An Analysis of Extension Agents’ Attitudes in the State of Jordan Towards Farm Business Management and Their Assessment of Training Needs

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Abstract

The study aimed at examining the knowledge, attitudes, and training needs of extension agents for farm management practices and marketing extension in the state of Jordan. Data were collected from 99 of the 110 public agents in Jordan using four 5-point Likert-type scales. Cronbach’s alpha coefficients ranged between 0.81 – 0.94, which indicated the internal consistency of the study scales. Parametric and non-parametric tests were used to analyze the data.

The extension services were found to be largely oriented to technical and production aspects, as less than one tenth of extension agents indicated that they offered general extension services in farm management or marketing extension. Few agents gave high ratings to their knowledge of farm management techniques. But, most agents attached high importance to farm management and marketing skills in an increasingly competitive environment. Similarly, most agents gave high rates to their need for practical training to improve their farm management and marketing skills using multi-day workshops, irrespective of their attributes. Knowledge and need for training scales were negatively correlated, which suggests that lower knowledge is associated with higher need for training. Coordinated efforts are momentous to enable agents to provide farmers with a basis for sound decision-making, and the skills to carry out profitable farm operations.
Introduction and Conceptual Framework

The world is faced with making agriculture more sustainable, more profitable, and more productive with fewer resources (Zijp, 1998). Farmers in less developed countries need to upgrade their business management skills to cope with changes in agribusiness environment, and run their business more effectively. Efficiency in the business of agriculture would improve income and living standards and bring about higher family satisfaction. But, improved technical efficiency, production management and hard work are no longer enough, and farm operators need good management and marketing skills for success. Therefore, the educational role of improving the managerial skills of the farmers is an important task for the public extension services. It is essential that these skills be improved continuously through participation in management training activities (Murray-Prior and Dymond, 2000). However, production is not completed until products are at the point of purchase and are yielding consumer satisfaction. Farmers and their information needs are thus inevitably linked into finding solutions to marketing problems, as well as to production (Rolls, 2001). Only a competitive agricultural sector can guarantee farmers' incomes in the longer run.

Information is an essential resource for technically efficient and profitable farming. Informed decisions are needed about what and how to produce, when and in what quantity in order to achieve the possible levels of income. Extension agents make the farmer learn about alternative courses of action (van den Ban, 1986). Knowledge of farm management principles provides farmers a basis for sound farming decision-making. It helps them to solve the economic problems associated with maximization of returns or minimization of costs. It also helps to make the right choice between crop enterprises according to individual levels of financial, labor, land resources and risk aversion (AGSP, 2002). Farm management concerns the future in terms of trading for which budgets are required and capital considerations, which need investment appraisal. Information is needed on past and present trading on the farm in terms of records, accounts and balance sheets (Rolls, 2001). Financial and technical records are an integral part of the long-term success of farm businesses. Properly used, farm records can help managers monitor production costs; analyze production enterprises; and make well-informed management decisions (Zoller, 2000). The farm operator must be able to interpret and analyze his records properly if the best decisions are to be made. The extension farm management agents can assist farmers to develop their business management skills. Agents can help in setting up a working record system, planning for the future, and analyzing the farm operation from the previous years records (Bryant, 2000). The extension agents can help farmers; to make better and more informed decisions; to acquire the skills that help them to analyze their decisions; to assess the market; to identify business opportunities; and to plan for a successful business in a highly competitive business environment.

