Competency Mapping of the Extensionists Working in Krishi Vigyan Kendra's in India

J. Rohit[1*], P. Singh[2], S. Satyapriya[2], V. Sangeetha[3], and N. V. Kumbhare[4]

ABSTRACT

Policy, research, and extension support are among the various drivers that helped India to become self-sufficient in food production. In order to contribute better towards agricultural development, the extension and advisory agents need new capacities to confront the present challenges in agriculture. The present study was conducted in four Indian Council of Agricultural Research (ICAR) zones of Krishi Vigyan Kendra's (KVK) selected by simple random sampling without replacement to map the present level of competencies of the extensionists. Twenty KVK from each zone were selected randomly and three extensionists from each KVK were selected by using simple random sampling technique. The total sample size was 240. Mapping of the competency was dealt in two parts *viz* Emotional Intelligence (EI) and Professional Competency (PC). Correspondence Analysis (CA) technique was used to map the professional competencies of the extensionists. The first part of mapping dealing with EI showed that the respondents had average level of EI. The analysis of the competencies showed that most of the competency statements for the extension professionals were clustered around the center of the biplot showing medium level of PC. Hence, this provides an opportunity to the policy makers to devise suitable strategies to develop these competencies of the extensionists so that they become efficient and effective in their job.

Keywords: Correspondence Analysis, Emotional Intelligence, Emotional Quotient, Professional competency.

INTRODUCTION

Agriculture research and extension are experiencing a change due to new scientific discoveries, change in demographics, shifts in socioeconomic characteristics, changing consumption patterns, liberalization and globalization. Human resource is integral to agricultural extension and its functioning is based on the performance of its human resource. Thus, human resource is an asset to the extension organization that needs to be updated like any other resource. Today, the role of extension goes beyond technology transfer to facilitation, beyond training to learning, it also includes mobilization of farmers, dealing with marketing issues, addressing public interest issues in rural areas such as resource conservation, health, monitoring of food and additional food security and agricultural production, food safety, nutrition, family education, and youth development and partnering with a broad range of service providers and other agencies (USAID, 2002). This requires extension functionaries to be well versed with new emerging areas to serve the client needs and aspiration. The

_____

[1] ICAR- Central Research Institute for Dryland Agriculture, Hyderabad-500059, India.

[*] Corresponding author; e-mail:jags.rohit@gmail.com

[2] Division of Agricultural Extension, ICAR- Indian Agricultural Research Institute, New Delhi-110012. India.

[3] ICAR-Indian Agricultural Research Institute, New Delhi, India.

[4] ATIC, ICAR- Indian Agricultural Research Institute, New Delhi-110012. India.

ability of extension professionals to perform extension tasks is generally said to be a function of their job competencies. Swanson (1996) suggested that great emphasis should be placed on the core competencies in business, industry, and agriculture, mainly referring to their knowledge and expertise in these fields. Extension professionals with latest knowledge are able to make informed decisions about the agricultural system and possess the skill necessary for adaptation and facilitation which will make a major contribution to the extension services and ultimately to the agricultural development (Hoffman, 2014). Stone (1997) described competencies as the application of knowledge, technical skills, and personal characteristics that are designed around the abilities of individuals and groups needs to give effective job performance and use in making human resource decisions. The competency mapping is a process of identifying key competencies for a company or an organization and the jobs and functions within it.

Every well-managed organization should have well-defined roles and a list of competencies required to perform those roles effectively. Competency mapping has gained worldwide recognition in this era of knowledge workers and high performance organizations. Organizations have realized the importance of competency mapping, as they are aware of the benefits of having the right person on the right job with right skill. Competency mapping reveals important skill gap of an employee, which can be addressed by capacity building and training. A few studies on core competencies for agricultural extension professionals have been done in Europe (Mulder, 2014), Asia (Khalil *et al.*, 2009; Rigyal and Wongsamun, 2011), and Africa (Issahaku, 2014). There is a dearth of studies on competency and its mapping in India. It is important to identify extensionists current levels of competency to determine whether there is any competency gap and plan in-service training programs to help them develop the needed skills. Emotional Intelligence refers to the level of competence one has in terms of both personal and interpersonal skills. In organizational environments, studies indicate that mastery of these personal and interpersonal skills is the most important determinant of success in performance (Rani, 2015). It is essential for extension agents to recognize the importance of EI competencies of today's workforce (Moore and Ruud, 2003). Hence, Competency Mapping in the present study will cover two aspects: (1) Emotional Intelligence, and (2) Professional Competencies.

MATERIALS AND METHODS

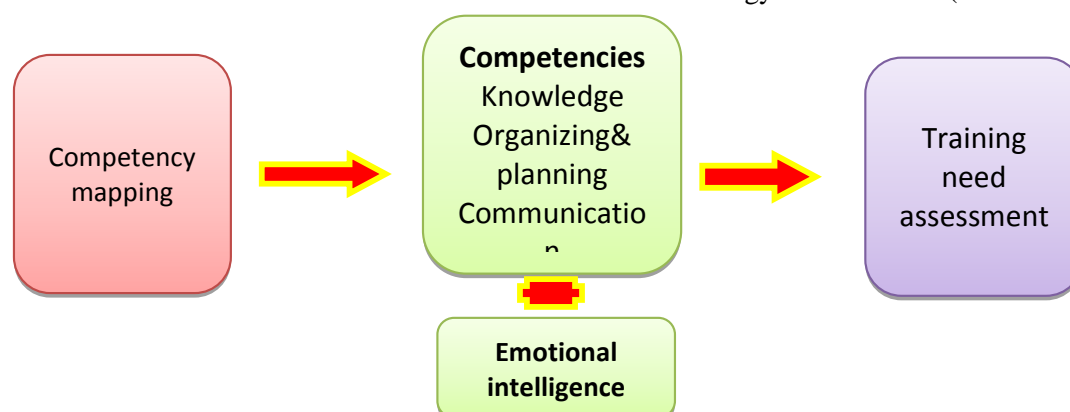The study was conducted in four ICAR-Krishi Vigyan Kendra (Farm Science

Figure 1. Conceptual framework of Competency Mapping.

