

**INFORMATION MANAGEMENT PATTERNS OF
EXTENSION PERSONNEL – AN ANALYSIS**

BY

K. ANAND, M.Sc. (Ag.)

**DEPARTMENT OF AGRICULTURAL EXTENSION AND RURAL SOCIOLOGY
CENTRE FOR AGRICULTURAL AND RURAL DEVELOPMENT STUDIES
TAMIL NADU AGRICULTURAL UNIVERSITY
COIMBATORE – 641 003**

2014

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EXTENSION PERSONNEL – AN ANALYSIS**

*Thesis submitted in part fulfillment of the requirements of the Degree of
DOCTOR OF PHILOSOPHY (Agriculture) in AGRICULTURAL EXTENSION
to the Tamil Nadu Agricultural University, Coimbatore.*

BY

K. ANAND, M.Sc. (Ag.)

ID NO. 11-604-001

**DEPARTMENT OF AGRICULTURAL EXTENSION AND RURAL SOCIOLOGY
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CERTIFICATE

This is to certify that the thesis entitled “**INFORMATION MANAGEMENT PATTERNS OF EXTENSION PERSONNEL – AN ANALYSIS**” submitted in part fulfillment of the requirement for the award of the degree of **DOCTOR OF PHILOSOPHY (AGRICULTURE)** in Tamil Nadu Agricultural University, Coimbatore, is a record of bonafide research work carried out by **Mr. K. ANAND** under my supervision and guidance and that no part of this thesis has been submitted for the award of other degree, diploma, fellowship or other similar titles or prizes. However, part of the thesis work has been published in peer reviewed scientific journal of national / international repute (copy enclosed).

Place: Coimbatore

Dr. V. RAVICHANDRAN
(Chairman)

Date :

Approved By

Chairman: **(Dr. V. RAVICHANDRAN)**

Members: **(Dr. S. PALANISWAMY)**

(Dr. T.R. SHANMUGAM)

(Dr. C.A. MAHANLINGAM)

Date:

EXTERNAL EXAMINER

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2.	Anand, K. and V. Ravichandran. 2014. Assessment of Information Management Pattern among Extension Personnel. Vol.7 No.13 (Published).	7(21)	13-3402	Trends in Biosciences – A fortnightly international journal	2.7

LIST OF ABBREVIATIONS

IMP	–	Information Management Patterns
ICT	–	Information and Communication Technology
TNAU	–	Tamil Nadu Agricultural University
JDA	–	Joint Director of Agriculture
AV aids	–	Audio-Visual aids
DDH	–	Deputy Director of Horticulture
ADA	–	Assistant Director of Agriculture
ADH	–	Assistant Director of Horticulture
AO	–	Agricultural Officers
HO	–	Horticultural Officers
Dy AO	–	Deputy Agriculture Officer
SDA	–	State Department of Agriculture
SMS	–	Subject Matter Specialists
KVK	–	Krishi Vigyan Kendra
RRS	–	Regional Research Station
ATMA	–	Agricultural Technology Management Agency
URL	–	Uniform Resource Locator
DMI	–	Dynamic Market Information
KCC	–	Kisan Call Centre
TOT	–	Transfer of Technology
IMI	–	Information Management Index
T & V	–	Training and Visit
WWW	–	World Wide Web

Abstract

ABSTRACT

INFORMATION MANAGEMENT PATTERNS OF EXTENSION PERSONNEL – AN ANALYSIS

BY

K. ANAND, M.Sc. (Ag.)

Degree : Doctor of Philosophy (Agriculture) in Agricultural Extension

Chairman : **Dr. V. RAVICHANDRAN, Ph.D.**

Professor (Agricultural Extension)

Department of Agricultural Extension and Rural Sociology

Tamil Nadu Agricultural University

Coimbatore - 641 003.

2014

The study primarily aimed to analyse the information management patterns of extension personnel and their capacity building needs. An attitude scale was developed to measure the attitude of extension personnel towards ICT tools. Besides, an information management index was developed to assess information management patterns of extension personnel. Further, the study focused on identifying the associating and contributing profile with attitude of extension personnel towards ICT tools and information management patterns. The constraints and suggestions were identified and a prescriptive model for effective information management patterns was proposed.

Coimbatore, Tirupur and Erode districts of Tamil Nadu were purposively selected for the study. All the blocks in these three districts were selected. Out of 154, 121 extension personnel responded. Thus, the final sample size comprised 121 extension personnel. Using equal appearing interval method, an attitude scale was constructed to measure the attitude of extension personnel towards ICT tools. Indexes were formulated separately for information acquisition, information processing (Information evaluation + information treatment + information storage + information transformation techniques) and information dissemination. The data were collected using a well structured and pre-tested mailed questionnaire from the respondents. The data were analyzed by using appropriate statistical tools.

Half of the extension personnel (49.58 %) were in old aged category followed by 31.40 per cent in young age and 19.02 per cent in middle age categories. More than half of the extension personnel (55.38 %) were B.Sc (Agri/Horti) degree holders followed by M.Sc (Agri/Horti) degree holders (38.01 %). More than two-third (43.80 %) of the respondents had work experience of less than 14 years followed by 41.32 per cent of the respondents were with work experience of more than 20 years. Majority (69.43 %) of the respondents perceived more conducive organizational climate. Three-fourth of the respondents were found in getting assistance from others and the rest (25.26 %) belonged to 'self doing' category with respect to managerial ability. Majority (66.90 %) had high level of value orientation followed by 33.10 per cent of the respondents who were found in medium level.

With respect to the possession of communication gadgets, majority (51.24%) of the respondents were in medium level category followed by high and low levels (29.75 % and 19.01 %). Most (82.64 %) of the respondents perceived high level of workload followed by 17.36 per cent in moderate level workload. More than two-third (68.60%) had high level of technical knowledge followed by 30.57 per cent with moderate level. Majority (58.67 %) of the respondents had moderate level of achievement motivation. High level of job involvement was observed among 50.41 per cent of the respondents. Nearly two-third (60.33 %) of the respondents were found in medium level followed by 39.67 per cent of respondents in high level of job satisfaction category. More than half (52.06%) of the respondents had moderate level of self confidence level. Majority (67.77 %) of the respondents attended more than two trainings followed by 26.46 per cent of the respondents who attended less than two trainings. More than half (50.41%) of the respondents in total sample had considerable media talks and publications.

Majority (45.45 %) of the extension personnel were found to possess moderately favourable attitude towards Information and Communication Technology (ICT) tools, followed by 30.58 per cent who had less favourable attitude. The rest (23.97 %) had more favourable attitude towards ICT tools. Work experience, organizational climate, trainings undergone and media talks and publications were observed to have positive and significant contribution at one per cent level of probability level. Managerial ability,

value orientation, job involvement and technical knowledge had positive and significant contribution at five per cent level of probability level and the R^2 value was 0.652.

Nearly half section of the respondents (47.94 %) were in medium level of overall information management patterns followed by high (34.71 %) level. Scientific Workers Conferences and Monthly Zonal Workshops were the primary sources of information acquisition patterns. Majority of the extension personnel used attribution of information for information evaluation. Preparing short and simple words and using simple languages were mostly used for information treatment. The stored information has been found transformed through popular articles, leaflets, posters and scripts for dissemination to the farming community. Front line demonstrations, e-mail, posters and leaflets were the primary information dissemination methods.

Significant differences were observed on overall information management patterns among the three cadres. Educational status, value orientation, workload perception, technical knowledge, job involvement, work experience, organizational climate, possession on communication gadgets, trainings undergone and publications were found to have exhibited positive significant contribution at one per cent level of probability level. Job satisfaction and self confidence exhibited significant contribution at five probability level and the R^2 value was 0.724.

Capacity building needs were expressed more for MS word (7.51), text document (7.30), word process (7.24) and MS power point (7.22). Tamil Nadu Agricultural University (2.74), KVK in districts (2.37) and office of Joint Director of Agriculture in the concerned districts (2.21) were the most preferred venues of training. Majority (47.11 %) respondents preferred three to five days training on information management. Lecture and AV aids (7.09), group discussion (6.48), exhibitions (6.28), field trips (6.26) and brainstorming (6.22) were the major preferred training methods. Most of the extension personnel preferred Tamil Nadu Agricultural University main campus scientists.

Non-availability of latest scientific or popular journals in the office library (65.29), more time spent on miscellaneous work (73.55 %), lack of adequate funds (76.86 %), lack of conveyance facilities or mobile audio visual units (69.42 %) and too many administrative

formalities for publishing articles in journals (35.54 %) were the major constraints perceived to be active in information management patterns.

Conducive organizational climate, sensitization of workload perception, organizing adequate sensitivity training programmes, consideration of future capacity building needs and provision of infrastructural facilities and ICT amenities would improve the information management patterns among the extension personnel. The strategic model suggested would help to empower extension personnel into future information managers for the benefit of farming community.

Introduction

CHAPTER I

INTRODUCTION

Agricultural extension is becoming a social innovation and potential force in bringing rapid agricultural development and socio-economic progress. Over the years, the public extension system has pivotal role in disseminating technologies to farmers to achieve higher production. The growth and development of agriculturally predominant India mainly depends on the progress made in science and technology. Rural development and socio-economic changes can be attained with the help of knowledge and information, which are the basic ingredients of communication. Information and communication have always mattered in agricultural extension. The achievement of all our agricultural programmes depends to a greater extent on the empowerment of the extension workers to ensure, deliver and direct a steady flow of right information to the farmers through appropriate extension methods, sources, channels and activities at right time in terms of information management.

In India, the agricultural scenario has been in the process of change during the recent years. In the developing world today, it is not the lack of technological packages, but is the rate of transfer of technology from the point of generation to the units of its utilization in the field of agricultural alone. So there exists an increasing gap of information management patterns among the extension personnel.

Agricultural research and its management of information have a symbiotic relationship and the symbiosis will be strengthened if an effective information management link between the extension personnel, researchers and farmers are framed.

The most important duty of the extension personnel is to acquire the farm information and to communicate to the farmers after treating the same. Mere acquisition of sufficient information has no guarantee that the extension personnel could treat them very easily. It depends on so many interrelated factors. Of which, information management is one of the effective vital factors influencing heavily on the communication skills of the extension personnel. A new agenda for agricultural extension personnel in terms of required competencies in knowledge and skills such as technical,

organisational, managerial, communication and business skills will be required in order to meet challenges of new millennium (Hassanullah, 1999).

After going through past trend of agricultural production and status of agricultural extension system in our country, it could be found that the focus of agriculture remained on achieving higher productivity. The state and central government's interventions also remained focused to achieve this major goal and provide technological support to farmers through extension services and inputs. More and more activities have been planned for capacity building of the extension personnel to enhance their technical skills and capabilities for transfer of technology to farmers through training and field demonstrations (Kalim, 2005).

The extension functionaries in future years under changing scenario, would have to play larger role as managers to discharge their responsibilities. One of the major areas for development of management skills for extension personnel will be information management.

It is necessary that the public sector extension system continue to play crucial roles in technology dissemination. To address the needs of the farmers as well as the research scientists, extension personnel have to be empowered on specialized extension services and management of information. To achieve this role, the extension personnel have to be empowered with various information management techniques.

In the era of information technology, where information play vital and effective roles in transfer of technology, extension personnel will have to be abreast of latest knowledge as well skills in use of various ICT devices such as touch screen kiosks, multimedia, video conferences etc. In the future years too, the area of information management will be the largest segment for competency building among agricultural extension personnel for rendering service to farming community.

Research has shown that the personal and psychological characters of the extension personnel have a bearing upon his role on information management patterns. Likewise, the psychological factors like job satisfaction, job involvement and organizational climate have influential effects on the information management patterns. So there is a need to identify factors related to the information management patterns of extension personnel at block level who have much contact with the farmers and research scientists (Kalim, 2005).

Conceptual Framework - Information Management

Rowley (1988) mentioned that information management includes organisation-wide information policy planning, the development and maintenance of integrated systems and services, the optimization of information flows and the harnessing of

leading-edge technologies to the functional requirements of end-users, whatever their status or role in the parent organization.

Choo (1998) proposed a process model of information management. Choo's model of Information Management entails 5 basic steps:

- Identification of information needs
- Information acquisition
- Information organization and storage
- Information distribution
- Information use

Each step requires the planning, the organization, the coordination and the control of a number of activities supported by information technology. The ultimate goal of information management is to ensure that information is storable and retrievable. Simply, information management system is assisted by information technology.

Among the other inputs, the development of agricultural technologies require a timely and systematic transmission of useful and relevant agricultural information (messages) through relatively well educated technology dissemination (extension) from formal technology generation system (research) via various communication media (channels) to the intended audience – farmers (Oladele, 1999).

Oladele (1999) further stated that information management (IM) is the collection and management of information from one or more sources and the distribution of that information to one or more audiences. Wilson (2009) defined information management as the management of the information resources of an organization and involves the management of information technology.

Information management brings together two basic concepts: information and management. Information is broadly defined in this guidance and includes all manner of data in its many forms. The various types of information agencies collect pertains to individuals/families that are the recipients of public child welfare services, business entities that provide services (i.e., public and private agencies as organizations), workforce (i.e., personnel), communities (e.g., census data or other population level data) and data of a

fiscal nature (e.g., cost analysis, budget projections). (Source: www.businessdictionary.com/Wigand, 2011).

March and James (2003) reported that an extension person who is called **information management functional specialist** carries out roles and responsibilities that require function-specific knowledge, skills and attributes related to managing information such as those found in records and document management, library services, archiving, data management, content management, business intelligence and decision support, information access, information protection and information privacy.

Information Management in Extension System

The State Department of Agriculture in Tamil Nadu was established in 1882 based on the recommendations of the Indian Famine Commission (1880). In 1904, the Agriculture Department was organised as an independent unit with the Director of Agriculture and necessary supporting staff. In 1905, the Agricultural College was transferred to function under the Department from Directorate of Public Instruction. Several changes took place in its organisational set up owing to the bifurcation of the State, District and Taluks etc.

In 1971, the fundamental research and higher education activities of the Department hitherto under the control of the Department was transferred to the newly formed Tamil Nadu Agricultural University, Coimbatore excepting the Regional Research Stations. In 1977-78, the activities of the Department with regard to Agricultural Marketing were separated and vested with the newly formed Directorate of Agricultural Marketing with headquarters at Trichy since shifted to Chennai. Likewise in 1979-80 two Departments, namely, Seed Certification and Horticulture and Plantation Crops were formed separating the subjects from this Department. In 1980-81 two more Departments *viz.*, Oilseeds and Agricultural Engineering were formed. In 1981-82, all the research stations which were hitherto with the Department were handed over to Tamil Nadu Agricultural University leaving behind only extension activities, inputs supply, quality control, soil testing and adaptive research. In 1991, the Oilseeds Department was merged with the Department of Agriculture (Parthasarathy, 2009).

In 2003, ATMA has been introduced in Tamil Nadu and it act as platform to perform the roles of all stakeholders. Before the restructuring in 2008, the three-tier system of functioning was in operation. It includes district level headed by JDA, taluk level headed by ADA and block level headed by Agricultural Development Officer. After identifying the lacuna, SDA was restructured in to two tier system viz., district and block.

There is an increasing realization among the extension personnel regarding the potentialities of information management. The extensive use of modern information technology needs to be promoted for communication between researchers, extension workers and farmers to transfer technologies and information in a cost effective manner.

At present the extension personnel in State Department of Agriculture has the major responsibility of transferring technologies to the farming community. The extension workers encounter number of problems in contacting farmers and the researchers due to physical proximity and other factors. Hence, the application of information management offers excellent possibilities, for strengthening TOT between extension systems and farmers. Thus, for effective and efficient service delivery, the extension workers need to be appropriately supported on use of information management in their transfer of technologies effort and interventions.

Estimates indicated that 60.00 per cent of farmers do not access any source of information for advanced agricultural technologies resulting in huge adoption gap (NSSO, 2005). In this context, it is expected that convergence of various extension systems will improve the information management patterns among the extension personnel.

Due to the importance given by the Tamil Nadu to improve information management through restructuring the agriculture department, it was thought that it would be more appropriate to undertake a study to assess the information management patterns of extension personnel and their future capacity building needs in different cadres, Thus, the results of the study may activate the process of necessary modifications in the information management patterns of officials to face the challenges of TOT. Keeping this view, the present study entitled '**Information Management Patterns of Extension Personnel – An Analysis**' was taken up with the following objectives.

Objectives

1. To study the profile of extension personnel
2. To measure the attitude of extension personnel towards the Information and Communication Technology (ICT) tools
3. To assess the information management patterns of extension personnel using an index
4. To find out the association and contribution of profile with attitude and information management patterns of extension personnel
5. To elucidate the capacity building needs of extension personnel
6. To identify the existing constraints and suggestions and propose a futuristic model to empower the extension personnel on information management strategies

Scope of the study

Several studies have been conducted in the field of information and communication. But no much studies are available on the information management patterns. Thus, it becomes the important study which would provide an insight into different dimensions of information management patterns.

The findings of this study would be of immense utility to the extension personnel, researchers, administrators and policy makers to formulate and execute suitable strategies in enhancing the use of information management for transfer of technology.

This study may throw light on the facilities to be provided for solving problems and bottlenecks faced by the extension personnel for effective information management patterns. The study also helps the administrator to plan and to provide suitable facilities in evolving suitable policies for effective information management. Particularly it would be helpful to give a detailed account of accessibility and use of information management patterns among different cadres of extension personnel and their socio – economic profile in using these tools. Above all, this study may offer empirical evidences to all aspects of field of information management which may be used for hypothesising future research problems.

Limitations of the study

As the sample of this study was confined to extension personnel of the selected three districts, the generalization could be made after careful consideration of the similar situations. But the efforts have been made to get factual data from them.

Organisation of the study

The study is organised under the following five chapters.

- Chapter 1 : INTRODUCTION – Explains the importance of the topic, objectives, scope and limitations of the study.
- Chapter 2 : REVIEW OF LITERATURE – Deals with the conceptualisation based on review of literature.
- Chapter 3 : RESEARCH METHODOLOGY – Describes the study area, the research design, the sampling design, selection and measurement of variables, tools for data collection and statistical tools used.
- Chapter 4 : FINDINGS AND DISCUSSION – Discusses the results of the study to draw specific inferences.
- Chapter 5 : SUMMARY AND CONCLUSIONS – Briefly summarises the work done and the salient findings. Explains the implications based on the results of the study.

Review of Literature

CHAPTER II

REVIEW OF LITERATURE

The prime focus of this chapter is to analyze theoretical and empirical information concerning the present study. Review of available literature provides a strong foundation for scientific investigation. It also forms as comparative message to bridge the research relationship between the past and future. Such an effort will highlight the attempts made and provide a clear comprehension of similar studies. A search on earlier research studies revealed that only few have taken up studies on information management of the extension personnel. Keeping this in view and based on the objectives set forth, attempt was made to review and present literature relevant to the study is presented under the following sub-heads.

2.1. Profile characteristics

2.2. Attitude towards the Information and Communication Technology (ICT) tools

2.3. Information Management

2.4. Capacity building needs in Information Management

2.5. Constraints and suggestions

2.1. Profile characteristics

2.1.1. Age

Birajdar (2002) found that majority (63.33 %) of the extension personnel belonged to middle age group (36-50 years) followed by 21.66 per cent in old age (more than 50 years) and 15 per cent in young age (<35 years).

Adesope *et al.*, (2005) revealed that majority of the extension officials (32.20 %) were in the category of 40-45 years, followed by 46-50 years (27.60 %), 21.80 per cent of the respondents were in above 50 years category and 18.40 per cent were below 40 years category.

Mishra *et al.*, (2007) revealed that majority of the extension officers belonged to middle age group category i.e. 35-50 years and nearly 20 per cent of them were in old and young age group category. Nearly half of the men were in above 50 years category. Among women, majority were in middle age group category and none were below 35 years.

Parthasarathy (2009) revealed that cent per cent of the respondents were in old aged category. This is due to the fact that ADAs being the senior officers possess 20-25 years of service. Hence, cent per cent of the respondents fall under the old age group. Further, he reported that majority (61.91 %) of the respondents had fallen under old age category followed by young (23.80 %) and middle (14.29 %) aged. Since there is no posting for AOs by direct recruitment for a long period, the lengthy years of service put by Deputy Agricultural Officers who promoted from AAOs also contribute for such high old age category of respondents.

Dhaka and Chayal (2010) found that majority (46.67 %) of the respondents belonged to middle age group followed by young age (38.67 %) and old age (14.67 %) group.

Purnomo and Yi-Hsuan (2010) indicated that majority of the respondents (51.30 %) were in 40-50 years category, followed by 27.9 per cent in above 50 years category and 20.80 per cent were in below 40 years category.

Sankri (2012) revealed that majority of the respondents were from middle (48.33 %) and old age (46.67 %) groups, followed by young age group (5.00 %).

2.1.2. Educational Status

Schmiesing *et al.*, (2003) found that majority (89.00 %) of the respondents had completed masters degree as their highest completed degree. A modest number (43.00 %) of respondents had completed their highest degree in education, followed by agriculture (20.00 %) and home economics (19.00 %).

Dhaka and Chayal (2010) revealed that majority (50.67 %) of respondents were Diploma holders followed by graduate (42.67 %) and Post graduate and above (6.67 %). Further the respondents' low level of education, it is an advantageous to provide ICT services in Hindi and other regional language. In addition, 44.00 per cent had a high exposure to the mass media followed by 30.67 per cent and 25.33 per cent had medium and low exposure to the mass media respectively.

According to the study conducted by Oladele and Mabe (2010) majority of the respondents (87.50 %) were diploma holders and 12.5 per cent were B.Sc degree holders.

Purnomo and Yi-Hsuan (2010) revealed that majority of the respondents (49.40 %) were M.Sc. degree holders and 41.40 per cent of the respondents were B.Sc degree holders followed by 4.60 per cent of the extension officials were Ph.D and other equivalent degrees.

Lashgarara *et al.*, (2011), revealed that 21 per cent of the respondents had MS degree and 11.10 per cent had upper diploma degree holders.

Sankri (2012) found that majority of the respondents (75.00 %) were B.Sc (Agri) holders followed by 15 per cent with M.Sc (Agri), whereas 6.66 per cent of the B.Sc (Agri) holders and 1.67 per cent of M.Sc (Agri) holders completed additional courses like MBA and PGDAEM. In addition, 1.67 per cent of the respondents completed up to Ph.D.

2.1.3. Work experience

Schmiesing *et al.*, (2003) from their study revealed that 58.77 per cent of the respondents have more than ten years of experience.

According to Mishra *et al.*, (2007), among men, 37.14 per cent of them belonged to medium category of total experience, while 34.29 and 28.57 per cents were in the low and high categories of total experience respectively. Among women category, most (92.31 %) were found in the medium category. The remaining 7.69 per cent of the women officials were found in low category of total experience. There were no women officials found in the high category of total experience.

Parthasarathy (2009) revealed that the respondents were classified based on the years of experience which have gained in the department. Half of the respondents (50.00 %) were having high level of experience followed by medium (41.67 %) and low (8.33 %) levels. It was obvious that majority of the respondents were old aged having high experience. Further, he reported that two-third (71.44 %) of the AOs / Deputy Agricultural Officers had high level of experience followed by low (23.80 %) and medium (4.76 %) levels of experience. This might be due to the fact that two-third of AOs / Dy.AOs were having more than fifteen years of service.

Bisht *et al.*, (2010) revealed that majority of the scientists (55.67 %) were old aged, holding Ph.D degree and working in the post of Associate Professor. Nearly half of the scientists were having more than 26 years of job experience. Majority of them (55.24 %) got low level of professional productivity scores.

Oladele and Mabe (2010) concluded that majority (67.50 %) of the respondents had 10-20 years of experience in job followed by 25.00 per cent had more than 20 years and 7.50 per cent of the respondents had less than 10 years of experience.

Sankri (2012) revealed that that 38.34 per cent of the extension officials had experience of more than 20 years followed by 33.33 per cent of the respondents in the category of 15 – 20 years of experience. The percentage of respondents having experience upto 14 years were 28.33 per cent.

2.1.4. Organizational Climate

Halakatti and Sundaraswamy (1997) found that majority (68.00 %) of Agricultural Assistants in Karnataka belonged to medium level of organizational climate perception category, followed by 22.00 and 10.00 per cent of them belonged to low and high categories respectively.

Meti and Kettappa (1997) found that majority (59.00 %) of the respondents perceived the organizational climate as facilitating, followed by highly and least facilitating (23.00 and 18.00 %), respectively.

Babukumari *et al.* (1998) from her study found that 45.00 per cent of the farm scientists perceived the organizational climate as favourable followed by less favourable (28.33 %) and more favourable (26.67 %).

Veeraswamy *et al.*, (1999) reported that majority (75.00 %) of the extension personnel belonged to medium organizational climate perception category followed by 13.00 and 12.00 per cent of them belonged to high and low organizational climate perception respectively.

Mohan Basco (2000) found that nearly 74.00 per cent of them perceived the organizational climate as facilitating while 14.63 and 12.19 per cent of them perceived it as highly facilitating and least facilitating respectively.

Naganada (2005) observed that majority of ADAs (73.30 %) perceived the organizational climate as favourable as compared to AOs (53.30 %), whereas the most favourable category was observed among equal number of ADAs (8.30 %) and AOs (6.70 %).

Jansirani (2006) found that majority (57.79 %) of the extension personnel had reported moderately conducive organizational climate existing in their organization.

Sandika (2007) from her study revealed that nearly fifty percent of respondents perceived the organizational climate of Department of Animal Husbandry and Veterinary Services as favourable and another 22.00 percent of them perceived it as most favourable. Further she found that majority of veterinary officers (55.00 %) perceived the organizational climate as favourable as compared to veterinary livestock inspectors (45.00 %).

Parthasarathy (2009) revealed that majority (91.67 %) of the respondents perceived that there existed a highly conducive to moderately conducive organizational climate. The guidance from the higher officials, the intra-departmental cooperation among various cadres might have contributed the reasons for such atmosphere. Further he reported that majority (80.95 %) of the AOs / Dy.AOs were opined that the organizational climate was high to moderately conducive. This might be due to the reasons like guidance and supervision, cooperation of co-workers and farmers of their area resulted such level of organizational climate.

2.1.5. Managerial Ability

The ability to make decisions and lead subordinates within an organization. Three most common skills include: 1) human skills - the ability to interact and motivate; 2) technical skills - the knowledge and proficiency in the trade; and 3) conceptual skills - the ability to understand concepts, develop ideas and implement strategies. Competencies include communication ability, response behavior and negotiation tactics. (<http://www.businessdictionary.com/definition/managerial-skill.html>, 2000).

Narmatha *et al.*, (2002) revealed that more than half the proportion of respondents (54.00 %) had high level of managerial ability followed by 28.00 and 18.00 per cent of the respondents who were found to have medium and low levels of management orientation respectively.

Madhu Prasad *et al.*, (2008) revealed that half the proportion of respondents (50.00 %) had medium level of managerial ability followed by low (30.65 %) and high (19.35 %) levels of managerial ability.

2.1.6. Value orientation (Cosmopolitanness - localitiness)

Sampath (1994) revealed that majority of the respondents (73.49 %) belonged to medium to high categories of value orientation. Nearly one-fourth (26.51 %) of the respondents had low level of value orientation. This might be due to the fact that due to the periodical transfer they might have developed interest in learning new things from outside their social system.

Shavitha (2002) stated that half (50.00 %) of the extension personnel had high value orientation followed by low (31.82 %) and medium (18.18 %) levels of value orientation.

Jansirani (2006) found that majority (59.63 %) of the extension personnel possessed moderate level of value orientation followed by high (22.94 %) and low (17.43 %) levels.

2.1.7. Possession of communication gadgets

The use of computers by extensionsists has been noted as crucial part of extension development (Martin et al., 2001).

Sankri (2012) revealed that 45.00 per cent of the respondents had medium level of modern electronic gadgets possession. More or less equal proportion (28.34 % and 26.66 %) of the respondents with low and high level of possession of modern electronic gadgets in home, respectively. She also found that majority (53.33 %) of the respondents had low level of possession of modern electronic gadgets in office followed by 41.67 per cent of the respondents in the medium level of possession of modern electronic gadgets. Only meager (5.00 %) respondents were in high level of possession of modern electronic gadgets.

Jayaraj (2013) revealed that 45.00 per cent of the respondents had medium level of modern electronic gadgets possession. More or less equal proportion (28.34 % and 26.66 %) of the respondents had low and high levels of possession of modern communication gadgets.

2.1.8. Workload perception

Vijayaraghavan and Senthilvinayagam (1994) concluded that the job involvement was negatively associated with the workload and job stress of respondents.

Jayalakshmi (2000) found that 27.69 per cent of the AAOs perceived low workload followed by 23.08 per cent with high workload and 19.23 per cent with medium level of workload.

Kutilek and Conklin (2002) found that the work/life issues are of great concern to many extension employees. Sixty-five percent identified the most critical work/life challenges as heavy work load, evening and weekend time commitments and lack of control or job autonomy.

Shavitha (2002) stated that half (50.00 %) of the extension personnel had high workload perception followed by low (31.82 %) and medium (18.18 %) levels of workload perception.

Jansirani (2006) found that majority (59.63 %) of the extension personnel possessed moderate level of workload perception followed by high (22.94 %) and low (17.43 %) levels.

Parthasarathy (2009) revealed that workload perception was an important variable where one-third (75.00 %) of the ADAs having moderate to high levels. Being in a reputed position, the ADAs perceive about their nature of work accordingly. Further, he reported that most (90.48 %) of the respondents expressed high to moderate levels of work load due to multiple jobs assigned to them with a pressure to complete them in scheduled time period.

Sidhakaran (2008) found that 42.80 per cent of extension personnel expressed medium level of work load followed by equal amount (28.60 %) expressed high and low levels of work load.

2.1.9. Technical knowledge

Kalaivani (1999) reported that a vast majority of ADAs (83.33 %) had medium level of technical knowledge, only 16.67 per cent had low level of technical knowledge. Among ADOs, 36.84 per cent had medium level of technical knowledge and the remainders (31.58 %) were found equally distributed in low and high levels respectively. Similarly an equal percentage of AOs (43.75 %) have been observed low and high levels

of technical knowledge leaving 12.50 per cent at medium level. Further, stated that among AAOs, 42.86 percent of the respondents had low level of technical knowledge followed by 38.57 per cent and 18.57 per cent at high and medium levels respectively.

Parthasarathy (2009) revealed that most (91.67 %) of the respondents perceived that there existed a highly to moderate level of technical knowledge. The guidance from the higher officials the intra-departmental cooperation among various cadres might have contributed the reasons for such atmosphere. Further, he reported that most (80.95 %) of the AOs / Dy.AOs were opined that the technical knowledge was high to moderately levels.

2.1.10. Achievement Motivation

Narmatha *et al.*, (2002) revealed that half the proportion of the respondents (51.00 %) had high level of achievement motivation followed by 32.00 and 17.00 per cent of the respondents with medium and low levels of achievement motivation respectively.

Palmurugan (2002) opined that a winning margin 87.80 per cent of respondents had possessed medium level of achievement motivation whereas a meager per cent had high (1.40 %) and low levels (10.80 %) of achievement motivation.

Femina (2003) inferred that majority (58.87 %) of the respondents had high level of achievement motivation followed by medium level (41.13 %) of achievement motivation.

Hema (2003) observed that 40.83 per cent of the respondents had medium level of achievement motivation, followed by high (34.17 %) and low (25.00 %) levels of achievement motivation.

Shanthi (2004) reported that more than two-fifth of the respondents (45.83 %) fell under medium category of achievement motivation followed by 31.67 per cent belonged to high and 22.50 per cent belonged to low levels of achievement motivation categories.

Asokhan (2006) found that exactly cent 100 per cent had attained a medium to high level of achievement motivation whereas none had fallen under low level of achievement motivation.

Dillikumar (2006) observed that 43.33 per cent of the respondents had medium level of achievement motivation followed by high (30.00 %) and low (26.67 %) levels of achievement motivation.

Selvarani (2006) reported that more than half (51.54%) of the respondents had high level of achievement motivation. Less than one-fourth of the respondents had medium (24.62 %) level of achievement motivation followed by low (23.84 %) level of achievement motivation.

Mukesh (2007) revealed that forty per cent of the women SHG members (42.50 %) had medium level of achievement motivation followed by 35.00 and 22.50 per cent of the respondents with low and high levels of achievement motivation.

Prasad *et al.*, (2008) observed that majority (75.81 %) of the respondents had medium to high level of achievement motivation followed by one-fourth (24.19 %) of the respondents who had low level of achievement motivation.

Sathiyabama (2008) observed that most of the respondents were found to possess high (41.00 %) level of achievement motivation followed by medium (40.00 %) level of achievement motivation. Only 19.00 per cent of the respondents had low level of achievement motivation.

Tamilselvi and Vasanthakumar (2008) reported that majority (66.00 %) of the respondents were found to possess high level of achievement motivation followed by 26.00 per cent with medium level. Only 8.00 per cent of the respondents had low level of achievement motivation.

Meenakshi (2011) reported that nearly half (48.33 %) of the respondents had high level of achievement motivation followed by 26.67 per cent and 25.00 per cent of the respondents had medium and low levels of achievement motivation respectively.

2.1.11. Job Involvement

Lenin and Veerabhadraiah (1997) found that large number of AAOs (56 to 63 %) had more experience and high job involvement. Further, they reported that the AOs (SMS) had low level of job involvement.

Viswanathan (1997) observed that most of the AOs (77.40 %) fell under medium job involvement category while 12.90 per cent and 9.70 per cent were under low and high job involvement categories respectively.

Senthil *et al.*, (1998) in their study on extent of job involvement and time management of Assistant Agricultural Officers in T and V system, found that 43.00 per cent of Assistant Agricultural Officers working under T and V system in Tamil Nadu belonged to the medium job involvement category while 37.33 per cent and 19.32 per cent belonged to high and low levels of job involvement, respectively.

Hanchinal (1999) found that comparatively higher percentage (36.67 %) of the extension personnel were grouped in low job involvement category one-third (33.33 %) of the respondents were grouped in medium job involvement while 30 per cent of them were in high job involvement category.

Kalaivani (1999) reported that a vast majority of ADAs (83.33 %) had medium level of job involvement only 16.67 per cent had low level of job involvement. Among ADOs, 36.84 per cent had medium level of job involvement and the remainders (31.58 %) were found equally distributed in low and high levels respectively. Similarly an equal percentage of AOs (43.75 %) have been observed low and high level of job involvement leaving 12.50 per cent at medium level. Further, it has been stated that among AAOs, 42.86 percent of the respondents had low level of job involvement followed by 38.57 per cent and 18.57 per cent at high and medium levels respectively.

Mohan Basco (2000) in his study on job performance and job satisfaction of Assistant Agricultural Officers found that majority (74.39 %) of the Assistant Agricultural Officers belonged to medium job involvement category while 12.19 per cent had low job involvement and 13.41 per cent had high level of job involvement.

Manjunath (2004) in his study revealed that majority (66.67 %) of extension workers belonged to medium job involvement category followed by 23.81 and 9.52 per cent of them belonged to high and low job involvement categories respectively.

Jansirani (2006) reported that majority (53.13 %) of the researchers had moderate job involvement followed by high (21.87 %) and low (21.87 %) levels.

Parthasarathy (2009) revealed that more than half of the respondents (58.34 %) were having high level of job involvement followed by medium level (33.33 %). The respondents were old and experienced has displayed high level of job involvement. Further he reported that more than three-fourth (80.95 %) of the respondents had high to medium level of job involvement. This might be due to introduction of new schemes and new working environment due to restructuring of State Department of Agriculture.

The degree to which an extension worker is engaged in and enthusiastic about performing their work (Business Dictionary, 2014).

2.1.12. Job satisfaction

Mohan Basco (2000) in his study on job performance and job satisfaction of Assistant Agricultural Officers found that more number of Assistant Agricultural Officers

(67.07 %) had medium job satisfaction, whereas, 20.73 per cent had low and only 12.19 per cent had high job satisfaction.

Schmiesing *et al.*, (2003) found that extension agents had a high level of job satisfaction.

Manjunath (2004) in his study found that majority (95.24 %) of the extension workers were in medium job satisfaction category while only 4.76 per cent of them were in high job satisfaction category. It was observed that none of the extension workers was noticed in low job satisfaction category.

Onu *et al.*, (2005) examined the factors affecting job satisfaction of field extension workers in Enugu State Agricultural Development Programme in Nigeria. The field extension workers indicated low level of satisfaction with their job content, conditions of service and working environment, which were subsequently identified as key factors that could enhance job satisfaction among extension personnel in Nigeria.

Mishra *et al.*, (2007) revealed that 13.11 per cent of overall extension officers exhibited high level of job satisfaction, 18.03 per cent indicated low level of job satisfaction and majority (68.85 %) of the extension officers belonged to medium level of job satisfaction category. Among men category, 17.14 per cent men had high job satisfaction and 20.00 per cent had low job satisfaction. Majority (62.86 %) of the men extension officers had medium job satisfaction. Among women category, 7.69 per cent had high job satisfaction, 15.38 per cent had low job satisfaction, whereas majority (76.92 %) of the women extension officers had medium job satisfaction.

Bisht *et al.*, (2010) observed that 22.00 per cent scientists got ICT training at national level training programmes for two to three weeks duration followed by 13.22 per cent scientists who participated in a month long training. About four out of ten scientists under study received ICT training in refresher courses at university level. Only 4.56 per cent of the scientists got a chance to attend ICT training at international level for about three months.

Foor and Cano (2011) in their research on predictors of job satisfaction among selected agriculture faculty revealed that the majority of faculty members (77.00 %) were moderate to very satisfied with their job.

Hosenally (2011) stated that training need analysis done at the Agricultural Research and Extension Unit in Mauritius was found that the main causes in performance gap of extension officers were identified. In addition, 39.30 per cent of the extension officers claimed that training is not conducted at a regular interval, 67.90 per cent were not satisfied with their working conditions and 45.00 per cent stated that their offices were badly equipped.

