universities and eight research centres in the region, respectively. In these higher education institutions even though there are a number of colleges, faculties, schools and departments only agriculture related faculties and departments were used for the study. Heads and vice-heads of the selected departments, faculties and universities were totally taken as respondents, while stratified random sampling technique is employed to proportionally allocate the total number of instructors to be included in the study among the selected departments. Almost all research directors, program leaders and researchers of Amhara Region Agricultural Research Institute (ARARI) at head quarter office and Gonder Agricultural Research Centre were purposively used for the study. In which case, 18 university heads, 36 instructors (out of the total 144 instructors *i.e.*, 25% of the total), 11 research heads and 25 researchers were included for the study. A structured questionnaire was used for data collection.

These instructors, heads of higher institutions, researchers and research heads were asked to use a 5-point Likert Scale, where '1=strongly disagree',

'2=disagree', '3=neutral', '4=agree' and '5=strongly agree' and 3.5 was used as a cut-off point for agreement, to assess their institutions readiness to establish inter-and-trans-disciplinary training/research approach. Descriptive data analysis approach was employed to analyze the data, and in which case the mean, standard deviation and Cronbach's Alpha scores are calculated using SPSS for strength, weakness, opportunity and threat variables.

RESULTS AND DISCUSSION

Perceptions on institutional responsiveness

Results on responsiveness of the existing higher education and research system in the Amhara region in transforming the small scale farmer's livelihood indicated that the majority (50%) of heads of the universities did not agree to the responsiveness of their institution, while in contrary the majority of instructors (66.7%) reported that their education and research systems are responsive. On the other hand, the majority of the research heads and researchers groups believed that their institution is doing its best in the generation and dissemination of different agricultural technologies to the small holder farmers. This finding indicates that university heads of the concerned higher education institutions were pessimist on the responsiveness of their institution to the needs of small farmers. This may be due to the fact that by virtue of their position they do have good knowledge of the existing institutional system.

Although it seems that the majority of the respondents in both research and education institutions, except university heads, deemed to agree (54%) on the responsiveness of their institutions to the complex needs of the small holder farmers; they believed that this responsiveness lacks cross fertilization between different disciplines and integrated knowledge from heterogeneous sources *i.e.*, inter-and-trans-disciplinary integrity. In this context, it is wise to look at the strengths, weaknesses, opportunities and threats of the concerned institutions to establish ITD learning and research settings.

Institutional readiness for adopting ITD trainings/research

The validity test was done on variables of strengths, weaknesses, opportunities and threats in the higher education and research institutions that are included in the study for establishing ITD trainings/research by using the Alpha Cronbach Coefficient. It was found that those values are above 0.4 (Kay Dora *et al.*, 2010) as shown in Table 2, 3, 4 and 5. This means that each variable tested is reliable and can be accepted as strengths, weaknesses, opportunities and threats of the respective

Table 1. Responsiveness of higher education and research institutions to the transformation of small-scale farmers

Position in the institutions	Frequency of response			Total
	Yes	No	Indifferent	
University heads	6(33.3)	9(50)	3(16.7)	18(20)
Lecturers	24(66.7)	7(19.4)	5(13.9)	36(40)
Research head	7(63.6)	2(10)	2(20)	11(12.2)
Researchers	17(70.8)	6(18.2)	2(18.2)	25(27.8)
	54(60)	24(26.7)	12 (13.3)	90

Note: numbers in the parentheses indicates the percentage share of each response

Table 2. Strengths and weaknesses of higher education institutions in establishing responsive trainings

Strength	Instructors (N=36)			Heads of higher institutions (N=18)		
	Strength, CA=0.81			Strength, CA=0.857		
	Mean	SD	CA	Mean	SD	CA
High level of attention given to quality education	3.78	1.245	.802	4.00	.907	.833
Expansion and diversification of agriculture and agriculture related programs	3.75	.996	.800	4.28	.575	.846
Encouraging growth in physical infrastructures	3.67	.756	.807	3.94	.725	.838
High commitment for staff capacity building	3.86	.990	.803	3.83	1.043	.837
Presence of sufficient number of academic staff	3.44	.909	.782	3.78	.878	.825
Institutional readiness to work with other stakeholders to bring rural transformation	3.89	1.063	.761	4.11	.900	.872
Due attention is given to gender equality	3.53	.971	.828	3.61	.608	.856
Presence of management which is open to change	3.56	1.229	.773	3.89	.758	.825
Committed academic staff to change	3.64	1.125	.780	3.50	.985	.853
Availability of Senior professionals capable to consult institutional learning & rural transformation	3.86	1.313	.781	3.50	.924	.842
General Mean	3.69			3.84		
Weakness	Weakness, CA=0.854			Weakness, CA=0.888		
Low quality of instructors	2.75	1.105	.870	3.28	1.274	.876
Limited infrastructure and inadequate facilities	3.44	1.206	.841	3.83	1.339	.854
Poor research culture	3.50	1.183	.816	3.72	1.320	.846
Weak relationship with stakeholders	3.50	1.276	.816	3.22	1.353	.882
Lack of accountability	3.47	1.134	.824	3.50	1.150	.859
High staff turnover	3.08	.996	.841	2.94	.998	.900
Limited experience of instructors	3.39	1.128	.833	3.33	1.085	.881
Lack of motivation of staff	3.22	1.198	.847	3.44	1.247	.883
General Mean	3.29			3.41		

