Teaching Method Competencies Used by Extensionists in Transferring the Good Agricultural Practices to Malaysian Farmers

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Abstract: The purpose of this study is to determine level of teaching method competency and extensionists’ job performance. Furthermore this study aimed to determine relationship between teaching method competencies and extensionists’ job performance in relation to the Good Agricultural Practice (GAP) among Malaysian extensionists at the Department of Agriculture (DOA). This study focused on extensionists transferring the GAP to the farmers using variety of extension teaching methods. The study employed stratified random sampling technique. Samples are chosen with a technique called proportional sample allocation. The sample consisted of 210 extensionists from the Department of Agriculture in four states of Malaysia. The data were analyzed using descriptive statistics and Pearson correlation analysis. Extensionists reported high level of teaching methods competency and job performance. The findings supported a positive relationship between teaching method competencies and job performance.

Key words: teaching method, competency, job performance. Good Agricultural Practices

INTRODUCTION

Good Agricultural Practice in Malaysia:

Agriculture has played significant role in the development of Malaysia. This country is the world’s leading palm oil producer and the third largest producer of rubber. Agriculture continues to make a significant contribution to the national economy (FAO, 2004). However, in terms of food production the country has yet to reach self sufficiency. For example, in the case of rice, a staple, Malaysia still imports 30 percent of its requirement (Dawe, 2004). Majority of the farmers in the food sector are smallholders with uneconomic-sized farms, high cost of production, low input, low yield and poor quality produce. Hence, the government launched several Good Agricultural Practice (GAP) schemes in order to improve the quality of produce in agricultural sector. GAP aims to encourage production in the food sector for export and to develop market for agricultural produce.

Good agricultural practice is an integrated system to manage the hazards associated with the elements of land, input, process and output of agricultural production. Good agriculture practices seek to achieve productivity, sustainability, quality and safe produce in a socially acceptable manner (Department of Agriculture Malaysia, 2007). At present, GAP is not accepted and properly practiced by the majority of the clients in the Malaysian smallholders sector (Norma Othman, 2006). For that purpose the mission of the Department of Agriculture (DOA) currently includes provision for extension services to the farmers in relation to GAP. Taking cognizance of these challenges a certification scheme audited to GAP standards was introduced and implemented in the country. The first GAP scheme for food crops introduced in Malaysia was the Malaysian Farm Certification Scheme for Good Agricultural Practice (Skim Amalan Ladang Baik Malaysia) with the acronym SALM. SALM was developed by the Department of Agriculture, Ministry of Agriculture and Agro-based Industry (Norma Othman, 2006). The SALM standard on Good Agricultural Practice is a document that set out rules of agricultural productions, which must be achieved and which are encouraged among clients (Department of Agriculture Malaysia, 2007). SALM was launched on 31 January 2002 by the DOA as a national program implemented to certify farms which adopt Good Agricultural Practices (GAP). A GAP certification warrants the quality of products and therefore acknowledges the agriculture produce to be safe and...
suitable for consumption. SALM certificates are awarded to farms that adhere to stipulated standards. The DOA officers visit and assess farms wishing to attain SALM certification. Certified farms can then affix seals of quality on their farm produce. In general, DOA officers will assist farmers in achieving the standards of GAP through extension services. This study focuses on extensionists who provide extension services to farmers in relation to SALM certification program.