Lashagara *et al.*, (2011) revealed that majority (80.70 %) of the respondents had more satisfaction on job followed by (15.70 %) moderate, 2.40 per cent very much and 1.20 per cent little level of job satisfaction.

2.1.13. Self Confidence

Narmatha *et al.*, (2002) reported that majority of the livestock entrepreneurs (79.34 %) possessed medium to high levels of self confidence.

Sudhakar (2002) observed that more than fifty per cent of the respondents (54.17 %) had medium level of self confidence.

Shanthi (2004) reported that 44.17 per cent of the respondents of respondents possessed high level of self confidence, followed by 42.50 per cent of the respondents with medium level of self- confidence. There were 13.33 per cent of the respondents who possessed low level of self- confidence.

Dillikumar (2006) reported that 36.70 per cent of the SHG members possessed high level of self confidence, followed by 35.00 per cent with medium level of self confidence. There were 28.30 per cent of the respondents who possessed low level of self confidence.

Selvarani (2006) reported that more than one-third (41.54 %) of the respondents had high self confidence, less than one-third of the respondents had low (32.31 %) level of self confidence followed by medium (26.15 %) self confidence.

Mukesh (2007) revealed that 32.50 per cent of the respondents had high level of self confidence followed by 52.50 per cent of the respondents had medium level and 15.00 per cent of the respondents had low level of self confidence.

Sathiyabama (2008) observed that majority of the respondents had high (60.00 %) level of self-confidence followed by medium (25.50 %) and low (16.00 %) levels of self-confidence.

Tamilselvi and Vasanthakumar (2008) reported that majority of the respondents (74.00 %) had high level of self confidence followed by medium (15.00 %) and low (11.00 %) levels of self confidence.

2.1.14. Trainings undergone

Mohan Basco (2000) in his study on job performance and job satisfaction of Assistant Agricultural Officers found that 14.60 per cent of Assistant Agricultural Officers had attended training for more than six months duration, while 17.07, 29.26, 13.41 and 12.91 per cent of them received in-service training for 4-6, 2-4, 1-2 and less than a month duration, respectively. Nearly 14.00 per cent of Assistant Agricultural Officers had not undergone any training at all.

Ghosh *et al.*, (2000) stated that, involvement in production oriented training and extension programmes not led the respondents as beneficiaries but also change agent.

Krishnakumar (2002) reported that more than two-fifth (42.50 %) of the respondents attended more than one training followed by 30.83 per cent farm women who have attended one training and 26.07 per cent farm women who have attended no training.

Narmatha (2002) concluded that majority (83.33 %) of the respondents had not undergone any training related to their enterprise only 16.67 per cent of the respondents had undergone training.

Sailaja (2002) found that 58.00 per cent of the respondents had undergone low levels of training followed by 21.00 per cent each that had undergone medium and high levels of training respectively.

Tamilselvi (2002) observed that majority (73.00 %) of the respondents attended training programmes and 27.00 per cent did not attend any training programme.

Hema (2003) observed that majority (68.33 %) of the SHG women attended two to three training programmes. None was found without any training participation.

Asokhan (2006) found that more than one-fourth (26.67 %) of members had undergone more than five trainings whereas less than one-fourth (23.66 %) had undergone trainings ranging from one to three and nearly fifty per cent (47.67 %) of them had undergone trainings up to five.

Dillikumar (2006) stated that majority (56.70 %) of the respondents had attended up to three training programmes followed by medium (30.00 %) and high (13.30 %) categories with regard to number of training programmes attended.

Selvarani (2006) stated that little less than half (48.46 %) of the respondents had one training while less than one-third (32.31 %) of the respondents had two trainings. More than one-tenth (11.54 %) of the respondents had attended three trainings, while less than one-tenth (7.69 %) had attended four trainings.

Mukesh (2007) reported that nearly half the proportion of respondents (45.00 %) had attended four to five training programmes on dairy management followed by 32.50 per cent who had attended more than 6 training programmes.

Kiran and Kanani (2010) revealed that more than half (57.00 %) the proportion of respondents had received training in tailoring (design stitching) followed by 43.00 per cent of the respondents who had not received any training.

Meenakshi (2011) found that one-fourth (25.00 %) of the respondents had one training and (47.50 %) of the respondents had two trainings. More than one-fourth (27.50 %) of the respondents had attended more than two trainings.

2.2. Attitude of extension personnel towards the Information and Communication Technology (ICT) tools

According to Edwards (1991) attitude has been defined as ‘the degree of positive and negative affects towards a psychological object’.

The World Bank defines Information and Communication Technologies as “the set of activities which facilitate by electronic means, the processing, transmission and display of information” (Rodriguez and Wilson, 2000).

Information and Communication Technologies referred as technologies that people use to share, distribute, gather information and to communicate through computers and computer networks (Economic and Social Commission for Asia and the Pacific ‘ESCAP’, 2000).

The United States Agency for International Development, defined ICT as the combination of hardware, software and the means of production that enable the exchange, processing and management of information and knowledge (Hafkin and Odame, 2002).

Information and Communication Technology (ICT) is the modern science of gathering, storing, manipulating, processing and communicating desired type of information in a specific environment. Computer technology and communication technology are the main supporting pillars of this technology and the impact of these two, in the information storage and dissemination is vital (Mahajan, 2002).

Derbyshire (2003) reported that students' confidence on ICT can be explained through the attitude and behaviors of their teachers. Teachers' behavior is a critical influence on students' confidence and attitude towards ICT as they provide important role model to their students.

McCarney (2004) opined that while there is agreement that ICT can be a powerful tool for advancing education efforts going forward, the challenge is in turning the potential of Information and Communication Technologies for Education (ICTE) into reality with results. He also emphasized that ICT would play an important role in achieving the Millennium Development Goal (MDG) on education by making available the opportunity of transcending time and space in the education process.

Teo (2008) revealed that more positive attitude towards the computer was found associated with a higher level of computer experience in his study on under graduate students' attitude towards computer.

Dixon (2008) found that majority of the extension agents indicated that they intend and plan to engage in ICT interactions (80.00 %). More than half indicated that interacting with ICT is pleasant (59.00 %). Approximately one-third (36.00 %) of the sample perceived that they should engage with ICT. Two-third (66.00 %) of the participants indicated that engaging with ICT is easy while just over half (56.00 %) indicated that they can interact successfully with ICT at all levels.

Major ICT competencies required by teachers were highlighted by Kirschner and Woperies (2009) to include competency in making personal use of ICT; mastery of a

range of educational paradigms that make use of ICT competency in making use of ICT as mindtools; competency in using ICT as tool for teaching, competency in mastering a range of assessment paradigms which involves use of ICT; and competency in understanding the policy dimensions of the use of ICT for teaching and learning.

Saravanan (2010) stated that ICT's can help in enabling rural development workers to gather, store, retrieve, adapt, localized and disseminate a broad range of information needed by farmers. This, in turn, leads to the emergence of knowledge managers that will result in the realization of a bottom-up, demand-driven paradigm for technologies generation, assessment, refinement and adoption.

Balogun and Yusuf (2011) found that extension agents have positive attitude towards the use of ICT. The results revealed that among the basic computer competency sub-divisions, respondents indicated that competency in general computer operation, word processing, downloading and using basic internet resources. However, the same extension agents lacked required competence in the use of spreadsheet, presentation, database and web authoring tools. The findings underscore the need to introduce respondents to more training courses on ICT with needed hand-on experiences so as to promote effective integration of ICT throughout the curriculum by respondents.

Yusuf (2011) revealed that there is every indication that responses to the positive statements showed that over 50.00 per cent of extension worker had a positive attitude towards ICT. It is seen that ICT could generally provide better learning experience. However, for negative statements, only about 27.75 per cent of the respondents agreed or strongly agreed that they won't have anything to do with ICT.

Noa Aharony (2011) studied that Librarians' Attitudes toward Knowledge Management. The research was conducted during the summer semester of the 2009 academic year and encompassed two main groups of Israeli librarians: academic librarians and public librarians. The result showed that personality and situational characteristics influence participants' knowledge sharing in the organization.

Ganesh Kumar and Ratnakar (2011) developed and standardized Farmers' Attitude towards ICT-based extension services. Out of 55 statements, 22 statements were retained on the final scale.

Mohammed and Balogun (2011) studied that Student-Teachers' Competence and Attitude towards Information and Communication Technology. The findings revealed that majority of the student-teachers have positive attitude towards the use of ICT and they are competent in the use of few basic ICT tools. Overall, no significant difference was established between male and female student-teachers' attitudes and use of ICT. The implication is that the student-teachers lacked the necessary competence in the full integration of ICT in the curriculum.

2.3. Information Management (IM) – An overall perspective

According to Debowski (1999) Information Management is the process of identifying, capturing, organizing and disseminating the intellectual assets that are critical to the organization's long-term performance. A discipline that directs and supports effective and efficient management of information in an organization, from planning and systems development to disposal or long-term preservation.

Jones (2000) defined Information management (IM) is the collection and management of information from one or more sources and the distribution of that information to one or more audiences. This sometimes involves those who have a stake in, or a right to that information.

In the words of James (2001), Information management is a method to a organize information, avoid information overload and to keep information in a format that is efficient to retrieve whenever needed.

March and James (2003) conceptualized information management entails organizing, retrieving, acquiring, securing and maintaining information. It is closely related to applied practice of data management.

According to the Wigand (2009), information management is considered at the core of organizational and managerial competencies.

The principles of Information Management include

- Information are governed according to extension personnel value, as assets for which extension personnel are accountable

- To collect information are captured to enable services and operations and collected in line with standards so extension personnel are fit-for-purpose
- Information are organised for easy retrieval and efficient management
- Information are secured to protect their integrity and with respect for their sensitivity
- Information are used to support evidence-based policy, targeted service delivery, and re-used to derive maximum return on investment
- Information are shared to streamline service delivery and reporting to enable value-adding and support transparency
- Information are maintained for as long as they have value then disposed systematically and accountably

Further, Wigand (2009) stated that key roles and responsibilities of Information Management are

- Create or acquire information resources that support programs, services and ongoing operations.
- Capture those information resources of business value by saving them within a repository.
- Avoid collecting duplicate information resources.
- Share and reuse information resources. Respecting legal restrictions.
- Ensure that information resources of business value are complete, accurate, current, relevant and understandable.
- Support information access and retrieval, respecting privacy, policy and legal requirements.
- Safeguard information resources of business value against unlawful access, loss and damage.
- Ensure information resources of enduring business value are properly preserved

Zijp (2007) reported that the extensive use of modern information management needs to be promoted for communication between researchers, extension workers and farmers to transfer technologies and information in a cost effective manner.

According to Jones (2007) Information Management has many potential applications in agricultural extension. The use of information management is an important pillar of agriculture extension and in the current scenario of a rapidly changing world, has been recognized as an essential mechanism for delivering knowledge (information) and advice as an input for modern farming.

Lukeeram *et al.*, (2008) reported that the faculty of Agriculture of the University of Mauritius had developed a computer based information system – the Potato Extension and Training Information System (PETIS). PETIS uses the internet and will test whether rural communities can use the web to access the information. The system, destined principally for the small-scale potato growers, is equipped with audio files that provide information in English. Illiterate users have an option that reads the summary of the content in Creole and Bhojpuri and icons and pictures that enable most rural users to navigate easily the basic levels on the site. The system had been rated very successful and the research team is now exploring touch screens.

The International Fund for Agricultural Development (IFAD), as quoted by Munyua (2010) is supporting an information management based system in Latin America and the Caribbean – FIDAMERICA – that has the objective of strengthening local capacities of poor rural communities and improving their quality of life. The system has used to assist the rural communities to access agricultural, market and technical information and to improve access to financial systems. It offers facilities for knowledge and information exchange through electronic conferencing, e-mail, databases and websites. Fund for International Development for AMERICA, now in its second phase, has 41 projects and programmes in the region and involves about 3600 community organizations and 500,000 families.

Muller (2008) revealed that one out of twenty five US extensions agents had access to available information sources in information management system. He found

that respondents were accessing various e-commerce sites and database which containing information dealing with transaction cost and market price.

Shihjui (2008) found that respondents possessing higher job status, education levels and income tend to have better qualifications in computerization and a greater perception of information management as a tool.

Sutter (2008) viewed that information management, the newest, has many positive benefits in the fields of research and entertainment. He concluded through several studies that it has the potential to be supremely useful tool for private, professional and commercial users.

Truelove (2008) reported that, the cable that bridges, the two concepts of information and management is technology. Technology supports efficient data collection and utilization. It can be a powerful tool to improve data integrity. It is also what supports practice, program and policy collaboration in aligning information management and technology investments.

Van Crowder and Fortier (2008) indicated that Latin America, FAO has applied ICTs in a project to establish farmer information Management networks – FARMNets – involving agricultural producers and farmer associations, extension services and NGOs in Chile and Mexico. Essential information on inputs, prices, markets, weather and credit are exchanged through the electronic network (via the internet) to farmer organizations, co-operatives and local government. The project also provided training on how to analyse, retrieve and disseminate information of local relevance using ICTs.

Further, evaluation of the project indicated that the information management was found appropriate for transmitting information across the network. Farmers and their associations were able to sell their produce at much higher prices than they could fetch in the local market and strategize on what quantities and when to produce. Vegetable producers reported that the information on weather conditions informed them the climatic conditions faced by the competitors in other states and countries. This enabled them to plan markets for their products.

Anonymous (2009a) reported that the State Government of Tamil Nadu has set up a marketing information network in Tamil Nadu to enable farmers to get information on prices of various commodities in different markets. Computer is supplied first to 55 regulated markets and these regulated markets were networked to inter-communicate information on the prices and movements of various agricultural commodities in the state and headquarters. At present, the prices of 13 varieties of commodities from 33 markets are being obtained on a daily basis through NICNET and e-mail and updated on the web pages of the agricultural marketing department. This information will be communicated to back to the regulated markets for information to the farmers. Now active trading is taking place between farmers and traders in 102 out of 272 regulated markets.

Anonymous (2009b) reported that the Chennai based Murugappa group has set up an information management for the dissemination of agriculture related information to the villages. A farmer can use kiosk to access information in Tamil or English on a range of agri-related topics. It aims to bring on-line trading in on-line banking and retailing, news updates and on-line consulting.

Anonymous (2009c) reported that launching of information management system through its website, (<http://www.fertindia.com>) which provides wealth of information, regarding fertilizer and agriculture. In addition to this, facilities like message box, abstract service, latest statistical data and latest trends in agriculture and fertilizer use, calendar of events etc., are available.

<http://www.fao.org> (2009) stated that FAO established the World Agricultural Information Center (WAICENT) for agricultural information management and dissemination in an effort to fight with hunger. WAICENT in FAO's strategic program for improving access to essential documents, statistics, maps and multimedia resources to millions of users around the globe.

<http://www.agriacts.org/icdd/radio.html> (2009) reported that new information management becoming more accessible and users can obtain information from various sources and one computer could meet the needs of a large rural community.

Mani (2009) reported that the information management would ultimately evolve as a Global Information Infrastructure (GII). It would have create a global information

market place and in process which narrow down the poverty gap and eliminate many of the geographical obstacles to prosperity and equality.

Putler and Zilberman (2009) in Tulare County California, found that livestock producers much more likely to use information for production decision rather than crop producers. A similar research has been done by Ernst and Tucker (2009) with the findings saying that larger farms tend to use information management patterns.

Austen *et al.*, (2009) revealed that uptake of information technology and the use of the information management amongst farmers in the perennial pasture zone of south-eastern Australia had increased rapidly, with an average of 76 per cent connected to the Internet. Computers were mainly used for financial and farm management, while the information management was mainly used for information acquisition. The educational level attained by the farmer was the main factor that influenced the uptake and use of information technology.

Moss (2010) had reported that after reading 'E' an e-magazine devoted to environment, 60 per cent of the readers wrote letters to legislators, 93 per cent had recycled at the home and their office, 70 per cent joined an environmental group, 69 per cent ate lower on food chain and 90 per cent had purchased products which had a lower environmental impact because of the effective information management among various organizations.

Woods *et al.*, (2010) underlines that the traditional role of extension workers includes assessing and articulating technological needs of the farmers, studying and developing new technology, testing and evaluating new technology and transferring new technology to farmers. In particular, Agricultural extension officers have a significant role in bridging the technological gap between the existing scientific knowledge base and information and knowledge of the farmers. As of now, the most appropriate target learners of information management are knowledgeable intermediaries such as agricultural extension officers.

Marquez and Berber (2011) stated that while analyzing the patterns of information management in Mexico had reported that the use among the farmers was less

than one percent, at northwest and northeast of Mexico. Most benefits from the information revolution were still to be seen by Mexican farmers.

Hafkin and Odame (2005) reported that benefits of utilizing the concept of information management for agricultural extension and training purposes are well documented. Chamala and Shingi (2005) confirm that better information management used for extension activities will ultimately transform extension officers into catalysts, who play their roles of empowerment in community organisations, human resource development, problem solving and educating farmers.

Richardson (2011) argues that extension organisations have a key role to develop effective information management patterns act bridging between communication technologies, providing technologies and services and the client groups they serve.

Muto and Yamano (2011) indicated that expansion of information management networks and increase access density in Uganda has enabled higher market participation by farmers producing perishable crops located in remote areas and helped them realize higher prices by reducing the information asymmetry that existed between farmers and traders.

Lehr (2011) mentioned that information management transforming the lives of many users in developing countries and are widely recognized as an important current and future technology platform for developing nations.

Heeks and Molla (2011) found in their evaluation compendium that the concept of Information Management (IM) is not fully utilized in agriculture and further indicated that scaling up of delivery still remains at experimental stage.

Gakuru *et al.*, (2011) mentioned that projects have developed that use a variety of services from the information management patterns to deliver farmer information and are using variety of technologies at an increasing rate, most innovative farmer advisory services rely exclusively on the extension personnel to provide online training or transmit agricultural information. He also mentioned that 47 projects were using internet and 22 projects were using mobile phone for information dissemination. For the farmers' information service the elements of the information management include the following:

(a) SMS (text) Platform; (b) Voice platform; (c) Web-portal; (d) Call centre; (e) Extension workers; (f) Libraries and (g) Researchers.

Mittal and Gaurav (2012) mentioned that the role of information management is to get timely price information which helps them to decide the best place to land and sell their daily catch. The recent introduction of a number of mobile-enabled information management services suggests that it is timely to take a look at their impact on agriculture sector in India. These services deliver a wide range of information to the farmers.

Further he added that the national survey of farmers by NSS has found that only 40 per cent of the farmers' households accessed information about modern agricultural techniques and inputs. The most popular information source of these households for accessing information were 'other progressive farmers', followed by 'input dealers'.

Rashid and Elder (2012) studied that accurate and timely market information particularly of perishable items can significantly reduce transaction and travel costs. There have been quite a few studies that explored how information management patterns impacts do have livelihoods of farmers.

Dhaka and Chayal (2010) concluded that the application of information management in agriculture has emerged an important pillar of agriculture extension focusing on the enhancement of agricultural and rural development through improved information and communication processes. Effective utilization of information management patterns has potential to make the rural communities prosperous as it enables the dissemination of requisite information in user friendly form, easy to access, cost-effective ways at the right time.

Chauhan and Chauhan (2012) pointed out that majority of the respondents agreed with the statement that "Information management cannot be a very useful mean to the respondents during present time". They opined it as a useful medium for farming community. Of course, respondents were not in position to use this information for the development of their agriculture because whatever information available on agriculture was in English language. This fact was reflected in study, 88 percent of the farmers partially or absolutely realized that information available on internet was difficult to understand.

2.3.1. Information management patterns

The information management patterns was conceptualized by various researchers in different way. Rogers (1962) considered information management patterns as the degree to which an individual was willing to seek information and advice.

Vijayaraghavan (1976) measured and conceptualized information management patterns as an index which was aggregate of scores obtained on information acquisition index, information processing index and information dissemination index of agricultural officers.

Rathakrishnan (1993) reported that majority of the farm scientist (42.16 %) were found to be high level category followed by 27.18 per cent of respondents were medium level category of information input patterns..

According to Sampath (1994), Information management patterns of extension personnel has been referred to the sum of the product of information acquisition, information processing and information dissemination.

Sampath (1994) revealed that more or less similar per cent of the extension personnel were found to fall in all the three categories namely low (36.14 %), medium (32.53 %) and high levels. It might be due to the efficiency of the respondents, their capability of managing also differed accordingly.

According to Jones and James (2011) information management (IM) is the collection and management of information from one or more sources and the distribution of that information to one or more audiences. This sometimes involves those who have a stake in, or a right to that information.

In this study, information management patterns referred to the aggregate actions related to information acquisition, information processing and information dissemination among the extension personnel.

2.3.2. Information acquisition patterns

Rathakrishnan (1993) indicated that the information input patterns referred to all the activities performed by an individual for acquiring scientific and technical information from various sources for performing his roles effectively.

Sampath (1994) reported information acquisition patterns has been operationalized as all the activities performed by extension personnel to gather insights as input. Further, he revealed that nearly half (44.58 %) of the respondents had medium level of overall information acquisition behavior followed by nearly one-third (33.73 %) with low level. Only 21.69 per cent were seen to acquire high level of information acquisition. In general it may be recapitulated that medium to high levels of information acquisition was found to be observed by majority of the respondents.

Venkatesan (2001) reported that around forty per cent of the extension workers (38.33%) had medium level of information source utilization. About 32.50 and 29.17 per cent possessed high and low levels of information source acquisition.

Tamilselvi (2002) revealed that 48.00 per cent of the extension workers had medium level of information source acquisition, followed by high (33.00 %) and low (19.00 %) levels of information source acquisition.

Deepa barathi (2003) reported that one-third of the input dealers (36.67 %) had medium level of information acquisition, while 34.17 per cent and 29.16 per cent of them were in low level and high level respectively.

Shanthi (2004) reported that majority of the respondents (54.17 %) had medium level of information acquisition behaviour. Further, 25.00 and 20.83 per cent possessed high and low levels of information acquisition behaviour.

Mukesh (2007) revealed that 32.50 per cent of the respondents had high level and 47.50 per cent of the respondents had medium level of information source utilization. The low level of information source acquisition was obtained among 20.00 of respondents.

Mathu Prasad *et.al.*, (2008) reported that forty per cent of the respondents (41.94 %) had medium level and 35.48 per cent of the respondents had high level of information source acquisition. This is followed by 22.14 per cent of the respondents who had low level of information acquisition.

Godara and Bhimawat (2012) clearly revealed that workshop was the least preferred information source as perceived by the input dealers.

2.3.3. Information processing patterns

Rathakrishnan (1993) stated that Information processing patterns has been viewed as the activities performed by extension personnel in exploring probable solutions for problems, judging, preserving and choosing the dissemination techniques of the acquired information through various information input sources.

Sampath (1994) revealed that more or less equal proportions of the respondents were seen in all the three categories of information processing patterns. Further, he revealed that 33.70 per cent and 33.70 per cent of the respondents was seen in high and low level categories of information processing patterns and 32.50 per cent of the respondents were medium level of the information processing patterns.

Information processing refers to the manipulation of digitized information by computers and other digital electronic equipment, known collectively as Information Technology (IT) (Techopedia, 2009).

According to March and Simon (2008) information processing organizations have to be considered as cooperative systems with a high level and a vast need for decision making at various levels. They also claimed that there are factors that would prevent individuals from acting strictly rationally, in opposite to what has been proposed and advocated by classic theorists. The degree of extent to which an individual acting upon the processing of information through evaluation, treatment, storage and transformation techniques from various sources and channels.

According to Lisa Fristcher (2014), Information processing is the term applied to the human thought process. The brain is considered to be roughly equivalent to a computer, providing the necessary hardware for the computational process to take place. Our thoughts, feelings and emotions are the actual computations.

2.3.4. Information dissemination patterns

Rathakrishnan (1993) reported that majority (92.33 %) of the respondents had disseminated the information with medium to high level; where as one-tenth 7.67 per cent of them disseminated the information with low level.

Rathakrishnan (1993) also revealed that information output index of agricultural scientist was positively and significantly correlated with education, training, experience

and family background. Furthermore, scientists, extension personnel communication had the largest direct effect on the information output of the scientist.

Sampath (1994) revealed that one-third (33.74 %) of the extension personnel were found to possess high level of information dissemination patterns while 20.48 per cent of the extension personnel were seen in medium level. However it is heartening to note that nearly half (45.78 %) of the respondents were reported to belonged to low level information dissemination. This might be due to the time factor which would have restrained the respondents to disseminate the technologies.

Mishra (2005) stated that majority (88.00 %) of the respondents shared the self-help group information and personal information with other members.

Asokhan (2006) opined that majority (92.33 %) of the respondents had disseminated the information with medium to high levels whereas one-tenth (7.67 %) of them disseminated the information at low level.

Abduallhi (2006) argued that there was bound to be a problem in the effectively delivery system because the higher the qualified extension agents the better their handling communication between them and the farmers they were meant to interact with.

2.4. Capacity building needs of extension personnel in information management

According to Monahan (2004) capacity building needs covers a number of aspects from training of extension personnel to support for content development. It highlights the critical issue that, without adequate capacity building, even well-designed policies and the most sophisticated technologies would not be able to achieve the desired results. Allocation of resources for use information and communication of in human development areas in South Asia (also developing and least developed countries) has to balance the needs between providing basic infrastructure such as computers, connectivity and physical infrastructure on one hand with the mass-based learning networks, content support and development initiatives on the other. Absence of integration and interaction across the South Asian region, restricts sharing of information resources and mandates duplication of efforts, resulting in ineffective utilization of information management.

2.4.1. Capacity Building needs

Parvathi (2000) reported that the subject matter areas where respondents needed training on post harvest technologies (87.87 %), use of improved bins (87.87 %), method of storage (73.75 %), storage grain pest management (60.62 %), preparation of impregnated gunny bags (55.00 %) and use of threshing machines (51.25 %).

Ghosh *et al.*, (2000) stated that, involvement in production oriented training and extension programmes not led the farmers as beneficiaries but also change agent.

Anonymous (2003) reported that the entrepreneurs were trained in preparing good products, making paper bags, beauty products, soaps and detergents besides stitching garments.

Clarke (2003) opined that a training need analysis must be carried out to employees within an organization as it helps to define the current training received by the employee and to then take it one step further to clarify whether or not the training is sufficient, or perhaps outdated and whether or not that employee feels as they need to do more in terms of analyzing the training they have received and to evaluate it to then make the next step. Training needs analysis refers to the organizations' data collection activities that underpin decision making, particularly in relation to whether training, can improve performance, who should receive training and training content.

Jayaraj (2013) revealed that exactly half of the respondents had medium level of training needs in their subject matter areas of forest. More than one-third (35.00 %) had low level of training needs and a less number (15.00 %) of the respondents were found to be under the category of high level training need areas of forest extension personnel.

2.4.2. Venue of training

Shanthasheela (2002) indicated that majority (77.78 %) of the respondents indicated their willingness to attend training, if it is conducted in local places and only 22.22 per cent desired to attend training conducted anywhere in Tamil Nadu state.

Hema (2003) found that nearly half (50.83 %) of the respondents had the willingness to attend training in training institutes followed by BDO's office (32.50 %). The village school was preferred by 2.50 per cent of the respondents only.

Jayaraj (2013) found that 50.00 per cent of the respondents preferred own institutions followed by other department (23.34 %); other institutions (16.66 %) and the rest (13.34 %) preferred training outside the state.

2.4.3. Duration of training

Mallika (1995) reported that a little more than half (58.10 %) of respondents attended trainings more than 15 days duration and less than half (41.90 %) respondents attended training less than 15 days duration.

Viswanathan (1997) found that 58.10 per cent of respondents attended trainings with more than 15 days duration. Whereas, the remaining 41.90 per cent of respondents also attended training but less than 15 days duration.

Shanthasheela (2002) reported that out 63 respondents who needed training, 42 respondents (66.67 %) opined that one day was enough for them for getting any training, since they have to manage their house and also send their children to school. Eleven persons (17.46 %) desired to attend two days training, 6.35 per cent desired three days training and 4.76 per cent were willing to attend either four or five days of training.

Bisht *et al.*, (2010) observed that 22.00 per cent scientists got ICT training at national level training programmes for two to three weeks durations followed by 13.22 per cent scientists who participated in a month long training. About four out of ten scientists under study received ICT training in refresher courses at university level. Only 4.56 per cent of the scientists have got a chance to attend ICT training at international level for about three months.

Jayaraj (2013) found that 31.68 per cent of the respondents preferred training of three to five days followed by one week training (26.66 %). Very few preferred to undergo training for two weeks or one month (15.00 % and 10.00 % respectively).

2.4.4. Training methods

Mallika (1995) stated that field trips and group discussion were the most effective methods for training for NGO members and input dealers.

Rajkala (2004) found that demonstration and group discussion were the first and second preference of the respondents for rice growing farmers and progressive farmers.

Elakkiya (2007) stated that demonstration and field visit were the first and second preference of the respondents among farmers participating of paddy organic farming.

Jayaraj (2013) reported that most of the forest extension personnel preferred lively video lessons, followed by field visit, study tour, discussion, lecture plus AV aids, demonstration, exhibition and lecture. The interactive video lessons pertaining to management of forests and wildlife as it can be imbibed quickly in the trainees.

2.4.5. Trainers

Thangachamy (1993) stated that extension personnel and scientists were the most preferred trainers.

Elakkia (2007) reported that most of the respondents preferred scientists as trainers.

Jayaraj (2013) found that the order of preference indicated by the respondents regarding choice of trainers was department personnel (40.00 %) followed by extension personnel (20.00 %) and scientists (18.34 %). The rest of the personnel preferred bureaucrats and NGO workers as a trainers (11.66 % and 10.00 % respectively).

2.5. Constraints and suggestions

2.5.1. Constraints

Munyua (2000) reported that there were problems of poor infra structure and there was a need for strengthening the information management as backbone of developing countries. He had also reported the case of the Village Earth Project and its Consortium for Sustainable Village Based Development in India, which had a library of books with

microfiche and CD-ROMs that provide appropriate information resources but most of these materials were in English, not appropriate for the region or culture.

The use of information management by extensionists has been noted as a crucial part of extension development (Martin *et al.*, 2001). Jamias *et al.*, (2002) asserted that theoretical (only) knowledge does not guarantee sustained changes in more strongly held farming attitude, due to lack of reinforcement.

Belawati *et al.*, (2002) while discussing about the use of electronic tutorials like internet in Indonesia had found that there were two challenges in their use – the visible and the invisible challenges. Visible challenges included limitations in the availability of technology infrastructure and issues of inadequate access, while invisible challenges included the readiness of people to adopt and take advantage of new technology for educational purposes.

The use of information management in agricultural extension and rural development was significant, especially now that it has witnessed an upsurge in almost all areas of rural life in several African countries where it has provided average to adequate access to agricultural information, despite persistent problems of availability, connectivity, literacy, content and cost (Technical Center for Agricultural and Rural Cooperation [CTA], 2003).

The poor knowledge of facilitator about subject matter and inadequate infrastructure facility like power supply and internet facility in rural area were perceived constraints by respondents to make best use of Information and Communication Technology (ICT) services. Similar constraint in utilization of information management through Information and Communication Technologies in agriculture and rural development by farmers were also reported by Adhiguru *et al.*, (2003).

Mungania (2003) revealed that e-Learning barriers are heterogeneous, encompassing seven types of barriers viz., personal or dispositional, learning style, instructional, situational, organisational, content suitability and technological barriers.

Baldwin and Evans (2004) indicated that organisational barriers include lack of time available for training, cost versus value, lack of appropriate content related to specific

needs, language barrier (as most of the content is delivered in English), difficulties in measuring e-Learning effectiveness, lack of strategic planning and direction, lack of e-learning awareness, lack of incentives and finally, lack of management support.

Staffs for agricultural extension projects have inadequate training and farmers have very little faith in extension personnel and their commitment to achieve the goals of the projects (Meera *et al.*, 2004). However, research on how the excluded farmers could be reached is limited.

Muilenburg and Berge (2005) determined eight barrier factors to online learning including administrative/instructor issues, social interactions, academic skills, technical skills, learners motivation, time and support for studies cost and access to the internet and technical problems.

The United States Development Agency (USDA, 2005) declared that lack of effective training remains a major adoption constraint.

USDA (2005) reported that major constraints affecting in information management by extension officers in the Niger Delta were revealed to be poor information management and ICT infrastructure development high cost of broadcast equipment, high charges for radio/TV presentation, high cost of access/interconnectivity and electricity power problem. It was also revealed that private agencies extension officials recorded more constraints (14 to 54 %) than public sector extension officials (11 to 42 %) with regard to 26 constraint items under focus. This may be because they had more access to the coordinated information management provided by their institutions and therefore apprised of the problems inherent in their use. This is unlike public sector extension agents who utilize mainly interpersonal communication in their extension activities due to paucity of funds to invested in information management. It is obvious that despite abundant experiences with Information and Communication Technology initiatives towards information management behaviour and ICT adoption remains a major issue and current critical concern.

Alemna and Sam (2006) and Adomi (2005) have alluded to the problems of poor infrastructure development, electricity, illiteracy and overbearing costs, as deterrents to information management in developing countries.

Studies have demonstrated that demographic and characteristic background such as age, gender, ethnicity, marital status, level of education, prior experiences with computers and the Internet influence the information management and or e-Learning adoption (Ongand Lay, 2006). The four factors of barriers towards information management were investigated, including barrier categories classified as organisational culture, individual, technological and policy barriers.

The internet and mobile networks have the potential to provide agro-information services that are affordable, relevant (timely and customized), searchable and up to date. Large sections of the farming community, particularly the rural folk, do not have access to the huge knowledge base acquired by agricultural universities, extension-centers and businesses. While telecenters are beginning to dot the Indian rural landscape, one of the big barriers remains the lack of agro-content.

Ali and Magalhaes (2008) divided the barriers in the adoption of information management system into two factors viz., organisational and technical issues. As for the technical barriers, the most commonly cited are system crashes, bandwidth and infrastructure upgrading, accessibility, usability, technical support and perceived difficulties in using such a system.

Sudaryanto (2011) stated that even though it is found that there was a growing interest of computer for agriculture development, inconsistency of information management deployment across regions also creates constraints within an increasingly integrated global industry.

2.5.2. Suggestions

Meera *et al.*, (2004) observed that, as a result of the emerging new paradigm of agricultural development, old ways of delivering important services to citizens are being challenged and traditional societies are being transformed into knowledge societies all over the world. Information management use for extension activities would ultimately transform extension officers into catalysts who according to would play empowerment, community organizing, human resource development, problem solving and educational roles. This is because ICT use enables extension officers to play complimentary roles of accessing and transferring relevant information to farmers and also helps farmers to utilize such information to solve pressing problems.

Kauffman and Kumar (2005) introduced three stages of diffusion of information at the country level of analysis are the information readiness stage, the information intensity stage and the information impact stage. In the first stage of readiness, they argue that when the technology is new to a country or a region, the readiness of its people to adopt it is a crucial issue.

Gelb and Offer (2006) reported that adoption of information and knowledge management in rural areas for agricultural purposes was unique challenge and has long been of specific public concern with regional, national and international strategic significance.

Mruthunjaya and Adhiguru (2005) stated that comprehensible that on one hand agriculture becoming highly science driven and knowledge intensive, but on the other hand the existing public extension system, has become less effective, more time consuming and costly and fails to meet the expectations of those involved in agricultural production. Recent developments in information management offer a great opportunity to facilitate the flow of information and technology services delivery especially to the farmers (Maningas, 2006).

Research Methodology

CHAPTER III

RESEARCH METHODOLOGY

Research methodology is the detailed plan of an investigation and the blue print of procedure about how the research was carried out. According to Kothari (1990), research methodology is a way to systematically solve the research problems. It may be understood as a science of studying how research is done systematically. It explains various steps done that are adopted by the researcher in studying the research problem, along with logic behind them. It is necessary for the researcher to know not only the research methods and techniques but also the methodology.

This chapter deals with the salient features of the study area, rationale behind its selection, sampling method followed, variables and their measurement, data collection tools and the statistical tools and techniques used in the analysis of data. The research methods followed in this study are presented under the following sub heads

- 3.1. Locale of research
- 3.2. Description of the study area
- 3.3. Research design
- 3.4. Selection, operationalisation and measurement of variables
- 3.5. Attitude scale for measuring attitude of extension personnel towards the Information and Communication Technology (ICT) tools
- 3.6. Information Management Index
- 3.7. Tools and techniques of data collection
- 3.8. Statistical tools used

3.1. Locale of research

The details on selection of districts have been presented along with their description. The locale of the study had been depicted in Fig.1, 2 and 3.

3.1.1. Selection of study area

Coimbatore, Tirupur and Erode districts of Tamil Nadu were selected purposively for the study because the ATMA scheme has been introduced in first phase in these three districts during the year 2005-2006 with establishment of more new ICT initiatives and efforts (Source: Office of the Joint Director of Agriculture). To have adequate sample size of the extension personnel, three districts have been included in the study.

3.2. Description of the study area

Knowledge about the study area will help to gain better understanding of the circumstances in the study area. This will also help to perceive the situations and issues with the possibility of relating to similar areas elsewhere. The details are presented here under.

3.2.1. Location

Coimbatore district is one of the more affluent and industrially advanced districts of the state of Tamil Nadu in India. Coimbatore existed even prior to the 2nd or 3rd century AD ruled by Karikalan, the first of the early Cholas. When Kongu Nadu fell to the British along with the rest of the state, its name was changed to Coimbatore and it is by this name that it is known today, except in Tamil, in which it is called Kovai. Coimbatore is known as the "Manchester of South India." It has the highest GDP among the districts of Tamil Nadu, even ahead of the state capital Chennai. The region is bounded by Kerala state on the west and it is surrounded by Tirupur, Nilgiris and Erode districts. Palghat Gap is the only major pass in the long stretch of the Ghats abutting Tamil Nadu and Kerala. The headquarters of the district is Coimbatore city. It is highest revenue yielding district in the state, next to district of Chennai.

