A Study on Involvement of Agricultural Extension Professionals in Social Media

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THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF

Master of Science (Agriculture)

in

Extension Education

Supervisor

Prof. Kalyan Ghadei

Submitted by

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CERTIFICATE

To,

The Registrar (Academic)
Banaras Hindu University,
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Through: The Head, Department of Extension Education, Institute of Agricultural Sciences, B.H.U, Varanasi.

Dear Sir,

I have great pleasure in forwarding the thesis entitled **"A Study on Involvement of Agriculture Extension Professionals in Social Media"** submitted by **Hanamanth**, **I.D. No. 19412EXE021, Enrolment No. 416509** in partial fulfillment of the requirements for the degree of **Master of Science (Agriculture)** in **Extension Education**, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi (U.P.) and placing on record that she has completed the requisite residential requirements as contained in the statutes of the university.

I certify that the entire scheme of investigation presented herein was planned and carried out solely by the candidate under my guidance and supervision. The data presented in thesis, to the best of my knowledge and belief, are genuine and original.

Thanking you,

Yours faithfully,

(**Kalyan Ghadei)**
Supervisor

Forwarded by

Head of Department

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By
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Date:
Place: *Varanasi* *(Hanamanth)*

CONTENTS

LIST OF ABBREVIATIONS

%	:	Percentage
AAO	:	Assistant Agricultural Officer
AAU	:	Anand Agriculture University
BHU	:	Banaras Hindu University
EO	:	Extension Officers
et al.	:	(et albeit) and elsewhere
Etc.	:	Etcetera
Fig.	:	Figure
i.e.	:	That is
ICAR	:	Indian Council of Agricultural Research
ICT	:	Information Communication Technology
KVK	:	Krishi Vigyan Kendra
LLP	:	Lab to Land Programme
NES	:	National Extension Service
NGOs	:	Non- Government Organization
SAU	:	State Agricultural University
SD	:	Standard Deviation
SMS	:	Subject Matter Specialist
SNSs	:	Social Networking Sites
TADACD	:	Technology Assessment and Demonstration for Application and Capacity Development
ToT	:	Transfer of Technology
UT	:	Union Territory

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Chapter I

INTRODUCTION

> "Social media is not a media. The key is to listen, engage, and build relationships."
>
> - David Alston

Be it a twenty-year-old young man or a sixty-year-old man, social media has become an integral part of everyone's lives. It has changed the way we look at the world and how we communicate and interact with our friends, acquaintances and loved ones. In the late 1990s, as broadband Internet became more popular, websites that allowed users to create and upload content began to appear. The first social network site (SixDegrees.com) appeared in 1997. From 2002 onward, a large number of social network sites were launched. Some – such as Friendster – enjoyed a surge of popularity, only to fade. Others developed niche communities: Myspace, for example, appealed to teenaged music aficionados.

The first social media platform, Sixdegrees, was launched in 1997 and was founded by Andrew Weinreich. The website permitted users to list their friends and family members and had various interesting features like bulletin boards, school affiliations and profiles. It was shut down in 2001 after it had over a million users. Initially, Friendster, Myspace and Facebook were used by people to communicate and interact. But now, times have changed and platforms like Twitter, Instagram, LinkedIn, Snapchat are widely used as sources of information.

By the late 2000s, social media had gained widespread acceptance and some services gained huge numbers of users. For example, in November 2020, Facebook announced it had 2.89 billion users worldwide, of whom 340 million were in India. In July 2021, Twitter had an estimated 206 million users, of whom 22.1 million were in India. (Source India Today 2021). It is noteworthy here to know the concept of social media.

