

Full Length Research Paper

The role of training in facilitating innovation in small food industries in rural Iran

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Accepted 4 August, 2010

Food industries are operating in an increasingly dynamic environment and are affected by major changes. In this situation, the importance of innovation for competitiveness and growth is obvious. Findings from different studies show that training is a catalyst for raising innovation in SMEs. As such in this study, specific realities which should be considered in planning training courses on innovation management for rural small food industries (SFIs) were investigated. From 104 registered firms, just 60 were active at the time the survey was conveyed. Therefore 60 SFIs were studied on a census basis in Tehran Province and 111 managers were interviewed. About 80% of managers have not attended any training courses in their specific field. Main source of information for managers was books and magazines and the most important channel for communication was face-to-face communication; as such it is recommended to hold training courses which facilitates this type of communication. Finding shows the insufficiency of training courses on innovation management for SFIs. Managers would like to attend in training courses in which trainers have experience rather than academic knowledge. It is recommended to agricultural extension to pay more attention to the need of this group of clientele and provide them with appropriate trainings. If any extension institute is going to hold appropriate training courses, should enjoy the experienced manager trainers with consideration to their intellectual property rights.

Key words: Agricultural extension, innovation, small food industries.

INTRODUCTION

Companies worldwide of different sizes and sectors are operating in an increasingly dynamic, complex and unpredictable environment. This suggests that many firms seek new ways of conducting their business through some kind of innovation to make a profit and stay ahead of the competition (Laforet, 2008). However, successful innovation is a complex task for a SME that does not have the means and know-how to invest in R and D activities (Avermaete et al., 2003) or does not convert research and development into effective innovation (Laforet, 2008).

Similar to other companies, companies in the food industry are being affected, at all levels and by major changes in business operations and management brought about by technology and globalization, which has

caused intense competition for market (Morrissey and Almonacid, 2005). In this situation the importance of new technologies and innovations for competitiveness and growth is a truism among managers, policy makers and researchers (Bollinger, 2008).

In this research, food industries in "rural areas" were studied. As Kwamena (2008) notes about small industries in rural areas, the issue of competition is critical for rural small food industries as they are challenged with problems such as small local markets, isolation from larger markets and remoteness from business mainstream. Therefore innovation studies for rural food industries are necessary in order to find ways to overcome special challenges they face.

Innovation in business has been studied with different definitions and quite innovative categorizations. The innovation process has changed dramatically in recent years. Traditional conception of a linear innovation process is limited to its relevance and instead innovation is

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perceived to occur as a multidirectional and iterative process involving multiple actors (Hewitt-Dundas, 2008).

In Kleef and Roome (2007) study, innovation is seen as the process of discovery and development that creates new products, production processes, organizations and technologies, institutional and systemic arrangements. A study by Laforet (2008) considers innovation as new product development, process innovation, continuous improvement, culture and working environment. Kwamena (2008), points out to four types of innovation: product innovation, process innovation, marketing innovation and organizational innovation. Kotelinkov (2008) adds two other types of technology innovation and strategic innovation into this categorization. This categorization was adopted in this study.

There are studies about effective factors on innovation and innovative performance of businesses. Some studies have focused on the importance of R and D activities as the determinant of innovation (Hirsch-Kreinsen et al., 2005; Kiner et al., 2008; Santamaria et al., 2008; Hadjimanolis, 1991; Ropher et al., 2008), but according to some more recent studies like Santamaraia et al. (2008) many activities that lead to innovation are not R and D-based.

A growing number of studies reveal that diffusion of knowledge among industries results in better achievement and improving innovative performance (Robertson and Patel, 2007). Cosh et al. (2003) study shows that there is a significant mutual relationship between innovation and training. Training is especially important in LMT (Low and Medium technology) industries because many employees need to have knowledge of several disciplines, and therefore require hybrid qualifications that are not usually offered by the market (Schmierl and Köhler, 2005).