(Web source: Coimbatore District Profile, 2012)

Tirupur district forms a part of the ancient Kongu Nadu region of South India. It was formed in 2009. This district has been carved out of the Coimbatore and Erode districts making it as the 32nd district of Tamil Nadu. It is one among the well industrialised and economically developed districts of Tamil Nadu. It is a textile hub and a vast generator of employment for unskilled temporary workers. This district is famous for the Tirupur banian industry, cotton market, the famous Uthukkuli butter etc. It is

bounded on the north by the Erode district, on the east by the Karur and Dindigul districts, on the south by the Dindigul district and Kerala State, on the west by the Coimbatore district. It is one of the fastest developing cities and seventh largest city in Tamil Nadu. Tirupur city is the administrative headquarters of this district.

(Web source: Tirupur District Profile, 2010)

Erode district lies on the extreme north of Tamil Nadu. It is bounded mostly by Karnataka State and also River Palar covers pretty long distance. To the east lies Namakkal and Karur districts. Dindigul district is its immediate neighbour to the South and on the West, it has Coimbatore and Nilgiri districts, as its boundaries.

(Web source: Erode District Profile, 2013)

3.2.2. Geographical details

Coimbatore district constitutes a geographical area of 4721.23 Sq.km. The district lies between 10° 10' and 11° 30' degrees of the Northern latitude and between 76° 40' and 77° 30' degrees of the Eastern longitude. It is in the extreme west of Tamil Nadu. Of the total geographical area (4,72,123 ha) total cultivable area is 1,87,782 ha, which is 39.77 per cent of the geographical area.

(Web source: Coimbatore District Profile, 2012)

Tirupur district constitutes a geographical area of 5186.34 Sq.km. The geographical coordinates of the district is 10° 24' of Northern latitude and 77° 26' of Eastern longitude. It is an inland district in the Southern Part of Peninsula. Of the total geographical area (5,18,634 ha) total cultivable area is 2,28,556 ha, which is 44.06 per cent of the geographical area.

(Web source: Tirupur District Profile, 2010)

Erode District is essentially a land-locked area having no sea-cost of its own. Erode district is situated between 10° 36'' and 11° 58'' North Latitude and between 76° 49'' and 77° 58'' East Longitude. The region comprised in the district can be portrayed as a long undulating plain gently sloping towards the river Cauvery in the south-east.

The two major tributaries of river Cauvery viz., Bhavani and Noyyal drain the long stretch of mountains in the north. A part of the eastern boundary of the district is formed by river Cauvery, entering the district from Salem and flowing in a southerly direction.

(Web source: Erode District Profile, 2013)

3.2.3. Demographic details

Coimbatore District has recorded a population of 3,472,578 of which male and female are 1,735,362 and 1,737,216 respectively. In 2011 census, Coimbatore had a population of 2,916,620 of which males were 1,482,228 and remaining 1,434,392 were females. There is a change of 18.46 per cent in the population compared to population as per 2001. The initial provisional data released by census India 2011, shows that density of Coimbatore district for 2011 is 748 people per sq. km. Average literacy rate of Coimbatore in 2011 are 84.31 per cent compared to 78.50 per cent of 2001. The male and female literacy rate is 89.49 and 79.16 per cent respectively. Total literates in Coimbatore district are 2,678,637 of which male and female are 1,418,291 and 1,260,346 respectively. With regard to Sex Ratio in Coimbatore, it stands at 1001 per 1000 male compared to 2001 census figure of 968.

(Web source: Census of India, 2011)

Tirupur District has recorded a population of 2,471,222 of which male and female were 1,242,974 and 1,228,248 respectively. In 2011 census, Tirupur had a population of 1,920,154 of which males were 978,349 and remaining 941,805 were females. There was change of 29.69 per cent in the population compared to population as per 2001. The initial provisional data released by census of India 2011, shows that density of Tirupur district for 2011 is 476 people per sq. km. Average literacy rate of Tirupur in 2011 is 79.10 per cent compared to 71.08 of 2001. The male and female literacy rate is 86.07 and 72.07 per cent respectively. Total literates in Tiruppur District are 1,779,379 of which male and female are 972,032 and 807,347 respectively. With regard to Sex Ratio in Tirupur, it stood at 988 per 1000 male compared to 2011 census figure of 963.

(Web source: Census of India, 2011)

Erode District has recorded of population of 2,259,608 of which male and female were 1,134,191 and 1,125,417 respectively. Erode District population constituted 992 per 1000 males compared to 2001 census figures of 968. The initial provisional data released by census of India 2011, shows that density of Erode district for 2011 is 316 people per sq. km. Average literacy rate of Erode in 2011 is 79.63 per cent compared to 66.00 per cent of 2001. The male and female literacy rate is 86.53 per cent and 72.73 per cent respectively.

(Web source: Census of India, 2011)

3.2.4. Administrative divisions

Coimbatore is divided into two revenue divisions and six taluks consisting of 295 revenue villages. Out of two revenue divisions, Coimbatore division is industrially developed and Pollachi is predominant in agriculture. Coimbatore district comprises of 12 agricultural blocks, 44 town panchayats and 229 village panchayats. All the blocks were selected for the study namely Anamalai, Annur, Karamadai, Kinathukadavu, Madhukkarai, Perianaickenpalayam, Pollachi North, Pollachi South, Sarkarsamakulam, Sultanpet, Sulur and Thondamuthur.

Tirupur district is divided into three revenue divisions' viz., Tirupur, Dharapuram and Udumalpet. These revenue divisions are spread over seven taluks and 13 blocks. The district has 273 village panchayats, 13 panchayat union, 16 town panchayats, seven municipalities and one corporation. All the blocks were studied Avinashi, Gudimangalam, Madathukulam, Palladam, Pongalur, Tiruppur, Udumalpet, Dharapuram, Kangayam, Kundadam, Mulanur, Uthukuli and Vellakoil.

Erode District consists of 5 taluks viz., Sathyamangalam, Bhavani, Gobichettipalayam, Perundurai and Erode. There are 4 Municipalities in the district viz., Sathyamangalam, Bhavani, Gobichettipalayam and Punjai Puliampatti. The other four Municipalities in the district viz. Periasemur, Kasipalayam, Surampatti and Veerappanchatram have been merged recently with have been merged recently with Erode Corporation. There are 42 Town Panchayats, 230 Village Panchayats and 375 Revenue Villages. All the 14 blocks viz., Ammapettai, Anthiyur, Bhavani, Bhavanishagar, Chennimalai, Erode, Gobi, Kodumudi, Modakurichi, Nambiyur, Perundurai, Sathy, Thalavadi and T.N.Palayam were taken.

(Web source: Coimbatore, Tirupur and Erode District Profile, 2013)

3.2.5. Climate, Temperature and Rainfall

Coimbatore district enjoys a very pleasant climate all the year round, aided by the fresh breeze that flows through the 25 kms long Palakkad gap. The Eastern side of the Coimbatore district is predominantly dry. The Southwestern and Northern parts enjoys pleasant climate all throughout the year. The rest of the district lies in the rain shadow region of the Western Ghats and experiences salubrious climate in most parts of the year. The mean maximum and minimum temperatures for Coimbatore city during summer and winter vary between 35°C to 18°C. The average annual rainfall in the plains is around 700 mm with the Northeast and the Southwest monsoons contributing to 47.00 per cent and 28.00 per cent respectively to the total rainfall.

(Web source: Coimbatore District Profile, 2012)

Tirupur district lies on the Western part of Tamil Nadu bordering the Western Ghats and hence the district enjoys a moderate climate. The mean maximum and minimum temperature for Tirupur city during summer and winter vary between 35°C to 18°C. The average annual rainfall in the plains is around 700 mm with the North East and the South West monsoons contributing to 47.00 per cent and 28.00 per cent respectively to the total rainfall.

(Web source: Tirupur District Profile, 2010)

Erode district in general is characterised with a scanty rainfall and a dry climate. Maximum rainfall is recorded in Gobi chettipalayam and Bhavani taluks. The Palghat gap in the Western Ghats, which has a soothing effect in the climate of Coimbatore District, does not render much help in bringing down the dry climate in this area. The cool-wind that gushes out of the west coast through Palghat gap loses its coolness and becomes dry by the time it crosses Coimbatore district and reaches Erode region. North-east monsoon sets in vigorously only during October-November and by December, the rains disappear rendering the climate clear but pleasant. The district receives an annual rainfall of 963.17mm, 50 per cent of the rainfall was received during the North East monsoon season.

(Web source: Erode District Profile, 2013)

3.2.6. Irrigation sources

The major rivers flowing through the **Coimbatore district** are Bhavani, Noyyal, Amaravathi, Aliyar, Nirar and Sholayar. Aliyar dam, Cholayar dam, Siruvani dam and Pillur dam are some of the prime source of irrigation in the district. The total net area irrigated through various sources of irrigation is 111963 ha and gross area irrigated is 115533 ha.

(Web source: Coimbatore District Profile, 2012)

The major rivers flowing through the **Tirupur district** are Amaravathi, Noyyal, Palar, Nallar and Chinnar. Amaravathi dam, Thirumurthy dam, Upaaru dam, Nallathangaal odai and Vattamalaikkarai odai are the prime source of irrigation in the district. The total net area irrigated through various sources of irrigation is 119300 ha and gross area irrigated is 123100 ha.

(Web source: Tirupur District Profile, 2010)

Bhavani, Cauvery and Noyyal are the main rivers of the **Erode district**. Other significant river is Palar in the North. Palar constitutes the boundary between Erode district and Karnataka State in the North. Canals under various irrigation projects together help to irrigate about 98,805 hectares of land while the wells irrigated 68,570 hectares. The net area irrigated in the district totals to 209,432 hectares.

(Web source: Erode District Profile, 2013)

3.2.7. Soil and Agriculture

Three soil types are found in the **Coimbatore region** black cotton, red loam and calcareous. The total area of cultivation is around 1,87,782 hectare. Paddy is the major monsoon crop. From October to December dry land crops such as sorghum, maize and pulses are cultivated. Sugarcane is also cultivated in the irrigated areas. The cropping intensity is 1.06. The land increasingly turning fallow due to lack of water sources is a matter of concern for the policy makers. The ground water sources have fallen dismally low due to over exploitation and are considered in critical category.

Table 1. Total area under crop cultivation in Coimbatore district

S. No	Category	Irrigated	Unirrigated	Total
1.	Total area cultivated under all crops	117539.599	67534.554	185074.153
2.	Area cultivated under 1st crop	114399.349	61677.824	176077.173
3.	Area cultivated more than once	3140.250	5856.730	8996.980

(Source: Office of Assistant Director of Statistics, Coimbatore, 2010)

Loam, alluvial and clay are the soil types found in the **Tirupur district**. Though an industrial district, this district plays an important role in Agriculture also. The total area of cultivation is around 2,28,556 hectare, mainly food and commercial crops. The chief food crops are paddy, millets and pulses. The non food or commercial crops in the district are cotton, oil seeds and coconut. The cropping intensity is 1.03.

Table 2. Total area under crop cultivation in Tirupur district

S. No	Category	Irrigated	Unirrigated	Total
1.	Total area cultivated under all crops	121946.952	77092.936	199039.888
2.	Area cultivated under 1st crop	117139.867	76939.311	194079.178
3.	Area cultivated more than once	4807.085	153.625	4960.710

(Source: Office of Assistant Director of Statistics, Coimbatore, 2010)

The soils of the **Erode district** are mostly red sand and gravel with moderate amounts of red-loam and occasional black loam tracts. Paddy accounts for 86,939 hectares. Next to paddy is sorghum which is raise in more than 11240 hectares. Pulses are not much in cultivation in the district. Only 31498 hectares are used for raising pulses. Among condiments and spices, turmeric and chillies are significant. Cultivation of turmeric extends over 14533 hectares. The cropping intensity is 132 per cent.

Table 3. Total area under crop cultivation in Erode district

S. No	Category	Irrigated	Unirrigated	Total
1.	Total area cultivated under all crops	184904	139797	324701
2.	Area cultivated under 1st crop	161217	139765	300982
3.	Area cultivated more than once	23687	32	23719

(Source: Office of Assistant Director of Statistics, Coimbatore, 2010)

3.2.8. Land classification

The total geographical area of the **Coimbatore district** is 472321.979 ha. Cropped area accounts for about 36.66 per cent of the total area. Forest lands cover about 23.68 per cent of the total land. A significant portion (37.10%) of the land falls under the category of 'non available for cultivation' and 'fallow lands'.

Table 4. Land classification of Coimbatore, Tirupur and Erode districts (Area in ha)

S.No	Land Classification	Coimbatore	Tirupur	Erode
1.	Forest	6647.130	1238.380	1425.000
2.	Uncultivable Wasteland	4792.570	2541.785	6269.750
3.	Non Agri Uses	74794.483	98291.686	52961.150
4.	Cultivable Waste Land	8731.255	3936.430	1707.268
5.	Permanent Pasture & Grass Land	76.955	125.800	97.335
6.	Misc. Tree Crops & Groves	3182.880	1767.550	913.224
7.	Current Fallow	54366.226	98291.686	64314.877
8.	Other Fallow	41315.518	102622.995	19056.701

9.	Net Cultivated Area	173190.923	194079.178	199388.980
10.	Reserve Forest	105224.039	46930.000	224786.165
	Total	472321.979	519559.170	572220.285

(Source: Office of Assistant Director of Statistics, Coimbatore, 2010)

The total geographical area of the **Tirupur district** is 519559.170 ha. Cropped area accounts for about 37.35 per cent of the total area. Forest lands cover about 9.27 per cent of the total land. A significant portion (58.07%) of the land falls under the category of ‘non available for cultivation’ and ‘fallow lands’.

The total geographical area of **Erode district** is 572220.285 ha. Of this, about 28 per cent was under forests and 0.02 per cent was under pastures and grazing lands. As much as about ten per cent of the total area is under non-agricultural uses. The area under cultivable waste was 0.19 per cent. The net sown area of the district was about three lakh hectares constituting about 37 per cent of the geographical area of the district. The nine fold classification of the land use patterns of Erode district is provided in the Table 4.

3.2.9. Industrial profile

Coimbatore district is one among the industrially developed and commercially vibrant districts of Tamil Nadu. It has got high concentration of small, medium and large scale industries. It is known as the ‘Manchester of South India’ because of its well developed textile industry and other industrialised base. The successful growth of cotton served as the foundation for the establishment of its famous textile industry. The first textile mill came as far back as 1888, but now there are more than 100 mills. The result has been a string economy and a reputation as one of the great industrialized cities in south India. There are more than 25,000 small, medium and large scale industries and textile mills. Coimbatore is also famous for the manufacture of motor pump sets and varied engineering goods.

(Web source: Coimbatore district profile, 2012)

Tirupur district is a textile hub of Tamil Nadu. Tirupur is popularly known as Banian City or Knit City. Tirupur is a centre for cotton market and cotton ginning factories. Though cotton trading and ginning operations has shrunk, Tirupur is still a popular market for unginced cotton. Tirupur gain stem from its performance in technology and the quality of its macroeconomic environment. Nearly 56.00 per cent of India's total knitwear exports come from Tirupur. It is also known as the 'Town of Export Excellence' for its contribution to the export efforts. Being in close proximity to Coimbatore which is a major centre of cotton spinning industry in the country makes the rich availability of raw materials easy. The strong entrepreneurial flamboyance and personalized management contributes to efficient management of negotiations and direct control of operations causing cost effective competitiveness of the industry.

(Web source: Tirupur district profile, 2010)

In the Industrial map of Tamil Nadu, **Erode district** has a place of unique importance with 40.32 percent of population depending on non-agricultural sector. Rice milling is yet another industry which has been able to hold its own. Erode, Bhavani and Perundurai are the centers where a number of rice mills are flourishing. The cotton textile industry in Coimbatore and handloom industry in Erode district have encouraged the growth of various ancillary industries to meet the needs of the textile mills. Chennimalai, Erode, Gobichettipalayam etc., are important centres where cotton ginning is carried on a large scale. Major items of export from the district are handloom products, dairy products, raw cotton, rice etc.

(Web source: Erode District Profile, 2013).

3.2.10. ICT facilities in selected districts

There is an increasing realization about the potentialities of Information and Communication Technology (ICT) in information management among the extension personnel in these three districts. The extensive use of modern information technology needs to be promoted for better information management between researchers, extension personnel and farmers to transfer technologies and information in a cost effective manner.

All extension personnel were provided with laptop computers and tablets by State Department of Agriculture in Coimbatore, Tirupur and Erode districts. ICT accessories like printer, scanner, LCD projector, digital and video camera, voice recorder, desktop computers, fax machine, telephone and internet facilities were also provided in their office.

Coimbatore, Tirupur and Erode districts have more number of extension personnel in the Tamil Nadu providing continuous knowledge support. The continuous service of 24 hours in all the seven days is possible only through e-learning strategies in agriculture. Some successful public ICT initiatives in State Department of Agriculture are e-choupal, aAQUA which stands for almost All Questions Answered, Warana Wired Village, Infosys' ICT initiatives for empowering Indian farmers, Agropedia, RKMP (Rice Knowledge Management Portal), InDG (India Gateway), Kissan Kerala, AGRISNET, Agmarknet, DACNET, Agricoop, Intradac, seednet, Metrological Information by Ingen Technologies, Honey-Bee knowledge network. MSSRF, I kisan portal, Uttamkrishi, Mahindra kisanmitra, India Agronet and Krishi world are available in these districts. Agriwatch and Agriculture information were some of the private initiatives for agricultural development were also available in three districts.

3.3. Research design

The design of research is the most important and crucial aspect of research methodology. In a broad sense, research design is the process of planning and carrying out research. **Ex-post facto** research design was used in this study to suit the objectives and type of information needed.

According to Singh (2008), the term ex-post facto is used to refer to an experiment in which the researcher, rather than creating the treatment, examines the effect of a naturally occurring treatment after it has occurred. The main characteristic of this method is that the researcher has no control over the variable and only what has happened or what is happening can be reported.

3.3.1. Sampling procedure

The respondents of the present investigation comprised extension personnel. The officials working with common framework of field extension were chosen for the

study. Hence, the extension personnel included from the cadres of Deputy Director of Agriculture/ Horticulture (DDAs/DDHs), Assistant Director of Agriculture / Horticulture (ADAs/ADHs) and Agriculture/ Horticultural Officers (AOs/HOs) were the respondents for this study.

3.3.2. Sample size

All the blocks in Coimbatore, Tirupur and Erode districts were selected. Totally 154 extension personnel were available in the three districts. Mailed questionnaires were sent. Out of 154, 121 extension personnel were responded. Thus the final sample size constituted of 121 extension personnel.

Table 5. Sampling design

S. No	Extension personnel	Coimbatore		Tirupur		Erode		Total	
		Available	Responded	Available	Responded	Available	Responded	Available	Responded
1	DDAs/DD Hs	9	9	8	7	9	8	26	24
2	ADAs/AD Hs	20	12	18	6	22	15	60	33
3	AOs/ HOs	22	20	20	19	26	25	68	64
Total		51	41	46	32	57	48	154	121

Among 121 respondents, the final sample comprised 64 AOs/HOs, 33 ADAs/ADHs and 24 DDAs/ DDHs. The full details are given in annexure IV and V.

3.4. Operationalization and measurement of variables

3.4.1. Selection of Independent variables

Forty two important independent variables that may influence the level of information management were identified for this study by perusing the literature, discussion with scientists and concerned scheme officials. In order to find out the relevancy of these variables, a three point continuum was formed, namely most relevant, relevant and not relevant and given to fifty judges from various SAUs with a request to give their opinion about the relevancy of the variables to the present study. Out of 50 judges, 34 judges expressed their opinion. The responses of most relevant, relevant and not relevant were given scores of 3, 2 and 1 respectively. Based on the rating by judges, the mean and coefficient of variations were worked out for all the independent variables. The overall mean and coefficient of variations were also worked out. The criteria used for the selection of variables are as follows.

- The individual variables mean should be greater than the overall mean.

Individual mean > Overall mean

- The individual variables co-efficient of variation (CV) should be less than the overall coefficient of variation.

Individual CV < Overall CV

Through this process, 15 variables were selected from the judges' ratings. The summary of selected variables and their measurement procedure are given in Table 6. The variables, which had mean value more than the overall mean and its CV less than the CV ratio, were selected for the study. Thus 15 variables were selected for the study. Lists of variables along with the instruments for their measurement are elucidated in the following Table 6.

3.4.2. Variables for the study

Table 6. Operationalization and measurement of variables

S.No	Variables	Measures used
I	Independent Variables	
1	Age	Chronological age of the respondents (completed years) scale adopted by India Census Report (2001) and followed by Asokhan (2006)
2	Educational status	Scale developed by Kalavani (1999) and followed by Sankri (2012)
3	Work experience	Scale developed by Ramprasad (2004) and followed by Jansirani (2006)
4	Organizational Climate	Scale developed by Reddy (1976) and followed by Parthasarathi (2009)

S.No	Variables	Measures used
5	Managerial ability	Scale developed by Thavasumuthu (1997) and followed by Thilagam (2012)
6	Value orientation	Scale developed by Singh (1967) and followed by Sampath (1994) and Kalaivani (1999).
7	Possession of communication gadgets	Scale adopted by Sankri (2012) and modified for the study
8	Workload perception	Scale developed by Katteppa (1984) and followed by Parthasarthi (2009)
9	Technical knowledge	Scale developed by Kalaivani (1999)
10	Achievement motivation	Scale developed by Singh (1969) and followed by Senthilkumar (2009)
11	Job involvement	Scale developed by Lodahl and Kejner (1965) and followed by Kalaivani (1999) and modified for the study
12	Job satisfaction	Scale adopted by Vijayakumar (2009)
13	Self confidence	Developed by Basavanna (1974) and followed by Thilagam (2012)
14	Trainings undergone	Scale adopted by Sankri (2012) and modified for the study
15	Media talks and publications	Developed for the study
II	Dependent variable	

S.No	Variables	Measures used
1	Attitude of extension personnel towards ICT tools	Scale developed for the study
2	Information Management patterns	Index developed for the study

3.4.3. Operationalisation and Measurement of Independent Variables

The selected independent variables were operationalized and the measurement procedures followed are presented hereunder.

3.4.3.1. Age

Age was operationalized as the number of completed years of the respondent at the time of enquiry and the chronological age was taken as a measure. The respondents were classified into three age groups viz., young, middle and old age and scoring procedure adopted by Asokhan (2006) was followed.

Categories	Age
Young	Less than 35 years
Middle	35 – 45 years
Old	More than 45 years

3.4.3.2. Educational status

Educational status of a respondent was operationalized as the extent of formal education possessed. Generally the minimum qualification of AOs/HOs is a pass in B.Sc (Agri) / B.Sc (Horti). The scoring procedure developed by Kalaivani (1999) and followed by Sankri (2012) was adopted with slight modifications. The scoring was given as noted below.

Educational Status	Score
B.Sc (Agri)	1

B.Sc(Agri) + additional course	2
M.Sc(Agri)	3
M.Sc(Agri) + additional course	4
Ph.D.	5
Ph.D. + additional course	6

3.4.3.3. Work experience

The experience of the respondents was operationalized as the number of years of service of the respondents in the concerned department. The number was rounded off to the nearest year. The respondents were categorized into three groups based on the procedure adopted by Jansirani (2006) was followed.

Experience in job	Score
Less than 14 years	1
15 to 20 years	2
More than 20 years	3

3.4.3.4. Organizational Climate

Organizational climate was operationally defined as the degree to which the officials perceived the situation of parent organization found to be conducive and encouraging for the dissemination of technology.

The scale developed by Reddy (1976) and followed by Parthasarathy (2009) was followed in this study. The scale consisted of seven items on a three-point continuum viz., agree, disagree and agree to some extent and the weightages allocated were 1, 2 and 3 respectively. The sum of scores of all the items formed the score of the respondent. Categorization of the respondents was done based on the scores obtained. They were categorized into less conducive, moderately conducive and more conducive by adopting mean and standard deviation.

Category	Score
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Less Conducive	1
Moderate Conducive	2
More Conducive	3

3.4.3.5. Managerial Ability

The ability to make decisions and lead subordinates within an organization. It was operationalised as the capabilities of an extension personnel to maintain and manage the organization for getting higher profitability. The score for involvement in managerial activities was ranging from 3 to 1, for “self-doing”, “assisting others”, and “not involved” in order. The scoring procedure developed by Thavasumuthu (1997) and followed by Thilagam (2012).

Involvement in managerial activities	Score
Self doing	3
Getting assistance from others	2
Not involved	1

The scores obtained by a respondent were summed to arrive at the total score for managerial ability of the extension personnel. The respondents were classified as low, moderate and high on managerial ability using cumulative frequency method.

3.4.3.6. Value orientation (Cosmopolitaness – localitiness)

Value orientation refers to the tendency of an individual to be in contact with outside one’s (cosmopolitaness) or to limit his contact with one’s own resource (localitiness). It was operationalized as the degree to which the extension personnel derive values through their job. Value orientation was measured by using the scale developed by Singh (1967) and followed by Sampath (1994) and Kalaivani (1999). The scale includes 36 items. Among these, five items were selected on five-point continuum which includes 3 positive statements and 2 negative statements. A weightage

of 5,4,3,2 and 1 were given for positive statements and the weights were reversed in the case of negative statements. The total score of each respondent was worked out by summing up all the scores on all statements. The score range is from 5 to 25. Based on the cumulative frequency of obtained scores, the respondents were categorized into low, medium and high categories.

3.4.3.7. Possession of communication gadgets

It refers to the possession of communication gadgets by the respondents in the office and in home. The scoring procedure was developed by Sankri (2012). Twenty two modern communication electronic gadgets were identified. The score of two was assigned if he/she owned the gadget in office, one for the possession of gadget in personal and zero for non-possession of gadgets.

3.4.3.8. Workload perception

The workload of the respondents includes field work, official work and maintenance of records and others. The scale developed by Katteppa (1984) and used by Jayalakshmi (1995) and Jansirani (2006) was adopted for the study. Based on the degree of workload as perceived by the respondents themselves they were classified into low, moderate and high by using cumulative frequency method, the scoring adopted is as follows.

Workload	Score
Heavy	3
Moderate	2
Light	1

3.4.3.9. Technical knowledge

Technical knowledge is the intellectual acumen one should possess in carrying out a given job. The scale developed by Kalaivani (1999) was used in this study to measure this variable. The scale consists of five items. The items were measured on three point continuum with scores 3, 2 and 1 for positive statements and it was reversed for negative

statement. The scores for each statement were added to arrive at the total score for an individual. The respondents were classified into low, medium and high level categories based on cumulative frequency method.

3.4.3.10. Achievement motivation

Achievement motivation is a social value that emphasized a desire for excellence in order for an individual to attain a sense of personal accomplishment. The scoring procedure developed by Singh (1969) and followed by Senthilkumar (2009) was adopted in this study. It consisted of six items scale with five alternative responses to each item with scores ranging from 5 to 1. The respondents were asked to give their responses to each item. Total score for an individual respondent was obtained by summing up the score of statements. The maximum and minimum possible scores an individual could obtain were 25 and 5 respectively. The respondents were categorized into low, moderate and high based on cumulative frequency method.

3.4.3.11. Job involvement

Job involvement was operationalised as the degree to which a person is identified psychologically with the work or the importance of work in its total self image.

Job involvement of respondents was measured by using a job involvement scale developed by Lodahl and Kejner (1965) and followed by Kalaivani (1999) and with slight modification. The scale consists of five statements out of which, statements 2 and 5 were negative statements. Against each statement, 5-point response categories were provided such as strongly agree, agree, undecided, disagree and strongly disagree with the score of 5, 4, 3, 2 and 1 respectively. Total score for each respondent was obtained by summing the scores on each item. The sum of scores of overall items formed the score of officials on job involvement.

The high score reveals higher job involvement of the respondents and vice versa. Mean and standard deviation were calculated for the categorization of the respondents as less, moderate and high.

Statements	Response
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	SA	A	UD	DA	SDA
Positive statements	5	4	3	2	1
Negative statements	1	2	3	4	5

3.4.3.12. Job satisfaction

It was operationalized as the degree to which the extension personnel derive satisfaction through their job. Job satisfaction was measured by using the scale adopted by Vijayakumar (2009). The scale includes 36 items, among these seven items were selected on five-point continuum, which includes 4 positive statements and 3 negative statements. A weightage of 5,4,3,2 and 1 were given for positive statements and the weights were reversed in the case of negative statements. The total score of each respondent was worked out by summing up the scores on all statements. The score range is from 7 to 49. Based on the cumulative frequency, the respondents were categorized into low, medium and high categories.

3.4.3.13. Self confidence

It refers to the feeling of an individual about the ability, initiative and zeal to achieve his goal or aim. This variable was measured by the scale developed by Basavanna (1974) used by Jayalakshmi (1995). The scale consists of eight statements to be related on a five point continuum namely, 'Strongly Agree', 'Agree', 'Undecided', 'Disagree' and 'Strongly Disagree' with the weightages of 5, 4, 3, 2 and 1 for positive statements (1,2,5,8) and 1, 2, 3, 4 and 5 for negative statements (3,4,6,7) respectively. Self confidence score of a respondent was calculated by adding the scores of all the statements. Thus, 40 and 8 were the maximum and minimum scores obtainable respectively for each respondent. Cumulative frequency method was used for the categorization of the respondents.

3.4.3.14. Trainings undergone

It was operationalized as the number of trainings undergone by the respondents in last three years in the area of ICT and related fields. The scoring procedure adopted by Sankri (2012) was used. If he / she had attended general training, then he / she was

awarded with the score of one and if he / she attended any training related to computer or ICT, then he / she was awarded with the score of two.

For each additional training, score of one for general training and score of two for trainings related to computer / ICT was given. If he/she had not attended any training, no score was given. Based on the total scores the respondents were classified on identified intervals.

3.4.3.15. Media talks and publications

The scale was developed for the study and the scoring procedure was adopted based on the publications of extension personnel. If he/she had published articles, messages and radio talks then he/she was awarded with the score of two and if he/she was not published, then he / she was awarded with the score of one.

Item	Score	
	Published	Not published
Popular articles	2	1
Radio talks	2	1
TV talks	2	1
Newspaper	2	1

3.5. Construction of scale to measure the attitude of extension personnel towards the Information and Communication Technology (ICT) tools

3.5.1. Collection of attitude items

Possible statements concerning the psychological object i.e., ‘**Information and Communication Technology (ICT) tools**’ with respect to the psychological and economical domains were collected based on review of literature, discussion with scientists and

extensionists. Totally 92 statements were initially collected which were organised and structured in the form of attitude items. The items were screened by following the informal criteria suggested by Edwards (1969) for editing the statements to be used in the construction of the attitude scale. Based on the screening, 79 items were finally selected which formed the universe of content.

3.5.2. Item scoring and computation of scale values and Q values

The 79 statements were then subjected to judge's opinion on a five-point continuum, ranging from, most unfavourable to most favourable. The list of statements was sent to 50 judges who comprised of extensionists of Tamil Nadu Agricultural Universities, Kerala Agricultural University and Annamalai University. Of the 50 judges, 34 judges responded by sending their judgements. The scale values and Q values were computed for the 79 statements by applying the formula as suggested by Thurstone and Chave (1929) which is as follows.

$$S = l + \left[0.50 - \frac{\sum pb}{pw} \right] i$$

Where,

S – The median or scale value of the statement

l – The lower limit of the interval in which the median falls

$\sum pb$ – The sum of the proportions below the interval in which the median falls

Pw – The proportion within the interval in which the median falls

I – The width of the interval and is assumed to be equal to 1.0

$$Q = C_{75} - C_{25}$$

Where,

Q – Interquartile range

$$C_{75} - \text{the } 75^{\text{th}} \text{ centile, } C_{75} = l + \left[0.75 - \frac{\sum pb}{pw} \right] i$$

$$C_{25} - \text{the } 25^{\text{th}} \text{ centile, } C_{25} = l + \left[0.25 - \frac{\sum pb}{pw} \right] i.$$

3.5.3. Selection of attitude items

The attitude items to be included in the final attitude scale were selected based on the following criteria:

- The statements selected should represent the universe of content with respect to ‘Information and Communication Technology (ICT) tools’.
- The statements selected should adequately represent the respective domain of ‘Information and Communication Technology (ICT) tools’.
- The scale values of the selected attitude items should have equal appearing interval i.e. distributed uniformly along the psychological continuum.
- Those items with high scale values and smaller Q values should be selected as far as possible.
- There should be more or less equal number of statements with favourable and unfavourable attitudes as far as possible.

An objective methodology was devised in order to select the attitude items keeping in mind the above mentioned criteria. The scale values were arranged in descending order of magnitude and the difference between the successive scale values and the cumulative total of the computed differences were worked out. Considering the time limitation from extension personnel’ point of view, it was decided to select 7 statements to constitute the attitude scale. Since, the selected scale values should have equal appearing interval and distributed uniformly along the psychological continuum, it was necessary to form 7 compartments so as to select 7 statements at one statement from each compartment. The basis for forming the compartments was that, each compartment

should be equally spaced in the continuum. For this purpose the difference between the highest scale value (4.816) and the lowest scale value (1.158) was worked out. The difference value was divided by seven. This formed the width of the first class interval. The second interval was worked out by adding the value 0.421 with the width of the first class interval (0.874). Adding the value 0.421 with the width interval of second class (0.874) gives the third interval (1.381). Subsequently all the seven intervals were worked out. Each class interval represented a compartment for the selection of the attitude items. For example the value 0.421 is close to 0.41 of the cumulative value of difference. So this forms the first compartment and similarly seven compartments were worked out.

To select the attitude items from the seven compartments the scale values and the corresponding Q values were considered (Appendix II). Based on the criteria already mentioned, items having high scale values and low Q values were selected at one item from each compartment. Care was taken to ensure that the selected items represented the universe of content and covered the psychological and economical domains of Information and Communication Technology (ICT) tools. Thereby, seven items were selected with equal appearing interval and with a uniform distribution along the psychological continuum. The attitude scale thus constructed is given in the table below.

Table 7. Final set of attitude items selected with corresponding S and Q values and the nature of statement

S. No.	Statement No.	Scale Value	Q Value	Statement	Nature of the statement
1.	1	4.816	0.625	ICT tools plays pivotal role in transfer of technologies among farmers	Favourable
2.	10	4.314	1.034	ICT tools are not essential for technology transfer	Unfavourable
3.	44	3.761	1.031	ICT tools does not help to resolve the	Unfavourable

S. No.	Statement No.	Scale Value	Q Value	Statement	Nature of the statement
				conflicts among the extension personnel	
4.	28	2.822	1.670	ICT tools induce the more information acquisition among the extension personnel	Favourable
5.	52	2.218	1.414	ICT tools are effective medium of communication to impart training to farmers	Favourable
6.	36	1.716	2.084	Extension personnel need not rely on the use of ITC tools	Unfavourable
7.	48	1.588	2.742	ICT tools have nothing new to offer	Unfavourable

3.5.4. Reliability of the scale

The reliability of the scale was determined by 'Split-half' method. The split-half method is regarded by many as the best method for measuring reliability (Garrett, 1979). The seven selected attitude items were divided into two equal halves by odd-even method (Singh, 2008). The two halves were administered separately to 30 extension personnel who in charge for test laboratories in non-sample area. The scores were subjected to product moment correlation test in order to find out the reliability of the half test. The half-test reliability coefficient r was 0.537, which was significant at one per cent level of probability. Further the reliability coefficient of the whole test was computed using the Spearman-Brown Prophecy formula. The whole test reliability r_{tt} was 0.698. According to Singh (2008), when the purpose of the test is to compare the means of the two groups of narrow range, a reliability coefficient of 0.50 or 0.60 would suffice. Hence, the constructed scale is reliable as the r_{tt} was > 0.60 .

3.5.5. Content validity of the scale

It referred to the representativeness or sampling adequacy of the content of a measuring instrument (Kerlinger, 2010). Content validation was carried out by subjecting the selected seven items to judges' opinion. Experts in the selected field of study formed the judges. They were asked to indicate the extent to which each attitude item covered the domains of the psychological object 'Information and Communication Technology (ICT) tools' or judge each item for its presumed relevance to the property being measured. The responses were obtained on a four – point continuum of most adequately covers', 'More adequately covers', 'less adequately covers' and 'least adequately covers'. Scores of 4, 3, 2 and 1 were given for the points on the continuum respectively. Totally 30 judges responded by sending their judgments. The mean score 2.5 was fixed as the basis for deciding the content validity of the scale. If the overall mean score of the attitude items as rated by the judges was above 2.5, the scale will be declared as valid and if not otherwise. In the present case, the overall mean score was worked out as 2.82 and therefore the constructed attitude scale is said to be valid.

3.5.6. Administration of the scale

The selected seven attitude items were arranged randomly in order to avoid biased responses. The scoring procedure adopted is as follows.

Nature of the statement	Continuum				
	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
Favourable	7	5	4	3	1
Unfavourable	1	3	4	5	7

This scale was administered to obtain extension personnel responses. The score obtained for each statement was summed up to arrive at the attitude score for that respondent. The score ranged from 49 (maximum) to 7 (minimum). The responses were

grouped as less favourable, moderately favourable and more favourable based on the cumulative frequency method.

3.6. Construction on Information Management Index

3.6.1. Operationalisation of index

An index may be defined as a technique of totaling or reducing a single composite series data on a number of distinct, but related variables expressed in different units of measurement (Hooda, 2001). It is a device which facilitates comparison of the level of magnitude of a group of related variables under two or more situations. Situations requiring comparison may refer to either

- changes occurring over a time
- the difference(s) between two or more places and
- The variations between similar categories of objects or subjects such as persons, groups of persons, organization etc.

For example, composite multi dimensional poverty index, wholesale price index, market index, market share weighted index, market value weighted index, r-square index, russell employment cost index etc., are some of the commonly used indices.

The operationalisation and measurement of information management patterns for this study are presented in this section.

The information management patterns were conceptualized by various researchers in different ways. Rogers (1962) considered information management patterns as the degree to which an individual was willing to seek information and advice. Vijayaraghavan (1976) measured information management patterns as an index which was aggregate of scores obtained on information acquisition index, information processing index and information dissemination index of agricultural officers.