Center, KVK) in India. Krishi Vigyan Kendras have an important role in catalyzing the growth of agriculture (Singh, 2015). Recognizing the potential of KVK in extension system, the number of KVK's has been increasing every year. KVK are involved in all types of extension work right from demonstration to training. Due to these reasons, KVK was selected purposively for the study. These zones were selected by using simple random sampling without replacement procedure. These ATARI-KVK zones were:

1. Zone I: Delhi, Haryana, Jammu and Kashmir, Himachal Pradesh, and Punjab;
2. Zone II: Bihar, Jharkhand, West Bengal and Andaman and Nicobar;
3. Zone IV: Uttar Pradesh and Uttarakhand,
4. Zone VII: Chhattisgarh, Madhya Pradesh and Odisha.

The respondents of the present study consisted of extensionists working in ICAR-Krishi Vigyan Kendras in these zones. From each zone, 20 ICAR-KVKS were selected randomly. Three respondents from each KVK were selected following simple random sampling technique. Hence, the total sample size was 240. The data was collected in the period of September 2015 to February 2016 through face to face contact (interview) and by mailing the questionnaire. The mailed questionnaires were followed by repeated reminders through mail and personal calls.

An "extensionist", for the present study, was operationalized as an extension professional having acquired a specialized degree in agricultural sciences or allied sciences, working in Krishi Vigyan Kendras and directly in contact with the clientele/farmers. Extensionists are synonymously used for subject matter specialist/extension professionals in Krishi Vigyan Kendra. Competency was operationalized as the extent of knowledge, skill and attribute that an extensionist working in Krishi Vigyan Kendras demonstrated in his/her career.

Conceptual Framework for Competency Mapping

Competency mapping is a process an individual uses to identify and describe competencies that are the most critical to success in a work situation or work role (Garrett, 2007). Earlier, mapping of the competencies was only related to the job competencies, but nowadays emotional intelligence competencies are also an integral part of the overall competencies required by an individual to be efficient and effective in the required field.

Competency mapping is a process through which one assesses and determines one's strengths as an individual worker and, in some cases, as part of an organization. It generally examines two areas: Emotional Intelligence (EI) or Emotional Quotient (EQ), and strengths of the individual in areas like team structure, leadership, and decision-making. (Buckingham and Clifton, 2001). The present study is based upon the above understanding of competency mapping, which is more robust and practically applicable. Competency mapping is similar to Success Profiles in that EI is "mapped" to organizational competencies (and in some cases, individual competencies). Various researches have shown that certain industries do well because they have a particular set of competencies and/or culture. Mapping EI to particular competencies enhances an organization's probability of success.

In the present study, "Competency Mapping" was operationalized as the extent to which the Emotional Intelligence and various competencies related to the job are possessed by an extensionist.

Competency mapping= Job competencies+Emotional intelligence competencies

The objective of the study is to map the present level of competency possessed by the extension professionals working in the Krishi Vigyan Kendras in India. Mapping of the competency is done by first measuring the emotional intelligence possessed by the

extension professional, and then, measuring the different job competencies possessed by them.

Emotional Intelligence Scale (EIS) developed by Hyde *et al.* (2001), was modified for the study and was administered to the extension professionals. The scale is a self-administering, consisting of 34 items and measuring EI through 10 factors – self-awareness, empathy, self-motivation, emotional stability, managing relation, integrity, self-development, value orientation, commitment, and altruistic behaviour. The responses were recorded, on a 5 point continuum i.e. strongly agree, agree, uncertain, disagree and strongly disagree. The 'Cronbach's Coefficient Alpha' (a) of the scale for the present study was 0.884

To assess the competencies, Likert type competency scale was developed. The level of possession of competencies by the respondents was measured on a five-point continuum ranging from 1 being "Very Low" to 5 being "Very High". The categories of competencies was based on recommendation made by Oakley and Garforth (1985) on knowledge and skill of extension professionals, review of literature, and job description of professionals working in Krishi Vigyan Kendras. The final competency instrument consisted of 52 items divided into seven competency categories, namely, knowledge, organization and planning, communication, analysis and diagnosis, leadership qualities, initiative and Personal attributes. Movahedi and Nagel (2012) also identified the professional competencies required by the extension graduate as technical competency (capabilities and motor skills inherent to an occupation), methodological competency (the ability to self-inform and assimilate fundamental learning and workplace techniques), social competency (the ability to cooperate and communicate), and individual competency (self-knowledge and responsibility, development of personal interests and life plans). The content validity was established by using a panel of experts

in the extension field. The 'Cronbach's Coefficient Alpha' (a) was 0.854 for the scales for measuring the professional competencies of extension professionals working in KVK.

Correspondence Analysis (CA) was used to map the professional competencies of the extensionists. Correspondence Analysis (CA) is a descriptive technique of factoring categorical variables and displaying them in a property space, which maps their association in two or more dimensions. The primary goal of CA is to illustrate the most important relationships among the variables' response categories using a graphical representation (Benzécri, 1992).

RESULTS AND DISCUSSION

Personal Profile of the Extensionists

The personal profile of the extension professionals revealed that nearly 62 per cent were between 35 to 50 years of age. Respondents in age group of less than 35 were about 18 per cent, while in the age group of above 50 were 20 per cent. Adesope *et al.* (2007), in their study on "Effect of personal characteristics of extension managers and supervisors on information technology needs in the Niger Delta area of Nigeria", showed that the majority (about 60 per cent) of the extension personnel were between the age group of 45 to 50 years of age. As far as experience of the extension professionals was concerned, about 39 per cent had 11 to 21 years of experience, whereas 27 per cent had more than 21 years of experience. The respondents had vast experience in their field of specialization. Sixty nine per cent of the respondents had Ph.D. as their highest degree, while 31 per cent had MSc. It was clearly evident from the results that the extension professionals had attained adequate technical knowledge in their area of specialization. Among the respondents, the majority (65 per cent) were male, as against 35 per cent female respondents.