As innovation occurs primarily through new combinations of resources, ideas and technologies, a fertile innovation environment relies on a constant inflow of knowledge from other places (Fey and Birkinshaw, 2005). The diffusion of knowledge is shaped in the form of equipment, but other forms may be more intangible, such as scientific discoveries, understanding of the state of technology, or know-how of technologies developed by others (Palmberg, 2004).

Technology consultants are another possible source of external knowledge (Creplet et al., 2001; Huber, 1991). Consultants often interact with numerous firms across a variety of industries and therefore may transfer tacit knowledge that has been developed through ongoing experience of learning, integrating and sharing knowledge (Bierly and Daly, 2007). Bessant and Rush (1995) also highlight the role of consultants in the process of technology transfer. In this way, people are an important conduit of inter firm knowledge transfer (Malecki, 1991). Entrepreneurial human capital is directly related to innovative activity. This capital can be improved through training (Jelodar et al., 2008).

Yaghubi (2008) studied the effective factors on entrepreneurship and mechanisms for supporting entrepreneurs in agriculture sector in Iran. His findings show that these factors are knowledge, information, creativity, innovation, skills of financial management and training. Further, among other mechanisms for supporting entrepreneurs, the study emphasizes more on training in the fields of self-confidence, creativity and innovation.

Results from the study of Armun-tan (2008) show that training employees in problem-solving skills results in the improvement of productivity and innovativeness of employees.

The study of Roozbehani (2009) on effective factors on technological innovation in SMEs, show that education and short term trainings for managers and employees of SMEs has positive impacts on the level of technological innovation. Given the key role that training play in small food industries in Iran, examining its effectiveness in facilitating innovation may be critical for policy makers. The purpose of this study was to inspect requirements of training to facilitate innovation in small food industries in the rural areas of Tehran province.

MATERIALS AND METHODS

This paper reports a mainly quantitative research which is conducted in Tehran province, Iran. Findings from different studies show that it is still unresolved which variables influence innovation efforts in SMEs and in which way. Generalizations are difficult due to the complexity of the system; therefore it is difficult to infer general rules that would hold across the board. One way to learn more about determinants of innovative efforts in SMEs is to conduct a variety of studies under diverse economic conditions and in different geographical areas (Radas and Bozic, 2009). According to this fact, a single province was chosen in this study. Tehran province which is the capital of Iran was studied because the most recent formal national statistics published by Statistic Center of Iran (SCI, 2006), show that 27% of all SMEs are working in Tehran.

Small scale manufactures in food sector which have less than 50 staff and are located in rural areas must obtain two licenses from the Ministry of Agriculture; first license is a permission for establishment (of construction) and the other is for starting production. To date, 104 firms in the food industry have registered in MOA formally in Tehran province from which 60 firms were active at the time when the research was conducted (2009 - 2010). Other 44 firms were not in business any more.

The total population of respondents in this study was 111 managers (production managers, marketing managers, human resource managers and vice managers) in 60 small size food industries in Tehran province who agreed to participate in the interview. Data were collected through questionnaires which were administered using face-to-face method.

The main goal of this study in measuring respondents' attitudes towards the role of training in facilitating innovation has been achieved largely through structured questionnaire survey.

Extension service is supposed to facilitate clientele's access to the sources of information through and after training courses. Therefore in one section respondents were asked about their sources of technical information, including books and magazines, internet, other firms, Universities, and mass media.

The SFI's managers' need to training on innovation management was investigated through asking about the level of receiving training

Table 1. Variables and their measurement scale.

| Variables | Scale |
|--|-------------|
| X ₁ . Innovation rate (No. of innovations in 6 areas) | Categorical |
| X ₂ . The current level of receiving training on innovation management (None, very rarely, rarely, sometimes, often, very often) | Categorical |
| X ₃ . The desirable level of receiving training on innovation management (None, very rarely, rarely, sometimes, often, very often) | Categorical |
| X ₄ . The need to training on innovation management (X ₃ - X ₂) | Categorical |
| X ₅ . Importance of each source of information for users(10 variables) | Categorical |
| X ₆ . Importance of each channel for communication for users(5 variables) | Categorical |
| X ₇ . Firm size (No. of employees) | Continuous |
| X ₈ . Firm age | Continuous |
| X ₉ . Managers' level of education | Categorical |
| X ₁₀ . Respondents' level of management | Categorical |
| X ₁₁ . Having formal R and D (Yes, No) | Categorical |
| X ₁₂ . Having informal R and D (Yes, No) | Categorical |
| X ₁₃ . Fixed capital | Continuous |
| X ₁₄ . Awards (Yes, No) | Categorical |
| X ₁₅ . Capacity of production | Continuous |