**Extension Teaching Methods Competency and Job Performance:**

The GAP scheme involves the extension of good agricultural practices to farmers seeking certification. As such, extensionists have to organize educational activities to transfer the ideas of GAP to the farmers. The key issue is the type of teaching methods used in conveying information to the farmers. Extension educational activities include the dissemination of information to farmers through newsletters, newspaper articles, television and radio broadcasts, and the utilization of other media. Printed materials such as magazines, bulletins, fact sheets, and books, all contribute to the educational process. Since extension is a process of getting useful information to farmers to help them acquire knowledge, skill and attitude and to implement this information effectively, extensionists therefore should be competent in using variety of teaching methods as a tool in training clients. Gaforth (1993) classified extension teaching methods into three classes: (a) Individual method (b) Group method (c) Mass method. According to Farinde (1991) group and individual teaching methods were mostly employed in teaching farmers improved agricultural practices and to create awareness of new farm technologies. It is imperative that extensionists cannot change the knowledge, skill and attitude of the farmers without employing appropriate extension teaching methods. Ogunwale (1991) stressed that effective extensionists must not only rely on variety of extension teaching methods to do their job well, they must also know where and how to use them (cited by Okunade, 2007). According to Tuttle, Lindner and Dooley (2004) developing countries have not prepared extensionists in extension teaching methods competencies. Thus extensionists must acquire competency on this area to be able to select appropriate methods in the process of technology transfer. Additionally Okunade (2007) contended that extensionists must have adequate knowledge of the characteristics of each of the extension teaching methods as well as know the characteristics of the farmers in the process of technology transfer. These will enable them to employ appropriate methods for appropriate farmers group. According to Miller and Cox (2006) many farmers in developing countries are small scale and slow in adopting technology. Extensionists need to develop skills in extension teaching methods to better communicate their message. According to Miller and Cox, one of the most effective ways to speed up the technology transfer process is demonstrations and field days. This is especially true for those technologies that are costly, complex, or require a major shift in the operation. Belay and Abebaw (2004) pointed out that extension teaching methods such as field demonstrations, field days and farm visits are expected to enhance adoption of new technologies through creation of awareness, exchange of ideas and skill acquisition. 

The SALM program is being conducted through non-formal and informal approaches to the clients. The informal approach is carried out at farm level by extensionists. Malaysian extensionists use a variety of teaching methods such as field visit tour, result demonstration, group discussion and so on. The non-formal approach takes the form of non-formal training at the training centers. Training courses are of short duration, usually ranging from one to six days (Normah Othman, 2006). The success of this newly introduced program is largely dependent on the extensionists’ competency and their performance. Past studies have indicated that there is a relationship between competency and performance. In the case of district extensionists in the Mekong Delta Vietnam, extensionists’ social skills were found the strongest contributor to extensionists’ performance. Teaching methods skills and program implementation skills were moderately correlated to the extensionists’ performance (Thach et al., 2008). Similarly finding of the study conducted by Khalil et al. (2008) in Yemen have confirmed a significant positive relationship between extension teaching methods competency and extensionists’ job performance.

**Competency:**

The concept of competency is not new to extension. Many studies have been conducted to identify competency needed by extensionists. Cooper and Graham (2001) identified 57 core competencies that extensionists need for success in Arkansas such as involving people in program planning, teach decision making skills to clients, develop volunteer leader, ability to work with key leaders, people skills, ability to lead, communication skills, and being a team player. Liles and Mustian (2004) identified seven core competencies as critical to successful performance of North Carolina Cooperative Extension (NCCE) employees and volunteers as: knowledge of the organization, technical subject matter expertise, Programming, professionalism, communications, human relations, and leadership. Similarly, the FAO (2000) have also outlined the
goal of extension, as the client’s self development, in which extensionists develop an orientation towards the participatory development process and not technical development alone. Extensionists need to have a clear understanding of a variety of extension methods, a deep conceptual understanding of learning process, the creativity to invent adapted methods, the skill to communicate with others, identifying effective linkages among clients, the technical knowledge necessary for advising clients on topics related to solving their farming problems, knowledge and understanding of the management and organization of extension. Taking cognizance of the above list of competencies needed by extensionists, this paper focuses on extension teaching methods competency which extensionists should acquire to perform their job well.

Models of Job Performance:

According to Binning and Barrett (1989) there are several different dimensions of performance in terms of scope and content. Four types of models of job performance are classified (as cited by Viswesvaran & Ones, 2000):

1. Stand-alone, specific dimensions developed for specific job
2. Stand-alone, specific dimensions developed to apply across jobs
3. Dimensions developed as a set that are applicable to specific occupations
4. Dimensions developed as a set that are applicable across jobs.