There has been a gender gap prevalent in the extension organizations. In the past, extension job was reserved for men only believing that it was only men that were farmers (Airemen, 2005). Majority of the KVK in the study were under State Agricultural University.

It is indicated from Figure 2 that about 17 per cent of the extensionists had food science and nutrition as their area of specialization. This was mainly due to the fact that the majority of the female respondents had their degree in this subject, followed by agricultural extension (16 per cent) and agronomy (10 per cent). KVK being an extension organization generally had a subject matter specialist having agricultural extension as his/her specialization. The respondents had different areas of specialization and worked together as a multi-disciplinary team in KVK. Only about 2 per cent of the respondents had agricultural economics as their specialization.

Competency Mapping

1. To map the Emotional Intelligence possessed by the extensionists,
2. To map the present level of job competencies possessed.

Emotional Intelligence Category of the Extensionists

Table 2 shows the Emotional Intelligence category of the respondents based on their EI score. It was evident from the table that the highest number of extensionists was lying in the "Average" EI category (103). In the "Low" category of EI, seventy seven respondents were found whereas forty one respondents were in "High" category. The category "Very High" and "Very Low" had eight and eleven respondents, respectively. It was also reported by Villard and Earnest, (2006) that nearly eighty one per cent of the responding county had a total EQ-I score in the average or above level score. High and medium emotional intelligence scores describe individuals who feel good about themselves, are in touch with their feelings, feel fairly successful in realizing their potential, understand the way others feel (and respond accordingly), are realistic, assertive and successful in problem solving, are happy and carry a positive outlook on life. Their job requires them to be in regular contact with the farmers; hence, Emotional Intelligence will be quite helpful in performing their job better. As the extensionists had average EI score, training programs can be organized to raise it to a
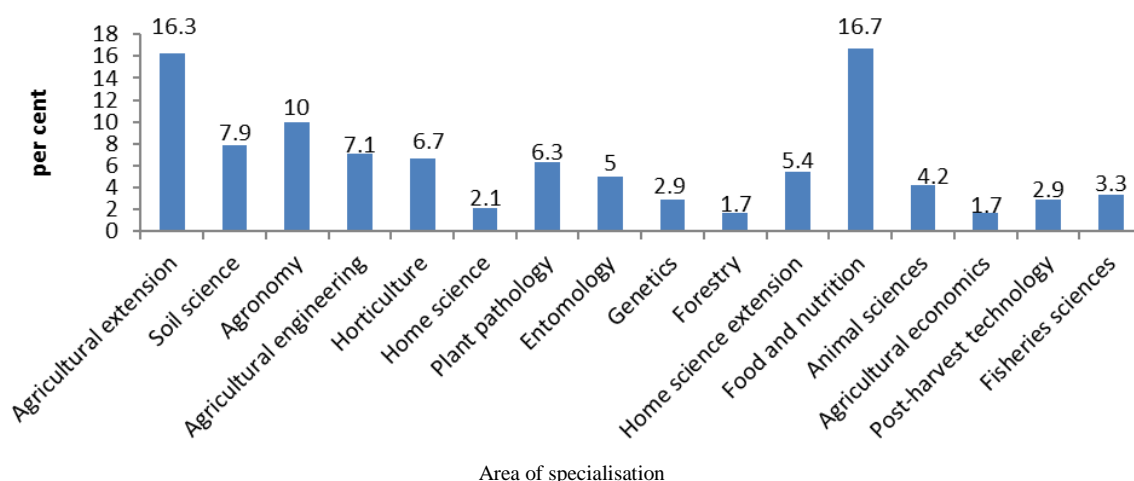

Figure 2. Area of specialization of extensionists.

Table 1. Personal profile of the extensionists (n= 240).

Variable	Category	Frequency	Percent
	< 35	48	17.5
Age	35-50	150	62.5
	>50	52	20
Gender	Male	157	65.4
	Female	83	34.6
	1-10 years	81	33.8
Experience	11-21 years	93	38.8
	> 21 years	66	27.4
Education	Post-graduation	75	31.3
	Ph.D.	165	68.7
Position	Subject matter specialists	177	73.8
	Programme coordinator	63	26.3
	ICAR	69	28.8
Type of KVK	SAU	129	53.8
	NGO	42	17.5

Table 2. Categories of extensionists based on Emotional Intelligence score.

Emotional intelligence category	Number of respondents(n= 240)
Very low	11
Low	77
Average	103
High	41
Very high	8

higher level.

Mean and standard deviation was computed for the total respondents and for each zone separately (Table 3). The total mean of EI score for all the respondents was 113.7 with standard deviation of 8.99. This showed that, overall, the respondents were in the average category of Emotional Intelligence. Zone wise analysis depicted that extensionists of Zone I (mean score 116.4), Zone IV (mean score 103.5) and Zone VII (115.9) were in the "Average" category, while respondents of Zone II were found in the "Low" category on EI. As the extension professionals are directly catering to the need of farming community and dealing with the multi-stakeholders in an era of pluralistic extension approach, high emotional intelligence is a must for them. Emotional Intelligence not only enhances the ability of the human resource but also create professional relations among individuals and groups within the organization. Emotional Intelligence has

also emerged as the most important new competency required, being successful in present changing agricultural scenario (Lakai, 2010).