Table 2. Innovation rate in the studied SFIs.

| Types of innovation | No. of innovative firms | No. of innovations |
|---------------------|-------------------------|--------------------|
| Product/services | 49 | 117 |
| Process | 22 | 35 |
| Technology | 35 | 50 |
| Marketing | 38 | 74 |
| Strategy | 25 | 42 |
| Organization | 31 | 42 |
| Total | | 360 |

on the innovation management in actual situation (from 1: very rarely to 5: very often) and the level at which they are desirable to receive training in optimal situation (from 1: very rarely to 5: very often). The gap between actual and optimal situation is the need to training on innovation management which is computed through Spss software as dependent variable. The variables and their measurement scale are presented in Table 1.

Content and face validity were established by a panel of experts consisting of faculty members at Islamic Azad University, Science and Research Branch and some specialists in the Ministry of Agriculture. Some wording and structuring of the instrument were made based on the recommendation of the panel of experts.

A pretest was conducted with 15 managers to determine the reliability of the questionnaire for the study. Computed Cronbach's Alpha score was acceptable for different parts of the questionnaire (Alpha > 0.7), which indicated that the questionnaire was reliable. Data analyzed through Spss/Win software.

RESULTS

The average age of firms was 7.6 years. Twenty-four firms were profitable in the last year, while other thirty-six firms did not report any profit in the past 12 months.

About 20% of the firms had R and D unit, 60% employed a personnel to be in charge of R and D activities (informal R and D) while the rest did not have any R and D activities in their firms.

Managers of 40 firms reported innovation in product and services. Among different types of innovation, the highest number of innovations was 117 cases for product and services and the lowest number was 35 cases for innovation in processing. Table 2 shows the number of innovative firms and number of innovations in each of the six areas of innovation.

Fifty-eight percent of managers had at least a bachelor's degree from university and 23% have not entered University. From those managers who were educated, 46% indicated that their job is related to their education, while in 11% of cases, it was not related to their education. In other cases, their education was somehow related to their job. The average working experience of managers was 19.2 years. There have been very few training courses for managers. Just 23 managers (from 111 interviewed managers) had attended

Table 3. Reasons of no or less participation in training.

| Reasons | No. | (%) |
|---|-----|------|
| There was no training course | 91 | 82.0 |
| I was not interested to attend and participate | 36 | 32.4 |
| I had no time to participate | 8 | 7.2 |
| I was not aware of the time and place of training courses | 2 | 1.8 |

Data source: our survey.

Table 4. Reasons of no or less participation in training courses by managerial level.

| Managerial level | There's no training (%) | Lack of tendency to participation (%) | Lack of time (%) |
|-------------------------|-------------------------|---------------------------------------|------------------|
| Top Managers | 42.9 | 38.9 | 50 |
| Executive Boards | 11.0 | 8.3 | 25 |
| Vice Manager | 7.7 | 11.1 | 12.5 |
| Production Manager | 9.9 | 13.9 | 0 |
| Marketing Managers | 8.8 | 5.6 | 0 |
| Administrative Managers | 6.6 | 11.1 | 0 |
| Owner | 2.2 | 5.6 | 0 |
| Technical Director | 11.0 | 5.6 | 12.5 |

36 training courses, from which 9 training courses were organized by MOA. Others were organized by Ministry of Industry, Ministry of trade, Standard organization, Health organization and Universities. Ministry of Industry has had the most training course (No.:7) while Universities has had the least (No.:2).

Spearman test shows a statistically significant relationship between participation in training courses and numbers of innovations firms have (Correlation Coefficient: 0.450, Sig.:0.007). Managers who participated in training courses listed more innovations.