*SE=Standard Error, SD=Standard Deviation, CA=Cronbach Alpha

institutions for sensitizing rural transformation by establishing responsive ITD training/research. In this study it was assumed that any variable that scored greater than 3.5 for a mean Likert-type scale (Njenga, 2006) was found to be influential strength, weakness, opportunity and/or threat in establishing ITD trainings/research because it shows agreement or strong agreement of the respondents on the item.

Internal environmental factors: strengths and weaknesses

Table 2 above indicates that all the strength variables for both instructors and heads of higher education institutions, except the variable sufficient number of academic staff (Mean=3.44, SD=0.909) for instructors, represent important strengths of higher education institu-

Table 3. Strength and weakness of research institutions in establishing responsive researches

Strength	Researchers (N=25)			Research heads (N=11)		
	Mean	SD	CA	Mean	SD	CA
High attention to quality research	3.20	1.258	.834	3.18	1.079	.707
Expansion and diversification of research centers and programs in different agro-ecology	4.00	.913	.866	4.00	.447	.719
Encouraged growth in physical infrastructure	3.60	.866	.857	3.73	.647	.761
High commitment for staff capacity building	3.68	1.069	.853	3.82	.405	.700
Sufficient number of research staff	3.20	1.323	.860	3.00	1.000	.615
Readiness to work with other stakeholders to bring rural transformation	3.84	.943	.846	3.82	.751	.639
Due attention is given to gender equality	3.52	.918	.865	3.73	.467	.730
Management which is open to change	3.48	1.262	.845	3.82	1.079	.691
Committed research staff to change	3.44	1.083	.845	3.55	.820	.679
Availability of senior researchers capable to consult institutional learning and rural transformation	2.84	1.463	.823	2.91	1.446	.680
General Mean	3.48			3.55		
Weakness	Weakness, CA=0.903			Weakness, CA=0.906		
Low quality of researchers in research activities	3.00	1.323	.914	3.18	.982	.891
Limited infrastructure and inadequate facilities	3.80	1.225	.889	3.64	1.206	.886
Poor research culture	3.16	1.344	.890	3.00	1.095	.926
Weak relationship with stakeholders	3.52	1.358	.879	3.64	1.120	.887
Lack of willingness and ability to use available resources efficiently within and across institutions	3.20	1.225	.887	3.45	1.214	.898
Lack of accountability	3.28	1.275	.904	3.18	1.079	.890
High staff turnover	4.04	1.098	.891	4.00	1.183	.873
Limited experience of researchers	3.88	1.130	.884	3.55	.934	.883
Lack of motivation of staff	3.56	1.261	.885	3.09	1.221	.913
General Mean	3.49			3.41		

*SE=Standard Error, SD=Standard Deviation, CA=Cronbach Alpha

tions to establish ITD trainings/research; because the statistical means of all of the variables are higher than the benchmark 3.5. It was further observed in the data obtained from instructors and heads of higher education institutions that the specific result for 'readiness to work with other stakeholders to bring rural transformation' and 'expansion and diversification of agricultural and agricultural related programs' were attained the highest statistical mean of 3.89 and 4.28, respectively, with 77.8% and 75% respondents, respectively, indicating that they agreed or strongly agreed that these variables represent the most significant strengths of higher education institutions to establish ITD training/research. This can be interpreted as, acknowledging the fact that knowledge also exists and is produced in societal fields other than science the higher education institutions in Amhara Region are opening their door for partnership and this, according to instructors, is the first and important step in ITD training/research system establishment. The other very important factor, according

to heads of higher education institutions, is the expansion and diversification of agriculture and other related programs which enable higher education institutions produce new breed professionals that could potentially solve the complex societal economic, social and environmental problems to result in sustainable development.