In this study, information management patterns referred to the aggregate of information acquisition, information processing and information dissemination patterns of extension personnel. The information management pattern of each respondent was calculated by the aggregate of scores obtained on information acquisition, processing and dissemination pattern.

Thus, Information management patterns = Information acquisition patterns + Information processing patterns + Information dissemination patterns.

3.6.2. Information Acquisition Patterns

This has been referred as the sources and channels from where the respondents seek technological information (regarding the latest technologies/process/product in business). According to Sampath (1994) information acquisition referred to all the activities performed by a respondent for the acquisition of scientific and technical information. The scoring procedure followed by Sampath (1994) and Thavasumuthu (1997) with slight

modification was adopted for this study. The score for frequency of use of sources/channels for acquisition of information was ranging from 4 to 1, for “regularly”, “occasionally”, “rarely” and “never” in order.

Use of sources/channels	Score
Regularly	4
Occasionally	3
Rarely	2
Never	1

3.6.2.1. Information Acquisition Index (IAI)

The information acquisition has been measured by using information acquisition index. Respondents were asked to indicate the degree of usage of various existing sources and channels and the information acquisition index was worked out by using the following formula.

$$IAI = \frac{SSi a_{xi}}{TSi a_{yi}}$$

Where,

IAI = Information acquisition index

SSi a_{xi} = Scores secured by an extension personnel on information acquisition patterns

TSi a_{yi} = Total possible score for an extension personnel on information acquisition patterns

Thus calculated IAI score was used for further analysis.

3.6.3. Information processing Patterns

According to Sampath (1994) Information processing patterns deals with evaluation of information received, that is the analysis, synthesis or decision making, treatment of information, that is preparing with sort of concrete and familiar words and storage of information, that is noting, memorizing and recording.

It has been operationalized as the sum of all the activities performed by the extension personnel for evaluation, treatment, storage and transformation techniques of the scientific and technical information received from various sources and channels. The scoring procedures followed by Rathakrishnan (1993), Sampath (1994) and Thavasumuthu (1997) with slight modification were adopted for this study. The information processing index comprises the following,

- Information evaluation index
- Information treatment index
- Information storage index and
- Information transformation index

3.6.3.1. Information evaluation index (IEI)

It has been operationalized as the extent to which an extension worker process the information through various evaluation techniques. It comprises various techniques of the information evaluation of extension personnel from various sources and channels. The responses were obtained on four point continuum viz., “regularly”, “occasionally”, “rarely” and “never” in order with score of 4 to 1.

$$IEI = \frac{SSie_{xi}}{TSie_{yi}}$$

Where,

IEI = Information evaluation index

SSie_{xi} = Scores secured by an extension personnel on information evaluation patterns

TSI_e y_i = Total possible score for an extension personnel on information evaluation patterns

Thus calculated IEI score was used for further analysis.

3.6.3.2. Information treatment index (ITI)

It has been operationalized as the extent to which an extension worker treats information through different techniques of information treatments like preparing messages with short words and avoiding too much statistics. The response was obtained on four point continuum.

$$ITI = \frac{SSI_t x_i}{TSI_t y_i}$$

Where,

ITI = Information treatment index

SSI_t x_i = Scores secured by an individual on information treatment patterns

TSI_t y_i = Total possible score for an individual on information treatment patterns

Thus calculated ITI score was used for further analysis.

3.6.3.3. Information storage index (ISI)

It has been operationalized as the extent to which an extension worker uses the different information storage methods through information storage technique like compact disc, pen drive, e-mail and notebook. Respondents were asked to rate the existing storage methods and information storage index was worked out by using the following formula.

$$ISI = \frac{SSI_s x_i}{TSI_s y_i}$$

Where,

ISI = Information storage index

SSIs x_i = Scores secured by an individual on information storage patterns

TSIs y_i = Total possible score for an individual on information storage patterns

Thus calculated ISI score was used for further analysis.

3.6.3.4. Information transformation index (ITrI)

It has been operationalized as the extent to which an extension worker uses the various information transformation techniques like popular articles, scripts for media, posters and leaflets.

$$\text{ITrI} = \frac{\text{SSITr } x_i}{\text{TSITr } y_i}$$

Where,

ITrI = Information transformation index

SSITr = Score secured by an individual on information transformation patterns

TSITr y_i = Total possible score for an individual on information transformation patterns

Thus calculated ITrI score was used for further analysis.

3.6.3.5. Information processing index

It has been operationalized as sum of scores secured for information evaluation, information treatment, information storage and information transformation techniques used.

$$\text{IPI} = \frac{\text{SSIp } x_i}{\text{TSIp } y_i}$$

Where,

IPI = Information processing index

SSIp x_i = Scores secured by an individual on information processing patterns
(Evaluation, treatment, storage and transformation)

TSIp y_i = Total possible score for an individual on information processing patterns

Thus calculated IPI score was used for further analysis.

3.6.4. Information dissemination patterns

According to Sampath (1994) information dissemination referred to all the activities performed by the respondents for disseminating scientific and technical information.

The scoring procedure followed by Rathakrishnan (1993), Sampath (1994), Thavasumuthu (1997) and Palmurugan (2002) with modification was adopted for this study. The scores for frequency of use of sources/channels for dissemination of information were ranging from 4 to 1, for “regularly”, “occasionally”, “rarely” and “never” in order.

Use of sources/channels	Score
Regularly	4
Occasionally	3
Rarely	2
Never	1

3.6.4.1. Information dissemination index

It has been operationalized as extent of dissemination of information and knowledge by an extension worker through various sources and channels to farmers. The responses were obtained in four point continuum.

$$IDI = \frac{SSId \ x_i}{TSId \ y_i}$$

Where,

IDI = Information dissemination index

SSId xi= Score secured by an extension personnel on information dissemination patterns

TSId yi = Total possible score for an extension personnel on information dissemination patterns

Thus calculated IDI score was used for further analysis.

3.6.5. Information Management Index (IMI)

Information Management Index (IMI) was finally arrived by adding the scores of each component *viz.*, **information acquisition, information processing** (Information evaluation + Information treatment + Information storage + information transformation techniques) and **information dissemination**. The Information Management Index (IMI) was thus calculated by adopting the following formula.

$$IMI = \frac{Iax + (Iex + Itx + Isx + Itrx) + Idx}{Iay + (Iey + Ity + Isy + Itry) + Idy}$$

Where,

- IMI - Information Management Index
- Iax - Total scores obtained for information acquisition
- Iex - Total scores obtained for Information evaluation
- Itx - Total scores obtained for Information treatment
- Isx - Total scores obtained for Information storage
- Itrx - Total scores obtained for information transformation techniques
- Idx - Total scores obtained for information dissemination
- Iay - Total maximum possible scores for information acquisition
- Iey - Total maximum possible scores for information evaluation
- Ity - Total maximum possible scores for information treatment
- Isy - Total maximum possible scores for information storage
- Itry - Total maximum possible scores for information transformation techniques
- Idy - Total maximum possible scores for dissemination

Information Management Patterns - Index score analysis

The Information Management Index scores for each of the components of Information Management Patterns have been arrived for the extension personnel based on

the indexes developed. Also the total Information Management Index scores which have been calculated based on the formula depicted were used for further analysis for classification of respondents on overall Information Management Patterns (Table 24) and also the component-wise depiction of index scores for three cadres (Table 31).

Further, the correlation and regression analyses were carried out using these Information Management index scores secured by extension workers for each and total components of Information Management Patterns (Table 33).

Mean score analysis

Further attempts have been made to work out the mean scores secured by each of the sources/ channels or activities in each component of Information Management Patterns. This has been done in order to know to generate data on the extent of usage of each source / channel / activities in each components viz., information acquisition patterns, information processing patterns and information dissemination patterns among the three cadres of extension personnel.

Following formula was used to find out the mean scores for each of source / channel / activities in each component of Information Management Patterns.

Formula:

The total mean score for a source / channel / activity in components of Information Management Patterns (IMP)	=	Sum of the scores secured by a source / channel / activity among AOs/HOs	+	Sum of the scores secured by a source / channel / activity among ADAs/ADHs	+	Sum of the scores secured by a source / channel / activity among DDAs/DDHs
		<hr style="width: 100%;"/> Total number of respondents in that cadre (64)		<hr style="width: 100%;"/> Total number of respondents in that cadre (33)		<hr style="width: 100%;"/> Total number of respondents in that cadre (24)

The overall and cadre-wise mean scores for each of the source / channel / activity has also been worked to arrive for mean score for all the 121 respondents. These mean scores were used in Tables 25, 26, 27, 28, 29, 30 and 31 in findings and discussion chapter for drawing interpretations.

Thus, it could be concluded that index scores have been computed for each of extension worker and the mean scores have been calculated for each source / channel / activity in each component of Information Management Patterns.

3.6. Capacity building needs of extension personnel in Information Management

3.6.3.1. Capacity building needs of extension personnel in Information Management

Capacity building needs in this study has been operationalized the overall capacity building needs of extension personnel in dimensions of subject matter areas, venue, duration, training methods and trainer preferences.

Capacity building needs of each subject matter area was assessed over a three point continuum viz., most needed, needed and not needed by assigning scores of 3, 2 and 1 respectively. The results were expressed in mean scores.

3.6.3.2. Training venue

Venue of training referred to the place where extension personnel preferred to undergo training. Based on the perusal of literature, a list of possible venues was prepared. Each respondent was asked to state their preference of training venue. The results were expressed in mean scores.

3.6.3.3. Training methods

Thirty five training methods viz., lecture alone, lecture + av aids, group discussion, extempore, demonstration / hands on experience, exhibitions, role playing, problem solving sessions with expert, study assignments, symposium, colloquium, seminar, workshop, indoor session like solving hypothetical problems, outdoor session like case study, visit to field trips visit to research station, visit to market, using objects and specimens, buzz session, brainstorming, testing, quizzes, questioning, small group work, individualize instruction, use of handouts, graphics, books, photographs, games, simulation, sensitivity training, transactional analysis, syndicate, recording video lessons, contact sessions in distance mode were found as training methods. Each respondent was asked to state their preference of training methods and the results were expressed in mean scores.

3.6.3.4. Trainers

This referred to the person who had to conduct training for the extension personnel. Based on the literature and discussion with experts, a list of trainers were administered and preference were collected.

3.7. Tools and techniques of data collection

3.7.1. Mailed questionnaire construction

Considering the scope, objectives and the variables under the study, a comprehensive questionnaire was constructed. Questionnaire is a form containing a series of questions where the respondents themselves fill in the answers (Singh, 1986). The items included in the questionnaire were both structured and optional type of questions, which were suitable to the extension personnel. The most relevant, unambiguous and practical questions were included in the questionnaire in order to gather adequate and precise information.

Questionnaire method was chosen, taking in to consideration of the fact that respondents were distributed in three districts. In addition all the respondents had a Bachelor's degree in agriculture and horticulture and hence even in the absence of researcher, they could answer to the expected level. Also it is easy in administration, less time consumption and less expensive nature contributed to the choice of this method. For construction of questionnaire, suggestions of experienced research workers were also sought, besides referring to the model questionnaires of the earlier studies in the field. The questionnaire was designed into four parts,

Part – A Profile of the extension personnel

Part – B Attitude of extension personnel towards the Information and Communication Technology (ICT) tools in Transfer of Technology

Part – C Information Management Patterns with constraints

Part – D Capacity building needs of extension personnel in information management.

3.7.2. Pre-testing

Before finalizing the questionnaire, it was pre-tested and inconsistencies were noted and properly rectified and then the schedule was finalized.

3.8. Statistical tools used

The collected data were quantified and tabulated for statistical analysis. The following statistical techniques were used.

- i. Percentage analysis
- ii. Cumulative frequency
- iii. Mean score analysis
- iv. Correlation analysis
- v. Multiple regression analysis
- vi. ANOVA (Analysis of Variance)

Findings and Discussion

CHAPTER IV

FINDINGS AND DISCUSSION

Results and discussion form the crux of a research study. The data were classified, tabulated and then treated with scientific methods to get the results. The discussion has been taken up simultaneously along with the results. The results are interpreted to bring out the empirical relationship between the variables. The results of the study have been presented in the following sections in the light of the objectives set-forth.

- 4.1. Profile characteristics of extension personnel
- 4.2. Attitude of extension personnel towards the Information and Communication Technology (ICT) tools
- 4.3. Information Management Patterns
- 4.4. Association and contribution of selected profile variables with attitude of extension personnel towards ICT tools and information management patterns.
- 4.5. Capacity building needs of extension personnel
- 4.6. Constraints and suggestions

4.1. Profile of the extension personnel

A clear understanding and firsthand knowledge about the composition of the subjects render in a larger way to interpret the collected data. In studying the information management patterns of the extension personnel, it is very important to scan the profile as they would also act as causes to influence the Information Management Patterns. Keeping this view, attempt has been made to collect the details on selected profile of the extension personnel. The composition of the respondents has been discussed against each variable selected for the study. The results have been presented and discussed in this section.

4.1.1. Age

Age has been considered, as it may reveal the mental maturity of an individual to take decisions for achieving his needs. The completed years of age was collected from

the respondents and it was classified as young (less than 35 years), middle (35 to 45 years) and old (more than 45 years). Data collected on age of the respondents were analysed and presented in Table 8 and depicted in figure 5.

Table 8. Distribution of respondents according to their age

S.No.	Categories	AOs / HOs (n = 64)		ADAs/ADHs (n =33)		DDAs/DDHs (n =24)		Total (n=121)	
		No	%	No	%	No	%	No	%
1	Young	38	59.40	0	0	0	0	38	31.40
2	Middle	22	39.40	1	3.00	0	0	23	19.02
3	Old	4	6.20	32	97.00	24	100.00	60	49.58
	Total	64	100	33	100	24	100	121	100

SD = 2.62; Mean = 43.55; F = 2.147 ** ; ** Significant at 0.01 probability level

It is apparent from Table 8, among the total respondents that nearly half (49.58 %) of the respondents were seen in old aged category followed by 31.40 per cent in young age and 19.02 per cent in middle age categories. Further, the table shows that majority (59.40 %) of the AOs/HOs were in young age category followed by 39.40 and 6.20 per cent in middle and old age categories respectively. An overwhelming majority (97.00 %) of the ADAs/ADHs were in old age category followed by middle age category with only 3.00 per cent of the respondents. Cent per cent (100 %) of the DDAs/DDHs were found old aged.

The recent recruitment which was carried out for selection of AOs and HOs in 2013 contributed for such more number of young age category of respondents found among agricultural officers. Moreover, the post of agricultural and horticultural officers being the initial level entry post, normally would have more of young aged extension personnel.

All the DDAs/DDHs were in the old aged category. This is due to the fact that DDAs/DDHs are being the senior level officers normally possess 20-25 years of service.

There existed significant differences among the three cadres with respect to age which has been confirmed by the 'F' value.

This finding is in line with Parthasarathi (2009).

4.1.2. Educational status

Education improves one's capability to cope up with different situations and also helps in taking appropriate decisions. The distribution of respondents according to educational status was analysed and presented in Table 9 and depicted in figure 6.

Table 9. Distribution of respondents based on their educational status

S.No	Category	AOs/HOs (n = 64)		ADAs/ADHs (n =33)		DDAs/ DDHs (n =24)		Total (n=121)	
		No	%	No	%	No	%	No	%
1.	B.Sc (Agri) / B.Sc (Horti)	30	46.88	24	72.72	13	54.16	67	55.38
2.	B.Sc(Agri/ Horti) + additional course	3	4.68	-	-	-	-	3	2.48
3.	M.Sc (Agri/ Horti)	28	43.76	9	27.28	9	37.50	46	38.01
4.	M.Sc (Agri/ Horti) + additional course	1	1.56	-	-	1	4.17	2	1.65
5.	Ph.D.	2	3.12	-	-	1	4.17	3	2.48
	Total	64	100	33	100	24	100	121	100
SD = 3.278; Mean = 42.175; F = 2.245^{NS}; Non significant									

It could be observed from Table 9 that in overall, more than half of the respondents (55.38 %) were B.Sc (Agri / Horti) degree holders followed by M.Sc (Agri/

Horti) degree holders (38.01 %). Only less percentage of the respondents (each 2.48 %) were observed in both B.Sc (Agri / Horti) degree with additional courses and Ph.D degree category followed by 1.65 per cent of the respondents in M.Sc (Agri/ Horti) degree with additional course category.

Further, the table clearly shows that majority (46.88 %) of the s/HOs were B.Sc (Agri/ Horti) degree holders followed by M.Sc (Agri/Horti) degree holders (43.76 %). Negligible percentage of the respondents were observed in additional course.

In the case of ADAs/ADHs, it was indicated that nearly three-fourth (72.72 %) of the respondents had the educational qualification of B.Sc (Agri / Horti) degree and rest of the respondents (27.28 %) had M.Sc (Agri) degree. None of the respondents were observed in the other categories.

With regard to the DDAs/DDHs, more than half of the respondents (54.16 %) had B.Sc (Agri / Horti) degree holders followed by 37.50 per cent of the respondents with M.Sc (Agri/ Horti) degree. Further, 4.17 per cent of the respondents were observed in both M.Sc (Agri) with additional course and Ph.D categories.

The probable reason for this result might be that B.Sc (Agri) is the basic qualification for the agricultural officers and B.Sc (Horti) is the basic qualification for the horticultural officers posts and most of the ADAs and ADHs were the B.Sc (Agri) and B.Sc (Horti) graduates. When the researcher investigated about the additional qualifications, it was interesting to listen that all the respondents did additional courses like PGDAEM, psychology, journalism, yoga, diploma in computer application and post graduate diploma in computer applications only after joining the post.

These findings also derive support from the findings of Parthasarathi (2009) and Sankri (2012).

4.1.3. Work experience

'Experience is the best teacher', goes a proverb. Experience gained over a period of time could help in making rational decisions in information management patterns. The respondents were classified based on the number of years of experience they have gained in the State Department of Agriculture. The data on experience of the extension

personnel at the time of enquiry were collected, analysed and presented in Table 10 and depicted in figure 7.

Table 10. Distribution of respondents according to their work experience

S.No.	Categories	AOs/HOs (n = 64)		ADAs/ADHs (n =33)		DDAs/DDHs (n =24)		Total (n=121)	
		No	%	No	%	No	%	No	%
1	Less than 14 years	52	81.30	1	3.00	-	-	53	43.80
2	15- 20 years	7	10.90	11	33.40	-	-	18	14.88
3	More than 20 years	5	7.80	21	63.60	24	100	50	41.32
	Total	64	100	33	100	24	100	121	100

SD = 4.361; Mean = 42.376; F = 1.124*; Significant at 0.05 probability level

It could be inferred from Table 10 that of total respondents, majority (43.80 %) were observed to have work experience of less than 14 years followed by 41.32 per cent of the respondents with work experience of more than 20 years. The percentage of respondents in the category of 15 – 20 years of work experience was 14.88 per cent.

It could be further seen from Table 10 that most (81.30 %) of the AOs/HOs were in the category of less than 14 years of experience followed by 15 - 20 years and above 20 years of experience (10.90 %) and (7.80 %) respectively. This might be due to the fact that one-fourth of the portion of AOs/HOs are in the entry cadres. This result is in conformity with that of Rao (1994), Reddy (1998) and Kalavani (1999).

With regard to ADAs/ADHs, it was further observed that more than half (63.60 %) of the respondents had more than 20 years of job experience followed by 33.40 per cent of the respondents with 15 – 20 years. Only 3.00 per cent of the respondents were seen in the category of work experience of less than 14 years. It was obvious that majority of the

respondents were found in old age category and having more number of years of experience occupying the post.

All the sample respondents of the DDAs/DDHs had more than 20 years of work experience. The proportion of the respondents in more experience category was high in this cadre as almost all the DDAs and DDHs entered in service as AOs and HOs immediately after completion of their under graduation. Thus, there existed significant differences among the three cadres which has been confirmed by the ‘F’ value.

The findings derive support from the findings of Parthasarathi (2009) and Sankri (2012).

4.1.4. Organizational climate

Organizational climate defined as the degree to which the extension personnel perceived the situation of parent organization found to be conducive and encouraging for the dissemination of technology. The respondents were categorized into less conducive, moderately conducive and more conducive. The data with respect to the perceived levels of organizational climate of extension personnel are presented in Table 11 and depicted in figure 8.

Table 11. Distribution of the respondents based on the organizational climate

S.No.	Categories	AOs/HOs (n = 64)		ADAs/ADHs (n =33)		DDAs/DDHs (n =24)		Total (n=121)	
		No	%	No	%	No	%	No	%
1	Less conducive	-	-	-	-	-	-	-	-
2	Moderate conducive	17	26.60	8	24.20	12	50.00	37	30.57
3	More conducive	47	73.40	25	75.80	12	50.00	84	69.43

1	Self doing	19	29.70	4	12.10	5	20.80	28	25.26
2	Getting Assistance from others	45	70.30	29	87.90	19	79.20	93	76.24
	Total	64	100	33	100	24	100	121	100
SD = 7.86; Mean = 43.675; F = 2.476* ; Significant at 0.05 probability level									

It is observed from Table 12 that three-fourth of the respondents were observed in getting assistance from others and the rest (25.26 %) were in ‘self doing’ category of managerial ability.

Further, the above table shows most of the AOs/HOs (70.30 %), ADAs/ADHs (87.90 %) and DDAs/DDHs (79.20 %) were in the category ‘getting assistance from others’. And also 29.70 per cent of the AOs/HOs, 12.10 per cent of the ADAs/ADHs and 20.80 per cent of the DDAs/DDHs were seen in the category ‘self doing’ pertaining to managerial ability.

There existed significant differences among the three cadres which has been confirmed by the ‘F’ value 2.476 at 0.05 probability level.

The extension personnel have responsibilities like supervision of the subordinates, achieving the target and planning the seasonal activities. Hence, the high managerial activities are expected among the extension personnel. Also all these activities are to be attended based on team spirit by the way of getting assistance from others.

The extension personnel have clear action plan at the time of initiating their activities in seasons. They would co-ordinate the job tasks like organizing inputs for production, managing labourers, packaging and marketing the products on teamwork basis. Thus, more extension personnel were reported to have got assistance from others.

The findings derive support from the findings of Parthasarathi (2009) and Thilagam (2012).

4.1.6. Value orientation (Cosmopolitanness – localitiness)

Value orientation refers to the tendency of an individual to be in contact with outside (cosmopolite) or to limit his contact with one's own source (localite). Based on the cumulative frequency of obtained scores, the respondents were categorized into low, medium and high categories. The results are presented in Table 13.

Table 13. Distribution of the respondents based on the value orientation

S.No.	Categories	AOs/HOs (n = 64)		ADAs/ADHs (n =33)		DDAs/DDHs (n =24)		Total (n=121)	
		No	%	No	%	No	%	No	%
1	Low	-	-	-	-	-	-	-	-
2	Medium	22	34.4	7	21.21	11	45.80	40	33.10
3	High	42	65.6	26	78.79	13	54.20	81	66.90
	Total	64	100	33	100	24	100	121	100
SD = 4.26; Mean = 49.921 F = 3.047^{NS}; Non significant									

Data furnished in Table 13 revealed that majority of the respondents (66.90 %) had high level of value orientation followed by 33.10 per cent of the respondents in medium level category in overall analysis.

In the case of AOs/HOs, the percentage of respondents in medium and high levels of value orientation was 34.40 and 65.60 per cent respectively.

With respect to ADAs/ADHs, the percentage of respondents observed in medium and high levels of value orientation was 21.21 and 78.79 respectively.

Further, it was clear that 45.80 per cent and 54.20 per cent of the respondents were in the category of medium and high levels of value orientation categories respectively with respect to DDAs/DDHs.

None of the respondents were in low level of value orientation category. No significant differences among three the cadres have been reported.

It could be interpreted that more than half of the extension personnel in all the three cadres were found to be cosmopolite in nature. This might be due to the fact that because of the periodical transfers, they might have developed interest in learning new things from new environments outside their native places.

The findings derive support from the findings of Sampath (1994) and Kalaivani (1999).

4.1.7. Possession of communication gadgets

It refers to the possession of communication gadgets by the extension personnel in office and home. Based on the cumulative frequency of obtained scores, the respondents were categorized into low, medium and high categories. The collected data were analyzed and presented in Table 14.

With respect to the possession of communication gadgets in home, more than half (51.24%) of the respondents were in the category of medium level followed by high and low levels (29.75 % and 19.01 % respectively). No significant differences of communication gadgets possession in home among the three cadres which has been confirmed by the 'F' value. But in the case of possession of communication gadgets in the office premises significant differences were observed

All the extension personnel owned a mobile phone. Some are having separate mobile phones for official use. The extension personnel communicated official information through calls and message services. The extension personnel owned either laptop or desktop computer in their homes for their personal use and children purposes. The extension wing of the State Department of Agriculture supplied with computer with internet connections and printers. They were using pen drive and CD's for both official and personal purposes.

Video and digital cameras are put to use during the field visits, tours, field work and survey works. The other modern communication gadgets like projector and voice recorder were available in the JDA office and in few ADA offices which they made use of these gadgets on the day of meetings and trainings. Almost all the extension personnel had digital cameras both in office and for personal use for documentation purposes.

LCD projectors and possession of tablets among extension personnel were used in limited way. Projectors and tablets are available at JDA offices of three districts.

The findings derive support from the findings of Balasubramani (2004).

Table 14. Distribution of the respondents according to their possession of communication gadgets

S.No.	Categories	Home								Office							
		AOs/HOs (n = 64)		ADAs/ADHs (n =33)		DDAs/ DDHs (n =24)		Total (n=121)		AOs/HOs (n = 64)		ADAs/ADHs (n =33)		DDAs/ DDHs (n =24)		Total (n=121)	
		No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
1	Low	12	18.75	8	24.24	3	12.50	23	19.01	18	28.13	6	18.18	5	20.83	29	23.96
2	Medium	32	50.00	18	54.55	12	50.00	62	51.24	27	42.19	17	51.52	14	58.33	58	47.93
3	High	20	31.25	7	21.21	9	37.50	36	29.75	19	29.68	10	30.30	5	20.84	34	28.11
	Total	64	100	33	100	24	100	121	100	64	100	33	100	24	100	121	100
		SD = 3.176; Mean = 43.42; F = 2.164^{NS}; Non significant								SD = 2.86; Mean = 45.12; F = 1.982*; significant at 0.05 level							

4.1.8. Workload perception

The workload of the respondents includes field work, official work and maintenance of records and others. Based on the degree of workload as perceived by the respondents, they were classified into low, moderate and high by using cumulative frequency method. The are presented in Table 15 and depicted in figure 10.

Table 15. Distribution of the respondents based on the workload perception

S.No.	Categories	AOs/HOs (n = 64)		ADAs/ADHs (n =33)		DDAs/DDHs (n =24)		Total (n=121)	
		No	%	No	%	No	%	No	%
1	Low	-	-	-	-	-	-	-	-
2	Moderate	12	18.80	3	9.10	6	25.00	21	17.36
3	High	52	81.20	30	90.90	18	75.00	100	82.64
	Total	64	100	33	100	24	100	121	100
SD = 3.18; Mean = 50.00; F = 1.376**; Significant at 0.01 probability level									

Tables 15 revealed that most (82.64 %) of the respondents had high workload perception category followed by 17.36 per cent respondents had overall moderate workload perception category.

It could be discerned from the table that 81.20 per cent of the AOs/HOs had high workload perception and the rest (18.80 %) had moderate workload perception. This exhibited more of medium to high levels of workload perception among AOs/HOs. The introduction of new schemes and inadequate staff strength might be the possible factors for more workload perception among the extension personnel.

The findings derive support from the findings of Kalavani (1999).

An overwhelming majority (90.90 %) of the ADAs/ADHs had high workload perception followed by 9.10 per cent who revealed moderate workload perception. Such a

high level of percentage might be due to the fact that working in the fields with farmers, handling various schemes and involving in more new schemes at regular intervals with more administrative work.

It is further obvious from the results that three-fourth of the DDAs/DDHs (75.00 %) had high workload perception and one -fourth (25.00 %) of the respondents had moderate workload perception. Significant differences among the three cadres were observed which has been confirmed by the 'F' value. Different workload patterns and job responsible might be the reasons for significant differences.

This finding is in line with Jansirani (2006) and Parthasarathi (2009).

4.1.9. Technical knowledge

Technical knowledge is the intellectual acumen one should possess in carrying out a given job. The respondents were classified into low, medium and high levels of technical knowledge based on the cumulative frequency method. The results are presented in Table 16 and depicted in figure 11.

Table 16. Distribution of the respondents based on perception on technical knowledge

S.No.	Categories	AOs/HOs (n = 64)		ADAs/ADHs (n =33)		DDAs/DDHs (n =24)		Total (n=121)	
		No	%	No	%	No	%	No	%
1	Low	1	1.6	-	-	-	-	1	0.83
2	Moderate	21	34.4	8	24.2	8	33.3	37	30.57
3	High	42	64.0	25	75.8	16	66.7	83	68.60
	Total	64	100	33	100	24	100	121	100
<p>SD = 5.47; Mean = 41.75; F = 1.783*; significant at 0.05 probability level</p>									

In the total sample, appreciable proportion (68.60%) of the respondents had high level of technical knowledge followed by 30.57 per cent who had moderate level

technical knowledge. Significant differences among the three cadres in terms of technical knowledge have been reported.

Further, glance at the table shows that majority of the AOs/HOs had high level of technical knowledge followed by 34.40 per cent and 1.60 per cent in moderate and low levels of technical knowledge. This might be due to that newly recruited AOs/HOs would have completed their degree programme in the recent years which may be the reason for high level of technical knowledge.

The ADAs/ADHs and DDAs/DDHs have exhibited similar trends in terms of perception on technical knowledge. The DDAs/DDHs being the senior officers having 20-25 years of service with more training exposures would have perceived sound technical knowledge.

The finding is supported from the study of Kalaivani (1999).

4.1.10. Achievement motivation

Achievement motivation is a social value that emphasized a desire for excellence for an individual to attain a sense of personal accomplishment. The respondents were categorized into low, moderate and high based on the cumulative frequency method. The results are presented in Table 17.

Table 17. Distribution of the respondents based on achievement motivation

S.No.	Categories	AOs/HOs (n = 64)		ADAs/ADHs (n =33)		DDAs/DDHs (n =24)		Total (n=121)	
		No	%	No	%	No	%	No	%
1	Low	6	9.40	3	9.10	2	8.33	11	9.10
2	Moderate	39	60.92	19	57.57	13	54.17	71	58.67
3	High	19	29.68	11	33.33	9	37.50	39	32.23
	Total	64	100	33	100	24	100	121	100

SD = 2.14; Mean = 43.88; F = 2.584^{NS}; Non significant

It could be very well observed from the table that in the case of total sample, majority (58.67 %) of the respondents had moderate level of achievement motivation. Nearly one-third (32.23 %) of the respondents had high level of achievement motivation followed by 9.10 per cent of respondents with low level of achievement motivation.

With regard to AOs/HOs, majority (60.92 %) of the respondents had moderate achievement motivation and 29.68 per cent of the AOs/HOs had high level of achievement motivation and only 9.40 per cent of the AOs/HOs had low level of achievement motivation.

More than half (57.57 %) of the ADAs/ADHs had moderate level of achievement motivation and one-third (33.33 %) of the ADAs/ADHs had high level of achievement motivation. Only 9.10 per cent of the ADAs/ADHs had low level of achievement motivation.

It is also apparent from the results that majority (54.17 %) of the DDAs/DDHs had moderate level of achievement motivation followed by 37.50 and 8.33 per cent in the categories of high and low levels of achievement motivation respectively.

All the categories of extension personnel had exhibited strong service of achievement motivation which helped to achieve their targets in time. They were reported to be committed to work and even they took additional responsibilities to complete the tasks. This might be the possible reason for a non-significant differences in terms achievement motivation among the three cadres.

The findings are in line with Jansirani (2006) and Parthasarathi (2009).

4.1.11. Job involvement

Job involvement referred as the degree to which a person is identified psychologically with the work or the importance of work in total self image. Cumulative frequency method was used for the categorization of the respondents as less, moderate and high. The results are presented in Table 18 and depicted in figure 12.

Table 18. Distribution of the respondents based on job involvement

S.No.	Categories	AOs/HOs (n = 64)		ADAs/ADHs (n =33)		DDAs/DDHs (n =24)		Total (n=121)	
		No	%	No	%	No	%	No	%
1	Less	6	9.38	2	6.06	3	12.50	11	9.10
2	Moderate	23	35.94	19	57.58	7	29.17	49	40.49
3	High	35	54.68	12	36.36	14	58.33	61	50.41
	Total	64	100	33	100	24	100	121	100
SD = 3.44; Mean = 47.47; F = 4.247*; Significant at 0.05 probability level									

It could be seen from the above table that majority (50.41 %) of the respondents had high level of job involvement followed by moderate and less job involvement categories (40.49 and 9.10 per cent of respondents respectively) in overall sample.

Significant differences were reported among the three cadres.

In the case of AOs/HOs, majority (54.68 %) of the respondents were seen with the high job involvement category and 35.94 and 9.38 per cent of the AOs/HOs were seen in the moderate and less job involvement categories respectively. Passion and pride on the job with self interest towards the job might be the reasons for high level of job involvement among the AOs/HOs. Heavy workload, lack of incentives and rewards might be the possible reasons for the medium and less level of job involvement.

This finding is in line with Parthasarathi (2009).

With regard to ADAs/ADHs, majority (57.58 %) of the respondents had moderate level of job involvement. Above one-third (36.36 %) of the ADAs/ADHs had high level of job involvement and only 6.06 per cent of the respondents had low level of job involvement. This might be due to the introduction of new schemes and new working environment which demands heavy expectation from the ADAs/ADHs cadres.

It is further notable that more than half (58.33 %) of the DDAs/DDHs had high level of job involvement followed by 29.17 and 12.50 per cent of the DDAs/DDHs in the moderate and low levels of job involvement categories. The respondents were much old and experienced displayed more of medium level of job involvement.

The conditions that would strengthen the job involvement are opportunity to make decisions, self determination, recognition and freedom to set one's own work.

This finding is in line with Kalaivani (1999) and contradictory with that of Viswanathan (1997).

4.1.12. Job satisfaction

Job satisfaction refers to the satisfaction of extension personnel with the different components of the overall job viz., job itself, salary, fringe benefits, opportunity for self development and interest in the job. Effectiveness of extension workers in promoting and quickening the dissemination of new agricultural practices depend on their job satisfaction. Based on the cumulative frequency of obtained scores, the respondents were categorized into low, medium and high level categories. The results on distribution of the respondents according to their level of job satisfaction are presented in Table 19.

Table 19. Distribution of the respondents based on job satisfaction

S.No.	Categories	AOs/HOs (n = 64)		ADAs/ADHs (n =33)		DDAs/DDHs (n =24)		Total (n=121)	
		No	%	No	%	No	%	No	%
1	Low	-	-	-	-	-	-	-	-
2	Medium	38	59.38	19	57.58	16	66.67	73	60.33
3	High	26	40.63	14	42.42	8	33.33	48	39.67
	Total	64	100	33	100	24	100	121	100

SD = 3.14; Mean = 50.00; F = 4.584;** Significant at 0.01 probability level

Table 19 exhibits that majority (60.33 %) of the respondents in total sample was seen with medium level of satisfaction followed by 39.67 per cent respondents had high level of job satisfaction. Significant differences among the three cadres have been reported in terms of job satisfaction level.

Further, it could be seen from the table that 59.38 per cent of the AOs/HOs had medium level of satisfaction and the rest (40.63 %) of the AOs/HOs had high level of job satisfaction. More workload perception due to the introduction of new schemes and inadequate staff might be the possible factors for more medium level of job satisfaction exhibited by AOs/HOs.

Half of the (57.58 %) ADAs/ADHs had medium level of job satisfaction followed by 42.42 per cent of the ADAs/ADHs who had high level of job satisfaction. Similarly, more DDAs/DDHs (66.67 %) had medium level of job satisfaction followed by 33.33 per cent of DDAs/DDHs who had high level of job satisfaction. Moderate to high levels of job involvement and achievement motivation among the three categories might be responsible for the outcomes for these two cadres.

In general, job satisfaction depends upon the extent to which an individual derives personal and socio-psychological benefits from his job. If the working conditions and facilities in the organization are not to the level of one's expectation, then the individual derives less satisfaction from his job.

Job satisfaction certainly affect the productivity in the long-run. The measures to be taken for suitable rewards and providing incentives and better promotional opportunities would enhance the job satisfaction. It is quiet natural that the government employees would have a sense of pride in holding a permanent job. They feel secured in the job and satisfied with their salary and benefit packages.

The finding derives support from the findings of Parthasarathi (2009) and Sankri (2012).

4.1.13. Self confidence

Self confidence relates to the self assuredness of an individual's personal judgements, ability and power and it is pivotal in persuading the extension personnel

towards information management. Cumulative frequency distribution method was used for the categorization of the respondents and the results are presented in Table 20.

Table 20. Distribution of the respondents based on self confidence

S.No.	Categories	AOs/HOs (n = 64)		ADAs/ADHs (n =33)		DDAs/DDHs (n =24)		Total (n=121)	
		No	%	No	%	No	%	No	%
1	Less	-	-	-	-	-	-	-	-
2	Moderate	35	54.70	17	51.50	11	45.80	63	52.06
3	High	29	45.30	16	48.50	13	54.20	58	47.94
	Total	64	100	33	100	24	100	121	100
SD = 4.51; Mean = 49.65; F = 3.26^{NS}; Non significant									

A cursory glance at Table 20 communicates that more than half (52.06%) of the respondents had moderate level of self confidence and the rest (47.94 %) had high level of self confidence. No significant differences observed for self confidence among the three cadres.

In all the cadres, the respondents were distributed more or less equally in moderate to high levels of self confidence categories. It is also notable that no respondents were found in less self confidence category.