A comparison among the four selected zones of Krishi Vigyan Kendra was also carried out to know whether any significant difference exists in the Emotional Intelligence among the respondents of these Zones (Table 5). Kruskal-Wallis test (Chi-square= 27.028, df= 3, P< 0.01) was used for the comparison among the selected Krishi Vigyan Kendra Zones (Table 4). Since the p value was found to be less than 0.01, it could be inferred that there existed significant difference among the extensionists selected zones. Zone I had the highest mean rank of 139.43 while Zone VII had the second highest mean rank of 139.35 followed by Zone IV having mean rank of 120.45. Zone II had the lowest mean rank of 82.37 among the selected Zones. This result was comparable with the result shown by Singh and Jha (2012), in which significant difference existed between the different faculties of teachers.

Table 3. Zone-wise analysis of extensionists on emotional intelligence category.

| Respondents | n | Emotional intelligence | | Categories |
		Mean	Std deviation	
Zone I	60	116.4	9.76	Average
Zone II	60	103.5	8.87	Low
Zone IV	60	108.8	8.35	Average
Zone VII	60	115.9	6.98	Average
Total respondents	240	113.7	8.99	Average

Table 4. Kruskal Wallis test statistics for emotional intelligence of extensionists (n= 240).

Category	Value
Chi-Square	27.028
df	3
Asymp Sig	< 0.01

Table 5. Comparison of emotional intelligence of extensionists among the selected zones of Krishi Vigyan Kendras based on mean ranks as per Kruskal Wallis test.

Zones	n	Mean rank
Zone I	60	139.43
Zone II	60	82.37
Zone IV	60	120.85
Zone VII	60	139.35
Total	240	

Sabitha (2011) found that there was significant difference among the managers of five different industrial states in India. It is evident that though all the selected zones of KVK had high Emotional Intelligence but they significantly differed from one another. Differences in EI may be due to the demographic and social factors of these zones. As these zones consist of different states of India, which have different culture, ethnicity, and social norms, it may have affected their EI. The mean rank of Zone I was highest among the selected zones of KVK's. The probable reason might be that this zone consists of many states including Jammu and Kashmir.

Mapping of the present level of competencies possessed

The perceptions of the extensionists regarding the competencies they possessed ranged from a mean score of 2.182 to 3.846 (Table 6). The competencies possessed by the respondents at the highest level in the seven category-wise competencies were: adequate technical knowledge in the subject area (3.84), self-motivation, determination and dedication (3.56), sensitive to the feelings and wishes of the farmers (3.54), maintained relationship with farmers (3.50), and in laying out on-farm trials (3.49). In terms of mean score, the lowest competencies possessed by them in the seven categories were curriculum development (2.18), assessing training need of the farmers (2.481), and applying persuasive style to inform the clientele (2.526). McClure *et al*. (2012) also showed that the extension professionals had the highest professional development need in selecting the most appropriate needs assessment method. With standard deviations of all the levels in almost all categories found ≤ 1, there are fewer variations in the perceptions of the

Table 6. Statements of competency rank orders, mean and standard deviation of extensionists of various categories (n= 240).

	Competency categories	Mean	Std dev	Rank
I	**Knowledge**			
1	Understand KVK mandates and objectives	3.35	0.61	II
2	Awareness of the current government policies	3.15	0.70	III
3	Good understanding of district, people and culture	2.94	0.83	IV
4	Adequate technical knowledge in the subject area	3.84	0.86	I
5	Awareness to approaches towards adult education	2.73	0.96	V
II	**Personal skills**			
2.1	**Organization and planning**			
6	Setting objectives for an extension program	2.82	0.70	XII
7	Coordinating work schedules with other peer staff	3.11	0.75	III
8	Assessing training needs of the farmers	2.48	0.70	XV
9	Evaluating extension program	2.77	0.73	XIII
10	Designing and conduct farmers 'Training	3.02	0.73	VI
11	Involving farmers in program planning	3.07	0.71	IV
12	Dealing effectively with field /extension problems	3.01	0.64	VII
13	Planning and conducting survey in operational area	2.91	0.66	X
14	Designing a work plan for extension activity	2.97	0.71	VIII
15	Curriculum development	2.18	0.82	XVI
16	Manage time effectively	3.06	0.74	V
17	Conduct situational analysis of extension program	2.68	0.74	XIV
18	Use of PRA tools	2.94	0.76	IX
19	Laying out frontline demonstration	3.40	0.65	II
20	Laying out on-farm trial	3.49	0.66	I
21	Identify appropriate educational delivery technology	2.89	0.68	XI
2.2	**Communication**			
22	Delivering radio talks	2.88	0.68	VIII
23	Establishing rapport with the farmers	3.17	0.72	I
24	Ability to prepare visual aids to help deliver information	2.96	0.71	VII
25	Ability to use computer (internet) and PowerPoint presentation	2.53	0.75	X
26	Ability to convey extension messages effectively	3.07	0.69	III
27	Ability to present seminar	3.16	0.66	II
28	Ability to persuade farmers to adopt technologies	2.98	0.67	VI
29	Write effectively for target	2.78	0.88	IX
30	Providing feedback of researchable problems to Researchers	3.04	0.72	IV
31	Delivering TV talks	3.00	0.65	V
2.3	**Analysis and diagnosis**			
32	Using local leaders to influence farmers to change	2.88	0.72	III
33	Analysing traditional culture and its effect on change	2.63	0.75	VI
34	Analysing how change in social status affect farmers	2.81	0.67	IV
35	Finding ways to encourage farmers to adopt innovations	3.15	0.63	I
36	Identifying problems of farmers and why they arise	2.97	0.70	II
37	Recognizing learning differences in age groups	2.53	0.81	V
2.4	**Leadership qualities**			
38	Visualizing future extension prospects and problems	2.79	0.84	V
39	Possess self-motivation, determination & dedication	3.56	0.52	I
40	Lead farmers	3.10	0.67	III
41	See both sides of arguments in question	3.08	0.73	IV
42	Provide leadership in program planning and Execution	3.15	0.76	II
43	Applying persuasive style to inform clientele	2.53	0.85	VI
2.5	**Initiative**			
44	Introducing new methods in extension work	2.83	0.81	II
45	Implementing extension activities without supervised	2.95	0.84	I
46	Confidence to work without guidance and support	2.83	0.74	III
III	**Personal attributes**			
47	Sensitive to the feelings and wishes of farmers	3.54	0.59	I
48	Maintaining relationship with farmer	3.50	0.56	II
49	Confidence in own abilities to meet set objective	3.26	0.64	V
50	Commitment to extension work	3.48	0.61	III
51	Reliability in implementing extension work	3.36	0.67	IV
52	Sure of what is being done everyday	3.25	0.70	VI

respondents with regard to the competency levels possessed by the respondents.

