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Information seeking by Pakistani farmers: A review of published research

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Abstract

The purpose of this article is to provide a critical review of published research on information seeking by Pakistani farmers, with a view to inform the relevant departments and individuals of the existing situation. The results from the related research are summarized by noting major methodological features and reviewing practical and theoretical implications of major findings. Although the findings from related studies were not directly comparable due to variations in research methods and geographical contexts, it was nevertheless possible to draw some common conclusions regarding the farmers' information seeking. The results from these studies overwhelmingly show that Pakistani farmers rely very much on interpersonal relationships with friends, relatives, fellow or progressive farmers, and neighbors for obtaining agricultural information. The use of mass-media, both print and electronic, and agricultural extension agents as sources of information was lower than expected. The results indicate the necessity for a need-based information infrastructure for farmers in Pakistan.

Keywords: Information seeking; Farmers; Pakistan

Introduction

Agriculture is the largest sector of Pakistan's economy as it contributes a 21 percent share in the GDP and directly supports three quarters of its total population. It is also a leading sector that absorbs, directly or indirectly, 45 percent of the total workforce of the country and provides food for its population, original products for export, and raw materials for Agro-allied industries (Pakistan, 2011). It is evident that development of the country mainly depends on the growth and advancement in agriculture due to its enormous role in the economy of Pakistan.

Indeed, farmers have an inevitable need for various types of information to perform their farming activities in an effective way. The information concerning improved agro-technologies generated by agricultural scientists and researchers must be disseminated in ways that are compatible with the needs of farmers and result in the satisfaction of end users of that information (Hassan, 1997). Agricultural production in Pakistan is quite low as compared to its potential in spite of the hectic struggle by the agriculture departments and other allied agencies (Mari, Shahzadi & Chachar, 2011). The main reason for this is the farmers' lack of awareness of the current agricultural information and technologies (Chaudhary, 1997).

For consistent growth in agricultural production, it is essential to equip rural farmers with need-based, accurate, reliable, and timely information. The dream of advancement in agricultural production

cannot come true until timely access to the information required by the farmers is assured. The consideration of users' information needs is a very vital element in the provision of need-based and relevant information to them (Anwar, 2007; Anwar & Supaat, 1998). The understanding of users' information needs is an important first step in designing focused, need-based, and user-oriented information infrastructure.

Information seeking plays a critical role in farmers' efforts to cope with the day to day concerns associated with farming activities. Effective communication of information is known to be the key to optimal agricultural productivity. Therefore, understanding what farmers need to know, when during the crop care continuum, and how they acquire needed information becomes vital to ensure the delivery of quality and need-based information. A number of studies of farmers' information use have been conducted in different areas of Pakistan but no attempt has been made to synthesize the findings of previous research in order to provide a broad and comprehensive overview of farmers' information seeking over time.

This study, therefore, aims to provide a comprehensive review of research published on information seeking by Pakistani farmers and synthesize this body of research with a view to inform researchers, policy makers as well as information providers within and outside Pakistan of what has been found about how Pakistani farmers seek information they need.

Method

The research articles related to information seeking by Pakistani farmers needed to be identified for this review. 'AGRIS' and 'Pakistan Agriculture Database' were searched by using the following terms: information needs, information sources, and information seeking, combining 'AND' with Pakistan. This broad search resulted in 34 citations, an encouraging initial sign. These citations were examined one by one to eliminate duplicates resulting in only 19 citations. After reading abstracts, eleven more citations were excluded because they did not fit into the focus of this paper, leaving only eight papers to deal with. Then, the citations from relevant research papers were examined to find more related articles. Finally, Google Scholar was searched. As a result, seven more articles were identified. Thus, fifteen published research papers on information seeking by Pakistani farmers were identified for analysis.

This review has two limitations: first, there may be more papers that we could not identify; second, the trends and patterns that have been identified by these papers cannot be generalized due to the small amount of literature presented in this study.

Demographic characteristics of the literature

This meager amount of research output paints a very disappointing picture: first, the amount of research is very limited; second, the databases do not even cover this meager amount; and finally, none of these 15 papers is written by the researchers from the Library and Information Science field. This dismal situation reflects badly on the awareness of and importance given to the area of farmers' information seeking by the agricultural research institutions, extension services, agricultural universities, and professional information providers. Perhaps, one should look at the unpublished research done by the students of various agricultural universities in the country in case they might have touched on the area.