Social Media

1. Social media refers to the activities through which people share their knowledge, within a collaborative online environment. **Papadopoulos et al. (2013)**
2. Social media refers to Internet-based media that allows individuals to share information and knowledge. **Chang and Chuang (2011)**
3. Social media refers to "the means of interactions between people in which they create, share, and exchange knowledge and ideas within virtual communities and networks". **Zeng and Gerritsen (2014)**
4. Social media is defined as "a group of internet-based applications that build on the ideological and technological foundations of Web 2.0, that allow the creation and exchange of user-generated content". **Kaplan and Haenlein (2010)**
5. Social media use for knowledge sharing is comprised of interactive digital tools, allowing users to not only share knowledge, but also to create or influence content. **Chomsky (2012)**
6. Social media refers to "New media technologies facilitating interactivity and co-creation that allow for the development and sharing of user-generated content among and between organizations (e.g., teams, governing bodies, agencies and media groups) and individuals (e.g., consumers, athletes and journalists)". **Filo et al. (2015)**

The term "social media" refers to the wide range of Internet-based and mobile services that allow users to participate in online exchanges, contribute user-created content, or join online communities. The kinds of Internet services commonly associated with social media (sometimes referred to as "Web 2.0") include the following:

Blogs: Short for "web log," a blog is an online journal in which pages are usually displayed in reverse chronological order. Blogs can be hosted for free on websites such as WordPress, Tumblr and Blogger.

Wikis: A wiki is "a collective website where any participant is allowed to modify any page or create a new page using her Web browser." One well-known example is Wikipedia, a free online encyclopaedia that makes use of wiki technology.

Social bookmarking: Social bookmarking sites allow users to organize and share links to websites. Examples include reddit, StumbleUpon and Digg.

Social network sites: These have been defined as "web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system."

Status-update services: Also known as microblogging services, status-update services such as Twitter allow people to share short updates about people or events and to see updates created by others.

Virtual world content: These sites offer game-like virtual environments in which users interact. One example is the imaginary world constructed in Second Life, in which users create avatars (a virtual representation of the user) that interact with others.

Media-sharing sites: These sites allow users to post videos or photographs. Popular examples include YouTube, Pinterest and Instagram.

These categories overlap to some degree. Twitter, for example, is a social network site as well as a status-update service. Likewise, users of the social network site Facebook can share photographs, and users of the media-sharing site Pinterest can follow other people. These tools encourage professionals to share their ideas, thoughts, and feelings and they provide a virtual platform to review the various resources.

According to the global statistics internet users have grown by 7.6 per cent over the past year and has reached 4.72 billion. It now equates to more than 60 percent of the world's total population. The data suggests that more than half a billion new users have joined social media platforms in a year and now there are 4.33 billion social media users as of April 2021(globalstatistics.com/India-social-media-statistics 2021).

In India, there are 448 million social media users as of January 2021 and it has increased by 78 million (+21%) between 2020 and 2021. WhatsApp is the most used app in India, followed by YouTube, Facebook, Instagram, and Twitter (source: forbesindia) The social media users in India as per the Bar and Bench report are as follows: Whatsapp-53crore, YouTube-44.8crore, Facebook-41crore, Instagram-21crore and Twitter-1.75 crore. (Source: forbesindia 2021)

With attributes that can affect the way people interact online, social media open up new ways for collaboration and discussion. One of these is persistence, meaning that a great deal of content posted on social media sites may remain there permanently by default. Other characteristics are replicability (content can be copied and shared) and searchability (content can be found easily using online search tools). The characteristic of accessibility is also important: social media can be used anywhere, at any time, where an Internet connection is available.

These attributes shape the dynamics of social interaction online. For example, the “invisibility” of the reader raises questions about the context, appropriateness and even comprehensibility of a communication. Moreover, just as it is difficult to know who might be reading content posted on a social media site, the identity and motives of those who post content are not always clear. For example, there have been instances of companies using social media to market products through fake blogs or sponsored postings on social media sites. Some of the popular social media platforms and overview is given below.

- **Facebook** is an American online social media and social networking service owned by Facebook, Inc.

Facebook can be accessed from devices with Internet connectivity, such as personal computers, tablets and smartphones. After registering, users can create a profile revealing information about themselves. They can post text, photos and multimedia which are shared with any other users who have agreed to be their "friend" or, with different privacy settings, publicly. Users can also communicate directly with each other with Facebook Messenger, join common-interest groups, and receive notifications on the activities of their Facebook friends and pages they follow.