In the knowledge category, "Adequate technical knowledge in the subject area (mean 3.84)" was in the highest rank, followed by "understanding of KVK mandates and objectives" (mean 3.35) and "Awareness of the current government policies (mean 3.15)". Majority (69%) of the extension professionals had PhD. as their highest degree due to which they perceived themselves as having good knowledge of the subject. Lakai (2012) also pointed out that the highest mean value was reported for the "Technical/Subject Matter Expertise" competency category, but was in contrast with the study of Rigyal and Wangsamun (2011) in Bhutan. "Awareness to approaches towards adult education (mean 2.73)" was accorded the lowest rank because the subject matter specialists working in Krishi Vigyan Kendra were from different specialization and not only from extension. This result contradicts the findings of Al-Zahrani *et al.* (2017) where it was indicated that the extension workers in Saudi Arabia had the highest competency and least training need in the area of adult education. In personal skill, sub category Organization and Planning, "Laying out on-farm trial (mean 3.49)" was accorded the first rank while "Laying out Frontline demonstration (mean 3.40)" was the second. As these are mandates of KVK that are frequently carried out, the respondents perceived them possessing in highest level. "Curriculum development (mean 2.18)" and "Assessing training needs of the farmers (mean 2.48)" were given the lowest rank. Curriculum development needs critical planning and work. The respondents perceived themselves having difficulty in developing the curriculum for various training programs. The result mirrored the findings of Al-Zahrani *et al.* (2017). In communication sub category, the highest rank was given to "establishing rapport with the farmers (mean 3.17)" and "Ability to present seminar (mean 3.16)". Rapport building is the first step in the extension programme and

extension professionals working in field generally develops good rapport with the farmers. The respondents accorded low rank in possession of the competency to use information and communication technology. Man *et al.* (2016) also indicated that ability to use network technology and ability to use ICT were below average for the extension agents. Analysis and diagnosis sub category had "Finding ways to encourage farmers to adopt innovations (mean 3.15)" and "Identifying problems of farmers and why they arise (mean 2.97)" had higher ranks among the respondents. Innovations are an important part of agricultural research and development. Extension professionals in Krishi Vigyan Kendra have to demonstrate these technologies and subsequently look after their adoption. Encouraging farmers becomes an essential component in the adoption of these technologies. In the sub category "Leadership qualities", the extensionists perceived themselves as possessing high self-motivation, determination and dedication. Working in the field condition requires lot of determination and motivation, which has been exhibited by the extension professionals. Lowest rank was for "Applying persuasive style to inform clientele (mean 2.53)" due to the disbelief among the extension professionals in persuasive technique. They were of the opinion that the farmers should adopt the technology due to the inherent advantage of the technology. **"**Implementing extension activities without supervision (mean 2.95)" was accorded the first rank in the sub category of Initiative. Generally, the subject matter specialists have to carry out the programs on their own, as a result they perceive in possessing it in highest rank. "Personal attributes" sub category showed that the extensionists were sensitive to the feelings and wishes of farmers and maintained relationship with farmer. The role of the extension professionals is mainly dealing with farmers and having proper relation with them. These qualities enable them to carry out their function effectively.

This is indicative of the value people place on relationship building. It is also an indication that respondents should place much emphasis on relating well with the farmers and other stakeholders if they have to make an impact in empowering people and communities through the extension services.

A zone-wise analysis of the competencies was carried out using correspondence analysis. Farkas and Nagy (2008) also used correspondence analysis approach to study the technical skills and the related knowledge of Budapest Tech graduates. Correspondence analysis provides a biplot graph that is a visual display of each of the values in the dataset plotted with their axes. For correspondence analysis, the main interpretative tool is a plot of the scores in each dimension. A biplot is a scatterplot of the coordinates in, this case, dimension one, and dimension two, for both competency categories and its level of possessions. It is called a biplot because all categories, for both variables, go on the same plot. As both variables can be seen in terms of the latent variables, any proximity between categories of either variable on the biplot is interpretable as a substantive proximity. From the chart, one may readily determine which are the most possessed competencies, how the relative magnitudes look like for the distances between the competencies, and what sort of associations are among these competencies.

Figures 3 to 7 show a zone-wise and overall biplot of competency level possessed by the respondents on 52 competency statements using correspondence analysis. In all the biplots (Figures 3 to 7), competency possessions were quite regularly grouped together i.e., most of the 4 (high level), 3 (medium level), and 2 (low level) were grouped near the middle or right or left of the center, while 5 (very high) and 1 (very low) were scattered irregularly. This means that most of the competency statements are clustered at the center around the level of possession between low to high. Kokol (2012) also showed that the results for both

management and nursing students' competencies were near the center and clustered close together i.e. competency perceptions were quite regularly grouped together. This could be probably due to the reason that the respondents were of the opinion that there was always a chance to improve their competencies. None of the competency possessed by the respondents was close to very high or very low. It evident from Figure 5, for respondents of Zone IV, most of the competencies clustered together in the middle, but statement number 4, i.e. "adequate technical knowledge in the subject area", is near the very high. While statement number 15 representing curriculum development is close to very low. Figure 4 shows the competency map of extensionists of Zone II. While low to high range showed maximum concentration, statement 52, which is "sure about what is being done every day", is between high to low. For extensionists of Zone I, most of the competencies in the personal qualities category like "maintaining relationship with the farmers", "sensitive to the feeling and wishes of the farmer" were near the high and very high range. This result also corresponds to the highest emotional intelligence mean score for respondents of Zone I as compared to other zones. Biplot map of Zone VII depicted that all the competencies were between low to medium range. Farkas (2007), in his study of Competency Profiling of graduate students, also depicted that attribute and contribution clustered in the middle (low to high) of the biplot graph. As the competencies of the respondents were clustered around low to high, there is a great scope to enhance their competencies by providing proper training to the extensionists.