A cursory look at some of the demographic features of these 15 papers should be interesting. These papers have been published between 1988 and 2010. Four of these were produced in 1988, 1990, 1992, and 1999 – one paper each year. The remaining 11 papers were published in seven years as follows: three in 2003, one each in 2005, 2006, 2007, 2008, and two papers each in 2009 and 2010. These 15 papers were produced by 33 authors. Only three of these appear to be foreigners. Ten of the papers are the result of a collaborative effort. Six of the papers are three- and four-authored whereas two are two- and six-authored. This level of collaborative authorship is common in scientific disciplines. These papers are published by eight journals – four producing one each, three two each, and one publishing five papers which is the *Pakistan Journal of Agricultural Sciences*.

Review of the literature

Fifteen papers identified in the literature search process are briefly reviewed in the following sections. An effort has been made to highlight the main features of the papers.

Sources of information used

An investigation of 300 male farmers was conducted by Khan, Morgan and Sofranko (1990) in order to explore their preferred sources of agricultural information. The extension agents, relatives, dealers, mass-media, better farmers, and neighbors were available information sources to these farmers. These farmers generally perceived the dealers as their preferred source of information. It was found that farmers differed in their preferred information sources which varied in their efficiency in disseminating information. Very little relationship between socioeconomic characteristics and utilization of information was discovered. The knowledge about improved inputs was available from a variety of information sources and the utilization of these sources appeared to be a matter of personal preference rather than socioeconomic status, farm size, or any other structural characteristic.

Muhammad and Garforth (1999) surveyed farmers, selected randomly through multistage sampling technique, using an interview schedule from the district of Faisalabad to explore the effective sources of information as perceived by them. The results revealed that a majority of the respondents depended more upon neighbors / relatives / friends and mass media (radio and television) than other sources of information. Observations rather than interpersonal communication were found as the major mode of information dissemination among farmers. The role of the contact farmers, field assistants, agriculture officers, and extension field staff in information dissemination was far less than expected because there was less interaction between farmers, field staff, field assistants, and agriculture officers. These were perceived as the least effective sources of information. The printed materials, followed by the University of Agriculture, Faisalabad and Ayub Agricultural Research Institute were perceived as the most effective communication channels by the farmers. But they had very limited access to these information sources. The farmers' exposure to these information sources could yield better results in equipping them with the latest agricultural information.

Abbas, Muhammad, Nabi and Kashif (2003) conducted a farm level survey of a sample of 180 sugarcane growers, selected through stratified random sampling process, and using a structured interview to explore their sources of information and level of awareness of recommended technologies related to the sugarcane production in Faisalabad division. The farmers were divided into three categories (small, medium, and large) based on their farm size. The study revealed that a majority of the medium and large farmers were aware of recommended sugarcane varieties, methods of sowing, fertilizer to use, weed eradication, irrigation and plant protection. They also adopted sugarcane production technologies. A majority of small farmers had low awareness about recommended technologies of sugarcane production and their level of adoption was quite low. A majority of small and medium farmers got information mainly from co-workers whereas a smaller proportion of the large farmers (only 30 to 45 percent) got information from these sources. The large farmers mainly obtained information related to sugarcane production from agriculture department, research institutions, mass media, and sugar mills.

A survey of farmers in the districts of Sheikhupura, Gujranwala, and Sialkot was conducted, using a questionnaire (Taj, Akmal, Sharif & Mahmood, 2009). The aim was to understand the ways by which end users were obtaining information regarding new agricultural developments. The results showed that irrespective of gender type, the relatives/friends, progressive farmers, and mass-media (T.V. and radio) were the major and most frequent used information sources. On the other hand, the farmers' interaction with fellow farmers and input dealer was relatively stronger than with the representatives of agricultural extension department, Zarai Taraqiati Bank Limited (ZTBL), and livestock and dairy department indicating that the role of extension departments was lower than expected. The authors recommended agro-technology promotion campaign for farmers through mass-media and the integration of progressive farmers with institutions doing research and promotion to increase rapid adoption and diffusion of resource conservation technologies.