Interest is growing in integrating farm management in extension services. Rapid change throughout Europe in the agribusiness sector, calls for appropriate development of farm management skills by East and Central Europe (ECE) farmers for their future viability (Rolls, 2001). Priority needs for virtually all ECE farmers include market information and improved skills in management, especially accounting, and cost-benefit analysis (Zijp, 1998). Twelve country studies have been launched in various African regions to analyze the scope
and importance of farm business management in the provision of extension services (AGSP, 2002). In Jordan, the increasing complexities of farming activities in the irrigated agriculture, and the relatively high level of competence on the part of farmers, demands advisory services related to the second generation of farm problems, i.e. farm management and marketing (Rimawi, 1996). Freeing of trade and removal of the price support systems have made it very difficult for farmers to sustain their businesses in the aftermath of Jordan’s membership in the World Trade Organization (MOA, 2001). Of the main policy objectives are to increase the profitability of the agricultural sector and to improve standards of living for farmers (MOA, 1997). Yet, most farmers report that they are incurring economic losses (Habbab and Rimawi, 2002). Professional extension farm management personnel can help to re-establish profitability. Public and private extension services are largely production-oriented, while improving the managerial and marketing abilities of the farmers are most needed (Habbab and Rimawi, 2002). The emphasis of extension agents on technical rather than business aspects of farming is placing the farmers’ long-term viability in danger. Thus, it is imperative to investigate the perceptions of agents towards integrating farm business management, and marketing extension in their services, and to identify their training needs.

**Purpose**

The purpose of this study was; to examine the perceptions of extension agents about the importance of farm management and marketing skills to business viability; to get a better understanding of the agents' need for knowledge of business management and marketing, and how to meet their educational needs.

**Objectives**

The specific objectives of the study were the following:
- To investigate the knowledge and attitudes of extension agents on farm management principles, practices, and tools for decision-making.
- To assess the extension agents need for in-service training on the subjects of farm management and marketing extension, and the preferred way to provide training.

**Methods**

Considering the small number of the public extension agents, data were collected from all public extension agents by personal interview during July-August 2002. The total number of public extension agents was 110 agents, and the rate of response was 90%. Table 1 presents statistical information of the four 5-point Likert-type scales, which were used as an instrument to gather primary data. Respondents were asked to rate their attitudes to the importance and knowledge of farm management concepts and techniques, and to rate their needs to improve their economic and financial management and marketing extension skills. The ratings were on a scale of one to five, with one being "strongly disagree," two being "disagree," three being "neutral," four being "agree," and five being "strongly agree." The knowledge, attitude, and need for training on farm management scales consisted of 13 items each, and the rates ranged between 13 and 65 points. The need for training in the marketing extension scale consisted of 10 items, and the rates ranged between 10 and 50 points.
Descriptive statistics were used to profile the extension agents. To test the reliabilities of the scales, Cronbach's alpha coefficients were calculated. As Table 1 displays, the coefficients ranged between 0.81 and 0.94, which indicated that the scales were internally consistent. The close values of the means and medians, and the low values of the negative skewness coefficients provide indications of the almost normal distributions of scales. Results of the non-parametric Kolmogrov-Smirnov test of normality shows a large probability (> 0.10) for the Zs, which clearly indicates that the frequency distributions of the scales are likely to fit by normal distribution. Therefore, parametric tests were used to determine whether there were significant differences between mean rates for groups of agents. One-way analysis of variance (ANOVA) was used to analyze the data collected. The Levene test (SPSS 10, 1999) was used to check the equality of variances of the populations, which is an important assumption for the F-test. The LSD method was consequently used in investigating where the differences occurred among groups. Levels of knowledge and need for training on farm management were established on the basis of the rates of knowledge and need for training. Rates beyond half a standard deviation below the mean were labeled as low. Similarly, rates beyond half a standard deviation above the mean were labeled as high. Rates in the range of a half of standard deviation below or above the mean were labeled as medium. Chi-square tests were used to investigate associations between the knowledge and need for training levels and the individual rating of training methods and selected agents’ attributes.
Results

Profiling Extension Agents

Extension agents were found to be relatively young, as 71% were less than 40 years old. Respondents reported that 95% had a university degree, and 4% had a master degree in agriculture sciences. Sixty percent were specialized in crop production or plant protection. One fifth (22%) had a specialty of agricultural economics, who may be trained to serve as subject matter specialists for farm management and marketing extension. One quarter of agents had a part time administrative work. About half of them offer extension services for irrigated vegetables and fruit growing farms where the need to improve farm business management is the highest. About half (48%) had experience in agriculture of more than 10 years, while 29% had more than 10 years experience in extension work, which indicates a high turnover ratio. Only 8% of extension agents indicated that they offer general extension services in farm management in the areas of how to get a loan, and how to manage a farm. Similarly, 5% of the agents reported that they cover marketing extension in the areas of selecting proper crops, timing of planting, storing products, and ways of marketing. Thus, public extension is largely oriented to technical and production aspects.