Managers were asked to indicate reasons why they did not attend training courses or attended a few training courses. Selection of different reasons was possible. Eighty-two percent of managers indicated that there were no training courses in their specific field. Thirty-two respondents were not interested to attend training courses (Table 3).

Table 4 displays the factors which make managers at different levels of management not intended to attend in training courses. Half of the respondents which had no time to participate in training courses were among top managers. For production, marketing and administrative managers, lack of time was not a barrier for their attending in training courses.

Open question about the reasons why managers were not intended to participate in training courses showed that there are 3 main reasons:

(1) Lack of trust to the organizers of training courses. In other words, they did not believe that training courses are effective enough to result in improving the situation of SFIs.

(2) Respondents' past experiences of participating in training courses showed that trainers were highly educated, but less-experienced people in food industries. We asked if they are intended to coach other less experienced managers in terms of innovation, but respondents refused because they were worry about their intellectual property rights.

(3) Lack of financial resources to be allocated to training courses.

Managers use multiple channels for communication. These channels were studied to identify ways to communicate with this new group of clientele for extension. First they were asked if they use the channel for communication, then they were asked how often they use it. Respondents were supposed to answer this question in Likert scale. Among other channels for communication, most of managers (97%) use the "face-to-face" method. They use this method for receiving the desirable information and advice sometimes (mode: 3 = sometimes, mean; 3.94).

About 93% of managers use telephone for communication. This big group use telephone for taking advice and information rarely (mode: 2 = rarely, mean: 2.44).

Almost the same number of respondents use mobile phone for communication but they use it for taking advice and receiving information more than telephone (Mode: 3 = sometimes, mean: 2.25).

Although respondents were familiar with internet and it was a source of information for them (it will be explained later in this paper), but most of them use it as a means of two-way communication very rarely (mode: 1 = very rarely, mean: 2.23).

Table 5. Channels for communication.

| Channels for communication | Frequency of usage* | | | | | | | | | | Mean |
|----------------------------|---------------------|------|--------|------|-----------|------|-------|------|------------|------|------|
| | Very rarely | | Rarely | | Sometimes | | Often | | Very often | | |
| | No. | (%) | No. | (%) | No. | (%) | No. | (%) | No. | (%) | |
| Face-to-face | 0 | 0 | 3 | 3.6 | 60 | 54.1 | 31 | 27.9 | 13 | 11.7 | 3.94 |
| Telephone | 20 | 18.0 | 36 | 32.4 | 29 | 26.1 | 18 | 16.2 | 0 | 0 | 2.44 |
| Mobile | 20 | 18.0 | 39 | 35.1 | 40 | 36.0 | 3 | 2.7 | 0 | 0 | 2.25 |
| Internet | 33 | 29.7 | 11 | 9.9 | 13 | 11.7 | 19 | 17.1 | 0 | 0 | 2.23 |
| Fax | 27 | 24.3 | 11 | 9.9 | 14 | 12.6 | 19 | 17.1 | 0 | 0 | 2.35 |

*1 = very rarely 2 = rarely 3 = sometimes 4 = often 5 = very often.

Table 6. Sources of information and advice for managers of SFIs.