The last model of job performance (Dimensions Application across Occupations) which is deemed relevant and useful for this study is discussed. According to this performance model, the dimensions comprise areas of responsibility and job-related performance expectations. The performance dimensions describe the behavior or results that an employee is expected to exhibit when they are successfully performing (Viswesvaran & Ones, 2000). Campbell (1990) describes the general latent structure of job performance in terms of eight dimensions. The eight factors are: job- specific task proficiency, non-job-specific task proficiency, written and oral communication, demonstrating effort, maintaining personal discipline, facilitating peer and team performance, supervision, and management or administration. Consequently, Viswesvaran (1993) listed ten dimensions: overall job performance, job performance or productivity (quantity), effort, job knowledge, interpersonal competence, administrative competence, quality of work, communication competence, leadership, and compliance with rules (cited by Anderson, Ones, Sinangil & Viswesvaran, 2001). In addition, Kane (1986) contended that every job function could be assessed in terms of six dimensions. The six dimensions are: quality, quantity, timeliness, cost-effectiveness, need for supervision, and interpersonal impact. Some of these dimensions may not be relevant to all job activities. With, Burke, Barrick and Mount (2002) identified 11 dimensions that include quality of work, quantity of work, initiative, and customer communication, planning organizational commitment, job knowledge, allocation, interpersonal orientation, self development and account management.

Job performance has to be measured on multiple dimensions such as quality and quantity. It’s argued that different dimension may have different levels of impact on organizations (Cheng, Heng Li and Fox, 2007). Cheng et al. (2007) introduced 15 dimension of job performance such as: Teamwork, organizational commitment, adaptability/ flexibility, Analytical Skills and problem solving, communication Skills, compliance / quality of service, creativity and innovation, customer Service, initiative, interpersonal skills, job knowledge and technical competency, mission, business and strategic plan, time Management, work habits. Ezell (2005) introduced six dimensions for performance out put (sometimes refer to productivity) or quantity of service delivered without regard to result. Six dimensions are employee satisfaction, clients’ satisfaction, client impact, service impact, service quality, resource acquisition and domain maintenance.

Based on the role performance theory, performance management system requires accounting for multiple roles that employee can enact at work in order to measure the employee performance. Welbourn, Johnson and Erez (1997) developed a model of Role Based Performance Scale (RBPS model) that combines five potentials roles. These roles are job roles, career role, team working role, innovative role, and organizational member role. Job role consist of four dimensions namely: Quality of work out put, quantity of work output, accuracy of work and customer service provided. Career role refer to the necessary skills to progress through one’s organization, competency needed, seeking out career opportunities. Team working role refer to ability to work with co workers and team member. Innovative role refers to creativity and innovation in one’s job and organization as whole. Organization member role refer to doing things to promote the organization, help others when its not part of employee’s job. Welbourn et al. (1997) contended that these five dimensions are not only relevant but also they have theoretical support for their inclusion in a performance measure. There may be additional and more general performance dimensions that cross over multiple areas of job responsibility and...
are considered essential for success in all areas of a job’s responsibilities. From wide varieties of dimensions some of those dimensions based on the specific needs of extensionists’ position were selected and applied to this study.

**Competency and Performance:**

Competency has been defined as a cluster of related knowledge, skills and attitudes that correlates with effective job performance. Competency can be measured and evaluated, and that can be improved through training and development (Berge & Verneil, 2002).

Similarly Parry (1998) pointed out that competency is correlated with job performance that can be measured and enhanced through training. Hoffman (1999) stated the purpose of competencies as to improve human performance at work. Dhanakumars (2001) and Linders (2001) reported that job performance and extension competencies are positively related. According to Heffernan and Flood (2000) there is a positive relationship between competencies and performance. Similarly Armstrong (2006) stated that competencies are factors that contribute to high levels of individual and organizational performance.