Objective One

Perceptions of Farm Management Extension

The attitude scale was used to measure the perception of agents of the importance of farm management skills to business viability, which influences the chance of success of integrating farm management in extension work. Agents were asked to rate; the significance of operators’ farm management skills to profitability; the provision of farm business management and marketing extension services; the need to create awareness and to train farmers to improve their ability to use management concepts and techniques such as book-keeping, budgeting, and financial statements. Table 1 shows that the distribution of the attitude scale rates was slightly skewed to the left due to the existence of few extreme high rates. Most agents (55-86%) gave 4 or 5 points when asked to rate how much importance they attach to the management skills in all items of the attitude scale. The ratings of the agents ranged between 30 and 65 points, and the mean rate was 49.2 points (76% of the maximum value). The mean rates for individual items ranged between 3.30 and 4.37 points. Offering farm business management and marketing extension rated 4 or 5 points by 79% and 70% of agents respectively. These results indicate that the agents are aware of the significance of knowledge and skills in farm business management in an increasingly competitive environment.

Using one-way ANOVA test, no significant differences in the mean rates of attitude were observed between age and experience in agriculture groups, education levels, and major area in extension. However, Table 2 shows that the overall mean rate of attitude for fields of specialty approaches significant differences (p < 0.07). As expected, mean rate for agricultural economists, was significantly different from means of the crop production, plant protection and general agriculture specialists (LSD test; p < 0.05). Using Pearson and Spearman’s rho tests of correlation, attitudes’ scale was found to be negatively correlated...
with age, years of experience in agriculture and in extension work, but the correlation was statistically insignificant. This suggests that relatively younger agents and the less experienced might be more positive to farm management extension.

Table 2

<table>
<thead>
<tr>
<th>Field of Specialty</th>
<th>N</th>
<th>Attitude’s Scale Rates</th>
<th>Knowledge’s Scale Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>95% Confidence Interval for Mean</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lower Bound</td>
<td>Upper Bound</td>
</tr>
<tr>
<td>Crop Production</td>
<td>31</td>
<td>45.60*</td>
<td>42.25 48.97</td>
</tr>
<tr>
<td>Plant Protection</td>
<td>20</td>
<td>51.30°</td>
<td>48.71 53.89</td>
</tr>
<tr>
<td>Animal Production</td>
<td>9</td>
<td>50.55</td>
<td>43.57 57.54</td>
</tr>
<tr>
<td>Soil and Water</td>
<td>7</td>
<td>48.00</td>
<td>40.45 55.55</td>
</tr>
<tr>
<td>Agricultural Economics</td>
<td>24</td>
<td>50.58*</td>
<td>47.27 53.89</td>
</tr>
<tr>
<td>General Agriculture</td>
<td>8</td>
<td>53.12*</td>
<td>45.97 60.28</td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>49.2</td>
<td>47.53 50.85</td>
</tr>
</tbody>
</table>

One-way ANOVA test
Levene statistic = 1.44, P < 0.216, F = 2.09, P < 0.07, F = 5.11 P < 0.0001, LSD test: °* Significant at the .05 level LSD test: °** Significant at the .05 level

Knowledge of Economic and Financial Management Techniques

The knowledge scale was used to measure the knowledge of extension agents of economics and financial management techniques. The items in the knowledge scale covered filing, book-keeping, optimum input use, short and long term budgeting, credit management, income statements, balance sheets, simple methods of calculating indicators to analyze the financial position of farms, and computer applications on technical and financial management. As compared to the attitude scale, fewer agents (30-49%) gave 4 or 5 points when asked to rate their knowledge in all items. The mean and median rates were 40.0 (61% of the maximum value). The mean rates for items ranged between 2.72 and 3.48. The highest mean rates (3.09 – 3.48) were observed for keeping records of input use and farming operations, how to get a loan, preparation and analysis of the loss and profit statement, as well as short and long term budgeting. The lowest mean rates of knowledge (2.72 - 3.03) were observed for the use of computers in farm management and calculating return for the agricultural loans.