All the cadres of extension personnel expressed their confidence on abilities like decision making ability, managerial ability, risk taking, communication and social networking ability. They felt that these abilities with good educational status and experience provide them more confidence to perform the job effectively.

This finding is in line with Kalaivani (1999).

4.1.14. Trainings undergone

Training is a planned communication process which essentially aims at providing the skills, knowledge and attitude in accordance with specified objectives related to the

desired patterns of behaviour (Kumar, 2000). Hence, the details regarding technical and computer training undergone by the respondents are collected with respect to the number of trainings undergone. The corresponding frequency distribution was worked out and presented in Table 21 and depicted in figure 13.

Table 21. Distribution of the respondents based on trainings undergone

S.No.	Categories	AOs/HOs (n = 64)		ADAs/ADHs (n =33)		DDAs/DDHs (n =24)		Total (n=121)	
		No	%	No	%	No	%	No	%
1	No trainings	7	10.94	-	-	-	-	7	5.78
2	Less than two	21	32.81	11	33.33	-	-	32	26.46
3	More than two	36	56.25	22	66.67	24	100	82	67.77
	Total	64	100	33	100	24	100	121	100
SD = 5.42; Mean = 48.56; F = 3.247**; Significant at 0.01 probability level.									

For the total sample of 121, majority (67.77 %) of the respondents reported to have attended more than two trainings followed by 26.46 per cent of the respondents who attended less than two number of trainings. Further, 5.78 per cent indicated that they did not attend any training programmes at all.

It could also be seen from Table 21 that majority (56.25 %) of the AOs/HOs attended more than two trainings followed by less than two trainings (32.81 %) and no trainings (10.94 %).

With regard to ADAs/ADHs, it was observed that more than half (66.67 %) of the respondents attended more than two trainings followed by 33.33 per cent of the respondents attended less than two trainings.

The table also reveals that all the DDAs/DDHs (100.00 %) attended more than two number of trainings.

A concrete difference has been observed among all the three cadres which is confirmed by the 'F' value at 0.01 probability level.

As the extension personnel gain more years of service, they may undergo more number of trainings. The reason for no trainings category might be the newly recruited extension personnel who have joined recently might not have attended any training programme. All the ADAs and ADHs were given trainings on usage of TNAU Agritech portal, video and audio conferencing, touch screen kiosks and online mode of distance education trainings periodically.

The findings are in line with the findings of Hosenally (2011).

4.1.15. Media talks and publications

Published articles, messages and radio talks given by extension personnel could determine the information management patterns. Cumulative frequency distribution method was used for the categorization of the respondents and the results are presented in Table 22.

Table 22. Distribution of the respondents based on media talks and publications

S.No.	Categories	AOs/HOs (n = 64)		ADAs/ADHs (n =33)		DDAs/DDHs (n =24)		Total (n=121)	
		No	%	No	%	No	%	No	%
1	Less	6	9.38	2	6.06	3	12.50	11	9.10
2	Moderate	23	35.94	19	57.58	7	29.17	49	40.49
3	High	35	54.68	12	36.36	14	58.33	61	50.41
	Total	64	100	33	100	24	100	121	100
SD = 4.24; Mean = 45.34; F = 3.124* ; Significant at 0.05 probability level									

Table 22 revealed that more than half (50.41%) of the respondents in the total sample had high category of publications. It is followed by 40.49 per cent of the respondents in moderate level of publications. Rest (9.10 %) had less level of publications. However, lack of incentives and non-recognition of the efforts might have discouraged for low level of publications.

Majority (54.68 %) of the AOs/HOs had high level of publications and 35.94 per cent of the AOs/HOs had moderate level of publications. Only 9.38 per cent of the respondents were seen with less media talks and publications category.

It is also observed from Table 22 that majority (57.58 %) of the ADAs/ADHs had moderate level of media talks and publications and the 36.36 per cent of the ADAs/ADHs had high level of publications followed by 6.06 per cent in the category of less media talks and publications.

Data furnished in Table 22 further revealed that majority (58.33 %) of the DDAs/DDHs had high level of publications and moderate level of publications was seen among 29.17 per cent of the respondents and rest of 9.10 per cent of them had low level of publications.

With respect to publications of articles in newspaper, journals and magazines, comparatively more number of ADAs/ADHs were found to have published as compared to DDAs/DDHs. Non-availability of time and more administrative works might be the reason for such differentiating publication efforts among all the three cadres of extension personnel.

4.2. Attitude of extension personnel towards Information and Communication Technology (ICT) tools

Attitude means a set of tendencies, views and beliefs of an individual about his/her environmental factors. This tendency and belief will be stabilized based on environmental effect, experiences and the period of time (Rafiepour, 1993). Usually, attitude portrays either positive or negative view towards a person, place, thing or event which is known as attitudinal object. People can also be conflicted towards an object that they simultaneously possess both negative and positive attitude toward the psychological object (Breckler and Wiggins, 1992).

Considering this point of view, an attitude scale was developed to measure the attitude of extension personnel towards Information and Communication Technology (ICT) tools by using equal appearing interval method (discussed in Chapter III). The final scale consisted of seven statements of which, five were positive and five were negative. Using cumulative frequency method, the respondents were categorized into three groups *viz.*, less favorable, moderately favorable and highly favourable based on their expressions of attitude. The data on distribution of extension personnel based on their attitude towards ICT tools were presented in Table 23 and depicted in figure 14.

Table 23. Attitude of extension personnel towards ICT tools

S.No.	Attitude towards Information and Communication Technology (ICT) tools	Score Range	Total (n=121)						Total	%
			AOs/HOs		ADAs/ADHs		DDAs/DDHs			
			No	%	No	%	No	%		
1.	Less favourable	Less than 44	22	34.38	9	27.27	6	25.00	37	30.58
2.	Moderately favourable	44-49	26	40.62	16	48.49	13	54.17	55	45.45
3.	More favourable	More than 49	16	25.00	8	24.24	5	20.83	29	23.97
	Total		64	100	33	100	24	100	121	100
SD = 2.78; Mean = 44.75; F = 1.247**; Significant at 0.01 probability										

It could be observed from the Table 23 that in total sample majority (45.45 %) of the extension personnel were found to possess moderately favourable attitude towards Information and Communication Technology (ICT) tools followed by 30.58 per cent had less favourable and the rest (23.97 %) had more favourable attitude. Significant differences were observed among the three cadres which has been confirmed by the 'F' value.

Comparatively Agricultural / Horticultural officers possessed more favourable attitude towards ICT tools among other cadres (25.00). Majority of the extension personnel depend on Information and Communication Technology (ICT) tools as a primary source for transfer of technologies and they expressed good experience in managing and utilizing the ICT tools for information acquisition and information dissemination through better communication. This could be the probable reason for perceive of moderate to highly favourable attitude towards Information and Communication Technology (ICT) tools.

However, the reflected less favourable attitude might be due to less interest towards ICT tools and less number related trainings organized as revealed by them.

Majority of extension personnel considered ICT tools as feasible and that has the potential to bring about improvements in transfer of technologies among farmers as well as extension personnel. Few respondents reported that they are not regularly utilizing the ICT tools. The Department offices do not have full internet connectivity which is also a main factor contributing to the less utilization of ICT tools for training purposes.

The findings are in accordance with the study conducted by Sankri (2012) who reported that an appreciable proportion (61.67%) of the respondents had most favourable attitude towards e-media.

4.3. Information management patterns

Information management patterns of extension personnel in this study has been referred to the sum of the product of information acquisition, information processing and information dissemination patterns.

The findings related to the Information Management Patterns have been presented on the following sub heads.

4.3.1. Overall Information Management Patterns

4.3.2. Component-wise Information Management Patterns

4.3.1. Overall Information Management Patterns

The overall Information Management Patterns was worked out based on the scores obtained through index formula developed for this study and explained in research methodology chapter. Cumulative frequency distribution method was used for the categorization of the respondents. The results are presented in Table 24 and depicted in figure 15.

Table 24. Distribution of extension personnel based on overall Information Management patterns index

S.No.	Category	AOs/HOs (n = 64)		ADAs/ADHs (n =33)		DDAs/DDHs (n =24)		Total (n = 121)	
		No	%	No	%	No	%	No	%
1	Low	10	15.63	6	18.18	5	20.83	21	17.35
2	Medium	29	45.31	17	51.52	12	50.00	58	47.94
3	High	25	39.06	10	30.30	7	29.17	42	34.71
Total		64	100	33	100	24	100	121	100
SD = 7.01; Mean = 63.68; F = 2.127*; Significant at 0.05 probability									

From the above Table 24, it could be observed that 47.94 per cent of the respondents were in medium level of overall information management category followed by high (34.71 %) level of overall information management category. It could be concluded that majority of the respondents possessed medium to high levels of

information management patterns in managing and utilizing the appropriate sources and channels. Less than two-fifth (17.35 %) of the extension personnel belonged low level overall information management pattern category.

This might be due to the lack of adequate training in information management aspects. There existed differences among the three cadres which has been confirmed by the significant 'F' value.

4.3.1. Information Acquisition Patterns

Information acquisition patterns referred to all the activities performed by an individual for acquiring scientific and technical information from various sources through various channels for performing his roles effectively. By working out mean scores on information acquisition patterns, the results are presented in Table 25 and depicted in figure 16.1 and 16.2.

Table 25. Information acquisition patterns

S.No.	Information Acquisition Patterns (Sources/ Channels/ Activities)	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
A	Personal-cosmopolite channels								
1.	Scientific workers conferences	2.89	3.12	3.29	3.10	45 (37.2 %)	50 (41.3 %)	11 (9.1 %)	15 (12.4 %)
2.	Regional Research council meetings	2.78	2.82	2.96	2.85	27 (22.3 %)	55 (45.5 %)	30 (24.8 %)	9 (7.4 %)
3.	Zonal advisory council meetings	2.98	3.00	3.08	3.02	30 (24.8 %)	67 (55.4 %)	19 (15.7 %)	5 (4.1 %)
4.	Extension Education Council meetings	2.78	2.94	2.75	2.82	20 (16.5 %)	70 (57.9 %)	20 (16.5 %)	11 (9.1 %)
5.	Monthly zonal workshop	2.98	3.06	3.25	3.10	49	46	10	16

S.No.	Information Acquisition Patterns (Sources/ Channels/ Activities)	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
						(40.5 %)	(38.0 %)	(8.3 %)	(13.2 %)
6.	From Extension Personnel of other line departments	2.75	2.52	2.83	2.70	41 (33.9 %)	33 (27.3 %)	17 (14.0 %)	30 (24.8 %)
7.	Scientists in TNAU Head Quarters at Coimbatore	2.25	2.33	2.92	2.50	20 (16.5 %)	45 (37.2 %)	20 (16.5 %)	36 (29.8 %)
8.	Scientists in Research Stations of the district	2.08	2.48	2.71	2.42	38 (31.4 %)	27 (22.3 %)	36 (29.8 %)	20 (16.5 %)
9.	Scientist in the District's KVK	2.28	2.64	2.96	2.63	36 (29.8 %)	17 (14.0 %)	38 (31.4 %)	30 (24.8 %)
10.	From the status report of District	2.84	3.03	3.33	3.07	41 (33.9 %)	53 (43.8 %)	12 (9.9 %)	15 (12.4 %)

S.No.	Information Acquisition Patterns (Sources/ Channels/ Activities)	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
11.	From self observation	2.92	3.18	3.29	3.13	49 (40.5 %)	43 (35.5 %)	17 (14.0 %)	12 (9.9 %)
12.	From immediate supervisors	2.80	3.00	2.92	2.91	33 (27.3 %)	53 (43.8 %)	22 (18.2 %)	13 (10.7 %)
13.	From Farm machinery and implements center of the district	1.67	1.85	1.96	1.83	1 (0.8 %)	31 (25.6 %)	29 (24.0 %)	60 (49.6 %)
14.	From Kisan Call Center	2.42	2.52	2.79	2.58	16 (13.2 %)	46 (38.0 %)	44 (36.4 %)	15 (12.4 %)
15.	From Corporate (Reliance, Nokia Life Tools)	1.14	1.18	1.42	1.25	0 0.0	5 (4.1 %)	15 (12.4 %)	101 (83.5 %)
B	Personal – localite channels								

S.No.	Information Acquisition Patterns (Sources/ Channels/ Activities)	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
16.	Local NGO functionaries	2.17	2.12	2.63	2.31	13 (10.7 %)	43 (35.5 %)	26 (21.5 %)	39 (32.2 %)
17.	Local KVKs	1.98	2.15	2.29	2.14	12 (9.9 %)	24 (19.8 %)	48 (39.7 %)	37 (30.6 %)
18.	Input dealers	1.81	1.97	1.92	1.90	5 (4.1 %)	30 (24.8 %)	31 (25.6 %)	55 (45.5 %)
19.	Commodity Interest Groups (CIG)	1.45	1.33	1.88	1.55	8 (6.6 %)	9 (7.4 %)	19 (15.7 %)	85 (70.2 %)
20.	Farmers Interest Group (FIG)	1.45	2.00	2.13	1.86	20 (16.5 %)	10 (8.3 %)	9 (7.4 %)	82 (67.8 %)
21.	Farmer Field School (FFS)	1.36	2.03	2.17	1.85	18	13	5	85

S.No.	Information Acquisition Patterns (Sources/ Channels/ Activities)	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
						(14.9 %)	(10.7 %)	(4.1 %)	(70.2 %)
22.	Progressive farmers	2.88	2.88	2.92	2.89	33 (27.3 %)	63 (52.1 %)	3 (2.5 %)	22 (18.2 %)
23.	Fellow workers	2.95	3.15	3.08	3.06	53 (43.8 %)	36 (29.8 %)	15 (12.4 %)	17 (14.0 %)
24.	Front Line Demonstration of KVK's plots	1.92	2.39	2.38	2.23	9 (7.4 %)	42 (34.7 %)	27 (22.3 %)	43 (35.5 %)
25.	From Agri clinic / Plant Clinic	1.69	1.79	1.58	1.69	6 (5.0 %)	13 (10.7 %)	40 (33.1 %)	62 (51.2 %)
C	Impersonal-cosmopolite channel								
26.	Listening farm programs through	3.05	2.94	3.13	3.04	28	74	14	5

S.No.	Information Acquisition Patterns (Sources/ Channels/ Activities)	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
	All India Radio					(23.1 %)	(61.2 %)	(11.6 %)	(4.1 %)
27.	Watching agricultural programs in Television	2.86	2.85	2.63	2.78	27 (22.3 %)	49 (40.5 %)	40 (33.1 %)	5 (4.1 %)
28.	Watching agricultural technologies on Video cassette	2.66	2.85	2.54	2.68	27 (22.3 %)	43 (35.5 %)	37 (30.6 %)	14 (11.6 %)
29.	Listening agricultural technologies on audio cassette	2.30	2.27	2.38	2.32	16 (13.2 %)	39 (32.2 %)	32 (26.4 %)	34 (28.1 %)
30.	Film show on Agricultural technologies	2.38	2.45	2.04	2.29	9 (7.4 %)	45 (37.2 %)	44 (36.4 %)	23 (19.0 %)
31.	Viewing hoarding	2.16	2.24	2.33	2.24	11 (9.1 %)	43 (35.5 %)	28 (23.1 %)	39 (32.2 %)

S.No.	Information Acquisition Patterns (Sources/ Channels/ Activities)	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
32.	Listening Agricultural technologies in Compact disc	2.59	2.39	2.38	2.45	17 (14.0 %)	50 (41.3 %)	30 (24.8 %)	24 (19.8 %)
33.	Through Telephone	2.53	2.70	2.29	2.51	34 (28.1 %)	33 (27.3 %)	17 (14.0 %)	37 (30.6 %)
34.	Mobile handset with GPRS	1.53	1.73	1.92	1.73	5 (4.1 %)	22 (18.2 %)	21 (17.4 %)	73 (60.3 %)
35.	Mobile handset with GIS	1.39	1.48	1.71	1.53	5 (4.1 %)	14 (11.6 %)	15 (12.4 %)	87 (71.9 %)
D	Online library								
36.	http://nanopolitan.blogspot.in/	1.11	1.00	1.04	1.05	1 (0.8 %)	2 (1.7 %)	1 (0.8 %)	117 (96.7 %)

S.No.	Information Acquisition Patterns (Sources/ Channels/ Activities)	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
37.	http://horadecubitus.wordpress.com	1.05	1.00	1.04	1.03	1 (0.8 %)	0 (0.0 %)	1 (0.8 %)	119 (98.3 %)
38.	http://www.scq.ubc.ca/	1.05	1.00	1.04	1.03	1 (0.8 %)	0 0.0	1 (0.8 %)	119 (98.3 %)
E	Printed materials								
39.	By reading Text Books	2.97	2.91	3.17	3.02	30 (24.8 %)	67 (55.4 %)	17 (14.0 %)	7 (5.8 %)
40.	By reading Newspapers	3.28	3.27	3.08	3.21	53 (43.8 %)	50 (41.3 %)	12 (9.9 %)	6 (5.0 %)
41.	By reading Leaflets	2.89	3.21	3.54	3.21	36 (29.8 %)	69 (57.0 %)	9 (7.4 %)	7 (5.8 %)

S.No.	Information Acquisition Patterns (Sources/ Channels/ Activities)	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
42.	By reading Folders	2.56	2.97	3.13	2.89	29 (24.0 %)	46 (38.0 %)	37 (30.6 %)	9 (7.4 %)
F	By reading Farm magazines								
43.	Uzhavarin valarum Velanmai	3.63	3.61	3.54	3.59	87 (71.9 %)	25 (20.7 %)	4 (3.3 %)	5 (4.1 %)
44.	Pasumai Vikatan	3.69	3.64	3.71	3.68	90 (74.4 %)	25 (20.7 %)	4 (3.3 %)	2 (1.7 %)
45.	Naam Uzhavar	2.05	2.42	2.21	2.23	19 (15.7 %)	36 (29.8 %)	14 (11.6 %)	52 (43.0 %)
46.	Naveena Velanmai	1.38	1.97	2.00	1.78	8 (6.6 %)	21 (17.4 %)	14 (11.6 %)	78 (64.5 %)

S.No.	Information Acquisition Patterns (Sources/ Channels/ Activities)	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
47.	Uzhavar oosai	1.30	1.58	1.58	1.49	2 (1.7 %)	19 (15.7 %)	8 (6.6 %)	92 (76.0 %)
48.	Indraya velanmai	1.17	1.58	1.71	1.49	2 (1.7 %)	18 (14.9 %)	5 (4.1 %)	96 (79.3 %)
49.	Spice India	1.19	1.58	1.46	1.41	2 (1.7 %)	15 (12.4 %)	6 (5.0 %)	98 (81.0 %)
G	By reading Journals								
50.	Agriculture today	2.39	2.85	2.58	2.61	26 (21.5 %)	53 (43.8 %)	4 (3.3 %)	38 (31.4 %)
51.	Agrobios	1.38	1.94	1.92	1.75	1 (0.8 %)	21 (17.4 %)	32 (26.4 %)	67 (55.4 %)

S.No.	Information Acquisition Patterns (Sources/ Channels/ Activities)	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
52.	Indian Coconut Journal	1.53	1.79	2.17	1.83	14 (11.6 %)	14 (11.6 %)	18 (14.9 %)	75 (62.0 %)
53.	Indian Coffee	1.30	1.45	1.54	1.43	4 (3.3 %)	9 (7.4 %)	17 (14.0 %)	91 (75.2 %)
54.	Intensive Agriculture	1.13	1.52	1.50	1.38	1 (0.8 %)	9 (7.4 %)	16 (13.2 %)	95 (78.5 %)
55.	LEISA	1.25	1.64	1.46	1.45	7 (5.8 %)	6 (5.0 %)	15 (12.4 %)	93 (76.9 %)
56.	Rice India	1.06	1.48	1.63	1.39	2 (1.7 %)	8 (6.6 %)	13 (10.7 %)	98 (81.0 %)
57.	Agricultural News	1.03	1.61	1.58	1.41	2	9	12	98

S.No.	Information Acquisition Patterns (Sources/ Channels/ Activities)	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
						(1.7 %)	(7.4 %)	(9.9 %)	81.0 %
58.	Crop care	1.02	1.33	1.46	1.27	0 0.0	6 (5.0 %)	11 (9.1 %)	104 86.0 %
H	By other mode								
59.	By reading Popular articles	2.69	3.30	2.50	2.83	27 (22.3 %)	65 (53.7 %)	9 (7.4 %)	20 16.5 %
60.	By reading Feature articles	2.95	3.12	2.38	2.82	44 (36.4 %)	37 (30.6 %)	22 (18.2 %)	18 (14.9 %)
61.	By reading Success stories	3.02	3.09	3.04	3.05	30 (24.8 %)	71 (58.7 %)	15 (12.4 %)	5 (4.1 %)
62.	Video conferences	2.70	2.67	2.63	2.67	19	50	46	6

S.No.	Information Acquisition Patterns (Sources/ Channels/ Activities)	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
						(15.7 %)	(41.3 %)	(38.0 %)	(5.0 %)
63.	Audio conferences	2.31	2.30	2.08	2.23	13 (10.7%)	39 (32.2 %)	36 (29.8 %)	33 (27.3 %)
64.	Expert system	1.84	1.67	1.67	1.73	6 (5.0 %)	28 (23.1 %)	18 (14.9 %)	69 57.0 %)
I	Agricultural Websites and Portals								
65.	www.agrisnet.com	3.91	3.91	3.54	3.79	109 (90.1 %)	5 (4.1 %)	6 (5.0 %)	1 (0.8 %)
66.	www.agritech.tnau.ac.in	3.67	3.79	3.63	3.70	89 (73.6 %)	28 (23.1 %)	3 (2.5 %)	1 (0.8 %)
67.	www.tn.gov.in	3.73	3.85	3.46	3.68	96	19	2	4

S.No.	Information Acquisition Patterns (Sources/ Channels/ Activities)	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
						(79.3 %)	(15.7 %)	(1.7 %)	(3.3 %)
68.	www.dacnet.nic.in	3.59	3.33	3.21	3.38	76 (62.8 %)	32 (26.4 %)	4 (3.3 %)	9 (7.4 %)
69.	www.agricoop.nic	3.67	3.48	3.33	3.49	82 (67.8 %)	29 (24.0 %)	5 (4.1 %)	5 (4.1 %)
70.	www.agmarknet.com	3.45	3.33	3.17	3.32	65 (53.7 %)	42 (34.7 %)	7 (5.8 %)	7 (5.8 %)
71.	www.icar.org.in	2.97	2.48	2.75	2.73	22 (18.2 %)	66 (54.5 %)	19 (15.7 %)	14 (11.6 %)
72.	www.tnau.ac.in	3.02	2.70	2.38	2.70	35 (28.9 %)	52 (43.0 %)	9 (7.4 %)	25 (20.7 %)

S.No.	Information Acquisition Patterns (Sources/ Channels/ Activities)	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
73.	www.caneinfo.nic.in	1.55	1.42	1.33	1.43	2 (1.7 %)	21 (17.4 %)	9 (7.4 %)	89 (73.6 %)
74.	www.velanmai.com	1.44	1.36	1.54	1.45	5 (4.1 %)	13 (10.7 %)	12 (9.9 %)	91 (75.2 %)
75.	www.indg.in	1.72	1.58	2.54	1.95	18 (14.9 %)	18 (14.9 %)	12 (9.9 %)	73 (60.3 %)
76.	www.india.gov.in	2.22	2.15	2.50	2.29	33 (27.3 %)	21 (17.4 %)	11 (9.1 %)	56 (46.3 %)
77.	www.sugarcane.res.in	1.25	1.21	1.50	1.32	1 (0.8 %)	9 (7.4 %)	14 (11.6 %)	97 (80.2 %)
78.	www.ikisan.com	1.36	1.30	1.33	1.33	2	10	15	94

S.No.	Information Acquisition Patterns (Sources/ Channels/ Activities)	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly No (%)	Occasionally No (%)	Rarely No (%)	Never No (%)
							(1.7 %)	(8.3 %)	(12.4 %)
Total		208.1	218.1	218.5	214.9				
SD = 0.0925; Mean = 0.86; F = 17.60* ; Significant at 0.05 probability									

From the Table 25, it could be observed that among the personal-cosmopolite sources/ channels, self observation, attending scientific workers conference and monthly zonal workshops were seen with more mean scores 3.13, 3.10 and 3.10 respectively. The professional meetings had acted as channels of input to help the extension personnel in designing their plan of information management patterns in transfer of technologies endeavours.

Scientific Worker Conference is an annual technical meet among the TNAU research scientists and extension personnel from all over the Tamil Nadu state. In this conference, the information on new varieties, management technologies and farm implements developed are being officially communicated to the extension functionaries of the state. Attending Scientific Worker Conference is mandatory on the part of extension personnel from all districts. Thus, it acted as major source of information acquisition for most of the extension personnel.

The additional feature of Scientific Worker Conference included direct contact with scientists of various faculties in the TNAU main campus, participation with elaborate discussions, deliberations with technical directorates and field and laboratory visits would have acted upon on the extension personnel to indicate the Scientific Workers Conference (SWC) as the primary source of information acquisition. Also, the credibility of the Scientific Workers Conference has been much high for it to act as a major source of information.

The self observation was seen more among DDAs/DDHs and ADAs/ADHs rather in the cadre of AOs/HOs. This may be quite interesting but it could be well justified by the fact that more years of work experience and more involvement in technical and communication activities would have made them to secure scores.

Among personal-localite channels, fellow workers (3.06) and progressive farmers (2.89) were easily approachable in the local system. It would have helped the extension personnel to develop a better inter-communication link for information acquisition.

Among impersonal-cosmopolite channels, radio and television were regularly utilized by extension personnel for information acquisition. Because, most of the respondents owned radio and television sets. This might be possible to listening and

viewing agricultural programs regularly. Also, the Doordarshan channel telecasts many useful programmes like Choupal, Krishi, Dharshan and Navankur in which more useful information about agriculture production technology are being telecasted.

The low mean scores secured by extension personnel for online libraries as information source could be due to elitist nature of libraries and lack of two-way process of communication nature of online library network.

With regard to printed materials, newspapers was found to have high with the mean score (3.21). This could be justified by means of their time availability and subscribing capacity.

With respect to farm magazines, Pasumai Vikatan and Uzhavarin Valarum Velanmai were found with more mean scores (3.68 and 3.59 respectively). The reason might be the availability and subscription rate for Pasumai Vikatan and Uzhavarin valarum velanmai magazines which are affordable by the extension personnel.

With regard to journals, most of the extension personnel preferred agricultural today (2.61) and Indian coconut journal (1.83). The reason might be due to credibility and trustworthiness of information published in these journals.

With reference to other modes of information acquisition, success stories (3.05) and video conferences (2.67) emerged as major source of information acquisition for extension personnel. That is too the ADAs/ADHs cadres were found to be as source more. Success stories would motivate the extension personnel to strengthen their transfer of technology efforts.

In case of agricultural websites and portals, AGRISNET was found to be the primary source of information acquisition for all the three cadres of extension personnel.

Among the other agricultural websites and portals studied, all the extension personnel were aware and utilized the websites namely, www.tnagrisnet.tn.gov.in (3.79) and www.agritech.tnau.ac.in (3.70) to gain agricultural information. The reasons might be due to that Government of India has launched a central sector scheme titled, 'Strengthening/Promoting Agricultural Informatics and Communications' of which one component is AGRISNET. The objective of AGRISNET is to provide improved services

to the farming community through use of ICT. Further, the other websites namely, www.tn.gov.in (3.68), www.dacnet.nic.in (3.38), www.agmarknet.com (3.32) and www.india.gov.in (2.29) are also being used for information acquisition purposes.

The reason for use of agricultural websites and portals might be that all the block level offices have been provided with desktop and accessories with internet access. The reports are generally prepared and sent through mails to the offices at head quarters. They check official mail account in all the working days.

The results of analysis of variance indicated that significant differences among the extension personnel in terms of information acquisition patterns were observed. In overall, it could be seen that with respect to sources like online library, farm magazines and agricultural websites and portals relatively, more mean score have been observed with AOs/HOs cadres than that of ADAs/ADHs and DDAs/DDHs. This might be due to that young age nature of AOs/HOs, they would have developed more receptivity towards online related sources.

4.3.1.2. Information processing patterns

Information processing patterns have been defined as an activity of handling or manipulating raw data and transforming these into meaningful data or information for some purpose. The mean scores of the patterns were computed on various methods of information evaluation and have been presented in table.

Information evaluation patterns

The findings related to information evaluation methods followed by extension personnel are given in Table 26 and depicted in figure 17.

Table 26. Information evaluation patterns

S.No.	Information evaluation methods	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly No (%)	Occasionally No (%)	Rarely No (%)	Never No (%)
		1	Considering the advantages of messages	3.39	3.58	3.67	3.55	61 (50.41 %)	59 (48.76 %)
2	Considering the degree of complexity	3.55	3.39	3.54	3.49	72 (59.50%)	38 (31.40%)	11 (9.09%)	0 (0.00)
3	Considering the degree of compatibility	3.38	3.36	3.21	3.32	53 (43.80%)	59 (48.76%)	6 (4.96%)	3 (2.48%)
4	Comparing the information with original source	3.31	3.33	3.33	3.32	54 (44.63%)	53 (43.80%)	13 (10.74%)	1 (0.83%)
5	Accepting the information as it is without evaluation	3.09	3.09	2.96	3.05	44 (36.36%)	49 (40.50%)	20 (16.53%)	8 (6.61%)
6	Discussion with outside state	2.73	3.09	2.83	2.88	30	54	26	11

S.No.	Information evaluation methods	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
	specialists					(24.79%)	(44.63%)	(21.49%)	(9.09%)
7	Evaluation in the light of past experiences	2.91	2.94	2.88	2.91	43 (35.54%)	43 (35.54%)	16 (13.22%)	19 (15.70%)
8	Evaluation on the basis of socio economic conditions of the locality	2.86	3.18	2.92	2.99	41 (33.88%)	48 (39.67%)	18 (14.88%)	14 (11.57%)
9	Evaluation on the basis of agro climatic conditions of the locality	2.63	2.94	3.13	2.90	36 (29.75%)	47 (38.84%)	17 (14.05%)	21 (17.36%)
10	Evaluating the technical feasibility of information	2.70	3.00	2.79	2.83	37 (30.58%)	45 (37.19%)	17 (14.05%)	22 (18.18%)
11	Discussion with superiors on information	2.66	2.97	2.75	2.79	39 (32.23%)	37 (30.58%)	22 (18.18%)	23 (19.01%)
12	Discussion with research scientists on information	2.56	2.76	3.04	2.79	32 (26.45%)	44 (36.36%)	23 (19.01%)	22 (18.18%)

S.No.	Information evaluation methods	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly No (%)	Occasionally No (%)	Rarely No (%)	Never No (%)
		13	Evaluating the coverage and relevance of the information	2.59	2.94	3.04	2.86	31 (25.62%)	51 (42.15%)
14	Evaluation based on the discussion with farmers	2.72	3.00	2.79	2.84	35 (28.93%)	42 (34.71%)	26 (21.49%)	18 (14.88%)
15	Evaluation based on the purpose of the information	2.72	2.97	3.08	2.92	37 (30.58%)	43 (35.54%)	22 (18.18%)	19 (15.70%)
16	Evaluation based on the authenticated information	2.53	3.06	2.71	2.77	32 (26.45%)	53 (43.80%)	23 (19.01%)	13 (10.74%)
	Total	49.06	52.67	51.42	51.05	39 (32.23%)	37 (30.58%)	16 (13.22%)	29 (23.97%)
SD = 0.0645; Mean = 0.896; F = 9.60**; Significant at 0.01 probability									

From the table, it is quite clear that the first five methods of information evaluation patterns mostly used by the extension personnel were considering the advantages of messages, considering the degree of complexity, comparing the information, considering the degree of compatibility and accepting the information as it is without evaluation with the mean scores of 3.55, 3.49, 3.32, 3.32 and 3.05 respectively. It is followed by evaluation on the basis of socio economic conditions of the locality (2.99), evaluation in the light of past experiences (2.91), evaluation on the basis of agro climatic conditions of the locality (2.99) discussion with outside state specialists (2.88) and evaluation based on the purpose of the information (2.77).

The results of analysis of variance showed that significant differences. The mean scores of different methods used by the ADAs/ADHs were found to be high compared to that of AOs/HOs and DDAs/DDHs who were on par with each other. It is quite interesting to see that the ADAs/ADHs cadre secured more mean scores for information evaluation patterns compared to AOs/HOs and DDAs/DDHs. This is justified that the middle cadre with sufficient qualification and more years of experience would be very careful in evaluating the information before dissemination.

The extension personnel evaluate the information by more than one methods to make the information technically feasible and suitable for appropriate locations. Most of the extension personnel evaluate the information through the attributes of information. Few extension personnel were found evaluating the information with progressive farmers for considered its technical feasibility.

The factors like socio economic conditions and the area of work jurisdiction are to be necessarily considered for evaluating the information. None of the extension personnel will accept the information as it is, without evaluating the information.

Information treatment patterns

The findings related to information treatment methods followed by extension personnel are given in Table 27 and depicted in figure 18. It is vivid from the results that most of the extension personnel used treatment patterns are prepare messages with short words with the mean score of 3.38 followed by preparing with familiar words (3.30),

preparing with simple language (3.08), preparing with simple sentence (2.98), preparing with concrete words (2.97), expressing the message clearly (2.84), preparing with much details (2.74) and avoiding much statistics (2.73).

Preparing messages with short words and simple words are the most essential features and also it is mandatory on that part of message treatment. This might be the reason for such an outcome. Preparing the information with much details and avoiding too much statistics were given least preferences by the extension personnel. This might be due to that expectation of different levels of stakeholders where statistics could not be avoided much.

The results of analysis of variance showed that the mean scores of different information treatment methods used were significantly different. Relatively more mean scores were obtained by ADAs/ADHs cadre. Information treatment is very important step in information management patterns for its clarity and accuracy towards intended audience. DDAs/DDHs who usually attend more of administrative activities may not concern much on the treatment methods. The AOs/HOs being the entry level cadres may not have much exposure. Thus, the middle level cadres ADAs/ADHs have been more concerned with information treatment.

The results are in accordance with Rathakrishnan (1993) who reported similar outcomes for farm scientists in his study.

Table 27. Information treatment patterns

S.No.	Information treatment methods	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
1	Preparing messages with short words	3.38	3.33	3.42	3.38	50 (41.32 %)	67 (55.37%)	3 (2.48%)	1 (0.83%)
2	Preparing with concrete words	3.20	3.03	2.67	2.97	45 (37.19%)	40 (33.06%)	33 (27.27%)	3 (2.48%)
3	Preparing with familiar words	3.25	3.39	3.25	3.30	52 (42.98%)	58 (47.93%)	5 (4.13%)	6 (4.96%)
4	Preparing with simple language	2.97	3.27	3.00	3.08	43 (35.54%)	44 (36.36%)	32 (26.45%)	2 (1.65%)
5	Preparing with simple sentence	2.86	2.94	3.13	2.98	45 (37.19%)	38 (31.40%)	23 (19.01%)	15 (12.40%)
6	Expressing the message clearly	2.75	3.18	2.58	2.84	43 (35.54%)	35 (28.93%)	23 (19.01%)	20 (16.53%)
7	Preparing with logical manner	2.64	3.33	2.79	2.92	45	35	20	21

						(37.19%)	(28.93%)	(16.53%)	(17.36%)
8	Preparing with much details	2.59	2.97	2.67	2.74	36 (29.75%)	38 (31.40%)	23 (19.01%)	24 (19.83%)
9	Avoiding much statistics	2.59	3.09	2.50	2.73	31 (25.62%)	48 (39.67%)	18 (14.88%)	24 (19.83%)
	Total	26.23	28.55	26.00	26.93				
SD = 2.145; Mean = 0.8076; F = 21.20*; Significant at 0.05 probability									

Information storage patterns

Further attempt has been made to find out the various information storage methods used by extension personnel. The results are presented in Table 28 and depicted in figure 19.

It could be very well diagnosed from the table that the respondents preferred information storage methods in the following order of mean scores, storing through e-mail (3.37), taking hints in notes (3.28), storing in pen drive (3.25), preserving leaflets (2.96) and by self memorizing (2.92). It is followed by preserving information in laptop (2.90), preserving handouts (2.87) and preserving information in computer (2.84).

The results of analysis of variance showed that the total mean scores of ADAs/ADHs were found to be significantly high to that of AOs/HOs and DDAs/DDHs who were on par with each other with regard to information storage patterns.

Most of the extension personnel were found to have stored the information through e-Mail. This might be due to that most of the reports, circulars and letters were communicated to the extension personnel through e-mail from different offices. Majority of the extension personnel had maintained subject-wise folder files. The probable reason for this outcome is to make the information to get personalized and safe for documentation purposes.

Taking hints in notebooks is a common regular routine practice among extension personnel. Pen drive storing is nowadays much encouraged as it occupies less space in carrying to meetings and other forums. It is quite interesting to see that “self memorizing” emerged as one of the information storage methods among extension personnel. Might be the core aspects of technologies would have been memorized among the extension personnel.

The results are in accordance with Rathakrishnan (1993) who reported similar outcomes for farm scientist in his study and contradictory with Sampath (1994).