Nosheen, Ali and Ahmad (2010) presented an analysis of gender specific sources of information regarding home and farm practices in the Potohar region. It was found that females obtained information most frequently from television (75%), friends (67.5%), relatives (61%), radio (39%) and local farmers (37%). On the other hand, the most frequently used information sources by the males were local farmers (73%) and relatives (73%), followed by friends (66.5%), television (62%), and radio (54.5%). Both male and female respondents perceived localized information sources, except T. V. and radio, more reliable whereas information sources like input / output dealers, books / booklets, and extension agents, which were most authentic, were considered less reliable which was quite surprising. It might be due to their low level of education. The authors suggested that the Information Ministry and mass media should ensure the provision of gender-based and equality information to the audience in a strong and convincing manner through their programs and articles.

Sadaf, Muhammad and Lodhi (2005) tried to assess the women farmers' need for agricultural extension services in Faisalabad tehsil. The women farmers needed assistance with regard to information in three areas of agriculture: crop, livestock and poultry production. The results showed that with regard to the crop production the rural women farmers needed assistance in areas such as storage, plant protection and sowing, transplanting, intercultural operation, drying, cotton picking, harvesting, using fertilizer, land preparation, winnowing, threshing, and husking, etc. For livestock and poultry production, the respondents needed technical advice in caring for the diseased animals / birds, feeding, calf rearing, watering, breeding / brooding, milking / hatching and milk processing. The majority of the women farmers favored agricultural extension services to get advice or assistance.

Sadaf, Javed and Luqman (2006) conducted a study in order to identify the preferences of rural women farmers for agricultural information sources used to obtain information in the areas of crop, livestock, and poultry production. The data were collected using a structured interview from 125 respondents actively engaged in farming selected through multistage random sampling. T.V. / radio, print media, extension workers, male family head / husband, neighbors, co-workers, and NGOs were the information sources available to them. These sources were placed in a very low category of preference by these women. They thought that the information sources such as male family head / husband, neighbors and co-workers were better for agricultural information. They expressed a very strong need for agricultural extension services. A large majority of the respondents preferred female agricultural extension agents as sources of agricultural information, followed by electronic media and fellow-farmers. The authors recommended that the government should launch gender-based training and educational programs for women farmers to equip them with the latest agricultural information.

Chaudhry, Muhammad, Saghir and Ashraf (2008) carried out a survey of 120 women farmers, selected randomly through multistage sampling technique, using an interview in Faisalabad to identify their access to various sources of information regarding new agricultural technologies. The survey found that personal contacts with friends (71%), neighbors (69%), relatives (68%) and mass media such as T.V. (65%), radio (45%), and print media (40%) were the major sources of information available to them. There was less use of information sources like private agencies (2.6%), pesticides dealers (2.3%), and agriculture department (0%) by the rural women farmers. A significant relationship between age and education of respondents and their sources of information such as T.V., radio and print media was found. It was concluded that there was a need for improved information dissemination system especially for rural women to enhance agricultural production.

Effectives of extension staff as source of information

The agricultural extension services provided by the government are an important source of information to the farmers. These services are designed to support farmers by supplying latest information in all agricultural areas in order to improve their performance. Sofranko, Khan and Morgan (1988) studied the extent of farmer-extension contacts for information by collecting data from 100 farmers from the former N.W.F.P. province. The emphasis of the study was on the level of contacts, the type of farmers having contacts with extension agencies, and assessment of the use of information received from these services. It was found that a very small number of farmers had contact with extension services and those that had such contacts were 'progressive' farmers. In general, farmers had a positive view of the information received from extension services.

Ali, Zia, Yousaf, Hanif, Chaudhry and Khan (1992) tried to determine the effectiveness of various information sources used by the sugarcane growers in the Crescent Sugar Mills Area, Faisalabad. The data were collected from 100 respondents, selected through multistage random sampling, by using an interview. A majority of the respondents relied mainly on relatives / friends / neighbors (65%) and radio (56%) followed by T.V. (17%), extension field staff (13%), Mills field staff (11%), and printed materials (9%). Among these sources of information, relatives / friends / neighbors and radio were the most effective as perceived by these farmers whereas other sources were seen as less effective. The authors suggested that agricultural extension workers should be given guidance about the utilization of progressive farmers as agents for information transfer and change.