Table 7 represents the correlation matrix of competency with Emotional Intelligence sub parameters. There is evidence of a significant and strong correlation between the overall competencies and the overall EI
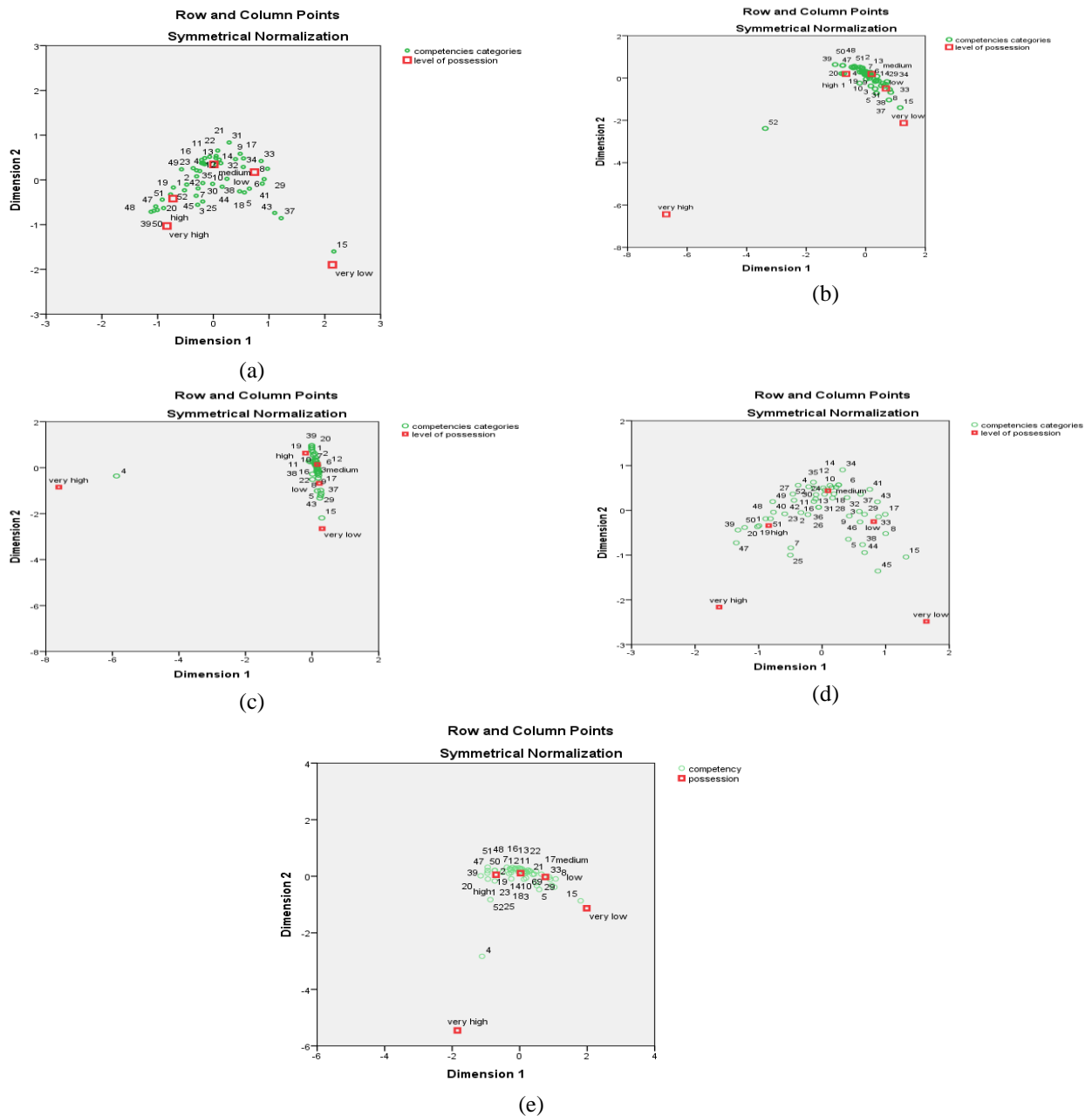
Figure 3. Biplot graph showing level of competencies possessed and competencies statements of extensionists of (a) Zone I**, (b)** Zone II**, (c)** Zone IV**(d)** Zone VII and (e) Biplot graph showing level of competencies possessed and competencies statements by extensionists.

competencies (Spearman's rho= 0.408, P< 0.01). Overall, competency was found to be significant for self-awareness (Spearman's rho= 0.364, P< 0.05), empathy (Spearman's rho= 0.382, P< 0.01), self-motivation (Spearman's rho= 0.350, P< 0.01), emotional stability (Spearman's rho= 0.352,

P< 0.01), managing relation(Spearman's rho= 0.243, P< 0.01), integrity (Spearman's rho= 0.227, P< 0.01), self-development (Spearman's rho= 0.183, P< 0.01), value orientation (Spearman's rho= 0.182, P< 0.001) and commitment (Spearman's rho= 0.408, P< 0.01). There was a significant

809

Table 7. Correlation matrix between emotional intelligence and total competency.