Table 28. Information storage patterns

S.No.	Information storage methods	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly No (%)	Occasionally No (%)	Rarely No (%)	Never No (%)
		1	Taking hints in notebook	3.28	3.36	3.33	3.32	46 (38.02%)	69 (57.02%)
2	By preserving leaflets and handouts	2.91	3.15	2.83	2.96	39 (32.23%)	44 (36.36%)	32 (26.45%)	6 (4.96%)
3	By preserving handouts	2.78	3.00	2.83	2.87	26 (21.49%)	64 (52.89%)	18 (14.88%)	13 (10.74%)
4	By self memorizing	2.67	3.30	2.79	2.92	37 (30.58%)	46 (38.02%)	23 (19.01%)	15 (12.40%)
5	Informing family members to take hints for memorizing	2.47	2.24	2.25	2.32	19 (15.70%)	46 (38.02%)	16 (13.22%)	40 (33.06%)
6	By recording through audio cassette	2.31	2.30	2.17	2.26	17	41	22	41

S.No.	Information storage methods	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
						(14.05%)	(33.88%)	(18.18%)	(33.88%)
7	By recording in video cassettes	2.06	2.36	2.21	2.21	18 (14.88%)	32 (26.45%)	24 (19.83%)	47 (38.84%)
8	By preserving information in Computer	3.03	3.00	2.50	2.84	46 (38.02%)	35 (28.93%)	24 (19.83%)	16 (13.22%)
9	By preserving information in laptop	2.98	3.09	2.63	2.90	47 (38.84%)	35 (28.93%)	24 (19.83%)	15 (12.40%)
10	By preserving information in external hard disc	2.41	2.30	2.04	2.25	13 (10.74%)	46 (38.02%)	27 (22.31%)	35 (28.93%)
11	By storing through e – mail	3.45	3.48	3.17	3.37	72 (59.50%)	31 (25.62%)	13 (10.74%)	5 (4.13%)
12	By storing through Blogs	2.30	2.12	2.38	2.27	18 (14.88%)	37 (30.58%)	25 (20.66%)	41 (33.88%)

S.No.	Information storage methods	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly No (%)	Occasionally No (%)	Rarely No (%)	Never No (%)
		13	By storing through Web pages	2.11	1.85	1.88	1.95	6 (4.96%)	33 (27.27%)
14	By storing in Pen drive	3.34	3.42	3.00	3.25	74 (61.16%)	24 (19.83%)	8 (6.61%)	15 (12.40%)
15	By storing in Digital Video Disc (DVD)	1.66	2.27	2.50	2.14	5 (4.13%)	45 (37.19%)	15 (12.40%)	56 (46.28%)
16	By storing in Compact Disc (CD)	1.56	2.48	3.00	2.35	14 (11.57%)	25 (20.66%)	41 (33.88%)	41 (33.88%)
	Total	41.33	43.76	41.50	42.20				
SD = 4.58; Mean = 0.746; F = 18.60*; Significant at 0.05 probability									

Information transformation patterns

The findings on the various information transformation patterns existed among the extension personnel are given in Table 29 and depicted in figure 20. It could be seen from the Table 26 that information transformation techniques were preferred were preparing folders, leaflets, transferring the idea into popular articles, preparing documents into MS Word and preparing lecture notes (3.17, 3.10, 3.07, 3.03 and 2.96 respectively). These are followed by the other methods viz., preparing power points (2.93), preparing for radio talk (2.87), preparing news for newspapers (2.78), preparing for TV talk (2.70), preparing visuals images (2.41), preparing audio cassette with experience (1.89) and preparing Interactive Multimedia Compact Disc (IMCD) (1.80).

Total mean scores of ADAs/ADHs were found to be slightly higher than that of AOs/HOs and DDAs/DDHs.

The transformation of scientific information into communicable form is done by the preparation of leaflets and folders by the extension personnel. It is very interesting to see that information transformation through preparing folders, leaflets and popular articles were considered more by the extension personnel. This might be due to the fact that it could be possible to reach both researchers and farmers through folders, leaflets and popular articles.

Field experience further revealed that extension personnel prepared radio talks, success stories, photographs and models to transform the information.

Preparing visual images, preparing script for audio cassette with experience and IMCD were observed with low mean scores as the accessibility and opportunity for preparing these media is very much limited among extension personnel.

The results are in accordance with Sampath (1994) who reported similar outcomes in his study.

Table 29. Distribution of the respondents based on the information transformation patterns

S.No.	Information transformation techniques	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
1	Transferring the idea into popular article	3.05	3.00	3.17	3.07	32 (26.45%)	73 (60.33%)	7 (5.79%)	9 (7.44%)
2	Preparing folders	3.14	3.33	3.04	3.17	46 (38.02%)	51 (42.15%)	23 (19.01%)	1 (0.83%)
3	Preparing leaflets	2.92	3.21	3.17	3.10	38 (31.40%)	52 (42.98%)	30 (24.79%)	1 (0.83%)
4	Preparing for lecture note	2.77	3.15	2.96	2.96	38 (31.40%)	46 (38.02%)	25 (20.66%)	12 (9.92%)
5	Preparing for radio talk	2.84	2.85	2.92	2.87	31 (25.62%)	52 (42.98%)	28 (23.14%)	10 (8.26%)

S.No.	Information transformation techniques	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
6	Preparing for TV talk	2.66	2.73	2.71	2.70	27 (22.31%)	45 (37.19%)	33 (27.27%)	16 (13.22%)
7	Preparing visuals images	2.69	2.33	2.21	2.41	21 (17.36%)	39 (32.23%)	40 (33.06%)	21 (17.36%)
8	Preparing news for Newspapers	2.92	2.76	2.67	2.78	38 (31.40%)	37 (30.58%)	33 (27.27%)	19 (15.70%)
9	Preparing documents in MS Word	3.17	3.18	2.75	3.03	46 (38.02%)	49 (40.50%)	17 (14.05%)	9 (7.44%)
10	Preparing power points	2.92	3.00	2.88	2.93	38 (31.40%)	44 (36.36%)	32 (26.45%)	7 (5.79%)

S.No.	Information transformation techniques	Mean score				Overall frequency of use (n=121)			
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	Regularly	Occasionally	Rarely	Never
						No (%)	No (%)	No (%)	No (%)
11	Preparing audio cassette with experience	1.81	1.70	2.17	1.89	7 (5.79%)	30 (24.79%)	22 (18.18%)	62 (51.24%)
12	Preparing Interactive Multimedia Compact Disc (IMCD)	1.78	1.61	2.00	1.80	5 (4.13%)	20 (16.53%)	39 (32.23%)	57 (47.11%)
	Total	32.67	32.85	32.63	32.72				
SD = 1.92; Mean = 0.720; F = 15.460* ; Significant at 0.05 probability									

4.3.1.3. Information dissemination patterns

Information dissemination referred to all the activities performed by the extension personnel for disseminating scientific and technical information. The mean scores were computed for various methods of information dissemination are presented in Table 30 and depicted in figure 21.

From the table, it could be seen that with regard to individual contact methods, e-mail and circular letters were the information tools which was commonly used by the extension personnel (3.49 and 3.15 respectively). Telephone calls were fully utilized for disseminating information since all the extension personnel had mobile phones. The information has been generally communicated mostly through mobile and landline phones. Visit to research stations and frequent field visits were also found.

In case of group contact methods, includes result demonstration (Front Line Demonstration) (3.90), method demonstration (2.96), group meetings (3.12), lectures (2.85) and tours (2.81) secured more mean scores as they has been proved to be an effective information dissemination methods. The schemes and activities of State Department of Agriculture include the following for the year 2014 – 2015.

- Integrated *Scheme* of Oilseeds, Pulses, Oilpalm & Maize (ISOPOM)
- National Horticulture Mission (NHM)
- System of Rice Intensification (SRI),
- Sustainable Sugarcane Intensification (SSI)
- Uzhavar peruvizha - an Intensive multidisciplinary awareness campaign
- National Mission on Sustainable Agriculture (NMSA).
- Micro irrigation exclusively for pulses
- Intensive Redgram cultivation through transplantation
- Integrated Farming System models
- Precision farming and micro irrigation
- Block Demonstrations by SDA

- Block Demonstrations of Polythene Mulch Technology in Groundnut by SDAs
- Demonstration on Integrated Pest Management (Farmers Field School)
- Vermi composting
- Sustainable Organic Farming

The schemes and activities are allotted with physical and financial targets. However, mostly demonstrations have to be conducted by the extension personnel in all the identified locations in their jurisdiction. Thus, the demonstration secured more mean score in group contact method.

The mass contact methods have been in the use for a longer period of time. Most of the extension personnel considered newspaper and television were the effective media to delivering the information as they secured more mean scores. The usage of radio was high in the past, but the usage has been reduced drastically due to the technological interventions such as advanced mobile phones, blogs, and wireless among extension personnel. The other mass contact methods such as pamphlets, leaflets, magazines were also found to secure more mean scores.

Extension personnel are using all the local available channels for dissemination. They try to report new technologies in local news television channel too. Similar to that of earlier findings, the ADAs/ADHs were observed to have secured more total mean scores in information dissemination patterns.

Table 30. Information dissemination patterns

S.No.	Information Dissemination Patterns	Mean score				Frequency of use			
						Regularly	Occasionally	Rarely	Never
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	No (%)	No (%)	No (%)	No (%)
A	Individual contact methods								
1.	Telephone call	3.38	3.27	2.96	3.20	52 (43.0 %)	50 (41.3 %)	18 (14.9 %)	1 (0.8 %)
2.	Circular letter	3.44	3.06	2.96	3.15	43 (35.5 %)	66 (54.5 %)	10 (8.3 %)	2 (1.7 %)
3.	Short Message Services (SMSs)	3.59	3.30	2.88	3.26	71 (58.7 %)	28 (23.1 %)	18 (14.9 %)	4 (3.3 %)
4.	e – Mail	3.73	3.36	3.38	3.49	87 (71.9 %)	20 (16.5 %)	6 (5.0 %)	7 (5.8 %)
B	Group contact methods								

S.No.	Information Dissemination Patterns	Mean score				Frequency of use			
						Regularly	Occasionally	Rarely	Never
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	No (%)	No (%)	No (%)	No (%)
1.	Method demonstration	3.02	2.91	2.96	2.96	18 (14.9 %)	85 (70.2 %)	15 (12.4 %)	3 (2.5 %)
2.	Result demonstration	3.27	3.21	3.13	3.20	32 (26.4 %)	85 (70.2 %)	3 (2.5 %)	1 (0.8 %)
3.	Front line demonstration	3.06	3.06	2.92	3.01	38 (31.4 %)	51 (42.1 %)	30 (24.8 %)	2 (1.7 %)
4.	Lectures	2.75	3.00	2.79	2.85	33 (27.3 %)	48 (39.7 %)	26 (21.5 %)	14 (11.6 %)
5.	Farmers training	3.13	3.18	3.08	3.13	50 (41.3 %)	43 (35.5 %)	22 (18.2 %)	6 (5.0 %)
6.	Meetings	3.17	3.24	2.96	3.12	56	37	18	10

S.No.	Information Dissemination Patterns	Mean score				Frequency of use			
						Regularly	Occasionally	Rarely	Never
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	No (%)	No (%)	No (%)	No (%)
						(46.3 %)	(30.6 %)	(14.9 %)	(8.3 %)
7.	Tours	3.05	2.97	2.42	2.81	36 (29.8 %)	47 (38.8 %)	28 (23.1 %)	10 (8.3 %)
8.	Field trips	3.20	3.03	2.54	2.92	53 (43.8 %)	31 (25.6 %)	24 (19.8 %)	13 (10.7 %)
9.	Power point presentation	3.16	2.70	2.79	2.88	38 (31.4 %)	57 (47.1 %)	9 (7.4 %)	17 (14.0 %)
10.	Audio conference	1.95	1.67	2.04	1.89	14 (11.6 %)	24 (19.8 %)	18 (14.9 %)	65 (53.7 %)
11.	Interactive Multimedia Compact Disc (IMCD)	1.81	2.06	1.75	1.87	5 (4.1 %)	28 (23.1 %)	34 (28.1 %)	54 (44.6 %)

S.No.	Information Dissemination Patterns	Mean score				Frequency of use			
						Regularly	Occasionally	Rarely	Never
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	No (%)	No (%)	No (%)	No (%)
12.	Video Conferences	1.83	1.97	1.67	1.82	0 0.0	30 (24.8 %)	41 (33.9 %)	50 (41.3 %)
13.	Web based Video programs	1.50	1.70	1.75	1.65	5 (4.1 %)	17 (14.0 %)	24 (19.8 %)	75 (62.0 %)
14.	Through Farmers Interest Groups (FIG)	1.66	2.06	2.13	1.95	23 (19.0 %)	13 (10.7 %)	9 (7.4 %)	76 (62.8 %)
15.	Through Farmers Field Schools (FFS)	1.50	1.88	1.83	1.74	16 (13.2 %)	14 (11.6 %)	5 (4.1 %)	86 (71.1 %)
C	Mass contact methods								
1.	Through Posters	3.08	3.27	3.04	3.13	28 (23.1 %)	84 (69.4 %)	5 (4.1 %)	4 (3.3 %)

S.No.	Information Dissemination Patterns	Mean score				Frequency of use			
						Regularly	Occasionally	Rarely	Never
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	No (%)	No (%)	No (%)	No (%)
2.	Through Charts	3.08	2.91	2.88	2.96	41 (33.9 %)	41 (33.9 %)	36 (29.8 %)	3 (2.5 %)
3.	Through Leaflets	2.95	3.09	2.88	2.97	37 (30.6 %)	49 (40.5 %)	30 (24.8 %)	5 (4.1 %)
4.	Through handouts	2.95	3.00	3.17	3.04	28 (23.1 %)	71 (58.7 %)	17 (14.0 %)	5 (4.1 %)
5.	Through Hoardings	2.73	2.67	2.71	2.70	27 (22.3 %)	40 33.1 %	46 (38.0 %)	8 (6.6 %)
6.	Through Wall paintings	2.45	2.67	2.63	2.58	15 (12.4 %)	59 (48.8 %)	24 (19.8 %)	23 (19.0 %)
7.	Through Radio messages	2.38	2.61	2.67	2.55	19	43	38	21

S.No.	Information Dissemination Patterns	Mean score				Frequency of use			
						Regularly	Occasionally	Rarely	Never
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	No (%)	No (%)	No (%)	No (%)
						(15.7 %)	(35.5 %)	(31.4 %)	(17.4 %)
8.	Through Television	2.58	2.64	2.29	2.50	18 (14.9 %)	51 (42.1 %)	30 (24.8 %)	22 (18.2 %)
9.	Through News paper	2.72	2.64	2.79	2.50	29 (24.0 %)	48 (39.7 %)	24 (19.8 %)	20 (16.5 %)
10.	Writing to Farm magazines	2.56	2.88	2.75	2.72	29 (24.0 %)	46 (38.0 %)	25 (20.7 %)	21 (17.4 %)
11.	Writing to Farm journals	2.59	2.76	2.54	2.73	28 (23.1 %)	49 (40.5 %)	15 (12.4 %)	29 (24.0 %)
12.	Writing News stories	2.22	2.45	2.29	2.63	14 (11.6 %)	41 (33.9 %)	33 (27.3 %)	33 (27.3 %)

S.No.	Information Dissemination Patterns	Mean score				Frequency of use			
						Regularly	Occasionally	Rarely	Never
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	No (%)	No (%)	No (%)	No (%)
13.	Writing Popular articles	2.13	2.55	2.63	2.32	16 (13.2 %)	44 (36.4 %)	26 (21.5 %)	35 (28.9 %)
14.	Writing Feature articles	1.98	2.33	2.46	2.44	14 (11.6 %)	33 (27.3 %)	34 (28.1 %)	40 (33.1 %)
15.	Through organizing exhibitions	2.09	2.76	2.83	2.26	31 (25.6 %)	29 (24.0 %)	21 (17.4 %)	40 (33.1 %)
16.	State level farmers mela at district level	1.89	2.61	2.79	2.53	19 (15.7 %)	38 (31.4 %)	20 (16.5 %)	44 (36.4 %)
17.	Regional level farmers mela	1.91	2.24	2.54	2.43	17 (14.0 %)	30 (24.8 %)	25 (20.7 %)	49 (40.5 %)
18.	Through Pre- season campaign	1.98	2.39	2.54	2.54	16	30	38	37

S.No.	Information Dissemination Patterns	Mean score				Frequency of use			
						Regularly	Occasionally	Rarely	Never
		AOs/ HOs	ADAs/ ADHs	DDAs/ DDHs	Total	No (%)	No (%)	No (%)	No (%)
						(13.2 %)	(24.8 %)	(31.4 %)	(30.6 %)
TOTAL		114.9	119.39	116.6	350.9				
SD = 7.92; Mean = 0.760; F = 25.460* ; Significant at 0.05 probability									

4.3.2. Component-wise Information Management Patterns

Further attempts have been made to present the results on component-wise Information Management Patterns among the extension personnel. For this, index scores have been worked out for each extension worker for each component of Information Management Patterns using the index formula developed in research methodology chapter. The overall index scores for all three cadres with respect to all components of Information Management Patterns index scores are given in the Table 31.

Table. 31. Information Management Index scores (component-wise and overall)

S.No.	Components	Index score			Total	
		AOs/HOs (n = 64)	ADAs/ADHs (n =33)	DDAs/ DDHs (n =24)		
1	Information acquisition	0.58	0.61	0.61	0.59	
2	Information processing	Information evaluation	0.72	0.77	0.76	0.74
3		Information treatment	0.73	0.79	0.72	0.74
4		Information storage	0.65	0.68	0.64	0.66
5		Information transformation technique	0.66	0.68	0.64	0.66
6	Information processing	0.69	0.73	0.70	0.70	
7	Information dissemination	0.64	0.66	0.65	0.65	
Composite Information Management Index		0.62	0.66	0.64	0.64	

SD = 0.070125; Mean = 0.6368; F = 27.60*; Significant at 0.05 probability

From the above table, it could be seen that the component-wise indexes for Information acquisition (0.59), Information evaluation (0.74), Information treatment (0.74), Information storage (0.66), Information transformation technique (0.68), information processing (0.70) and Information dissemination (0.65). The composite Information Management Index worked out was 0.64. It is quite evident that composite Information Management Index value of ADAs/ADH (0.66) was found to be higher than AOs/HO (0.62) and DDAs/DDHs (0.64).

The ADAs/ADHs cadre was found secure more index scores compared to other two cadres. This would be the possible as the AOs/HOs are recent entrants with low exposure and experience and DDAs/DDHs are more concentrated on administrative work. Thus, the ADAs/ADHs cadre would have secured relatively more mean score.

Significant differences among the three cadres were also confirmed through the 'F' value.

4.4. Association and contribution of profile variables with attitude of extension personnel towards ICT tools and Information Management Patterns

Further efforts have been made to study the association and contribution of profile variables with attitude of extension personnel towards ICT tools and information management patterns. The association and contribution have been studied using correlation and regression methods and the findings are presented in Table 32 and 33 and depicted in figure 22 and 23.

4.4.1. Association and contribution of selected profile variables with attitude of extension personnel towards ICT tools

The findings on association and contribution of profile variables with attitude of extension personnel towards ICT tools have been presented in this section.

The results of correlation analysis revealed that the variables namely work experience (X_3), organizational climate (X_4), trainings undergone (X_{14}) and media talks

and publications (X_{15}) were found to have positive and significant relationship at one per cent level of probability level.

However, variables such as achievement motivation (X_{10}), job satisfaction (X_{12}) and self confidence (X_{13}) depicted a non-significant relationship with the dependent variable.

Table 32. Association and contribution of selected profile variables with attitude of extension personnel towards ICT tools

S. No	Profile variables	Total no. of respondents (n = 121)			
		'r' value	PRC	SE	't' value
1.	(X_1) Age	-0.361**	0.610	1.422	0.429 ^{NS}
2.	(X_2) Educational status	0.324**	-1.062	0.876	-1.212 ^{NS}
3.	(X_3) Work experience	0.031**	2.964	1.931	1.535**
4.	(X_4) Organizational climate	0.098**	0.791	1.200	3.158**
5.	(X_5) Managerial ability	0.220	0.588**	0.194	2.257*
6.	(X_6) Value orientation	0.510**	0.394	2.197	2.910**
7.	(X_7) Possession of communication gadgets	0.320**	-1.129	1.952	-0.578 ^{NS}
8.	(X_8) Workload perception	-0.375**	-3.159	2.379	-1.328 ^{NS}
9.	(X_9) Technical knowledge	0.364**	0.759	0.344	2.205*
10.	(X_{10}) Achievement motivation	0.172 ^{NS}	0.299	0.293	1.022 ^{NS}
11.	(X_{11}) Job involvement	-0.047 ^{NS}	0.580	0.220	2.635**

12.	(X ₁₂) Job satisfaction	-0.206 ^{NS}	-1.566	2.341	0.669 ^{NS}
13.	(X ₁₃) Self confidence	0.093 ^{NS}	0.289	0.175	1.651 ^{NS}
14.	(X ₁₄) Trainings undergone	0.465**	0.073	0.335	0.217 ^{NS}
15.	(X ₁₅) Media talks and publications	0.365**	0.933	0.351	2.661**
	R ²	0.652			
	F Value	7.182**			
	Constant	8.518			

PRC = Partial Regression Co-efficient; ^{NS} - Non Significant;

SE = Standard Error; * - Significant at 0.05 level;

 ** - Significant at 0.01 level

The regression analysis further portrayed that the R² value was 0.652 which revealed that 65.20 per cent variation in the attitude of extension personnel towards ICT tools, which was explained by fifteen variables selected for the study. The 'F' value (7.182) was significant at one per cent level of probability. The prediction equation was fitted is as follows.

$$Y_1 = 8.518 + 0.610 (X_1) - 1.062 (X_2) + 2.694 (X_3) + 0.791 (X_4) + 0.588 (X_5) + 0.394 (X_6) + 1.129 (X_7) - 3.159 (X_8) + 0.759 (X_9) + 0.299 (X_{10}) + 0.580 (X_{11}) - 1.566 (X_{12}) + 0.289 (X_{13}) + 0.073 (X_{14}) + 0.933 (X_{15})$$

This revealed that an unit increase in work experience (X₃), organizational climate (X₄), managerial ability (X₅), value orientation (X₆), technical knowledge (X₇), job involvement (X₁₁) and media talks and publications (X₁₅) *ceteris paribus* would enhance the favourable attitude to the extent of 2.694, 0.791, 0.588, 0.394, 1.129, 0.580 and 0.933 units respectively.

Work experience exhibited positive contribution towards attitude of extension personnel. It is justifiable that as more years of service would create confidence among extension personnel on the use of ICT in transfer of technologies. The real impact of ICT

usage on farmers behavioural domains over the period of years would be responsible for such outcomes.

The organizational climate is a crucial variable contributed towards development of favourable attitude. If extension personnel feel the positive nature of organizational climate, it would encourage them to develop favourable attitude towards use of ICT tools.

Similarly, managerial ability and value orientation exhibited positive contribution towards attitudinal development. Managerial ability is a complex phenomenon where varied skills are to be developed by the extension personnel towards their technology transfer efforts. Skill in use of ICTs is one such skills to be developed. Thus, it exhibited such contribution towards attitude of extension personnel.

Job involvement is another important variable contributed towards attitude. More the job involvement and more achievement would be the possible with the full use of ICT in transfer of technological efforts. Thus, job involvement showed a concrete contribution towards the development of favourable attitude.

The other variables viz., technical knowledge and media talks and publications were found to have also contributed. It is quite justifiable that these two are interrelated variables would have acted on the attitudinal formation towards ICT tools.

4.4.2. Association and contribution of profile variables with Information Management Patterns

The association and contribution of profile variables with Information Management Patterns have been presented in this section.

The results revealed that the variables, educational status, value orientation, workload perception, technical knowledge and job involvement were found to have exhibited and significant relationship at one per cent level of probability whereas job satisfaction and self confidence exhibited significant relationship at the five per cent probability level.

The results also conveyed that work experience, organizational climate, possession on communication gadgets, trainings undergone and media talks and

publications were found to have positive and significant relationship at one per cent level of probability.

However, variables such as managerial ability and achievement motivation depicted a non-significant relationship with the dependent variable.

Further, multiple regression analysis was worked out for finding out the extent of contribution of independent variables with the dependent variable and the results are presented in Table 33.

Table 33 indicates that the R^2 value was 0.724 which revealed that 72.40 per cent variation in the information management patterns of extension personnel was explained by fifteen independent variables selected for the study. The 'F' value (11.327) was significant at one per cent level of probability. The prediction equation was fitted is as follows.

$$Y_1 = 18.638 - 0.663 (X_1) + 1.062 (X_2) + 0.671 (X_3) + 1.176 (X_4) + 5.549 (X_5) - 2.419 (X_6) - 2.063 (X_7) + 2.395 (X_8) + 0.045 (X_9) + 0.438 (X_{10}) - 0.021 (X_{11}) - 1.988 (X_{12}) + 0.198 (X_{13}) + 0.529 (X_{14}) + 0.191 (X_{15})$$

Table 33. Association and contribution of selected profile variables with information management patterns

S. No	Profile variables	Total no. of respondents (n = 121)			
		'r' value	PRC	SE	't' value
1.	(X ₁) Age	-0.268**	-0.663	0.707	-0.937 ^{NS}
2.	(X ₂) Educational status	0.260**	1.062	0.519	2.048*
3.	(X ₃) Work experience	0.185**	0.671	0.780	0.860 ^{NS}
4.	(X ₄) Organizational climate	0.031**	1.716	0.600	2.862**
5.	(X ₅) Managerial ability	0.011 ^{NS}	0.549	1.544	3.595**
6.	(X ₆) Value orientation	0.306**	-2.419	1.372	-1.763 ^{NS}

7.	(X ₇) Possession of communication gadgets	0.435**	-2.063	0.910	2.267*
8.	(X ₈) Workload perception	0.306**	2.395	1.226	1.953 ^{NS}
9.	(X ₉) Technical knowledge	0.406**	0.045	0.171	0.262 ^{NS}
10.	(X ₁₀) Achievement motivation	0.053 ^{NS}	0.438	0.194	2.257*
11.	(X ₁₁) Job involvement	0.273**	-0.021	0.140	-0.153 ^{NS}
12.	(X ₁₂) Job satisfaction	0.160*	-1.988	1.289	-1.542 ^{NS}
13.	(X ₁₃) Self confidence	0.190*	0.198	0.139	1.423 ^{NS}
14.	(X ₁₄) Trainings undergone	0.588**	0.529	0.246	2.148*
15.	(X ₁₅) Media talks and publications	0.499**	0.191	0.203	0.944 ^{NS}
	R ²	0.724			
	F Value	11.327**			
	Constant	18.638			

PRC = Partial Regression Co-efficient;

^{NS} - Non Significant;

SE = Standard Error;

* - Significant at 0.05 level;

** - Significant at 0.01 level

Out of the fifteen variables, organizational climate (X₄), managerial ability (X₅) and media talks and publications (X₁₅) had shown positive and significant contribution with 'Information Management Patterns' at one per cent level of probability. Educational status (X₂), possession of communication gadgets (X₇), achievement motivation (X₁₀) and trainings undergone (X₁₄) had shown positive and significant contribution with the dependent variable at five per cent level of probability.

This revealed that an unit increase in educational status, organizational climate, managerial ability, possession on communication gadgets, trainings undergone and media talks and publications *ceteris paribus* would result in an increasing level of information management patterns among extension personnel by 1.062, 1.716, 0.549, -2.063, 0.438 and 0.191 units respectively.

It could be observed from the Table 33 that among the six significantly contributing variables, educational status, organizational climate, managerial ability, possession on communication gadgets, achievement motivation and trainings undergone were found to contribute much on information management patterns of extension personnel. In general, educational status would enhance a favourable mindset towards information management and the experience tends to acquire more information on various schemes and their implementation.

The conducive organizational climate favours the effective delivery of information, duties and the self involvement in delivering the duties and responsibilities.

The more the possession of communication gadgets, more would be the access to manage the information and this would probably lead to possess an improved level of information management patterns.

Training undergone was found to have positive and significant contribution with information management patterns. This might be due the reason that during training period the respondents would have been exposed to the latest ICT tools and its application in field levels.

Similarly, strong achievement motivation of extension personnel might have paved way for the better information management.

4.4. Capacity building needs of extension personnel in information management

Further attempts have been made to identifying the future capacity building needs of extension personnel. Factors such as subject matter area, training venue, training duration, training methods and trainers were studied to develop appropriate model for promoting effective information management patterns.

4.4.1. Capacity building needs in subject matter areas

Capacity building is essential for extension personnel to gain new knowledge and skill. The capacity building needs were studied in terms of different subject matter areas with specific items. Mean scores were worked out and the results are presented in Table 34.

Table 34. Distribution of the respondents according to their preferred subject matter areas

S.No.	Subject matter areas	AOs/ HOs (n = 64)	ADAs/ ADHs (n =33)	DDAs/ DDHs (n =24)	Total
1	Word process	2.50	2.36	2.38	7.24
2	Preparation of CD ROM	2.30	2.03	2.25	6.58
3	Preparation of Virtual Reality mode	1.70	2.15	2.00	5.85
4	Multimedia usage	2.47	2.21	2.08	6.76
5	Opening online contents	1.86	1.70	1.67	5.22
6	Organizing video conference	1.83	1.85	2.25	5.93
7	Organizing Audio conference	1.61	1.73	2.17	5.50
8	Composing mail through online (e-mail, Office mail)	2.41	2.24	1.79	6.44
9	Scanning through computer scanner	1.88	1.94	1.79	5.61

S.No.	Subject matter areas	AOs/ HOs (n = 64)	ADAs/ ADHs (n =33)	DDAs/ DDHs (n =24)	Total
10	MS Word	2.52	2.58	2.42	7.51
11	MS power point	2.34	2.33	2.54	7.22
12	Text document	2.42	2.42	2.46	7.30
13	MS Excel Package	1.95	2.27	2.42	6.64
14	Specialized skills to access touch phone, Touch kiosk (MSSRF kiosk etc)	1.70	1.76	2.08	5.54
15	Process of saving the files	1.95	2.00	1.79	5.74
16	Saving the images	2.11	2.03	1.88	6.01
17	Processing and saving data	2.13	2.15	1.63	5.90
18	Transferring the idea into popular article	2.30	2.09	2.21	6.60
19	Developing folders	2.02	2.03	2.13	6.17
20	Developing leaflet	1.75	2.12	2.08	5.95
21	Developing lecture notes	1.94	2.12	2.08	6.14
22	Developing script of radio talk	2.20	2.39	2.46	7.06
23	Developing script for TV talk	2.05	2.30	2.29	6.64
24	Developing news stories	1.92	1.97	2.13	6.02
25	Developing feature articles	1.75	1.88	2.17	5.80

S.No.	Subject matter areas	AOs/ HOs (n = 64)	ADAs/ ADHs (n =33)	DDAs/ DDHs (n =24)	Total
26	Developing popular article	1.70	1.79	1.92	5.41
27	Developing success stories	1.78	1.82	1.79	5.39
28	Developing failure stories	1.47	1.52	1.71	4.69
29	Developing case studies	1.55	1.61	1.79	4.94
30	Developing an audio cassette with experience	1.34	1.21	1.54	4.10
31	Preparing Interactive Multimedia Compact Disc (IMCD)	1.31	1.48	1.38	4.17

Out of all the areas of capacity building needs identified, it was clear that the first four subject matter areas preferred were MS word, text document, word process and MS power point with mean scores 7.51, 7.30, 7.24 and 7.22 respectively. It is closely followed by developing script for radio talk (7.06), Multimedia usage (6.76), MS Excel (6.64) and developing script for TV talk (6.64). The respondents were also in need of training in areas viz., transferring idea into popular articles (5.41), preparation of CD ROM (6.58), composing e-mail (6.44), developing folders (6.17), lecture notes (6.14), news stories (6.02) and saving the images (6.01).

The capacity building areas which were least preferred by the respondents were developing popular articles (5.41), developing success stories (5.39), opening online content (5.22), developing case studies (4.94) , developing failure stories (4.69), developing an audio cassette with experience (4.10) and preparing interactive multimedia compact disc (4.17).

E-mail and circular letters are the information tools which are commonly used by the extension personnel. Mostly, preparations of reports and presentations are done by

extension personnel by using MS word and power points. This might be the reason for giving more preference to the area of MS word and word processing among most of the extension personnel for further strengthening their skills.

The least preferred areas like developing popular articles and success stories might be due to that extension personnel would have already prepared and published more number of success stories and popular articles in farm magazines and newspapers. Because, In earlier days, the popular articles and success stories were the primary printed publications which were used more number of extension personnel.

This finding is in line with the findings of Kalaivani (1999).

4.4.2. Venue of training

The venue of training will have an effect on the number of participants in attending the training. If the venue of training is nearer and easily accessible, more number of people will attend. The preferences with respect to training venues were given in Table 35.

Table 35. Distribution of the respondents according to the venue of training

S.No.	Place of Training	AOs/ HOs (n = 64)	ADAs/ ADHs (n =33)	DDAs/ DDHs (n =24)	Total
1.	ICRISAT	0.16	0.18	0.50	0.84
2.	MANAGE	0.56	0.52	0.75	1.83
3.	NAARM	0.27	0.21	0.38	0.85
4.	Extension Education Institutes	0.11	0.18	0.25	0.54
5.	Anna Institute of Management	0.28	0.03	0.46	0.77
6.	Agricultural Engineering Training Centre	0.14	0.06	0.42	0.62
7.	STAMIN	0.20	0.42	0.63	1.25
8.	Central Horticulture Training Institute center	0.06	0.03	0.17	0.26
9.	TNAU main campus	0.95	0.91	0.88	2.74
10.	SAMETI	0.51	0.45	0.42	1.38
11.	Krishi Vigyan Kendra of the districts	0.91	0.76	0.71	2.37
12.	JDA's Office in the districts	0.84	0.79	0.58	2.21
13.	District Rural Development Agency	0.77	0.61	0.58	1.96
14.	TNAU research stations in District	0.59	0.61	0.42	1.62

It is clear from the results that **TNAU main campus** is the most preferred venue of training by majority of the respondents with the mean score of 2.74 followed by **Krishi Vigyan Kendra** (2.37) and **JDA Office** (2.21) in concerned districts. The respondents also preferred the venues such as District Rural Development Agency (1.96), MANAGE (1.83), TNAU research stations in districts (1.62) and SAMETI (1.38). The least preferred venue of training were Anna Institute of Management (0.77), Extension Education Institute (0.54) and Central Horticulture Training Center (0.26).

The reasons given by the extension personnel for choosing TNAU main campus and followed by KVK in the concerned districts are primarily due to convenience factor. This would eliminate the problems of time consumption and transport. Extension personnel gave the least preferences to the national and international institutes for training. The probable reason might be due to the distance from their work place and home. The proximity factor played major role in selection of venue of training.

This finding is supported by Jayaraj (2013).

4.4.3. Duration of training

Duration of training is also an important criterion for any training. For adequate coverage of subject matter, duration of training is very important. At the same time, the duration of the training should be convenient to the trainees also. Otherwise, they may not attend the training. Too long or too short duration of training will not serve the purpose also. The details furnished in the Table 36.

Table 36. Distribution of the respondents according to duration of training

S.No.	Duration	AOs/HOs (n = 64)		ADAs/ADHs (n =33)		DDAs/DDHs (n =24)		Total (n=121)		Rank
		No	%	No	%	No	%	No	%	
1.	1 day	-	-	-	-	-	-	-	-	
2.	2 days	17	26.56	13	39.39	8	33.33	38	31.40	II

3.	3-5 days	34	53.13	16	48.48	7	29.17	57	47.11	I
4.	1 week	4	6.25	-	0.00	6	25.00	10	8.26	IV
5.	2 weeks	6	9.38	4	12.12	3	12.50	13	10.74	III
6.	1 month	3	4.69	-	-	-	-	3	2.48	V
	Total	64	100	33	100	24	100	121	100	

The findings clearly reflect that extension personnel are very clear in their choices. Majority felt three - five days training would hardly be enough to learn all the technologies and skills. The long duration trainings as preferred by 2.48 per cent of the extension personnel might be due to their perception that they would keep the extension personnel away from their home and department activities for a long time. Thus, majority would have preferred 3-5 days of duration of training.

4.4.4. Training methods

The effectiveness of the training to a large extent depends on the methods of training adopted. Method of training refers to various modes used in training programme. Different training methods are used in training programme. So it was felt to identify the most preferred methods of training on the basis of respondent's choice in Table 37.

Table 37. Distribution of the respondents according to the methods of training

S.No.	Method of Training	AOs/ HOs (n = 64)	ADAs/ ADHs (n =33)	DDAs/ DDHs (n =24)	Total	Rank
1	Lecture alone	1.84	1.79	2.21	5.84	8
2	Lecture + AV Aids	2.41	2.39	2.29	7.09	1
3	Group Discussion	2.13	2.27	2.08	6.48	2

S.No.	Method of Training	AOs/ HOs (n = 64)	ADAs/ ADHs (n =33)	DDAs/ DDHs (n =24)	Total	Rank
4	Extempore	1.86	1.45	1.50	4.81	15
5	Demonstration / Hands on experience	2.08	1.91	1.75	5.74	9
6	Exhibitions	2.08	2.03	2.17	6.28	3
7	Role playing	1.97	1.97	1.75	5.69	10
8	Problem solving sessions with expert	1.86	1.94	1.58	5.38	12
9	Study assignments	1.47	1.79	1.50	4.76	16
10	Symposium	1.48	1.39	1.63	4.50	20
11	Colloquium	1.38	1.61	1.38	4.36	21
12	Seminar	1.94	1.97	1.71	5.62	11
13	Workshop	1.94	2.09	2.00	6.03	6
14	Indoor session like solving hypothetical problems	1.50	1.48	1.38	4.36	22
15	Outdoor session like case study	1.63	1.58	1.79	4.99	14
16	Visit to field trips	2.16	2.27	1.83	6.26	4
17	Visit to research station	1.97	2.24	1.67	5.88	7
18	Visit to market	1.81	1.88	1.54	5.23	13
19	Using objects and specimens	1.38	1.55	1.29	4.21	26

S.No.	Method of Training	AOs/ HOs (n = 64)	ADAs/ ADHs (n =33)	DDAs/ DDHs (n =24)	Total	Rank
20	Buzz session	1.53	1.58	1.54	4.65	18
21	Brainstorming	2.27	2.24	1.71	6.22	5
22	Testing	1.28	1.39	1.38	4.05	28
23	Quizzes	1.44	1.55	1.29	4.27	24
24	Questioning	1.28	1.33	1.25	3.86	31
25	Small group work	1.27	1.36	1.21	3.84	33
26	Individualize instruction	1.20	1.15	1.25	3.60	35
27	Use of handouts, graphics, books, Photographs	1.63	1.42	1.71	4.76	17
28	Games	1.63	1.55	1.38	4.55	19
29	Simulation	1.42	1.39	1.38	4.19	27
30	Sensitivity training	1.33	1.55	1.38	4.25	25
31	Transactional analysis	1.30	1.33	1.29	3.92	29
32	Syndicate	1.34	1.21	1.33	3.89	30
33	Recording	1.28	1.24	1.29	3.82	34
34	Video lessons	1.48	1.42	1.38	4.28	23
35	Contact sessions in distance mode	1.25	1.21	1.38	3.84	33

From the above table, it is quite obvious that the first five methods of training preferred by the respondents were **lecture + AV aids, group discussion, exhibitions,**

field trips and brainstorming with the mean scores of 7.09, 6.48, 6.28, 6.26 and 6.22 respectively. They are closely followed by workshop (6.03), visit to research station (5.88), lecture alone (5.84), demonstration/ hands on experience (5.74) and role playing (5.69). The least preferred methods were syndicate (3.89), questioning (3.86), small group work (3.84), recording (3.82) and individualized instruction (3.60).