Good agricultural practice is important to solve the food crisis in Malaysia. Transfer of GAP by competent extensionists is important to ensure high productivity. Previous studies have identified various competencies thought to be needed by extensionists in agricultural extension education in the areas of extension process, human development, educational processes, teaching strategies, program planning, implementation, and evaluation, teach decision making skills to clients, develop volunteer leader, ability to work with key leaders and communication skills (Keregero, 1981; Gonzalez, 1982; Pezeshki Raad, Yoder & Diamond, 1994; Gibson & Hillison, 1994; Cooper & Graham, 2001; Miller & Cox, 2006). It was found that these competencies should be possessed by extensionists in order to effectively perform their role. However few studies have examined the relationship between extension teaching methods competency and extensionists’ job performance (Thach, et al., 2008; Khalil, et al., 2008).

**Methodology:**

This study is a descriptive correlation to allow a quantitative description of the relevant features of the data collected as well as the relationship between the variables. This study examines the relationship between extension teaching methods competency and job performance. In this study the extensionists’ job performance is dependent variable. Job performance was conceptualized as performance of eleven dimensions. Eleven dimension of job performance namely quality of work, quantity of work, timelines, effectiveness of work, work knowledge and skill, implementation of policy and procedures, effectiveness of communications, ability to manage, discipline, proactive and innovative, relationship and co-operation were applied in this study. These eleven dimensions were reviewed and validated by experts familiar with extension work. Researcher adopted and modified job performance dimensions to suit the purpose of this study. The independent variable is extension teaching method competency, which may have relationship and determine extensionists’ job performance. The research framework for this study is shown in figure1.

**Objectives of the Study:**

The objectives of the study are to determine:
1. The level of extensionists’ job performance.
2. The level of extension teaching methods competency of extensionists.
3. The relationships between extension teaching methods competency and job performance.

**Sample Size:**

The target population for this study was Malaysian extensionists at Department of Agriculture (DOA) who works directly with the farmers. There are 651 extensionists within West Malaysia. Required sample size
depends on a number of issues, the desired power, alpha level and number of predictors and expected effect size. Green (1991) provides some simple rules of thumb for testing individual predictors. \( N > 10^{4 + m} \) (\( m \) is number of IVs). This rule of thumb assume a medium size relationship between IV and DV, \( \alpha = 0.05 \) and \( \beta = 0.20 \). According to this method, a minimum sample size of 104 is sufficient for this study (Tabachnick & Fidell, 2007). West Malaysia is divided into four regions, namely, Northern region, Central region, Eastern region and Southern region (Aslan & Golam Hassan, 2003). Samples were chosen using geographical stratified sampling method and proportional sample allocation. First one state was randomly selected from each region. From each state, respondents were selected at random (every 2\( \text{nd} \)) from the complete list of respondents. A total of 210 extensionists were randomly selected.

Instrument and Measurement:
This study utilized a questionnaire as the instrument to collect data from the respondents. A questionnaire was created by the researchers from literature, which consisted of the two sections. The first part of the questionnaire was designed to collect data and measure the extension teaching methods competency. The second part of questionnaire designed to measure job performance of extensionists. Extension teaching methods competency was measured by the extent of extensionists’ ability to use effective extension teaching methods for technology transfer such as conduct extension meetings, conduct method demonstration, field visit tours, results demonstration and group discussions. Ten items were developed to measure this competency. Extensionists were asked to rank their extension teaching methods competency on 10 point scale. Job performance was defined as activities and responsibilities performed in a given position. Job performance has been conceptualized as performance of specific dimensions. In this study, extensionists’ job performance was measured using different function of their job. Respondents were asked to assess their performance on eleven dimensions. The dimensions are quantity of work, quality of work, timeliness, effectiveness of work, knowledge and skill in work, implementation of policy, procedures and direction, effectiveness of communication, ability to manage, discipline, pro-active and innovative, and relationship and cooperation.

The instrument contained eleven dimensions of job performance and a total of 46 items that extensionists are supposed to perform in their current position. Job performance was rated through self rating system. A ten-point scale was used to measure the constructs. As a first step toward validating the instrument, the items were reviewed by panel of experts comprising various faculty members from University Putra Malaysia. The instrument was pilot tested with 20 extensionists from the Selangor state of Malaysia. The researcher administered 20 randomly selected extensionists from a list to identify ambiguities and other inadequacies among items of the questionnaire. Reliability analysis was also performed for each scale. The results of reliability statistics for extension teaching methods competency were .928 and for overall job performance were .960. Furthermore, reliability analysis for each dimension of job performance was conducted. The Cronbach’s coefficient alpha for eleven dimensions ranged from 0.870 to 0.948.