On the other hand, data shown in Table 3 on the same variables for the researchers and research heads indicated that all the variables, except 'high attention to quality research' (Mean=3.20, SD=1.258 for researchers and Mean=3.18, SD=1.079 for research heads), 'sufficient number of research staff' (Mean=3.20, SD=1.323 for researchers and Mean=3.00, SD=1.00 for research heads) and 'availability of senior researchers capable to consult institutional learning and rural transformation' (Mean=2.84, SD=1.463 for researchers and Mean=2.91, SD=1.446 for research heads), represent important strengths of research institutions in the Amhara Region. As we can witness from the mean

Table 4. Opportunities and threats of higher education institutions in establishing responsive trainings

Opportunity	Instructors (N=36)			Heads of higher institutions (N=18)		
	Opportunity, CA=0.699			Opportunity, CA(0.695)		
	Mean	SD	CA	Mean	SD	CA
Favorable government policies and strategies	3.92	.937	.688	4.06	.725	.596
Having national GTP	4.08	.554	.747	4.17	.707	.585
The presence of national and international initiatives for achieving food security	4.06	.754	.599	4.17	.786	.584
High demand for effective professionals in the country	3.67	.986	.598	3.67	.907	.680
Unstable local and global economy	3.69	1.117	.693	3.89	.832	.741
Global warming	3.64	1.073	.584	3.94	.802	.713
General Mean	3.84			3.98		
Threat	Threat, CA=0.735			Threat, CA=0.614		
Shortage of effective professionals in the local market	3.83	.941	.667	3.61	1.243	.668
Unaffordable to hire skilled manpower from global market	3.42	1.273	.652	3.56	1.042	.468
Low interest of students to join in agricultural academic programs	3.44	1.275	.735	3.56	1.149	.604
Large number of unemployed professionals	3.64	1.099	.735	3.44	.984	.478
Limited amount of resources	3.19	1.305	.645	4.22	.732	.562
General Mean	3.51			3.68		

*SE=Standard Error, SD=Standard Deviation, CA=Cronbach Alpha

values of these variables in Table 3 above the respondents from both higher education (*i.e.*, instructors) and research institutions (*i.e.*, researchers and research heads) remained as neutral.

Data on weakness of instructors and higher education heads shown on Table 2 indicated that poor research culture (Mean=3.50, SD=1.183 for instructors and Mean=3.72, SD=1.32 for higher education heads), weak relationship with stakeholders (Mean=3.50, SD=1.276 for instructors), limited infrastructure and inadequate facilities (Mean =3.83, SD=1.339 for higher education heads) and lack of accountability (Mean =3.50, SD=1.15 for higher education heads) represent influential weaknesses of higher education institutions in Amhara Region. About 58.3% and 52.8% of the instructors and heads, respectively, agreed or strongly agreed that poor research culture and limited infrastructure and inadequate facilities, respectively represent the most important weaknesses. Whereas, the data obtained from research institutions showed that limited infrastructure and inadequate facilities (Mean=3.80, SD=1.225 for researchers and Mean=3.64, SD=1.206 for research heads), weak relationship with stakeholders (Mean=3.52, SD=1.358 for researchers and Mean=3.64, SD=1.12 for research heads), high staff turnover (Mean=4.04, SD=1.098 for researchers and Mean=4.00, SD=1.183 for research heads), limited experience of researchers (Mean=3.88, SD=1.13 for researchers and Mean=3.55, SD=0.934 for research heads) and lack of motivation of staff (Mean=3.56, SD=1.261 for researchers) are the prominent weaknesses for the establishment of ITD

research system in the Amhara Region. In this case about 63.6% and 80% of researchers and heads, respectively, agreed or strongly agreed that high staff turnover is the major problem in research institutions.

As indicated in the above paragraphs, with reference to the internal factors the data obtained from instructors seem to be in conformity with that of the heads of higher education institutions with the exception in four variables (*i.e.*, sufficient number of academic staff, limited infrastructure and inadequate facilities, weak relationship with stakeholders and lack of accountability). By the same token, research heads seem to be in agreement with that of the researchers in that high attention to quality research, sufficient number of research staff, availability of senior researchers capable to consult institutional learning and rural transformation, low quality of researchers, poor research culture, lack of willingness and ability to use available resources efficiently within and across institutions and lack of accountability were not reported as important items to explain the research institutions readiness to establish ITD research. In addition to these, research heads remain undecided in that lack of motivation of staff represents significant internal weakness of research institutions to establish ITD research.