Group discussion encourages face to face interaction, support free informal atmosphere to get more clarification and stimulate exchange of more ideas between the trainers and the trainees. In the field visits, extension personnel get a chance to farmers' fields and get first hand information about the practices being followed and get information on the worth of the practice also.

The classical example is the introduction of precision farming in Tamil Nadu during 2003-2008 in the first phase. More number of exposure visits have been arranged for extension personnel to get firsthand knowledge on precision farming techniques.

The probable reason for the differences in preferred training methods might be due to the differential perception and training exposures already attained by the extension personnel.

The respondents further felt that latest updates are not frequently made available through modern electronic gadgets like mobile phones, even though the scope of information dissemination is wider. When the training methods are imparted in an active manner, the trainees would accept the training.

4.4.5. Preference of trainers

The findings on the preference of choice trainers are presented in the Table 38.

Table 38. Distribution of the respondents according to the choice of trainers

S.No.	Choice of trainers	AOs/ HOs (n = 64)	ADAs/ ADHs (n =33)	DDAs/ DDHs (n =24)	Total	Rank
1.	Experts from International institutes	0.47	0.42	0.54	1.43	6
2.	Experts from national institutes	0.55	0.52	0.46	1.52	5
3.	Experts from State Management institutes	0.83	0.76	0.63	2.21	3
4.	Subject matter specialists from TNAU research stations in districts	0.83	0.61	0.63	2.06	4
5.	Subject matter specialists from KVK's	0.91	0.79	0.54	2.24	2
6.	Tamil Nadu Agricultural University scientists (Main campus)	0.91	0.97	0.92	2.79	1
7.	Corporate officials	0.14	0.12	0.38	0.64	7
8.	NGO functionaries	0.06	0.06	0.21	0.33	8

It could be very well diagnosed from the table that the respondents preferred the trainers in the following order along with their mean scores, Tamil Nadu Agricultural University (main campus) scientists (2.79), subject matter specialists from KVKs (2.24), experts from State Management Institutes (2.21), Subject matter specialists from TNAU research stations in districts (2.06), experts from national institutes (1.52), experts from international institutes (1.43), Corporate officials (0.64) and NGO functionaries (0.33).

The result implies that extension personnel have more confidence on Tamil Nadu Agricultural University main campus scientists and followed by subject matter specialists from KVK's in the districts.

Many respondents would have felt the potentialities of Tamil Nadu Agricultural University scientists in handling training session and imparting training skills. The infrastructural facilities available in TNAU main campus also could be better utilized. Further the KVK scientists in the districts would be more knowledgeable trainers. This would help the Extension personnel to learn comprehensively. The least preference has been given to NGO functionaries.

This finding was supported by Janani (2012) and Jayaraj (2013).

4.5. Constraints encountered by extension personnel and suggestions for effective information management patterns

Constraint analysis is one of the important components of extension research. Without analysing the constraints, it is impossible to enhance the information management patterns among the extension personnel. One of the objectives of this study is to identify the existing constraints and suggestions for effective information management patterns as perceived by the extension personnel.

Therefore, the possible constraints were enumerated from related studies in consultation with extension personnel in pilot study and pre-testing. The constraints faced by extension personnel in different components of information management patterns were collected. Percentage analysis was carried out and the constraints were ranked accordingly. The results are presented in Table 39, 40 and 41.

4.5.1. Constraints in information acquisition patterns

The constraints as encountered by extension personnel in information acquisition patterns are given in Table 39.

Table 39. Constraints regarding information acquisition patterns

S.No.	Constraints	Total (n=121)*		Rank
		No	%	
1.	Lack of adequate chance for attending trainings, seminars and workshops etc,	69	57.02	2
2.	Non availability of latest scientific or popular journals in the office library	79	65.29	1
3.	Lack of adequate time to visit research stations	43	35.54	13
4.	Restricted permissions to visit research stations of Tamil Nadu and other states	37	30.58	16
5.	Limited chances to meet university scientists	46	38.02	8
6.	Limited guidance from higher officials	54	44.63	3
7.	Lack of adequate time to read newspapers and journals	47	38.84	7
8.	Lack of adequate time to view agricultural programs in television	43	35.54	14
9.	Lack of adequate time to listen agricultural programs in radio	54	44.63	4
10.	Lack of adequate library facilities in the district	51	42.15	5
11.	Lack of skilled personnel to operate information kiosk	45	37.19	9
12.	Lack of information gadgets	51	42.15	6
13.	Lack of familiarity	44	36.36	11
14.	Lack of infrastructure for telecommunication	44	36.36	12
15.	Online queries and clarifications not replied promptly	45	37.19	10
16.	High cost for establishment	37	30.58	16

S.No.	Constraints	Total (n=121)*		Rank
		No	%	
17.	Slow downloading, uploading of photos and files	34	28.10	18
18.	Difficult to type the URL (Uniform Resource Locator) to access the webpage	39	32.23	15
19.	In adequate feedback of problems from progressive farmers	23	19.01	19
20.	Lack of adequate specialized skills to access ICT tools	19	15.70	20

***Multiple responses obtained**

Out of all the constraints identified, non-availability of latest scientific or popular journals in the office library was the major constraint faced by 65.29 per cent of the extension personnel. The extension personnel would have felt that the need for availability of more number of agricultural magazines in local languages that are to be subscribed from the budget provision made in concerned offices.

The other major constraints were lack of adequate chance for attending trainings, seminars and workshops (57.02 %), limited guidance from higher officials (44.63 %), lack of adequate time to listen to agricultural programmes in radio (44.63 %), lack of adequate library facilities, especially in the district level (42.15 %) and lack of adequate time to read other technical matter in agricultural related newspaper and journals (38.84 %). More time, they have been engaged in attending fieldworks and schemes for early completion of physical and financial targets. They might not have had adequate time to attend the trainings, workshops and seminars as and when being organized. In addition, the usage of online library was also found to be low among the extension personnel in information acquisition patterns.

The constraints viz., inadequate time to meet university scientists (37.50 %), lack of information gadgets and difficult to type the URL (Uniform Resource Locator) to

access the webpage (33.33 %) were also revealed by the extension personnel. Definitely, this indicates more scope for ICT hub in the ADA/JDA offices.

Further, the extension personnel would have felt that the limitation of availability of information gadgets such as computer, printers, fax machines, LCD projectors which have been provided at district level only. Majority of block level offices had limited access with information gadgets. Particularly AOs/HOs were not provided with much information gadgets for individual access. Thus, this might have been felt as constraint. This would have created a gap in information acquisition patterns between AOs/HOs and their subordinates.

This finding was similar to that of Sampath (1994) who also reported that most of the extension personnel faced lack of adequate information gadgets.

4.5.2. Constraints of information processing patterns

The findings related to the constraints as experienced by extension personnel in information processing patterns are given Table 40.

Table 40. Constraints in information processing patterns

S.No.	Constraints	Total (n=121)*		Rank
		No	%	
1.	Inadequate time	86	71.07	2
2.	More time to spent on miscellaneous work	89	73.55	1
3.	Lack of adequate skill in preparation of information materials	47	38.84	6
4.	Difficulty in preparing AV aids	52	42.98	4
5.	Not familiar with local people and local language	46	38.02	8
6.	Lack of update information	63	52.07	3
7.	Lack of relevant information	50	41.32	5
8.	Inability to make or receive electronic payments	34	28.10	9
9.	High cost for establishment	47	38.84	7
10.	Inadequate funds for the processing and purchase of AV aids like camera,	22	18.18	10

***Multiple responses obtained**

From table, it could be seen that more time spent on miscellaneous work (73.55) has emerged as the major constraint followed by inadequate time (71.07). The extension personnel would have felt that minimizing paper work, administrative work and increasing the fieldwork activities would have helped to give more focus on the information processing for better quality of information to deliver to farmers and research scientists.

Lack of update information and lack of relevant information were also mentioned as the constraints for 52.07 and 41.32 per cent of the extension personnel respectively. Most of the extension personnel pointed out that irrelevant materials and out of date materials which cluster the shelves of the offices and libraries. This need to be rectified.

Difficulty in preparing AV aids (42.98 %) and lack of adequate skill in preparation of information materials (38.84 %) were other constraints of extension personnel in information processing patterns. Since most of the ADAs/ADHs and DDAs/DDHs were found to be in old aged category and reported less familiarity and less proficiency in using advanced information gadgets which are used for information processing.

This finding was similar to that of Meera *et al.*, (2004) who reported that majority of the extension personnel faced inadequate time and lack of skills.

4.5.3. Constraints in information dissemination patterns

The constraints as encountered by extension personnel in information dissemination patterns are given in Table 41.

Table 41. Constraints regarding information dissemination patterns

S.No.	Constraints	Total (n=121)*		Rank
		No	%	
1.	Lack of conveyance facilities or mobile audio visual units	84	69.42	2
2.	Inadequate funds	93	76.86	1
3.	More time spent on miscellaneous works	44	36.36	7
4.	Lack of training on the use of AV aids	34	28.10	16
5.	Lack of chances to participate in farm broadcast and farm telecast programs	41	33.88	10
6.	Too many administrative formalities for publishing articles in journals	43	35.54	9
7.	Non availability of AV equipments	36	29.75	14
8.	Large clients	55	45.45	3
9.	Difficulty in organizing meetings	43	35.54	8

10.	Difficulty in organizing campaigns	40	33.06	11
11.	Difficulty in organizing exhibitions	47	38.84	6
12.	Difficulty in organizing demonstrations	48	39.67	5
13.	Difficulty in organizing field days	50	41.32	4
14.	Difficulty in organizing seminars	40	33.06	12
15.	Difficulty in printing information materials	39	32.23	13
16.	Difficulty in organizing power point slides	36	29.75	15
17.	Difficulty in organizing video program	15	12.40	17

***Multiple responses obtained**

Out of all the identified constraints, the major constraints were lack of adequate funds (76.86 %) and lack of conveyance facilities or mobile audio visual units (69.42 %). The reason might be that the State Department of Agriculture is primarily focusing on agricultural inputs than conveyance facilities or mobile audio-visual units under budget allocation. Majority extension personnel felt that infrastructure facilities are to be improved to meet the advancement in the information management patterns and adequate fund should be allotted for procurement of latest ICT tools, access of provision for the line department officials, transport facilities, library and soil testing labs. The block level office should be well equipped to satisfy the needs of the extension personnel and farmers in information delivery system as reported by extension personnel.

Too many administrative formalities for publishing articles in research and normal journals (35.54 %) is another constraint felt by extension personnel because of formal process for memberships, subscription charges and paying modes for publishing articles in journals and magazines.

Lack of adequate chances to participate in farm broadcast and farm telecast programs (33.88 %) was also felt by extension personnel especially in the cadres AOs/HOs. The reason might be that they would have felt that very few radio and television channels are available to broadcast agriculture related information.

The other constraints were large clients, difficulty in organizing field days and in organizing demonstrations (45.45, 41.32 and 39.67 per cent of respondents respectively). The reason might be due to inadequate staff strength for too large clients made difficult to disseminate the information, organizing field days and demonstrations. Hence, extension personnel are suggested for the posting of adequate field staff at block level and grass root level officials especially in the postings of Deputy Agricultural Officers.

This finding was similar to that of Oladale (2010) who also reported that majority of the extension personnel face constraints of inadequate funds.

Suggestions given by extension personnel

The focused group discussion with extension personnel revealed the following suggestions.

- Resources can be made available for the strengthening of extension information management
- Provision of free access to the books and journals in Tamil Nadu Agricultural University library for all extension personnel.
- Free subscriptions of major journals and magazines (Indian coconut journal, Uzhavarin Valarum velanmai, Pasumai vikatan).
- Posting of required officials in the block office along with development infrastructural facilities for effective information management patterns in SDA.
- Video conferences can be held frequently among extension personnel which would help in more interaction about latest information.

Summary and Conclusion

CHAPTER V

SUMMARY AND CONCLUSION

Information management in agricultural extension continues to be in transition worldwide. Governments and International agencies are advancing structural, financial and managerial reforms to improve information management patterns in extension. The role of government is much critical for the empowerment in information management patterns among the agricultural extension officers.

Tamil Nadu Government recently restructured the State Department of Agriculture in order to give importance to the information management at all levels especially at block level. This aims at render more involvement from the extension personnel from different cadres. The necessary modification has been carried out for effective functioning of information management at different level. As more focus is given on the information management, there should be change in TOT efforts of officials as per the requirements.

The future capacity building needs of extension personnel are to be identified for quality service and ensure strong links. It is necessary and mandatory that the public extension system continues to play a crucial role in technology dissemination. To address the needs of the farmers as well as research scientists, extension personnel have to be empowered more on information management. One of the major areas for development of management skills for extension personnel would be on information management. This focuses on timely dissemination through appropriate sources, channels and activities.

Based on the transformation scenario at State Department of Agriculture, it was felt that it would be more appropriate to undertake a study to assess the existing information management patterns of extension personnel and their future capacity building needs in the light on emerging agricultural development in different cadres, Thus, the results of the study may activate the process of necessary modifications in the information management patterns of extension personnel to face the challenges of TOT.

Keeping these in view, the present study was undertaken with the following specific objectives.

1. To study the profile of extension personnel
2. To measure the attitude of extension personnel towards the Information and Communication Technology (ICT) tools
3. To assess the information management patterns of extension personnel using an index
4. To find out the association and contribution of profile with attitude and information management patterns of extension personnel
5. To elucidate the capacity building needs of extension personnel
6. To identify the existing constraints and suggestions and to propose a futuristic model to empower the extension personnel on information management strategies

5.1. Methodology

Coimbatore, Tirupur and Erode districts of Tamil Nadu were purposively selected for the study because the ATMA scheme has been introduced in the first phase in these three districts during the year 2005-2006 with initiation and establishment of more new ICT initiatives and efforts. All the blocks in Coimbatore, Tirupur and Erode districts were selected. Totally 154 field level extension personnel were available in the three districts and mailed questionnaires were sent. Out of 154, 121 extension personnel were responded. Thus, the final sample size comprised 121 extension personnel.

Using equal appearing interval method, an attitude scale was constructed to measure the attitude of extension officers towards ICT tool. Indexes were formulated / developed separately for information acquisition, information processing (Information evaluation + information treatment + information storage + information transformation techniques) and information dissemination. The data were collected using a well structured and pre-tested mailed questionnaire for respondents.

The data were analyzed by using appropriate statistical tools and the salient findings of the study are given here under.

5.2. Summary

5.2.1. Profile of the extension personnel

- Half section (49.58 %) of the extension personnel were in old aged category followed by 31.40 per cent in young age and 19.02 per cent in middle age categories. Among the three cadres, cent per cent (100 %) of the DDAs/DDHs were found to be old aged.
- More than half of the extension personnel (55.38 %) were B.Sc (Agri/Horti) degree holders followed by M.Sc (Agri/Horti) degree holders (38.01 %). Only less percentage of the respondents (2.48 %) had B.Sc (Agri/Horti) degrees with additional courses followed by 1.65 per cent of the respondents with Ph.D degree.
- More than two-third (43.80 %) of the extension personnel had work experience of less than 14 years followed by 41.32 per cent of the extension personnel who were with work experience of more than 20 years. All the sample respondents of the DDAs/DDHs had more than 20 years of work experience.
- More than two-third (69.43 %) of the extension personnel perceived that the organizational climate was more conducive and rest (30.57 %) considered as moderately conducive organizational climate prevailed in the department.
- Three-fourth of the respondents were found in getting assistance from others and the rest (25.26 %) belonged to 'self doing' category with respect to managerial ability.
- Majority of the respondents (66.90 %) had high level of value orientation followed by 33.10 per cent of the extension personnel who were found in medium level category. None of the respondents were found in low level of value orientation category.
- With respect to the possession of communication gadgets, little more than two-fifth (51.24%) of the respondents were seen in medium level category followed by high and low levels (29.75 % and 19.01 % respectively).

- Most (82.64 %) of the extension personnel perceived high level workload followed by 17.36 per cent who perceived in moderate level workload. Among three cadres, most of the ADAs/ADHs (90.90 %) had high workload perception compared to other cadres.
- More than two-third (68.60%) of the extension personnel reported to have high level of technical knowledge followed by 30.57 per cent observed with moderate level technical knowledge.
- Majority (58.67 %) of the respondents had moderate level of achievement motivation. High and low levels of achievement motivation were observed among 32.23 and 9.10 per cent of extension personnel.
- High level of job involvement was observed among 50.41 per cent of the extension personnel. This is followed by moderate and less job involvement categories with 40.49 and 9.10 per cent of extension personnel respectively.
- Nearly two-third (60.33 %) of the extension personnel were found in medium level of job satisfaction category followed by 39.67 per cent of extension personnel with high level of job satisfaction category.
- More than half (52.06%) of the respondents had moderate level of self confidence and the rest (47.94 %) had high level.
- Majority (67.77 %) of the extension personnel attended more than two trainings followed by 26.46 per cent of the extension personnel who attended less than two trainings.
- More than half (50.41%) of the respondents in total sample had considerable level of media talks and publications. This is followed by 40.49 and 9.10 per cent of the extension personnel in moderate and less levels of publications.

5.2. Attitude of extension personnel towards Information and Communication Technology (ICT) tools

- Majority (45.45 %) of the extension personnel were found to possess moderately favourable attitude towards Information and Communication Technology (ICT) tools followed by 30.58 per cent with less favourable attitude. The rest (23.97 %) had more favourable attitude towards ICT tools.
- The Agricultural / Horticultural officers possessed more favourable attitude towards ICT tools compared to other cadres (25.00 %).

5.3. Overall Information Management Patterns

- Nearly half section of the extension personnel (47.94 %) were in medium level of overall information management patterns and followed by high (34.71 %) level.
- Less than two-fifth (17.35 %) of the extension personnel were seen in low level of overall information management patterns category.
- Significant differences were observed on overall information management patterns among the three cadres.

5.3.1. Information acquisition patterns

- In Personal- cosmopolite channels, self observation, scientific workers conference, monthly zonal workshop and professional meetings acted as major source of information management with more mean scores 9.40, 9.30 and 9.29 respectively.
- Among personal-localite channels, fellow workers (9.19) and innovative farmers (8.67) were the major source of information acquisition.
- With respect to impersonal-cosmopolite channels, radio (9.11) and television (8.33) were regularly utilized by extension personnel for information acquisition.
- Regarding printed materials, Newspapers (9.64) and leaflets (9.64) were found to be more utilized by extension personnel for information acquisition.
- With respect to farm magazines, Pasumai Vikatan and Uzhavarin Valarum Velanmai found to be high with more mean scores 11.03 and 10.77 respectively.

- With regard to farm journals, most of the extension personnel preferred agricultural today (7.82) and Indian coconut journal (5.49) for getting information.
- Success stories (3.05) and popular articles (2.83) were found to be have acted as important sources for information acquisition for extension personnel.
- In case of agricultural websites and portals, AGRISNET (11.36) and Tamil Nadu Agritech portal (11.08) were found to be the primary sources of information acquisition for all the three cadres of extension personnel.
- Significant differences among the extension personnel in terms of information acquisition patterns were observed.

5.3.2. Information processing patterns

5.3.2.1. Information evaluation patterns

- Considering the advantages of messages (10.63), considering the degree of complexity (10.58) and comparing the information (9.98) were the information evaluation methods used by the respondents.
- Significant differences exist among three cadres in terms of information evaluation methods.

5.3.2.2. Information treatment patterns

- Preparing messages with short words had maximum mean score of 10.13 followed by preparing with familiar words (9.89) and preparing with simple language (9.24). These were the prime information treatment patterns followed by extension personnel.
- Among three cadres, ADAs/ADHs secured more scores compared to other cadres.

5.3.2.2. Information storage patterns

- Storing through e-mail (10.10), taking hints in notes (9.98) and storing in pen drive (9.77) were most used method of storage among the extension personnel.

5.3.2.2. Information transformation patterns

- Preparing folders, leaflets, transferring the idea into popular articles, preparing documents into MS Word and preparing lecture notes secured more mean scores 9.52, 9.30, 9.21, 9.10 and 8.88 respectively were the major information transformation methods.
- The total mean scores of different information transformation methods used by ADAs/ADHs were found to be little higher than that of AOs/HOs and DDAs/DDHs.

5.3.3. Information dissemination patterns

- At individual level, e-mail (3.49) and circular letters (3.15) were the commonly used patterns among extension personnel.
- Result demonstration (3.20), group meetings (3.12), method demonstration (2.96) and tours (2.81), were more used by extension personnel in group contact methods..
- Information posters (3.13), information leaflets (2.97), newspapers (2.50) and use of television (2.50) were the major patterns in mass contact methods.

5.3.4. Information management index

- The overall components wise indexes indicated were information acquisition (0.59), information evaluation (0.74), information treatment (0.74), information storage (0.66), information transformation technique (0.68), information processing (0.70) and information dissemination (0.65).

5.3.5. Association and contribution of selected profile variables with attitude of extension personnel towards ICT tools

- Work experience, organizational climate, trainings undergone and publications were observed to have positive and significant contribution at one per cent level of probability level.
- Managerial ability, value orientation, job involvement and technical knowledge had to positive and significant contribution at five per cent level of probability level.

- The R^2 value was 0.652 which revealed that 65.20 per cent variation in the attitude of extension personnel towards ICT tools was brought out among by the variables

5.3.6. Association and contribution of selected profile variables with information management patterns

- The variables educational status, value orientation, workload perception, technical knowledge, job involvement, work experience, organizational climate, possession on communication gadgets, trainings undergone and publications were found to have exhibited positive significant contribution at one per cent level of probability level.
- Job satisfaction and self confidence exhibited significant contribution at five probability level.
- The R^2 value was 0.724 which revealed that 72.40 per cent variation in the information management patterns was brought out by the variables selected.

5.4. Future capacity building needs of extension personnel

Capacity building needs in subject matter area

- More exposure in MS word (7.51), text document (7.30), word process (7.24) and MS power point (7.22) were the major subject matter areas preferred.

Venue of training

- Tamil Nadu Agricultural University main campus, Coimbatore (2.74), Krishi Vigyan Kendra in districts (2.37) and Office of Joint Director of Agriculture in concerned districts (2.21) were most preferred by extension personnel as the best venues for training.

Duration of training

- Majority of extension personnel preferred three to five days training (47.11 %).

Training methods

- Lecture + AV aids (7.09), group discussion (6.48), exhibitions (6.28), field trips (6.26) and brainstorming (6.22) were the major preferred capacity building methods.

Preference of trainers

- Most of the extension personnel preferred Tamil Nadu Agricultural University main campus scientists (2.79), subject matter specialists from KVKs in the districts (2.24) and experts from other state institutes (2.21) as the trainer.

5.5. Constraints encountered by extension personnel in Information Management Patterns

5.5.1. Constraints in information acquisition patterns

- Non-availability of latest scientific or popular journals in the office library (65.29), lack of adequate chance for attending trainings, seminars and workshops (57.02 %) and limited guidance from higher officials (44.63 %), were the major constraints.

5.5.2. Constraints in information-processing patterns

- More time spent on miscellaneous work (73.55 %), inadequate time (71.07 %), lack of updating information (52.07 %) and lack of relevant information (41.32 %) had emerged as major constraints.

5.5.3. Constraints in information dissemination patterns

- Lack of adequate funds (76.86 %), lack of conveyance facilities or mobile audio visual units (69.42 %), too many administrative formalities for publishing articles in journals (35.54 %) and lack of chances to participate in more farm broadcast and farm telecast programs (33.88 %) were expressed as the constraints in information dissemination.

5.6. Implications of the study

1. With respect to educational status, nearly two-fifth of extension personnel were seen with post-graduate and few with doctoral qualifications. This distribution ensures much scope for further empowering the extension workers on information management techniques along with technology management. The post-graduates qualification would definitely be an added merit on the part of extension personnel as it would facilitate the learning in their professional career especially on information management.

2. None of the extension personnel reported the existence of less conducive organizational climate. This is an encouraging determinant and act as a positive platform for further motivating extension personnel to engage and utilize more information management techniques in their technology transfer efforts and interventions.
3. With regard to the managerial ability, more than three-fourth of extension personnel were found to utilize the assistance from others in their activities. There exists much scope for team work and team spirit among the extension personnel. This interface may well be utilized in execution of transfer of technology interventions using appropriate information management techniques.
4. Most of the extension personnel reported to have possessed essential communication gadgets like mobile and laptops for both official and personal uses. Interlinking both the usages on a common arena will be an added advantage to the extension personnel for use in regular field extension work.
5. A quite interesting finding was more workload perception was observed among all the three cadres. Adequate efforts are to be taken to sensitizing on the perception of workload perception to minimum level. This could be possible by policy decisions on diverting extension personnel more on technical related work as existed in the T & V system earlier.
6. A considerable and significant section of extension personnel were seen with low level of job involvement. This should be taken into account in organizing management related exposure programmes. The extension personnel are to further enlightened regarding more involvement in their task assigned in information dissemination.
7. Nearly one-third of extension personnel were found to have a less favourable attitude towards ICT tools. This is a serious concern on the part of State Department of Agriculture to organize adequate sensitivity training programmes to change the attitude of extension personnel towards ICT tools. As attitude towards ICT tools determines the extent of involvement and all other related activities, concrete steps are to be taken to transform the attitude among extension personnel towards ICT tools.

8. With respect to information acquisition, scientific workers conference and monthly zonal workshops emerged as the prime personal-cosmopolite sources. These two sources are really based on strong technical platforms. But almost in all the scientific workers conferences and monthly zonal workshops, most of the discussions are usually centered on technical aspects in agriculture, horticulture, agricultural marketing and sericulture. The flavor of information management is very much limited in these two sources. Therefore, it is implied that session on information management may have to be included more in scientific workers conference / monthly zonal workshops in all the districts. So that, it will be a strong support to the extension personnel to face the farmers through appropriate information management patterns.
9. With regard to personal-localite sources / channel / activity, fellow workers and progressive farmers were found to have acted as major source of information acquisition. Involving more number of progressive farmers in organizing TOT efforts would facilitate the extension personnel in successful conduct of the programmes. The progressive farmers would act as a para extension personnel in the locality.
10. The All India Radio and Doordharshan have emerged as major sources in impersonal cosmopolite channel/ sources. Therefore, the existing timings may be increased and regularity of broadcasting and telecasting may also be revised so that more coverage of agricultural information may be made possible. More exclusive programmes for extension personnel may be included in the program schedule for their participation in technology dissemination.
11. Less use of online library was found among extension personnel and especially the AOs/HOs were in better position to look into online journals. This might be due to their young aged nature and more aptitude towards online information sources. Extension personnel are to be motivated to make use of online sources for information acquisition. For that, more information are to be uploaded through online sources along with existing agri portal.

12. TNAU popular tamil magazine ‘Uzhavarin Valarum Velanmai’ and a private publication ‘Pasumai Vikatan’ were the major sources for extension personnel with regard to farm magazines. Therefore, these two sources may well be explored and attempt may be made to have public-private partnership in farm publications for the benefit of extension personnel. Further, it is implied that extension personnel are to be provided with free subscription issues.
13. With respect to other modes, success stories attracted more extension personnel followed by popular articles and feature articles. More information may be published / broadcasted / telecasted more on success stories modes to motivate the extension personnel to be more proficient in TOT efforts.
14. The TNAU Agritech portal website emerged as one of the major source of information for most of the extension personnel. It comprises more than three lakh pages. This implies that uploading agri portal regularly would definitely help the extension personnel to use the technology components in TOT efforts.
15. Advantages and complexities of messages were the major determinants of information evaluation patterns among extension personnel. Information with relative advantage over the existing varieties and hybrids, management technologies and farm machineries and implements would definitely attract the extension personnel for further dissemination. Therefore, technology generators should take care of these evaluation indicators of information.
16. Short words, familiar words and simple language were the major information treatment methods followed by extension personnel. Strengthening capacities on techniques of editing and organizing information would help the extension personnel.
17. The information storage methods were found to be appropriate and quite logical too among the extension personnel. However, more efforts and encouragements may be given to them exposure on easy access storage methods for quick retrieval of information including portable storage services.

18. Different information dissemination methods in terms of individual, group and mass contacts have been observed among the extension personnel. Therefore, it is suggested that every information component of a technology should include various methods or media mix for dissemination.
19. All the extension personnel differed significantly within their own cadres and between different cadres. This implies separate exposure mechanisms are to be developed for each cadre in sensitizing on Information Management Patterns.
20. The crucial variables in contributing attitude towards ICT tools and Information Management Patterns have to be considered while designing appropriate interventions on Information Management patterns for extension personnel.
21. The future capacity building programmes should include more information areas on recent and innovative MS packages especially word, excel and text documents, to be organized in especially TNAU main campus with more of three- five days programmes. More sessions are to be handled by the TNAU scientists through lecture with AV aids.
22. The constraints as encountered by extension personnel in information acquisition, information processing and information dissemination may have to be considered by the State Department of Agriculture and Horticulture to overcome the same for further empowering the extension personnel on Information Management Patterns.
23. The strategic model proposed in this study would transform and empower the extension personnel in to future “INFORMATION MANAGERS” for the benefit of farming community.

5.7. Suggestions for future research

1. An action research may be carried out to find out specific Management Information Systems in TOT and its impact.
2. A study on Information Management Patterns among women extension workers may be taken up.
3. An exclusive diagnostic study may be taken up to compare the effectiveness of various information treatment methods.

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*- Originals were not seen

APPENDIX - I

Tamil Nadu Agricultural University, Coimbatore – 641 003.

Dr.V.Ravichandran, Ph.D.

Professor (Agrl. Extension)

Department of Agricultural Extension and Rural Sociology,

Tamil Nadu Agricultural University, Coimbatore – 3.

Sir / Madam,

Mr. K. Anand, Ph.D scholar of Agricultural Extension and Rural Sociology department is undertaking a study entitled, “**Information Management Patterns of Extension Personnel – An Analysis**” as part of fulfillment of his Ph.D. Programme under my guidance. One of the objectives of his study is to measure the attitude of extension personnel towards the Information and Communication Technology (ICT) tools.

By examining similar studies and discussion with extension scientists, the universe of statements pertaining to the attitude of extension personnel towards the information and communication technology tools has been prepared and presented in Annexure I and the independent variables in Annexure II. Considering your high academic qualifications and vast experience, we are pleased to seek your valuable judgment on the relevancy of these components.

Kindly record your valuable judgment by putting (√) mark in the appropriate column. If you feel any more important variables, kindly add the same with your judgment.

The schedule duly filled may be mailed back at your earliest convenience in the enclosed self – addressed stamped envelope.

With kind regards,

Yours Sincerely,

Encl:

1. Schedules – Annexure I & II
2. Self addressed, stamped envelope

(V.Ravichandran)

S.No.	Statement	MUF	UF	N	F	MF
8	Information and communication technology tools helps in overall development of the farmers knowledge					
9	Information and communication technology is one of the means to share the among farmers knowledge					
10	Engagement with ICT tools are not essential for technology transfer					
11	Use of ICT tools promotes commercial agriculture among farmers					
12	Specialised skills are not required to employ the ICT tools					
13	Technologies conveyed through ICT tools can reach maximum number of people at minimum time period					
14	I do not trust my colleagues in the context of sharing reliable information through ICT tools					
15	ICT tools saves the time of extension personnel					
16	Information sharing through ICT tools will be more efficient among extension personnel					
17	Interactive communication is not possible through ICT tools					
18	ICT tools enabled to popularize more outreach activities					
19	ICT tools are the most powerful medium in our society					
20	ICT tools doesn't provide timely farm information					
21	Latest information is available up-to-date only in ICT tools					
22	ICT tools helps the readers to understand the message better than in conventional tools					
23	One can become progressive, if he/she access information through ICT tools					
24	Transfer of technology is faster in ICT tools than conventional tools					
25	It is difficult to read the online contents in ICT tools					

S.No.	Statement	MUF	UF	N	F	MF
26	ICT tools always provide one way communication					
27	ICT tools are not the pleasant way to spend the leisure time					
28	ICT tools induce the more information acquisition among the extension personnel					
29	ICT tools facilitate information sharing among the extension personnel					
30	Information provided through ICT tools gratify the farmers rather than traditional methods					
31	Information processing becomes more complex through ICT tools					
32	When I face difficult to access ICT tools, I'm sure I can cope with them					
33	Dissemination of information to the farmers through ICT tools is much clear than traditional methods					
34	Documentation of technologies can not be possible through ICT tools					
35	More amount of information can be stored through ICT tools					
36	Extension personnel need not rely on the use of ITC tools					
37	ICT tools doesn't integrate various sectors thereby achieving self sufficiency of extension personnel needs					
38	ICT tools alone would solve the problems of farmers					
39	ICT tools helps in entrepreneurship among the farmers					
40	Gender equity is encouraged through ICT tools					
41	ICT tools helps in overall development of the rural area					
42	Using ICT tools are not a risk minimizing strategy to disseminate the information					
43	ICT tools are not a powerful tool for socio-economic empowerment of the farmers					

S.No.	Statement	MUF	UF	N	F	MF
44	ICT tools does not help to resolve the conflicts among the extension personnel					
45	Farmers are not to be educated for use of ICT tools					
46	ICT tools are helpful for quick popularization of technologies					
47	ICT tools are emerging as a very reliable and efficient mode of transfer of technology					
48	The ICT tools have nothing new to offer.					
49	ICT tools will not be improved the knowledge of the Extension personnel					
50	Memory of information is not possible through ICT tools					
51	ICT tools increases better contact between extension officers and farmers					
52	ICT tools are effective medium of communication to impart training to farmers					
53	On reality, no individual extension officer is interested in transfer of technology through ICT tools among farmers					
54	ICT tools increases social status of extension personnel					
55	ICT tools act as one of the indicators for social change					
56	Expansion of business network among farmers is not possible through ICT tools					
57	ICT tools helps in creating awareness on government welfare programs					
58	ICT tools decreases communication skills					
59	ICT tools can not solve many agricultural problems of extension personnel					
60	ICT tools envisages significant improvement in the economic conditions of the extension personnel					
61	ICT tools provide possible solutions to the present agricultural situation					

S.No.	Statement	MUF	UF	N	F	MF
62	ICT tools cannot deliver personalized information					
63	ICT tools are a distant dream for resource poor farmers					
64	Only resourceful farmers can get the benefit of the ICTs through ICT tools					
65	ICT tools based extension services avoid the personal extension contact					
66	ICT tools based extension services are alternative to the present extension system					
67	All kinds of information exchange are possible only through ICT tools					
68	I enjoy working with ICT facilities					
69	Using ICT tools requires mental effort					
70	ICT tools doesn't provide direct access to information					
71	ICT tools are changing too fast to keep current					
72	Interacting with my colleagues through ICT tools gives pleasant					
73	Extra time and effort needed after integrating ICT tools in technology transfer					
74	Interacting with farmers through ICT tools gives pleasant					
75	ICT tools can cover more subject matter in technology transfer					
76	ICT tools can minimize time and distance barriers					
77	ICT tools are not always reliable					
78	Effective use of ICT tools in the work place is not essential					
79	ICT tools help in changing the attitude of farmers towards farm technologies					

Information Management Pattern among Extension Personnel – An Analysis

Dependent variables:

1. Attitude towards Information and Communication Technology (ICT) tools:

Degree of positive or negative affect associated with the Information and Communication Technology (ICT) tools in Transfer of Technology among extension personnel

2. Information management pattern of extension personnel:

The extent of degree to which an individual extension worker engages in information acquisition, information processing and information dissemination of farm technologies

S.No.	Independent variable	Most Relevant	Relevant	Not relevant
A.	Socio personal variables			
1	Age The number of completed years of the respondent at the time of enquiry and the chronological age was taken as a measure			
2	Educational status The extent of formal education an extension worker possessed. Generally the minimum qualification of AOs, ADOs, ADAs were a pass in B.Sc (Agri)			
3	Experience in job The number of years of service of the respondent in the concerned department. The number was rounded off the nearest year.			
4	Place of work The rural, urban and Semi urban			
5	Personal responsibility The quality or state of being accountable; especially: an obligation or willingness to accept responsibility or to account for one's actions.			