ANOVA test was used to examine whether there are differences between the mean rates of groups of agents by selected attributes. The only statistically significant differences were observed between fields of specialties (p< 0.0001). Table 2 shows that the mean rate for agricultural economists was significantly larger than the means of the main specialties; crop production and plant protection specialists (LSD test; p < 0.05). Similarly, the mean rate of plant protection was significantly different from the rates of knowledge for agricultural economists, animal production and soil and water specialists (LSD test; p < 0.05). Using Pearson and Spearman’s rho tests, knowledge scale was found to be uncorrelated with age,
years of experience in agriculture and in extension work, which suggests that agents are alike in their knowledge of farm management techniques, irrespective of their age and experience. Only 30% of the agents gave 4 or 5 points to their rate of knowledge on the computer application of farm business management. Using \( \chi^2 \) test of independence, knowledge on the use of computers in farm management was not associated with age groups, years of experience groups, and education levels which suggests that low knowledge on computer applications is a general problem.

**Objective Two**

**Training on Farm Business Management Activities**

Agents were asked to rate their relative importance of the need for training on economics and financial management techniques in order to measure their needs and to rank the topics of interest to them, using the need scale for training on farm business management. The items in this scale were the same as in the knowledge scale. As compared to the knowledge scale, more agents (44-67%) gave 4 or 5 points when asked to rate their need for training in all items of the need scale. As Table 1 shows, the mean rate was 43.3 points (67% of the maximum value). The mean rates for the items ranged between 3.21 and 3.66. The highest mean rates (3.33 – 3.66) were observed for training on the use of computers in farm management, scheduling of credits, book-keeping, preparation and analysis of budgets. The lowest mean rates (3.21 - 3.28) were observed for the preparation and analysis of loss and profit statement, record-keeping for farm operations, how to borrow money, and long term budgeting.

Using ANOVA test, no significant differences in the mean rates of need for training were observed between age groups, experience in agriculture groups, specialty, and education levels. Using Pearson and Spearman’s rho tests, the need scale was found to be uncorrelated with agents age and years of experience, which suggests that agents are alike in their perception of the need for training, irrespective of their age and experience. However, the knowledge and need scales were negatively correlated (\( r = -0.269, P < 0.01 \)), which means that the lower the knowledge, the higher the need for training. Two thirds of the agents gave 4 or 5 points to their rate of need for the use of computers in farm management. Using \( \chi^2 \) test of independence, need for training on the use of computers in farm management was not associated with age groups, years of experience groups, and education levels which suggests that it is a generally felt need between agents for the envisaged training. However, Table 3 shows that higher percentages of agents with low or medium knowledge of farm management practices were willing to participate in training (\( \chi^2 = 14.5, d.f = 4, p < 0.006 \)).
### Table 3

**Cross Tabulation of Knowledge and Need for Training on Farm Management Levels**

<table>
<thead>
<tr>
<th>Knowledge Level</th>
<th>Need for Training on Farm Management Level</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Low</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Medium</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>High</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>Overall</td>
<td>32</td>
<td>28</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Knowledge Level</th>
<th>Need for Training on Farm Management Level</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>14</td>
</tr>
<tr>
<td>High</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>Overall</td>
<td>32</td>
<td>28</td>
</tr>
</tbody>
</table>

Test of independence: $\chi^2 = 14.507$, df = 4, $P \leq 0.006$.

### Training on Marketing Extension Services

A scale of 10 items was used to measure the need of extension agents for training on marketing extension activities. These items covered timing for planting, type of crop, introduction of new crops, methods and timing for harvesting, sorting, grading, packing, market information on alternative markets and prices, and standards and opportunities for exporting. As compared to the need for training on farm management scale, much more agents (58-83%) gave 4 or 5 points when asked to rate their need for training in all items of the scale. The overall mean rate of the scale was 38.3 (77% of the maximum value). The highest mean rates (3.88 – 4.32) were observed for training on timing for planting, type of crop, introducing new crops, standards and opportunities for exporting. Using ANOVA, correlation and $\chi^2$ tests for the analysis of the data produced similar results to the analysis of the need scale for training on farm management. These findings suggest that agents are alike in their perception, and there is a general support for marketing extension training.