| Sources of information and advice | | | The importance of source for users* | | | | | | | | | | | |
|-----------------------------------|-----------------------|------|-------------------------------------|-----|-------------|-----|--------|------|----------|------|------|------|-----------|-----|
| | | | % of users | | Very little | | Little | | somewhat | | Much | | Very much | |
| | | | No. | (%) | No. | (%) | No. | (%) | No. | (%) | No. | (%) | No. | (%) |
| publications/ mass media | Books and magazines | 64.0 | 0 | 0.0 | 0 | 0.0 | 49 | 44.1 | 22 | 19.8 | 0 | 0.0 | | |
| | Newspaper | 9.0 | 5 | 4.5 | 2 | 1.8 | 2 | 1.8 | 1 | 0.9 | 0 | 0.0 | | |
| | Internet | 62.2 | 0 | 0.0 | 5 | 4.5 | 27 | 24.3 | 25 | 22.5 | 12 | 10.8 | | |
| | TV and radio | 13.5 | 5 | 4.5 | 8 | 7.2 | 1 | 0.9 | 1 | 0.9 | 0 | 0.0 | | |
| people/ organizations | Universities | 27.0 | 2 | 1.8 | 0 | 0.0 | 17 | 15.3 | 11 | 9.9 | 0 | 0.0 | | |
| | Similar firms | 45.0 | 0 | 0.0 | 7 | 6.3 | 39 | 35.1 | 5 | 4.5 | 0 | 0.0 | | |
| | Consumers | 27.9 | 2 | 1.8 | 0 | 0.0 | 19 | 17.1 | 10 | 9.0 | 0 | 0.0 | | |
| | MOA | 19.8 | 2 | 1.8 | 2 | 1.8 | 12 | 10.8 | 6 | 5.4 | 0 | 0.0 | | |
| | Standard organization | 28.8 | 0 | 0.0 | 0 | 0.0 | 14 | 12.6 | 6 | 5.4 | 12 | 10.8 | | |

* 1. Very little 2. Little 3. Somewhat 4. much 5. very much

While 64% of respondents used fax for communication, but they use it as a means to send and receive information very rarely (mode: 1 = very rarely, mean: 2.35). Actually managers of the studied SFIs used multiple channels for exchange of information, while the most important method for communication in order to get information and advice is "face-to-face" communication.

According to these results, if extension is going to address this group of clientele, there should be face-to-face communication between SFI managers and different sources of information (Table 5). As mentioned before, the role of extension is facilitating the clientele's access to sources of information and strengthening linkage between sources of information and clientele. As such, sources from which managers get information or take advice were investigated. These sources can be divided into two main categories of "publications/mass media" and "people/ organizations" (Table 6). As Table 6 shows, the most important source is books and magazines. While 64% of respondents used this source, but most of them complained about lack of enough up-to-date and useful books and magazines in their field of work. Although respondents use internet for two-way communication very rarely (Table 6), but they used it as a

source of information sometimes (mode: 3). Among different people and organizations who give information to respondents, "other similar firms" were the most important one (users: 45.0%). They receive information from brochures or some rarely hold meeting.

The least important source of information was newspaper (9% of respondents). Analysis of data about sources of information for managers and their education level shows that for managers at PhD level the most important source was internet. While for non-educated managers the most important source of information was firms' personnel.

Also Table 6 shows that there is a need to strengthen the linkage between Universities as a source of knowledge and small food industries in rural areas findings show that in current situation the role of Universities is very limited. Although some other previous research in different industries in Iran show the same results [(Saudis, 2004) in fishery industry] and [Sohrabinejad (2007) in tourism industry] but in the case of food industry in rural areas, the situation is worse due to remoteness and smallness and as a result neglect.

As mentioned before, 360 innovations were mentioned by managers in their field of activities. From the other

Table 7. No. of Innovations of managers by their source of information.

| Innovative managers | Sources of information | | |
|---------------------|------------------------|----------|---------------|
| | Books and magazines | Internet | Similar firms |
| Top manager | 215 | 249 | 147 |
| vice manager | 4 | 4 | 4 |
| production manager | 38 | 37 | 29 |
| marketing manager | 46 | 49 | 32 |
| Administrative M. | 9 | 12 | 9 |
| technical director | 5 | 5 | 0 |

hand, respondents were asked about their sources of information for innovation. Table 6 shows that main source of information for managers were books and magazines, internet and similar firms. In this section, the relationship between innovativeness of managers and their usage of information is illustrated. Managers were asked to choose one or more than one important source of information. Therefore the total number of each column or row is not equal to the total number of respondents or innovations. Although top managers were not able to search web personally, but they ordered personnel to provide them with the necessary information from internet. Needs are regarded as the gap between optimal and actual situation. The SFI's managers' needs to training was investigated through asking about the level of receiving training in actual situation (from 1: very rarely to 50: very often) and the level at which they like to receive in optimal situation (from 1: very rarely to 5: very often).