Data Collection Procedures:
A drop-off and pick-up method was adopted to collect data from the respondents. This method ensured distribution and collection procedures. Drop-off and pick-up questionnaires have the advantage of reaching all respondents and allowing time for questionnaire completion (Ibeh, 2004; Okpara & Wynn, 2008). In order to collect data, first the list names of extensionists in four states were obtained from the DOA. From the list, the required numbers of extensionists from each state was selected randomly. Those identified names with the attachment of approval letter of the study from the DOA and research schedule were faxed to the state DOA in all four states. To administer the questionnaire the researcher traveled to those states in due time. The researcher met with the state extension director and the contact person to explain the research proposes and procedures in filling the questionnaire. The final version of the questionnaire was distributed to the respondents at state extension office. The response rate for this study was 100 percent. This high response rate was possible as the DOA was interested in the outcome of the study and thus ensured all respondents returned their filled questionnaires.

RESULTS AND DISCUSSION

Research objective 1:
The first objective of this study was to determine the level of extensionists’ job performance. Based on the ten point scale used, the minimum, maximum, standard deviation and range of performance rating for each dimension of job performance are shown in table 2. The overall mean of job performance rating was 7.36 implying that the level of job performance was high.
Almost two-third, 65.2 percent rated their performance high. A further 28.1 percent rated very high and 6.7 percent moderate and none rated low. Among the eleven dimensions, extensionists rated their relationship and cooperation with farmers highest (M= 9.58). Quantity and quality of work received relatively lower ratings at (M= 6.51) and (M=6.82) respectively. This finding indicates that extensionists are comfortable with their ability to interact and build rapport with clients. However, there is probably less emphasis on the output of their work as lower ratings on work quantity and quality indicate.

Table 1: Descriptive statistic for 11 dimensions of job performance

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity of work</td>
<td>6.51</td>
<td>1.19</td>
<td>3.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Quality of work</td>
<td>6.82</td>
<td>1.21</td>
<td>3.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Timeliness</td>
<td>7.08</td>
<td>1.23</td>
<td>3.83</td>
<td>10.00</td>
</tr>
<tr>
<td>Effectiveness of work</td>
<td>7.52</td>
<td>1.45</td>
<td>3.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Knowledge and skill in work</td>
<td>7.63</td>
<td>1.17</td>
<td>3.50</td>
<td>10.00</td>
</tr>
<tr>
<td>Implementation of policy, procedures and direction</td>
<td>7.61</td>
<td>1.23</td>
<td>5.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Effectiveness of communications</td>
<td>7.63</td>
<td>1.13</td>
<td>4.33</td>
<td>10.00</td>
</tr>
<tr>
<td>Ability of manage</td>
<td>7.30</td>
<td>1.28</td>
<td>4.00</td>
<td>10.00</td>
</tr>
<tr>
<td>Discipline</td>
<td>7.66</td>
<td>1.20</td>
<td>3.80</td>
<td>10.00</td>
</tr>
<tr>
<td>Proactive and innovative</td>
<td>7.34</td>
<td>1.05</td>
<td>4.50</td>
<td>10.00</td>
</tr>
<tr>
<td>Relationship and co-operation</td>
<td>9.58</td>
<td>1.32</td>
<td>5.40</td>
<td>10.00</td>
</tr>
</tbody>
</table>

The results of this study are in line with the finding of Thach et al. (2008). As indicated in the result of their study, level of extension teaching methods skill were high (M = 8.26 SD=1.23).