Assessing the role of extension field staff in promoting agro-forestry among the farmers of the Bahawalpur district was the objective of Abbas, Hassan and Lodhi (2009). These farmers needed information and advice on general farm agro-forestry (98.3%), financial or investment to get better quality timber (89.2%), land rehabilitation related issues (85.8%), trees management (79.2%), the ways to integrate forestry with the existing farming system (78.3%), and marketing (77.5%). A majority of the respondents reported forestry extension wing as the most effective source of information followed by

radio, television, neighboring farmers, printed material, and provision of services by the University of Agriculture, Faisalabad. Agriculture helpline was considered less effective as the source of information which was quite surprising. The major problems in the adoption of agro-forestry as reported by these farmers were: the lack of capital, the lack of technical skills and assistance, and the lack of education and marketing facilities. It was also found that a majority of the farmers was aware of agro-forestry issues and showed their interest in growing forests. The authors recommended that government institutions should provide technical guidance to the agro-forestry farmers.

Role of print and electronic media

Farooq, Muhammad, Chaudhary and Ashraf (2007) assessed the role of print media in disseminating agricultural information among literate farmers by using an interview. The sample was selected through multistage random sampling process from Tando Allahyar, Hyderabad. The findings showed that print media and fellow farmers were the main sources of information used by all the respondents, followed by private sector (95%), television (81%), radio (75%), and extension field staff (67.5%). The fellow farmers were the major source of information, followed by T.V., print media, private sector and extension field staff. Pamphlets were the most used form of print media, followed by posters, newspapers, books / booklets, magazines, and journals.

An assessment of the role of electronic media in disseminating information regarding sugarcane production technologies among farmers of Faisalabad division was conducted by Abbas, Sheikh, Muhammad and Ashfaq (2003). A sample of 180 respondents, selected through stratified random sampling, was interviewed using a structured instrument. The results showed that a vast majority of the farmers (91.1%) relied mainly on fellow farmers, followed by extension staff (26.1%), electronic media (22.8%), and print media (11.1%). Among these farmers, 67 percent had their own radio and television sets, 56 percent listened to radio and watched television for agricultural programs, and more than half understood messages delivered by radio and television. Most of the farmers were satisfied with the timing of programs delivered by radio and T. V. and many of these farmers suggested 8-9pm as the most suitable time for agricultural programs on T. V. and radio.

An investigation of farmers' perceptions about the present status and future preferences of electronic media as an agricultural information source was conducted by Khan, Muhammad, Chaudhry, and Khan (2010) using an interview in the district of Faisalabad. The findings showed that farmers' awareness of various electronic media based agricultural programs and contacts such as radio broadcasts, T.V. telecasts, advertisements, short messages, websites, and mobile helpline was very low. The use of electronic media for agricultural information was not encouraging. T.V. was the most used information source, followed by mobile phone, radio, and telephone. Agricultural helpline was the least used source of information. The use of audio-video cassettes and the Internet as the sources of agricultural information was not found. However, the findings about the future preferences for obtaining agricultural information from electronic media showed some improving trends in each case as compared to the present use of electronic media.

Impact of education on information seeking

Rahim (2003) examined the impact of education on information use of farmers regarding adoption of improved gram cultivation practices in tehsil Takht-i-Nasrati, NWFP province. The data were collected from a sample of 150 farmers, selected through multistage random sampling, using a questionnaire. The results showed that a majority of the farmers (82%), who had adopted the improved gram varieties, were educated. This study also identified significant differences in the information seeking behavior of the literate and illiterate farmers. The literate farmers perceived agricultural extension agents as their reliable and mostly used source of information, whereas illiterate respondents sought information from co-farmers, friends, and relatives. It was recommended that the farmers must be informed about the improved agro-technology and practices such as 'cultivation of resistant varieties', weeding of diseased plants, what and how to apply fertilizer, caring of plants, and crop rotation, etc.