Emotional intelligence sub scale	Competency Spearman correlation coefficient (rho)
Self-awareness	0.364**
Empathy	0.382**
Self-motivation	0.350**
Emotional stability	0.352**
Managing relation	0.243**
integrity	0.227**
Self-development	0.183**
Value orientation	0.184**
Commitment	0.182**
Altruistic behavior	0.077
Total Emotional Intelligence	0.408**

** Significance at one per cent level.

correlation between total competency and all the sub scales of Emotional Intelligence, except altruistic behavior. Ponmozhi and Nellaiyapen (2014) also indicated a significant positive relationship between Emotional Intelligence sub scales and teaching competencies of teachers. This means that those extension professionals who felt more competence in their profession were the ones possessing higher levels of EI. There is a positive correlation between the total EI, factors of EI scores, and overall performance (Mishra and Mohapatra, 2010). These findings show that the increase in EI leads to the enhancement of competency. The positive significant relationship between EI and extensionists' overall competencies is due to the nature of their work.

CONCLUSIONS

Competency mapping is a viable tool that can be utilized to prepare the current and future workforce and retain skilled incumbent workers to meet the job requirements and other needs of employers. The study on competency mapping consisted of two critical dimension i.e. Emotional Intelligence (EI) and professional competencies. The demographic profile of the respondents indicated that about 62 per

cent of the respondents were in the age category of 35 to 50 years. Therefore, they were in their mid-career. This is the best time for providing the mid-career advancement training for them. Regarding the mapping of the EI competencies, the result of the study showed that the extensionists had average level of EI, which can be enhanced further. Since the extension professionals have to be in constant contact with the farmers and other stakeholders, emotional intelligence plays an important part in building relations and understanding the need of the clienteles. However, emotional intelligence is not given due importance in agriculture extension, so, awareness campaign should be organized and extension organizations should incorporate regular training sessions into employee development curriculum for enhancing these capabilities of the professionals. Specific attention should be given to developing strengths in interpersonal skills. Emotional intelligence scores should be evaluated periodically throughout their tenure to determine if a person's scores are malleable and change over time. Improvement plans should be established, implemented, and supported for extension personnel.

The study of the competencies possessed by them indicated that the extension professionals possessed the least

competencies in curriculum development (2.18), assessing training need of the farmers (2.481), and applying persuasive style to inform the clientele (2.526). Based on the findings of the study, it is recommended that good quality training programs should be designed and organized that target the weak areas like curriculum development and enhance the competence along with upgrading the skills of extension workers. These training programmes will not only help in upgrading their skills, but also will help in their promotions and rewards. The biplot of the competency categories revealed that most of the competencies were clustered around medium to high level. Mapping of the competency gives the clear picture of the area where further improvement is needed. The value of competency mapping and identifying emotional strengths is that not only the extension organizations can organize in-service training programs but also they can purposefully screen employees and hire people with specific competencies. Competency mapping will also be useful for the organization in assigning the specific task to the extension professional having a particular competency. The required competencies and EI can be incorporated in the extension curriculum at the graduate and post-graduate levels to meet the need of the future workforce in view of changing agricultural situations. Experts agree that the competency mapping process does not fit the one-size-fits-all formula. It has to be specific to the user organization. Thus, policy makers can use competency mapping for each organization engaged in providing extension services to frame suitable skill development strategies for them.

REFERENCES

1. Adesope, O., Asiabaka, C. and Agumagu, A. 2007. Effect of personal characteristics of extension managers and supervisors on information technology needs in the Niger Delta area of Nigeria. *IJEDICT* **3**(**2**): 4-15.

2. Airemen, S. A. 2005. Training Needs of Extension Staff in Agriculture: A Case Study of Edo State Agricultural Development Programme. Unpublished BSc. Thesis, Department of Agricultural Economics and Extension, Faculty of Agriculture, University of Benin, Benin-City.

3. Al-Zahrani, K. H., Aldosari, F. O., Baig, M. B., Shalaby, M. Y. and Straquadine, G. 2017. Assessing the Competencies and Training Needs of Agricultural Extension Workers in Saudi Arabia. *J. Agr. Sci. Tech.*, **19(1)**: 33-46.

4. Benzécri, J. P. 1992. *Correspondence Analysis Handbook.* Marcel Dekker, New York.

5. Buckingham, M. and Clifton, D. O. 2001. *Now, Discover Your Strengths*. Free Press, New York.

6. Farkas, A. 2007. On the Competency Profiles of Graduates. *Proceedings of the 5th International Conference on Management, Enterprise and Benchmarking,* June 1-2, 2007, Budapest, Hungary, PP. 153-166.

7. Farkas, A. and Nagy, V. 2008. Student Assessment of Desirable Technical Skills: A Correspondence Analysis Approach. *APH*, **5(2):** 43-57.

8. Garrett, S. 2007. Competency Mapping: What Is It and How It Can Be Done by Individuals. *Career. Plan. Adult. Dev. Netw. J*, **18(4)**: 43–59.

9. Hoffmann, V. 2014. Governmental Extension Services, Their Generic Problems and Potential Solutions. *Innovations in Extension and Advisory Services: International Conference Proceeding,* Nairobi, PP. 15-18. Retrieved November 25, 2015 from: http://knowledge.cta.int/en/Dossiers/CTA-and-ST/Selected-publications/Governmental-Extension-Services-their-Generic-Problems-andPotential-Solutions.

10. Hyde, A., Pethe, S. and Dhar, U. 2001. *Emotional Intelligence Scale*. Vedant Publication, Lucknow.

11. Issahaku, A. 2014. Perceived Competencies of Agriculture Extension Workers in Extension Services Delivery in Northern Region of Ghana: Perspective from Literature. *Dev. Countries Stud.,* **4(15):** 107-114.

12. Khalil, A. H. O., Ismail, M., Suandi, T. and Silong, A. D. 2009. Human Resource Development Competencies as Predictors of Agricultural Extension Agents' Performance in Yemen. *HRDI*, **12(4):** 429-447.