Research Objective 3:

The third objective of this study was to determine the relationship between teaching methods competency and extensionists’ job performance. The Pearson correlation coefficient was employed to achieve this objective. Results showed that job performance positively related to teaching methods competency (r= .582, p= .001). Hence the relationship between the independent variable and dependent variable is significant and positive. This result appear to be in line with the findings of the study conducted by Khalil et al.(2008) and Thach et al. (2008) as they reported a significant, positive relationship between competency and extensionists’job performance. Such a result also closely parallels the findings of Belay and Abebaw’s (2004) who indicated that extension teaching methods are expected to enhance adoption of new technologies and consequently increase extension performance. As Parry (1998) noted, a competency model must include competencies that are correlated with job performance. As such, the items on competency used in this study can be used to further develop as a performance model for extensionists.
Conclusions:
Extensionists perceive themselves to perform the job well in transferring the SALM program to the farmers. In other words, extensionists perceive they perform the extension activities well as they carried out the responsibilities and duties of transferring the newly introduced program to the farmers. The findings are in line with what Le Ngoc Thach et al. (2008) identified in measuring level of extension workers’ job performance in Vietnam. He pointed out that extensionists perceived high level of job performance. Similarly Long and Swortzel (2007) reported that extensionists performance evaluation scores indicated an overall high level of job performance. Result of study conducted by Ishaya, Henderson and McCracken (1992) showed that almost half of extensionists meet normal performance expectation and the rest meet normal expectation with further development. However the results of study on extensionists’ job performance conducted by Khalil et al. (2008) indicated that more than half of extensionists in Yemen rated moderate level of job performance. Malaysian extensionists are particularly confident with their abilities to develop rapport through their interactions with farmers. However, relatively less emphasis is given to the work quantity and quality. In fact the extensionists’ ability to interact and build rapport in technology transfer is very important; however extensionists must go beyond social relationship and be able to arrive at productive relationship with farmer. The study supports existing notions on the relationship of teaching methods competency and job performance among extensionists. Within the context of newly introduced technologies such as GAP, extension teaching methods remain relevant in the transfer of required standard practices for farmers. The results may also suggest that extensionists are adept at working with the clientele within the social system. The established rapport facilitates the transfer of technology. Nevertheless the results of the extensionists’ job performance may not be evident as extensionists may place less emphasis on their work quantity and quality.

Extensionists perceive themselves to be competent in extension teaching method. The results of this study are in line with what Thach et al. (2008) identified in measuring level of extensionists’ teaching methods skill. As indicated in the result of their study, level of extensionists’ teaching methods skill was high. However further concern need to revealed is that whether the extension teaching methods competency consider matching teaching style and learning style of the farmers which ultimately explain positive performance. Extensionists must have knowledge of the characteristics of each of the extension teaching methods as well as knowledge of the characteristics of the farmers. These will enable them to use appropriate teaching methods for appropriate farmers.

The significant relationship between extension teaching methods competency and job performance appear to be in line with the finding of the study conducted by Khalil et al. (2008) and Thach et al. (2008) as they reported a significant, positive relationship between extension teaching method competency and extensionists’ job performance. Such a result also parallels Belay and Abebaw’s (2004) statement that extension teaching methods are expected to enhance adoption of new technologies and consequently increase extension performance. The significant and positive relationship between extension teaching methods competency and job performance can be further explained that extensionists’ job performance is expected to increase if there is an increase in extensionists’ teaching methods competency.

Implications:
Results show that competencies are correlated with performance. Such information provides for valid and reliable criteria for selection, training, and development of extensionists (Buford & Lindner, 2002). The instrument used in this study measured the level of competency and performance. As such, extension managers could consider the eleven dimension of job performance as a basis for measurement and understanding the performance level of extensionists and develop training programs for extensionists in order to increase the extensionists’ performance. On the whole the findings of this study have highlighted the importance of teaching methods competency and its relationship with job performance. This provides information for extension managers towards enhancing performance in their organization through the development of teaching method competency among extensionists. This research explored teaching methods competency needed by extensionists to ensure efficient delivery of SALM program. Therefore findings of the study will help policy makers to give greater focus on the development of qualified and competent extensionists as the whole extension process is dependent on them to translate the policy and strategies into reality.

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