Information seeking by women farmers

An interesting aspect of information seeking in agriculture is the study of women farmers. More such studies have been done in Africa than any other region (Irivwieri, 2007; Okwu, & Umoru, 2009; Oladokun, 1994; Olowu, & Yahaya, 1998). Four of the studies reviewed above deal with this issue in Pakistan (Chaudhry, Muhammad, Saghir & Ashraf, 2008; Nosheen, Ali & Ahmad, 2010; Sadaf, Javed & Luqman, 2006; Sadaf, Muhammad & Lodhi, 2005). The details of these have been given above and will

not be repeated here. In general, Pakistani women, due to cultural reasons, do not engage in independent agricultural activity.

Information seeking for specific crops

Three of the studies reviewed above deal with specific crop growers – two with sugarcane (Abbas, Muhammad, Nabi & Kashif, 2003; Ali, Zia, Yousaf, Hanif, Chaudhry & Khan; 1992) and one with gram production (Rahim, 2003). The farmers producing cash crops, such as rice, cotton, maize, oil-seeds, fruits, and now flowers, need intensive information support from appropriate government institutions. Their information seeking behavior must be studied in order to increase agricultural output.

Discussion

Before discussing research outcomes from the reviewed literature, a note on methodological features of these research studies seems to be in order. First, all of these studies adopted structured interview as the primary data collection instrument. This means that the results were restricted by the researchers' own understanding of what was worthy of investigation because a list of information sources were pre-formulated. Second, the results from these studies are not comparable because these studies drew their samples from different geographical areas and adopted different sampling procedures, indicating that every geographical area brought in certain contextual implications. Bearing this in mind, it is quite interesting to note that these studies still came up with almost similar results.

The reviewed literature revealed that a majority of Pakistani farmers was illiterate and did not know how to use effective and efficient ways to improve their agricultural output. This seemed to be so because the information providing agencies were not performing their role effectively. The role of education was very vital and critical in improving farming activities. It was evident that the majority of farmers depended mainly on interpersonal relationships with friends, neighbors, relatives, co-farmers or progressive farmers, followed by mass media (radio and television only) in order to obtain their required information. The main modes of information transfer were personal contacts and observation. These findings are in line with the findings reported by Zhang and Yu (2009) that rural Chinese relied "mainly on interpersonal relationship, mass media and agricultural extension officers for information acquisition" (p. 67) and those of Dutta (2009) that the rural dwellers of developing countries considered 'informal networks' as their main sources of information. The findings did not confirm whether this dependability on informal social networks / interpersonal relationships for obtaining information indicated a real preference for informal communication or a compromise due to the lack of quality formal information infrastructure. If the preference for informal information sources was real, then the question of information reliability arose because rural dwellers might be misguided by those who are not trained in information selection and dissemination. The role of individuals providing information in the rural setting was also questionable because these individuals were not information professionals.

The use of printed materials and the Internet as the sources of information was very low because of the farmers' low level of education. The role of extension agents as a source of agricultural information was lower than expected. These farmers' information sources were mainly social in nature and related to the facility available at home or somewhere near indicating that this farming community was locality-oriented. It implies that farmers' intention to seek information about new innovations outside community was very low which meant that Pakistani farmers were still using conventional methods that yielded lower production per acre. Nearly all of these studies recommended need-based information infrastructure to meet information requirements of these farmers. A public library-based integrated rural information services system using socio-economic development information such as the one recommended by Anwar, Khan, Schabel and Tiwana (1976) was urgently needed.

The research examining the information seeking behavior of Pakistani farmers was very limited. These studies focused only on information sources available to farmers and their information source preferences. The review presented above adequately proves that very little attention has been given to farmers' information seeking and no attention to their information needs research in Pakistan by the LIS professionals. As a result, very little research on this critical topic has thus far been published. There is a critical need for the LIS professionals, agricultural research institutions, and the extension departments to take note of the current state of affairs and take steps to promote and conduct research in this area.

Conclusions

This limited amount of research and its narrow focus point to a critical need to conduct a comprehensive examination of the agricultural information infrastructure and services and prepare a

detailed plan for improving these. This exercise will only be meaningful if extensive information seeking behavior research is carried out, especially focusing on agricultural scientists and researchers, information providing agencies and specific groups of farmers. The efforts should be made to develop and provide integrated information services at the community level which cover socio-economic development, agriculture, health, and education. Such a service will lead to improved life of the rural people and make them better informed and more productive.

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