13. Kokol P. 2012. Exploring ICT Competencies in a Bologna Masters Level Nursing Program. *OJNI*, **7(7):**1-4.

14. Lakai, D. 2010. Identification of Competencies Needed by the Extension Agents in North Carolina Cooperative Extension, Master Thesis, North Carolina State University. Available at: http://repository.lib.ncsu.edu/ir/bitstream/18 40.16/ 6495/1/etd.pdf

15. Man, N. B., Saleh, J. M., Hassan, S., Zidane, F. H., Nawi, N. M. and Umar, S. 2016. Training Needs of Agricultural Extension Agents Using Borich Needs Assessment Model. *AJAEES*, **13(1):** 1-19.

16. McClure, M. M., Fuhrman, N. E., and Morgan, A. C. 2012. Program Evaluation Competencies of Extension Professionals: Implications for Continuing Professional Development. *J. Agric. Edu.*, **53(4):** 85–97

17. Mishra, P. S., and Mohapatra, A. D. 2010. Relevance of Emotional Intelligence for Effective Job Performance: An Empirical Study. *Vikalpa*, **35(1):** 53-61.

18. Moore, L. L., and Rudd, R. D. 2003. Exploring Leadership Competencies in Extension. *Paper Presented at the Association of Leadership Educators Annual Conference*, Anchorage, AK. Retrieved from: http://www.leadershipeducators.org/Archives/2003 /moore.pdf

19. Movahedi R. and Nagel, U. J. 2012. Identifying Required Competencies for the Agricultural Extension and Education Undergraduates. *J. Agr. Sci. Tech.,* **14:** 727-742.

20. Mulder, M. 2014. Conceptions of Professional Competence. In: "*International Handbook on Research into Professional and Practice-Based Learning*", (Eds.): Billett, S., Harteis, C. and Gruber, H. Springer, Dordrecht.

21. Oakley, P., and Garforth, C. 1985. *Guide to Extension Training* (No. 11). Food and Agriculture Org., Rome.

22. Ponmozhi, D., and Nellaiyapen, N.O. 2014. "How Does Student Teachers Emotional Intelligence Relate to Their Teaching Competencies?. *J. Res. Dev. Edu.,* **4(6):** 93-96.

23. Rani, M. S. 2015. Emotional Intelligence: A model for Effective Leadership, Competency and Career Growth. *Ind. J. Sci. Tech.*, **8(S4):** 240-246.

24. Rigyal, S., and Wangsamun, C. 2011. Perceived Professional Competency Level and Job Performance of Block Level Extension Agent in Bhutan. *J. Int. Agri. Ext. Edu.,* **18(1):** 87-103.

25. Sabitha, R. K. 2011. Emotional Intelligence in Small Scale Industries of Puducherry State: An Empirical Analysis. *TJC,* **3(1):**22-32.

26. Singh, I. and Jha, A. 2012. Teacher Effectiveness in Relation to Emotional Intelligence among Medical and Engineering Faculty Members. *Eur. J. Psychol.*, **8(4):** 667-685.

27. Singh, R. 2015. An Inaugural Speech at the Inter Session Meeting of the Consultative Committee at Ministry of Agriculture, New Delhi.

28. Stone, B. B. 1997. A System's Approach to Professional Development. *JOE,* [On-Line], **35(2):** 2TOT2. Retrieved from: http://www.joe.org/joe/1997april/tt2.php

29. Swanson, R. A. 1996. Analysis for Improving Performance: Tools for Diagnosing Organizations and Documenting Workplace Expertise. San Francisco, Berret Kpehler, CA.

30. United States Agency for International Development, USAID. 2002. *Rural Extension and Advisory Services*. USAID Agriculture.

31. Villard, J. A., and Earnest, G. W. 2006. Relationship between Job Satisfaction of County Extension Staff and the Level of Emotional Intelligence of County Extension Directors. *J. Leadersh. Edu.,* **5(3):**191-214.

ترسیم نمودار صلاحیت مروجان شاغل در مراکز علمی کشاورزی (Krishi, Vigyan Kendra's) در هندوستان

ج. روحیت، پ. سینگ، س. ساتیاپریا، و. سانگتا، و ن. و. کامبهار

چکیده

از شمار محرک هایی که به خود کفایی هند در تولید محصولات غذایی کمک کرد سیاست ها، پژوهش، و حمایتهای ترویجی بود. امروزه، به منظور ایفای نقش بهتر در توسعه کشاورزی، مروجان و مسولان مشاوره نیازمند ظرفیت های جدیدی برای مقابله با چالش های کنونی هستند. پژوهش حاضر در چهار مرکز علمی کشاورزی (Krishi, Vigyan, Kendra, KVK) مربوط به شورای تحقیقات کشاورزی هند با نمونه برداری ساده تصادفی و بدون جابجایی اجرا شد تا سطح کنونی صلاحیت مروجان ترسیم و تعیین شود. از هر منطقه بیستKVK به طور تصادفی انتخاب شد و از هرکدام سه مروج با روش ساده تصادفی برگزیده شد. تعداد کل نمونه ها ۲۴۰ بود. ترسیم صلاحیت در دو قسمت بررسی شد: یکی مربوط به هوشمندی احساسی (EI, emotional intelligence) و دیگری صلاحیت حرفه ای (PC، competency professional). سپس، با استفاده از روش تجزیه تناظری (Correspondence analysis) صلاحیت حرفه ای مروجان ترسیم شد. بخش نخست نمودارسازی که به EIمربوط بود نشان داد که سطح هوشمندی احساسی پاسخ دهندگان به پرسشنامه در حد میانگین بود. همچنین، تجزیه وتحلیل صلاحیت ها نشان داد که گزاره های صلاحیت برای مروجان در بخش مرکزی نمودار بایپلات (biplot) تجمع داشت و حاکی از صلاحیت حرفه ای آنها در سطح متوسط بود. از این رو، این نتایج فرصتی برای سیاستگزاران فراهم میآورد تا راه بردهای مناسب را برای ارتقای این صلاحیت ها در مروجان طراحی نمایند تا آن ها در شغل خود کارآمد و موثر باشند.