### Methods of Training

Extension agents need to be trained in the subjects of marketing extension and on the application of farm management techniques on actual farm situations. Agents were asked to rate their preference to the methods of training to improve their skills in these subjects. Table 4 shows that 79% of agents agree or strongly agree to use multi-day workshops as a method of training, 64% supported short presentations, 43% supported self-study of educational materials, and 11% backed one-day workshop.

Of the suggested farm management areas were cost accounting, financial feasibility, book keeping, computer application of farm management, credit management, optimum quantities or combinations of inputs, sorting, grading and methods of marketing. In-depth multi-day workshops was the preferred way to provide theoretical training to be backed by educational materials and practical examples on the concepts, purposes of budgeting, financial statements, measures of performance, and market information. Four fifths of the agents support the idea of producing farm management bulletins. To examine the association between rating of training methods and selected attributes, $\chi^2$ test of independence was used. Younger and less experienced agents were more likely to support the use of lectures (p
< 0.03), to use educational material to support training (p < 0.04), and less likely to support one-day workshops (p < 0.06). Similar, but less significant results were observed for field agents with no administrative duties (p < 0.09).

Table 4

Respondents' Perceptions Concerning Methods of Training (%)

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>No Opinion</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Total (No. of cases 99)</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-day workshop</td>
<td>4.1</td>
<td>7.2</td>
<td>22.7</td>
<td>20.6</td>
<td>45.4</td>
</tr>
<tr>
<td>Multi-day workshops</td>
<td>54.4</td>
<td>24.2</td>
<td>12.1</td>
<td>7.1</td>
<td>2.0</td>
</tr>
<tr>
<td>Lectures</td>
<td>34.3</td>
<td>30.3</td>
<td>22.2</td>
<td>9.1</td>
<td>4.0</td>
</tr>
<tr>
<td>Educational materials</td>
<td>19.2</td>
<td>24.2</td>
<td>17.2</td>
<td>21.2</td>
<td>18.2</td>
</tr>
</tbody>
</table>

Conclusions and Implications

The public extension services are oriented to technical and production aspects, as less than one tenth of agents offer services on farm management and marketing extension. However, more than two thirds of agents attached high importance to farm management and marketing skills, and recognize that technical skills, as well as farm management are important to the success of farm businesses in an increasingly competitive environment. The educational background of four fifths of agents is technical with limited orientation to economics of production and business aspects of farming. Few agents gave high rates when asked to rate their knowledge of economic and financial management techniques irrespective of their age and experience. The implication is that the current programming efforts of the public extension do not meet the educational needs of farmers, and the positive attitudes of agents increases the chance of success in integrating farm management in extension work.

The majority of agents gave high rates to their need for training on farm business management, and even higher rates for marketing extension, irrespective of their age, experience and specialty. The knowledge and need scales were found to be negatively correlated, which suggests that lower knowledge is associated with higher need for training. The highest rates were observed for the need of training on the computer applications of farm management. Four fifths of the agents were in favor of multi-day workshops for training, to provide in-depth theoretical information, and to be followed by practical training, and backed by educational materials. Younger and less experienced field agents were more likely to support the use of lectures and educational material to support training, while the older and more experienced agents appeared to be more inclined to practical learning. The implication is that, with the continuous changes in agribusiness environment, public agents in all disciplines need to be empowered to provide farmers with long-term management advice, and to look more critically at their marketing processes.
 Educational Importance

The study contributes to the development of appropriate extension services to support competitive farming. It sheds lights on the significance of meeting the specific and more pressing educational needs of the extension agents to improve their farm management and marketing competence, which would empower them with the means to improve farmers’ skills. The study results indicated that training need to be made more practical and concentrate on the ways of analyzing the business performance, and on computer applications using multi-day workshops. The diversity of the educational needs calls for concerted efforts of the public extension and the educational institutions to ensure successful implementation of training programs. The sharing of the significance of farm management and marketing extension to promote business-like farming among conference participants, would add to the efforts to integrate farm management dimension in agricultural extension, especially in the less developed countries to keep agriculture viable and competitive.

 References