S.No.	Independent variable	Most Relevant	Relevant	Not relevant
6	<p>Possession of Communication assets Possession of communication assets by the respondents in the office and in home.</p>			
7	<p>Perceived health status Perceived health is an indicator of overall health status.</p>			
8	<p>Attitude towards job Degree of positive or negative affect associated with their job</p>			
B	Socio Psychological variables			
1	<p>Integration The bringing of people of different groups into unrestricted and equal association in an organization</p>			
2	<p>Value orientation The tendency of an individual to be in contact with one's cosmopolite and localite</p>			
3	<p>Cooperation Situation in which people work together to do assigning job</p>			
4	<p>Decision making behavior It is the degree to which an individual justifies her/his selection as most efficient means from among the available alternatives on the basis of scientific criteria for achieving the maximum profit.</p>			
5	<p>Goal orientation The degree to which a person or organization focuses on tasks and the end results of those tasks</p>			
6	<p>Managerial ability The capabilities of an extension personal to maintain and manage the information for getting higher accountability</p>			

S.No.	Independent variable	Most Relevant	Relevant	Not relevant
7	Result orientation The degree to which individuals were oriented towards results with courage to face the challenges in job			
8	Job involvement The psychological and emotional extent, to which extension personal involve in their work			
9	Job satisfaction The degree to which the extension officials derive satisfaction through their job			
10	Job perception The state of being or process of becoming aware of job			
11	Job performance Individual output in terms of quantity & quality expected from each employee in a particular job			
12	Level of aspiration Emotional and inspirational, panting with desire of oneself			
13	Conservation and liberalism A political orientation that favors social progress by reform and by changing laws rather than by revolution			
14	Perceived organizational climate The state of being or process of becoming aware of the process of quantifying culture of an organization			
15	Time management Act of taking conscious control over the amount of time spent on specific activities			
16	Stress management			

S.No.	Independent variable	Most Relevant	Relevant	Not relevant
	Effective management of physical and physiological effects on a person, and can be a mental, physical, or emotional strain			
17	Achievement motivation It is an affect in connection with evaluated performance in which competition with a standard of excellence was paramount			
18	Self efficacy The belief in one's own ability to complete tasks and reach goals			
19	Self confidence Feeling of an individual about the ability, initiative and zeal to achieve his goal or aim			
20	Self reliance The fact of being able to rely on oneself			
21	Self esteem The value and worth that one gives oneself			
22	Perception on technical knowledge The state of being or process of becoming aware of technical knowledge			
23	Perception on work load The state of being or process of becoming aware of workload			
24	Organizational expectations Extent to which the needs of employees met by organization			
25	Work motivation Any condition that might energize and direct the employee to the work goal through a specific path			
26	Attitude towards e- media Degree of positive or negative affect associated towards electronic media			
27	Attitude towards publications Degree of positive or negative affect associated with publications towards			

S.No.	Independent variable	Most Relevant	Relevant	Not relevant
	information			
28	Appreciation of work Recognition of the quality, value, significance, or magnitude of people and things			
29	Faith in team work The confidence of self, working as a team			
30	Planning Process of identifying an organization's immediate and long-term objectives, and formulating and monitoring specific strategies to achieve them			
31	Organizing Involving the people who work together to do something in a way that has been carefully planned			
32	Supervising The in charge of working and make sure that done correctly and completely			
33	Feedback behavior Advice, Criticism or information about how good or usefully that work done			
34	Monitoring behavior The in charge of checking and making sure that work done correctly and completely			
35	Suggested variables			
1				
2.				
3.				

Signature

Name & Address

APPENDIX – II

Mean and CV values obtained for independent variables

S.No.	Independent variables	Mean	CV
1.	Age	2.85	0.187
2.	Educational status	2.62	0.180
3.	Experience in job	2.66	0.180
4.	Place of work	2.08	0.113
5.	Personal responsibility	2.83	0.157
6.	Possession of Communication assets	2.68	0.198
7.	Perceived health status	2.12	0.105
8.	Attitude towards job	2.02	0.110
9.	Integration	2.18	0.120
10.	Value orientation	2.84	0.181
11.	Cooperation	2.61	0.224
12.	Decision making behavior	2.45	0.219
13.	Goal orientation	2.1	0.157
14.	Managerial ability	2.71	0.191
15.	Result orientation	2.02	0.102
16.	Job involvement	2.62	0.220
16.	Job satisfaction	2.83	0.328
18.	Job perception	2.29	0.297
19.	Job performance	2.68	0.298
20.	Level of aspiration	2.93	0.083
21.	Conservation and liberalism	2.74	0.206
22.	Perceived organizational climate	2.68	0.198

S.No.	Independent variables	Mean	CV
23.	Time management	2.07	0.116
24.	Stress management	2.10	0.120
25.	Achievement motivation	2.52	0.219
26.	Self efficacy	2.08	0.142
27.	Self confidence	2.95	0.219
28.	Self reliance	2.74	0.206
29.	Self esteem	2.65	0.244
30.	Perception on technical knowledge	2.58	0.237
31.	Perception on work load	2.78	0.221
32.	Organizational expectations	2.29	0.276
33.	Work motivation	2.58	0.236
34.	Attitude towards e- media	2.65	0.204
35.	Attitude towards publications	2.52	0.222
36.	Appreciation of work	2.33	0.184
37.	Faith in team work	2.64	0.251
38.	Planning	2.48	0.305
39.	Organizing	2.58	0.256
40.	Supervising	2.64	0.205
41.	Feedback behavior	2.61	0.234
42.	Monitoring behavior	2.87	0.116

Overall mean = 2.44

Overall CV = 0.236

APPENDIX – III

Computation of equal appearing intervals

S.No.	Statement No.	Scale value	Q value	Difference between successive scale values	Cumulative value of the differences	Equal appearing class intervals	Compartments
1.	1	4.816	0.625				I
2.	19	4.268	1.550	0.045	0.045	0.449	
3.	30	4.266	2.141	0.002	0.047		
4.	21	4.248	1.312	0.018	0.065		
5.	56	4.247	2.213	0.000	0.066		
6.	2	4.246	1.334	0.001	0.067		
7.	41	4.173	1.195	0.073	0.140		
8.	35	4.134	1.600	0.039	0.179		II
9.	58	4.133	1.642	0.001	0.180		
10.	48	4.130	1.436	0.003	0.183		
11.	16	4.126	1.265	0.004	0.187		
12.	17	4.099	1.166	0.026	0.214		
13.	34	4.099	1.376	0.000	0.214		
14.	55	4.076	1.200	0.023	0.237		
15.	29	4.055	1.011	0.021	0.258		
16.	24	3.989	1.500	0.066	0.324		
17.	11	3.968	1.185	0.021	0.345		
18.	18	3.951	1.222	0.017	0.362		
19.	8	3.950	1.141	0.001	0.363		
20.	20	3.832	1.972	0.118	0.481		
21.	43	3.768	1.045	0.064	0.545		
22.	54	3.743	0.140	0.025	0.570		
23.	6	3.666	2.158	0.077	0.647		
24.	59	3.516	1.909	0.151	0.797		
25.	28	2.822	1.670	0.168	0.965	0.898	
26.	5	3.345	3.015	0.003	0.968		
27.	37	3.000	2.262	0.121	1.089		
28.	50	3.154	2.499	0.071	1.159		
29.	57	3.098	2.238	0.056	1.215		III
30.	45	3.090	2.833	0.008	1.223		
31.	32	3.013	0.570	0.077	1.300		
32.	52	2.218	1.414	0.012	1.313	1.347	

S.No.	Statement No.	Scale value	Q value	Difference between successive scale values	Cumulative value of the differences	Equal appearing class intervals	Compartments
33.	47	2.906	1.870	0.094	1.407		
34.	78	0.36	2.07	0.020	1.426		
35.	12	2.768	2.101	0.119	1.545		
36.	26	2.767	2.465	0.000	1.546		
37.	31	2.043	1.053	0.045	1.591		IV
38.	15	2.699	2.168	0.023	1.614		
39.	33	2.491	1.698	0.208	1.822	1.796	
40.	48	1.588	2.742	0.056	1.878		
41.	4	2.435	2.368	0.000	1.878		
42.	3	2.416	1.475	0.019	1.897		
43.	7	2.399	2.464	0.017	1.914		
44.	27	2.398	2.300	0.001	1.915		
45.	46	2.398	2.300	0.000	1.915		
46.	40	2.353	1.736	0.046	1.961		
47.	49	2.353	1.736	0.000	1.961		
48.	51	2.353	1.736	0.000	1.961		
49.	13	2.227	1.935	0.126	2.087		
50.	36	1.716	2.084	0.184	2.270	2.245	
51.	39	1.931	2.591	0.112	2.382		
52.	38	1.931	2.591	0.000	2.382		
53.	23	1.796	2.131	0.135	2.517		
54.	36	1.605	2.572	0.191	2.708		
55.	9	1.600	2.254	0.005	2.713		VI
56.	22	1.106	2.601	0.494	3.207		
57.	44	3.761	1.031	0.171	3.378		
58.	42	0.935	2.175	0.000	3.378		
59.	53	0.272	2.036	0.663	4.041		
60.	79	0.51	1.92	0.01	0.48		
61.	71	0.51	1.92	0.00	0.48		
62.	69	0.42	1.94	0.02	0.5	2.694	
63.	73	0.37	1.94	0.00	0.5		

S.No.	Statement No.	Scale value	Q value	Difference between successive scale values	Cumulative value of the differences	Equal appearing class intervals	Compartments
64	68	1.22	1.95	0.01	0.51		
65	70	1.23	1.97	0.02	0.53		VII
66	72	1.25	1.98	0.01	0.54		
67	74	0.41	1.99	0.01	0.55		
68	10	4.314	1.034	0.08	0.63		
69	75	0.72	2.09	0.02	0.65		
70	73	0.69	2.10	0.01	0.66		
71	63	0.58	2.11	0.01	0.67		
72	67	0.57	2.12	0.01	0.68	3.592	
73	64	0.68	2.13	0.01	0.69		
74	77	1.70	2.14	0.01	0.7		
75	76	1.67	2.17	0.03	0.73		
76	61	0.67	2.17	0.00	0.73		
77	65	1.45	2.17	0.00	0.73		
78	66	1.82	2.17	0.00	0.73		
79	62	0.62	2.18	0.01	0.74		

APPENDIX - IV

Selection of ADAs and ADHs

All the ADAs and ADHs of **Coimbatore district** were included for the study. Out of 12 ADA posts, five were vacant. Hence, the remaining seven ADAs and an ADA (Quality control) were selected. All the ADHs were selected and in addition to that an ADH (Planting materials) was also included. Seed Testing Officer (STO) (who is on par

with ADA) of the district was selected. The list of ADAs and ADHs block-wise is provided in the following table.

ADAs and ADHs of Coimbatore district

S.No	Name of the block	ADAs	ADHs
1	Anamalai	1	1
2	Annur	Post vacant	1
3	Karamadai	1	1
4	Kinathukadavu	Post vacant	1
5	Madhukkarai	1	1
6	Perianaickenpalayam	1	1
7	Pollachi North	Post vacant	1
8	Pollachi South	1	1
9	Sarkarsamakulam	1	1
10	Sultanpet	Post vacant	1
11	Sulur	Post vacant	1
12	Thondamuthur	1	1
13	JDA and JDH office	1 (Quality control)	1(Planting materials)
		8	13
	Total		21

All the ADAs and ADHs of **Tirupur district** were included for the study. Out of 13 ADA posts, four were vacant. Hence, the remaining nine ADAs and an ADA (Quality control) were selected. Out of 13 ADH posts, six were vacant. In addition to that an ADH (Planting materials) was also included. The list of ADAs and ADHs block-wise is provided in the following table.

ADAs and ADHs of Tirupur district

S.No	Name of the block	ADAs	ADHs
1	Avinashi	Post vacant	1
2	Gudimangalam	Post vacant	1
3	Madathukulam	Post vacant	1
4	Palladam	1	Post vacant
5	Pongalur	1	Post vacant
6	Tiruppur	1	1
7	Udumalpet	1	Post vacant
8	Dharapuram	1	Post vacant
9	Kangayam	1	1
10	Kundadam	1	Post vacant
11	Mulanur	Post vacant	1
12	Uthukuli	1	1
13	Vellakoil	1	Post vacant
14	JDA and JDH office	1 (Quality control)	1(Planting materials)
		10	9
	Total		19

All the ADAs and ADHs of **Erode district** were included for the study. Out of 14 ADA posts, six were vacant. Hence, the remaining nine ADAs and an ADA (Quality control) were selected. Out of 14 ADH posts, five were vacant. In addition to that an ADH (Planting materials) was also included. The list of ADAs and ADHs block-wise is provided in the following table.

ADAs and ADHs of Erode district

S.No	Name of the block	ADAs	ADHs
1	Ammapettai	1	Post vacant
2	Anthiyur	Post vacant	1

3	Bhavani	1	1
4	Bhavanishagar	Post vacant	1
5	Chennimalai	1	1
6	Erode	1	1
7	Gobi	1	Post vacant
8	Kodumudi	Post vacant	1
9	Modakurichi	1	Post vacant
10	Nambiyur	1	Post vacant
11	Perundurai	Post vacant	1
12	Sathy	1	Post vacant
13	Thalavadi	Post vacant	1
14	T.N. Palayam	Post vacant	1
15	JDA and JDH office	1 (Quality control)	1(Planting materials)
		10	12
	Total		22

Selection of AOs and HOs

All the AOs and HOs of **Coimbatore district** were included for the study. Out of 12 blocks only three blocks of HOs post were vacant. List of AOs and HOs is provided in Table.

AOs and HOs of Coimbatore district

S.No	Name of the block	AOs	HOs
1	Anamalai	1	1
2	Annur	1	-
3	Karamadai	1	1
4	Kinathukadavu	1	1
5	Madhukkarai	1	1
6	Perianaickenpalayam	1	1
7	Pollachi north	1	1
8	Pollachi south	1	1
9	Sarkarsamakulam	1	-
10	Sultanpet	1	1
11	Sulur	1	-
12	Thondamuthur	2	1
		13	9
	Total		22

All the AOs and HOs of **Tirupur district** were included for the study. Out of 13 blocks five blocks of HOs post were vacant and one block of AO was vacant. List of AOs and HOs is provided in following Table.

AOs and HOs of Tirupur district

S.No	Name of the block	AOs	HOs
1	Avinashi	1	1
2	Gudimangalam	1	-
3	Madathukulam	-	1
4	Palladam	1	-
5	Pongalur	1	1
6	Tiruppur	1	1
7	Udumalpet	1	1
8	Dharapuram	1	1
9	Kangayam	1	-

S.No	Name of the block	AOs	HOs
10	Kundadam	1	-
11	Mulanur	1	-
12	Uthukuli	1	1
13	Vellakoil	1	1
		12	8
	Total		20

All the AOs and HOs of **Erode district** were included for the study. Out of 14 blocks two blocks of HOs post were vacant. List of AOs and HOs is provided in following Table.

AOs and HOs of Erode district

S.No	Name of the block	AOs	HOs
1	Ammapettai	1	1
2	Anthiyur	1	1
3	Bhavani	1	1
4	Bhavanishagar	1	1
5	Chennimalai	1	1
6	Erode	1	1
7	Gobi	1	1
8	Kodumudi	1	1
9	Modakurichi	1	1
10	Nambiyur	1	1
11	Perundurai	1	-
12	Sathy	1	1
13	Thalavadi	1	-
14	T.N. Palayam	1	1
		14	12
	Total		26

Thus the total sample size of the study is 154 including DDAs, DDHs, ADAs, ADHs, AOs and HOs were selected as respondents of this study.

APPENDIX - VI
Information Management Patterns of Extension Personnel – An Analysis

Part – A

Block:

Respondent no:

1. Name and address :
- 1.a. phone no & mobile no :
- 1.b. e-mail :
2. Current designation & place :
3. Department : Agriculture / Horticulture / Seed Certification /
Marketing
4. Age : _____ years
5. Educational status :
- 5.a. Additional qualification :
6. Experience in job as on 31.12.13: _____ years
 - a. Experience as DDA / DDH : _____ years
 - b. Experience as ADA / ADH : _____ years
 - c. Experience as AO / HO : _____ years
7. Date of retirement : _____ year
8. **Organizational Climate**

Please indicate your degree of agreement / disagreement by putting a (√) mark in appropriate column for each of the statement.

S.No	Statements	Category of response		
		Agree	Agree to some extent	Disagree
1	There are many rules, procedures, policies and practices to which you have to conform rather than being also to do your work as you see fit			
2	You can make decisions and solve problems without checking with superiors at each step of work			

S.No	Statements	Category of response		
		Agree	Agree to some extent	Disagree
3	The organizations places on quality performance and outstanding production including the degree to which you feel that the organization is setting challenging and goals for itself and communicating these goal commitment to its members			
4	The organization recognize and reward for good work of members rather than being ignored, criticized or punished when something goes wrong			
5	The things are well organized and goals are clearly defined rather than being disorderly, confused or chaotic.			
6	Friendliness is the valued norm in the organization that you are trust one another and after support one another			
7	As needs for leadership arise, members feel free to take leadership roles and are rewarded for successful leadership.			

9. Managerial Ability

Please indicate your managerial ability about each statement by making (√) mark in appropriate columns.

S. No.	Managerial Activities	Self doing	Getting Assistance from others	Not involved
1.	Planning information			
2.	Organizing the information			
3.	Coordinating the various information			
4.	Supervising the information			
5.	Establishing market linkages			

10. Value orientation

Kindly state your degree of agreement or disagreement in the following statements by making (√) mark in appropriate columns.

S.No.	Statements	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1.	A person can learn many things from happening and experience of his jurisdictions					
2.	A person who has seen something worked in his work situation need not worry about taxing any additional information sources outside his work areas					
3.	One can satisfy all his requirements out of all total resources available to him					
4.	Many things a person might know are happening outside his jurisdiction and such happenings may be of great advantage to a person. He therefore ought to know them					
5.	At present when transport and other communication facilities are developing one should know more about things happening outside his jurisdiction					

11. Possession of communication gadgets:

Kindly mention the possession and purpose of the communication gadgets you own.

S.No	Particulars	Possession			
		In Personal		In Office	
		Yes	No	Available	Not available
1	Radio				
2	Television				
3	Mobile handset				
4	Desktop Computer				
5	Laptop				

S.No	Particulars	Possession			
		In Personal		In Office	
		Yes	No	Available	Not available
6	Compact Discs (CDs)				
7	Pen drive				
8	Video camera				
9	Printer				
10	Scanner				
11	Web camera				
12	Speakers				
13	UPS (Uninterrupted Power Supply)				
14	Voice recorder				
15	Digital camera				
16	Tablet				
17	Pinnacle studio				
18	Sound forge				
19	Flash player				
20	Maya				
21	LCD Projector				
22	Others (specify)				

12. Workload Perception

Please indicate your perception about each statement heavy - light on three – point continuum by making (√) mark in appropriate columns.

S.No.	Workload	Heavy	Optimum	Light
1.	Field work			
2.	Office and writing works			
3.	Distribution of subsidy			
4.	Conducting group meetings / demonstrations / Trainings			
5.	Conducting campaigns			
6.	Organizing exhibitions			
7.	Enhancing farmers participation in agricultural development programs			
8.	Farmers mela			
9.	State level farmer's meet			
10.	Attending review meetings			
11.	Receiving and accompanying visitors			
12.	Maintenance of records			
13.	Submission of reports			

13. Technical knowledge

Technical knowledge is the intellectual acumen one should possess in carrying out a given job. At this stage mention your opinion by making (√) mark in appropriate columns.

S.No	Statements	Category of response		
		Agree	Agree to some extent	Disagree
1	I keep my knowledge updated always to facilitate my work			
2	I teach all the techniques of subject matter to my subordinate or clientele			
3	I have adequate knowledge in understanding the subject matter to be taught to the subordinates /			

S.No	Statements	Category of response		
		Agree	Agree to some extent	Disagree
	clienteles			
4	I shall get the subject matter across others			
5	I have the capacity to reciprocate appropriately based on the retrieval			

14. Achievement motivation

Please indicate your degree of response by putting (√) mark in the appropriate column.

S.No	Statements	SA	A	UD	DA	SDA
1.	I do my work when my job assignments are fairly difficult.					
2.	I try very hard to improve on my past performance at work.					
3.	I take moderate risks and stick my neck out to get ahead at work.					
4.	I try to avoid my added responsibilities on my job.					
5.	I try to perform better than my group members.					

15. Job involvement

The following are some statements related to the job involvement. Please put a tick mark (✓) in any one column for each question that comes closest to reflecting your opinion about it.

S.No.	Statements	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1	I shall stay overtime to finish a work without any additional payment					
2	I will not postpone my work leading to stagnation					
3	I would feel guilty conscious, if I keep away myself from additional responsibilities					
4	I have personal involvement in my work					
5	I avoid taking extra duties and responsibilities in my work					

16. Job satisfaction

Please put a tick mark (✓) in any one column for each question that comes closest to reflecting your opinion about it.

S.No.	Statements	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1.	I feel I am being paid a fair salary for the work I do.					
2.	Many of our rules and procedures make doing a good job difficult.					
3.	Communications seem good within this organization.					
4.	I find I have to work harder at my job because of the incompetence of people I work with.					
5.	The benefit package we have is equitable for equivalent post elsewhere.					
6.	I have too much to do at work.					
7.	I feel a sense of pride in doing my job.					

17. Self-confidence

Kindly state your degree of agreement or disagreement in the following statements by making (✓) mark in appropriate columns.

S.No	Statement	SA	A	UD	DA	SDA
1.	I feel no obstacle can stop me from achieving my final goal					
2.	I am generally confident of my own ability					
3.	I am bothered by inferiority feelings					
4.	I do not have initiative					
5.	I usually work out things for myself rather than get someone share me					
6.	I get discouraged easily					
7.	Life is a strain for me is much of time					
8.	I find myself working about something (or other)					

18. Trainings undergone:

Have you under gone any training? (Yes /No), If yes, please give the details

S.No	Name of the training	Organizing institution / Agency	Place of the training attended	Duration (Days)	Subject matter covered
1	Computer trainings				
2					
3					
4					

19. Attitude of extension personnel towards the Information and Communication Technology (ICT) tools in Transfer of Technology

Kindly state your degree of agreement or disagreement in the following statements by making (√) mark in appropriate columns.

S.No.	Statement	SA	A	UD	DA	SDA
1.	ICT tools plays pivotal role in transfer of technologies among farmers					
2.	ICT tools are not essential for technology transfer					
3.	ICT tools does not help to resolve the conflicts among the extension personnel					
4.	ICT tools induce the more information acquisition among the extension personnel					
5.	ICT tools are effective medium of communication to impart training to farmers					
6.	Extension personnel need not rely on the use of ITC tools					
7.	ICT tools have nothing new to offer					

21. Media talks and publications

- Number of popular articles published :
- Number of radio talks given :
- Number of TV talks given :
- Number of messages given in Tamil dailies :
- Number of messages given in English dailies :

Part - B

Information Management Patterns

I. Information Acquisition Patterns

Please indicate your preferences of acquisition of various information sources by putting (√) mark in the appropriate column.

S.No	Sources/ Channels/ Activities	Frequency of usage			
		Regul arly	Occasion ally	Rarely	Never
A	Personal cosmopolite channels				
1.	Professional Meeting				
	a. Scientific workers conferences				
	b. Regional Research council meetings				
	c. Zonal advisory council meetings				
	d. Extension Education Council meetings				
	e. Monthly zonal workshop				
2	From Extension Personnel of other lined departments				
3	From State Agricultural University (SAU)				
	• Scientists in TNAU Head Quarters				
	• Scientists in Research Stations of the district				
	• Scientist in the District's KVK				
4	From the status report of District				
5	From self observation				
6.	From immediate supervisors				
7	From Farm machinery and implements center				
8	From Kisan Call Center				
9	From Corporate (Reliance, Nokia Life				

S.No	Sources/ Channels/ Activities	Frequency of usage			
		Regul arly	Occasion ally	Rarely	Never
	Tools)				
B	Personal – localite channels				
1	Representatives of private organizations				
	a. Local NGO functionaries				
	b. Input dealers				
	c. Commodity Interest Groups (CIG)				
	d. Farmers Interest Group (FIG)				
	e. Farmer Field School (FFS)				
2	Progressive farmers				
3	Fellow workers				
4	Front Line Demonstration of KVK's plots				
5	From Agri clinic / Plant Clinic				
6	Others if any				
C	Impersonal cosmopolite channel				
1	Listening farm programs through All India Radio				
2	Watching agricultural programs in Television				
3	Watching agricultural technologies on Video cassette				
4	Listening agricultural technologies on audio cassette				
5	Film show on Agricultural technologies				
6	Viewing hoarding				
7	Listening Agricultural technologies in Compact disc				

S.No	Sources/ Channels/ Activities	Frequency of usage			
		Regul arly	Occasion ally	Rarely	Never
8	Through Telephone				
9	Through Mobile Phone				
	<ul style="list-style-type: none"> • Mobile handset with GPRS • Mobile handset with GIS 				
10	Online library				
	<ul style="list-style-type: none"> • http://nanopolitan.blogspot.in/ • http://horadecubitus.wordpress.com • http://www.scq.ubc.ca/ 				
11	Printed materials				
a.	By reading Text Books				
b.	By reading Newspapers				
c.	By reading Leaflets				
d.	By reading Folders				
e.	By reading Farm magazines				
	a. Uzhavarin valarum Velanmai				
	b. Pasumai Vikatan				
	c. Naam Uzhavar				
	d. Naveena Velanmai				
	e. Uzhavar oosai				
	f. Indraya velanmai				
	g. Spice India				
h. Others if any, Please specify					
f.	By reading Journals				

S.No	Sources/ Channels/ Activities	Frequency of usage			
		Regul arly	Occasion ally	Rarely	Never
	a. Agriculture today				
	b. Agrobios				
	c. Indian Coconut Journal				
	d. Indian Coffee				
	e. Intensive Agriculture				
	f. LEISA				
	g. Rice India				
	h. Agricultural News				
	i. Crop care				
g.	By reading Popular articles				
h.	By reading Feature articles				
i.	By reading Success stories				
j.	Video conferences				
k.	Audio conferences				
l.	Expert system				
m.	By using Agricultural Websites and Portals				
	• www.agrisnet.com				
	• www.agritech.tnau.ac.in				
	• www.tn.gov.in				
	• www.dacnet.nic.in				
	• www.agricoop.nic				
	• www.agmarknet.com				
	• www.icar.org.in				
	• www.tnau.ac.in				

S.No	Sources/ Channels/ Activities	Frequency of usage			
		Regul arly	Occasion ally	Rarely	Never
	• www.caneinfo.nic.in				
	• www.velanmai.com				
	• www.indg.in				
	• www.india.gov.in				
	• www.sugarcane.res.in				
	• www.ikisan.com				
n.	Others, if any				

Please indicate the constraints regarding information acquisition Patterns faced by you by making (√) mark

1. Lack of adequate chance for attending trainings, seminars and workshops etc. ()
2. Non availability of latest scientific or popular journals. ()
3. Lack of adequate time to visit research stations ()
4. Restricted permissions to visit research stations of Tamil Nadu and other states. ()
5. Limited chances to meet university scientists. ()
6. Limited guidance from higher officials. ()
7. Lack of adequate time to read newspapers and journals. ()
8. Lack of adequate time to view agricultural programs in television. ()
9. Lack of adequate time to listen agricultural programs in radio. ()
10. Lack of adequate library facilities in the district. ()
11. Lack of skilled personnel to operate information kiosk ()
12. Lack of information gadgets ()
13. Lack of familiarity ()

14. Lack of infrastructure for telecommunication ()
15. Online queries and clarifications not replied promptly ()
16. High cost for establishment ()
17. Slow downloading, uploading of photos and files ()
18. Difficult to type the URL (Uniform Resource Locator) to access the webpage ()
19. In adequate feedback of problems from progressive farmers. ()
20. Lack of adequate specialized skills to access ICT tools ()
21. Any others, specify

II. Information processing Patterns

Please indicate your regularity to the following items and put (√) mark in the appropriate columns.

S.No	Sources	Frequency of usage			
		Regularly	Occasionally	Rarely	Never
A	Information Evaluation				
1	Considering the advantages of messages				
2	Considering the degree of complexity				
3	Considering the degree of compatibility				
4	Comparing the information with original source				
5	Accepting the information as it is without evaluation				
6	Discussion with outside state specialists				
7	Evaluation in the light of past experiences				
8	Evaluation on the basis of socio economic conditions of the				

S.No	Sources	Frequency of usage			
		Regularly	Occasionally	Rarely	Never
	locality				
9	Evaluation on the basis of agro climatic conditions of the locality				
10	Evaluating the technical feasibility of information				
11	Discussion with superiors on information				
12	Discussion with research scientists on information				
13	Evaluating the coverage and relevance of the information				
14	Evaluation based on the discussion with intended of audience				
15	Evaluation based on the purpose of the information				
16	Evaluation based on the authenticated information				
17	Others if any				
B	Information treatment				
1	Preparing messages with short words				
2	Preparing with concrete words				
3	Preparing with familiar words				
4	Preparing with simple language				
5	Preparing with simple sentence				
6	Expressing the message clearly				
7	Preparing with logical manner				
8	Preparing with much details				
9	Avoiding much statistics				
10	Others if any				

S.No	Sources	Frequency of usage			
		Regularly	Occasionally	Rarely	Never
C	Information storage				
1	Taking hints in notebook				
2	By preserving leaflets and handouts				
3	By preserving handouts				
4	By self memorizing				
5	Informing family members to take hints for memorizing				
6	By recording through audio cassette				
7	By recording in video cassettes				
8	By preserving information in Computer				
9	By preserving information in laptop				
10	By preserving information in external hard disc				
11	By storing through e – mail				
12	By storing through Blogs				
13	By storing through Web pages				
14	By storing in Pen drive				
16	By storing in Digital Video Disc (DVD)				
17	By storing in Compact Disc (CD)				
18	Others if any				

D. Information transformation technique

What methods do you employ in order to transform the information received so as to help the ultimate users? Put (√) mark against the items in appropriate columns.

S.No	Sources	Frequency of usage			
		Regularly	Occasionally	Rarely	Never
1	Transferring the idea into popular article				
2	Preparing folders				
3	Preparing leaflets				
4	Preparing for lecture note				
5	Preparing for radio talk				
6	Preparing for TV talk				
7	Preparing visuals images				
8	Preparing news for Newspapers				
9	Preparing documents in MS Word				
10	Preparing power points				
11	Through audio cassette with experience				
12	Through Interactive Multimedia Compact Disc (IMCD)				
13	Any others				

Please indicate your constraints regarding processing of information and put (√) mark in appropriate columns

1. Inadequate time ()
2. More time to spent on miscellaneous work ()
3. Lack of adequate skill in preparation of information materials ()
4. Difficulty in preparing AV aids ()

5. Not familiar with local people and local language ()
6. Lack of update information ()
7. Lack of relevant information ()
8. Inability to make or receive electronic payments ()
9. High cost for establishment ()
10. Inadequate funds for the processing and purchase of AV aids like camera,
VCR, TV, Voice recorder, Computer and projector ()
Any other (specify)

III. Information dissemination Patterns

A variety of information dissemination methods you may be using for technology transfer. Please indicate your response by making (√) mark in appropriate columns.

S.No	Methods / channels	Regularly	Occasionally	Rarely	Never
A	Individual contact method				
1.	Telephone call				
2.	Circular letter				
3.	Short Message Services (SMSs)				
4.	e – Mail				
5.	Others if any				
B	Group contact method				
1	Method demonstration				
2	Result demonstration				
3	Front line demonstration				
4	Lectures				
5	Farmers training				
6	Meetings				

S.No	Methods / channels	Regularly	Occasionally	Rarely	Never
7	Tours				
8	Field trips				
9	Power point presentation				
10	Audio programs <ul style="list-style-type: none"> • Radio program 				
	<ul style="list-style-type: none"> • Farm Community Radio 				
	<ul style="list-style-type: none"> • Audio conference 				
11	Video programs <ul style="list-style-type: none"> • Interactive Multimedia Compact Disc (IMCD) 				
	<ul style="list-style-type: none"> • Video Conferences 				
	<ul style="list-style-type: none"> • Web based Video programs 				
12	Through Farmers Interest Groups (FIG)				
13	Through Farmers Field Schools (FFS)				
14	Through Commodity Interest Groups (CIG)				
15	Others if any				
C	Mass contact methods				
1	Through Posters				
2	Through Charts				
3	Through Leaflets				
4	Through handouts				
5	Through Hoardings				

S.No	Methods / channels	Regularly	Occasionally	Rarely	Never
6	Through Wall paintings				
7	Through Radio messages				
8	Through Television				
9	Through News paper				
10	Writing to Farm magazines				
11	Writing to Farm journals				
12	Writing News stories				
13	Writing Popular articles				
14	Writing Feature articles				
15	Through organizing exhibitions				
16	Participating farmers day				
17	Organizing Kisan Melas <ul style="list-style-type: none"> • State level farmers mela at district level 				
	<ul style="list-style-type: none"> • Regional level farmers mela 				
21	Through Pre- season campaign				
22	Others if any				

Constraints in information dissemination

Please indicate the constraints you are facing while you are disseminating the information to the farmers.

1. Lack of conveyance facilities or mobile audio visual units ()
2. Inadequate funds ()
3. More time spent on miscellaneous works ()
4. Lack of training on the use of AV aids ()

5. Lack of chances to participate in farm broadcast and farm telecast programs ()
6. Too many administrative formalities for publishing articles in journals ()
7. Non availability of AV equipments ()
8. Large clients ()
9. Difficulty in organizing meetings ()
10. Difficulty in organizing campaigns ()
11. Difficulty in organizing exhibitions ()
12. Difficulty in organizing demonstrations ()
13. Difficulty in organizing field days ()
14. Difficulty in organizing seminars ()
15. Difficulty in printing information materials ()
16. Difficulty in organizing power point slides ()
17. Difficulty in organizing video program ()
18. Any others specify

Part - C

The capacity building needs of extension personnel in information management

1. Capacity Building Needs of Extension personnel in information management.

Please indicate your degree of need by making (√) mark in appropriate columns.

S.No	Subject matter areas	Capacity Building Needs		
		Most needed	Needed	Not Needed
1	Computer Based training			
	• Word process (MS Word, Power point)			
	• Preparation of CD ROM			
	• Preparation of Virtual Reality mode			
2	Opening online contents			
	Web based training			
	• Organizing video conference			
	• Organizing Audio conference			
3	Composing mail through online (e-mail, Office mail)			
4	Scanning through computer scanner			
5	Working in word and data processing			
	• MS Word			
	• MS power point			
	• Text document			
6	• MS Excel Package			
	Specialized skills to access touch phone, Touch kiosk (MSSRF kiosk etc)			

S.No	Subject matter areas	Capacity Building Needs		
		Most needed	Needed	Not Needed
7	Process of saving the files			
8	Saving the images			
9	Processing and saving data			
10	Transferring the idea into popular article			
11	Developing folders			
12	Developing leaflet			
13	Developing lecture note			
14	Developing script of radio talk			
15	Developing script for TV talk			
16	Developing news stories			
17	Developing feature articles			
18	Developing popular article			
19	Developing success stories			
20	Developing failure stories			
21	Developing case studies			
22	Developing an audio cassette with experience			
23	Preparing Interactive Multimedia Compact Disc (IMCD)			

2. Training Venue

Which venue do you consider as appropriate for giving training?

S.No	Place of Training	(✓) mark
1	INTERNATIONAL LEVEL TRAINING INSTITUTES	
	<ul style="list-style-type: none"> International Crop Research Institute for Semi Arid Tropics, (ICRISAT), Hyderabad. 	
2	NATIONAL LEVEL TRAINING INSTITUTES	
	<ul style="list-style-type: none"> National Institute of Agricultural Extension Management, (MANAGE), Hyderabad 	
	<ul style="list-style-type: none"> The National Academy of Agricultural Research Management (NAARM), Hyderabad 	
	<ul style="list-style-type: none"> Extension Education Institutes (EEI), Hyderabad 	
3	STATE LEVEL TRAINING INSTITUTES	
	<ul style="list-style-type: none"> Anna Institute of Management, Chennai. 	
	<ul style="list-style-type: none"> Agricultural Engineering Training Centre, Trichy 	
	<ul style="list-style-type: none"> State Agricultural Extension Management Institute (STAMIN), Kudumianmalai. 	
	<ul style="list-style-type: none"> Central Horticulture Training Institute Center, Kudumianmalai 	
	<ul style="list-style-type: none"> Tamil Nadu Agricultural University (TNAU), Coimbatore. 	
	<ul style="list-style-type: none"> State Agricultural Extension and Management Training Institute (SAMETI), Coimbatore. 	
4	DISTRICT LEVEL INSTITUTES	
	<ul style="list-style-type: none"> Krishi Vigyan Kendra (KVK) of the districts 	
	<ul style="list-style-type: none"> Joint Directorate of Agriculture Office in the districts 	
	<ul style="list-style-type: none"> District Rural Development Agency (DRDA) 	
	<ul style="list-style-type: none"> Research stations in District 	
5	<ul style="list-style-type: none"> If Others, Please specify, 	

4. Duration of the Training : _____ Days (Preferred by you)

5. Training Methods

Which of the following methods do you prefer for getting yourself trained?

S.No	Method of Training	Most preferred	Moderate preferred	Not preferred
1	Lecture alone			
2	Lecture + AV Aids			
3	Group Discussion			
4	Extempore			
5	Demonstration / Hands on experience			
6	Exhibitions			
7	Role playing			
8	Problem solving sessions with expert			
9	Study assignments			
10	Symposium			
11	Colloquium			
12	Seminar			
13	Workshop			
14	Indoor session like solving hypothetical problems			
15	Outdoor session like case study			
16	Visit to field trips			
17	Visit to research station			
18	Visit to market			
19	Using objects and specimens			
20	Buzz session			
21	Brainstorming			
22	Testing			
23	Quizzes			
24	Questioning			
25	Small group work			
26	Individualize instruction			

S.No	Method of Training	Most preferred	Moderate preferred	Not preferred
27	Use of handouts, graphics, books, Photographs			
28	Games			
29	Simulation			
30	Sensitivity training			
31	Transactional analysis			
32	Syndicate			
33	Recording			
34	Video lessons			
35	Contact sessions in distance mode			
36	Others (Pls specify)			

6. Trainers

Who among the following is preferred by you for giving training to you?

S.No	Trainers	(✓) mark
1	Experts from International institutes	
2	Experts from national institutes	
3	Experts from state institutes	
4	Subject matter specialists from research stations	
5	Subject matter specialists from KVK's	
6	Tamil Nadu Agricultural University scientists	
7	Corporate officials	
8	NGO functionaries	
9	Others if any	

7. Suggestions

Give any three important suggestions to make the information management Patterns of extension personnel to be more effective in future years.

Name & Signature with Seal