The actual and optimal situation was clarified by respondents. Through software the new variable of "need to training" computed. This variable was the desired level of training (optimal situation) minus the actual level of training.

According to Table 8, there is a statistically significant difference between the actual and optimal situation of training on innovation management. Most of the respondents revealed that training on innovation management has been very rarely for them (98.2%). In the optimal situation, 44.1% would like to receive training on innovation management often and very often (31.5 and 12.6% respectively). A description of the computed variable-"need to training on innovation management"- is available in Table 9. This table shows that for 18% of respondents there is no need to training on innovation management. About 44% of managers need trainings on innovation management.

The rather low level of needs to training on innovation management might be the result of not being familiar with this training. As Table 7 shows, training on innovation management for about 98% has been very rare. In order to find out the factors which affect the need for training on innovation management regression model was used.

The results from regression showed that 66% of changes in dependent variable are being defined by the

factors which entered the regression model (R Square = 0.660).

Among other variables, "capacity for production"(Beta coefficient: 0.381, sig.: 0.022) and "using the face-to-face method for communication" (Beta coefficient: 0.296, sig.:0.03) affect the need to training on innovation management positively. Other factors that affect the dependent variable negatively, include "fixed capital" (Beta coefficient: -0.569, sig.: 0.003), "having R and D Unit"(Beta coefficient: -0.882, sig. < 0.0001) and "having other jobs"(Beta coefficient: -0.372, sig.: 0.007). These 3 variables affect the needs of managers to training on innovation management negatively. Other variables were not statistically significant (Table 10).

Managers of firms with more capacity for production and managers, who use the method of face-to-face communication, are more probably desirable to learn ways of managing innovation. It is why managers of firms with more fixed capital, firms which have R and D unit and managers who have other jobs at the same time were less intended to learn about innovation management.

Other variables like participation in other training courses, firm age, number of innovations mentioned by manager, sex of manager, receiving awards, profitability of firms, manager's age and education, relevance of manager's education and job, and manager's years of working has not have any influence on the dependent variable (Table 10). This is not in line with some findings of Roozbehani (2009), Yaghubi (2008) and Skuras (2008) which mentioned earlier.

DISCUSSION AND CONCLUSION

In this study, first this assumption was tested that "training is a catalyst for innovation." Findings confirmed this assumption since there was a statistically significant relationship between participation in training courses and numbers of innovations in food firms. Managers who participated in more training courses listed more innovations. This finding also was reported by Cosh et al. (2003) and Roozbehani (2009). We observed a big gap in training courses for the studied SFIs in rural Tehran.

According to the findings, about 80% of managers

Table 8. The incidence of training on innovation management.

| Training on innovation management | Very rarely (1) | | Rarely (2) | | Somehow (3) | | Often (4) | | Very often (5) | | Mean of rates | Wilcoxon Signed Ranks Test | |
|-----------------------------------|-----------------|------|------------|-----|-------------|------|-----------|------|----------------|------|---------------|----------------------------|------------------------|
| | No. | (%) | No. | (%) | No. | (%) | No. | (%) | No. | (%) | | Z | Asymp. Sig. (2-tailed) |
| Actual situation | 109 | 98.2 | 2 | 1.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0.018 | -8.393 | <0.0001 |
| Optimal situation | 20 | 18.0 | 8 | 7.2 | 34 | 30.6 | 35 | 31.5 | 14 | 12.6 | 2.95 | | |

Table 9. Need to training on innovation management.

| Needs level | No. | Percent (%) | Statistics |
|----------------|-----|-------------|----------------------|
| 0 (no need) | 20 | 18.0 | Mean: 2.94 |
| 2 (little) | 10 | 9.0 | Median:3 |
| 3 (somehow) | 32 | 28.8 | Std. Deviation: 1.59 |
| 4 (much) | 35 | 31.5 | |
| 5 (very much) | 14 | 12.6 | |
| Total | 111 | 100.0 | |

Table 10. Coefficients of variables affecting "need to training on innovation managers".