External environmental factors: opportunities and threats

As shown in Table 4 and 5, with regard to the opportu-

Table 5. Opportunities and threats of research institutions in establishing responsive researches

	Researcher (N=25)			Research heads (N=11)		
	Opportunity, CA=0.818			Opportunity, CA=0.734		
Opportunity	Mean	SD	CA	Mean	SD	CA
Favorable government policies and strategies	3.96	.790	.781	4.18	.405	.691
Having national GTP	4.04	.735	.773	4.09	.539	.700
The presence of national and international initiatives for food security and poverty reduction	4.12	.600	.799	4.00	.447	.652
High demand for effective professionals in the country	3.80	1.000	.801	4.00	.447	.723
Unstable local and global economy	3.56	1.158	.812	3.45	.688	.748
Global warming	3.72	1.100	.764	4.09	.539	.661
General Mean	3.87			3.97		
Threat	Threat, CA=0.523			Threat, CA=0.769		
Shortage of highly qualified professionals on local market	3.96	1.060	.349	4.27	.905	.572
Unaffordable to hire skilled manpower from global market	3.60	1.323	.406	4.09	1.221	.658
Low interest of students to join in agricultural academic programs	3.96	1.241	.573	4.00	.894	.779
Limited amount of resources	3.80	1.225	.456	4.27	.467	.777
General Mean	3.83			4.16		

*SE=Standard Error, SD=Standard Deviation, CA=Cronbach Alpha

nities of higher education and research institutions in establishing responsive trainings, all respondents seemed to agree or strongly agree on that the presence of favorable government policies and strategies, the existence of national GTP, the presence of national and international initiatives for achieving food security, high demand for effective professionals in the country, unstable local and global economy and global warming were significant opportunities that higher education and research institutions could use to make their educational and research system responsive to rural transformation needs; with the exception of neutrality of the heads of research institutions on whether 'unstable local and global economy' represent an opportunity or not for research institutions.

With regard to the threats, according to Table 5, researchers and research heads seemed to be in agreement that all the listed threats represent prominent threats to their establishment of ITD research system in the Amhara Region. However, the data obtained from instructors showed that the unaffordability of skilled manpower in the global market, low interest of students to join in agricultural academic programs and limited resource availability were not found to be significant threats in the establishment of ITD training/research, while the heads of higher education institution were found to be neutral on whether the presence of large number of unemployed professionals represent significant threat.

CONCLUSION AND RECOMMENDATIONS

The researchers hope that findings of this study would be beneficial in giving information and guiding the higher education and research institutions in Amhara region in producing new professionals and research outputs that enable them respond to the complex needs of small holder farmers. The study applied SWOT analysis technique to identify the strengths, weaknesses, opportunities and threats to establish ITD training/research system. By having information on those elements, they can further improve their undertakings. Therefore, to respond to the complex needs of the society in the face of the rapidly changing environment the higher education and research institutions in the Amhara region should work on the development of ITD training/research.

On this ground the study established that the major strengths of higher education institutions to establish ITD training/research include factors like high attention to quality education, expansion of agriculture and agriculture related programs, encouraging growth in physical infrastructure, high commitment for staff capacity building, readiness to work with stakeholders, due attention given to gender equality, the presence of management open to change, committed academic staff, and availability of senior professionals. In addition, heads of higher education institutions indicated that the

presence of sufficient number of academic staffs is also an asset. On the other hand, expansion of research centers/programs in different agro-ecology, encouraging growth in physical infrastructure, high commitment for staff capacity building, readiness to work with stakeholders, due attention given to gender equality represent research institutions strength; in addition to these, research heads mentioned the presence of management which is open to change and committed research staffs.

The major weakness according to higher education institution respondents to establish ITD training/research includes poor research culture among staff members. Moreover, heads mentioned limited infrastructure/facilities and lack of accountability; and that of instructors' weak relationship with stakeholders as representing additional weaknesses. On the contrary, the influential opportunities that both higher education and research institutions have include the presence of favorable government policies/strategies and national GTP, the presence of different initiatives for food security, high demand for professionals in the country, unstable local & global economy and global warming. But research heads do not agree in that unstable local and global economy represents an opportunity.

According to respondents of research institutions shortage of highly qualified professionals on local market, unaffordability to hire skilled manpower from global market, low interest of students to join agricultural academic programs and limited amount of resources represent major threats, while those respondents from higher education institutions indicated shortage of effective professionals in the local market as influential threat. In addition, heads revealed some more threats like unaffordability to hire skilled manpower from global market, low interest of students to join agricultural academic programs and limited amount of resources; while instructors mentioned large number of unemployed professionals.

Based on the findings of the study the researchers recommended that:

- Higher education and research institutions should work on creating environs that promote accountability, strong relationship with stakeholders and good research culture.
- Better resource utilization or fund rising scheme should be employed to alleviate infrastructure/facility supply gaps.
- Local higher education institution instructors should be capacitated through the provision of on job training so as to alleviate quality problem.
- The government should play a great role in creating awareness on the side of students starting from primary school level by mainstreaming agricultural related contents in the curriculum so as to increase student's interest to join agricultural academic programs at the university level.

- The government should work on promoting agricultural related private investments to absorb unemployed professionals.

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