| | Coefficients | | | | |
|--|-----------------------------|------------|---------------------------|--------|-------|
| | Unstandardized coefficients | | Standardized coefficients | t | Sig. |
| | B | Std. Error | Beta | | |
| (Constant) | 9.340 | 2.889 | | 3.233 | 0.002 |
| Capacity of production(tons) | 4.243E-5 | 0.000 | 0.381 | 2.378 | 0.022 |
| No. of employees | -0.030 | 0.020 | -0.227 | -1.512 | 0.138 |
| fixed capital (million rials) | -2.888E-5 | 0.000 | -0.569 | -3.135 | 0.003 |
| sex | -0.588 | 0.434 | -0.144 | -1.353 | 0.183 |
| awards | -0.286 | 0.504 | -0.084 | -1.567 | 0.074 |
| profitable (the past 12 months) | 0.858 | 0.568 | 0.254 | 1.510 | 0.139 |
| Formal R and D unit | -3.191 | 0.773 | -0.882 | -4.128 | 0.000 |
| Informal R and D | -0.797 | 0.610 | -0.235 | -1.305 | 0.199 |
| No. of innovations | 0.003 | 0.006 | 0.076 | 0.595 | 0.555 |
| Participation in past training courses | 0.366 | 0.436 | 0.094 | 0.841 | 0.405 |
| Using face-to face communication | 0.634 | 0.288 | 0.296 | 2.206 | 0.033 |
| education | 0.018 | 0.272 | 0.008 | 0.066 | 0.947 |
| relevance of education and job | -0.106 | 0.228 | -0.056 | -0.463 | 0.645 |
| years of working in this firm | 0.064 | 0.047 | 0.167 | 1.357 | 0.182 |
| age | 0.025 | 0.020 | 0.144 | 1.258 | 0.215 |
| having another job | -1.299 | 0.455 | -0.372 | -2.854 | 0.007 |

did not attend any training courses, mainly because there are no training courses in their field of activity. Another reason is the lack of confidence of organizers and trainers. Trainers should be experienced people in SFIs rather than very knowledgeable theoreticians from Universities. Managers expect extension to organize training courses in which trainers are the successful managers of firms. In this case agricultural extension

should pay attention to the intellectual property rights of coaches. There was a significant difference between groups of managers in terms of innovation and education. This is in line with findings of Yaghubi (2008). Top managers had more innovations, while they were less educated in comparison with other managers. Extension services should provide some training courses on innovation and innovation management for top managers, so

that they can be aware of the share of other managers and personnel in raising innovative ideas. This suggestion also was pointed out in Armun-tan (2008) study.

Respondents used multiple channels for the exchange of information, while the most important one is "face-to-face" communication. Therefore the findings suggest that extension should use a package of different methods for communication with managers of SFIs, among them face-to-face method is the main method to convey important information or advice on innovation management.

Although managers use internet for communication sometimes, but they use it as a source of information very commonly. Managers who use internet are more innovative than others. Agricultural extension can facilitate or manage information in the web. Since there is no website and services for SFI managers, we suggest extension to facilitate and collaborate in establishing a website for rural SFIs.

Books and magazines are the most important sources of information for managers, but they have limited access to this source both in terms of quantity and quality. We suggest extension to collaborate in holding books and magazine exhibitions for rural SFIs. Also there is a need to encourage documentation of successful experiences of managers in innovation management. There can be facilities and motivations for innovative SFIs which document their experience. Managers of firms with more capacity for production and managers, who use the method of face-to-face communication more, are more probably desirable to learn ways of managing innovation. As such extension can start with the group of SFIs' managers with more capacity of production. The information about capacity for production is available in information bank of MOA.

Also extension can facilitate more face-to-face communication through providing platforms for dialogue among managers of firms. This will facilitate innovation perse', and at the same time will increase the capacity and intention of managers for learning about innovation management skills. The last and very important suggestion is that if any extension institute is going to hold appropriate training course in which the trainers are experienced managers, it should consider their intellectual property rights, otherwise these initiatives might not be sustainable.

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