- **WhatsApp Messenger**, or simply **WhatsApp**, is an American freeware, cross-platform centralized instant messaging (IM) and voice-over-IP (VoIP) service owned by Facebook, Inc. It allows users to send text messages and voice messages, make voice and video calls, and share images, documents, user locations, and other content. WhatsApp's client application runs on mobile devices but is also accessible from desktop computers, as long as the user's mobile device remains connected to the Internet while they use the desktop app. The service requires a cellular mobile telephone number to sign up. In January 2018, WhatsApp released a standalone business app targeted at small business owners, called WhatsApp Business, to allow companies to communicate with customers who use the standard WhatsApp client. Though primarily used for personal messaging, it is gaining more popularity among agricultural professionals and practitioners to share information, which is aided by the group messaging feature. There are a few hundred thousand WhatsApp groups created for agricultural extension and advisory services in India.
- **Electronic mail** (**email** or **e-mail**) is a method of exchanging messages ("mail") between people using electronic devices. Email entered limited use in the 1960s, but users could only send to users of the same computer. Some systems also supported a form of instant messaging, where sender and receiver needed to be online simultaneously. Ray Tomlinson is credited as the inventor of networked email; in 1971, he developed the first system able to send mail between users on different hosts across the ARPANET, using the @ sign to

link the user name with a destination server. By the mid-1970s, this was the form recognized as email.

Email operates across computer networks, primarily the Internet. Today's email systems are based on a store-and-forward model. Email servers accept, forward, deliver, and store messages. Neither the users nor their computers are required to be online simultaneously; they need to connect, typically to a mail server or a webmail interface to send or receive messages or download it.

- **Instagram** (commonly abbreviated to **IG, Insta** or **the gram**) is an American photo and video sharing social networking service created by Kevin Systrom and Mike Krieger. In April 2012, Facebook acquired the service for approximately US$1 billion in cash and stock. The app allows users to upload media that can be edited with filters and organized by hashtags and geographical tagging. Posts can be shared publicly or with pre-approved followers. Users can browse other users' content by tags and locations and view trending content. Users can like photos and follow other users to add their content to a personal feed.

  Instagram was originally distinguished by only allowing content to be framed in a square (1:1) aspect ratio with 640 pixels to match the display width of the iPhone at the time. In 2015, these restrictions were eased with an increase to 1080 pixels. The service also added messaging features, the ability to include multiple images or videos in a single post, and a 'stories' feature—similar to its main opposition Snapchat—which allows users to post photos and videos to a sequential feed, with each post accessible by others for 24 hours each. As of January 2019, the Stories feature is used by 500 million users daily.

- **Twitter** is an American microblogging and social networking service on which users post and interact with messages known as "tweets". Registered users can post, like, and retweet tweets, but unregistered users can only read

those that are publicly available. Users interact with Twitter through browser or mobile frontend software, or programmatically via its APIs. Prior to April 2020 services were accessible via SMS. The service is provided by Twitter, Inc., a corporation based in San Francisco, California, and has more than 25 offices around the world. Tweets were originally restricted to 140 characters, but the limit was doubled to 280 for non-CJK languages in November 2017. Audio and video tweets remain limited to 140 seconds for most accounts. In a social framework, it has been one of the major catalysts used for creating public opinions and for organizing people into groups. In agriculture too, it is one of the most used platforms.

- **YouTube** is an American online video sharing and social media platform owned by Google. It was launched in February 2005 by Steve Chen, Chad Hurley, and Jawed Karim. It is the second most visited website, with more than one billion monthly users who collectively watch more than one billion hours of videos each day. As of May 2019, videos were being uploaded at a rate of more than 500 hours of content per minute.

  YouTube has expanded beyond the website into mobile apps, network television, and the ability to link with other services. Video categories on YouTube include music videos, video clips, news, short films, feature films, documentaries, audio recordings, movie trailers, teasers, live streams, vlogs, and more. Most content is generated by individuals. This includes collaborations between YouTubers and company sponsors. Since around 2015, established media corporations such as Disney, ViacomCBS, and WarnerMedia have created and expanded their corporate YouTube channels to advertise to a larger audience.

- **LinkedIn** is an American business and employment-oriented online service that operates via websites and mobile apps. Launched on May 5, 2003, the platform is primarily used for professional networking and career development, and allows job seekers to post their CVs and employers to post jobs. As of 2015, most of the company's revenue came from selling

access to information about its members to recruiters and sales professionals. Since December 2016, it has been a wholly owned subsidiary of Microsoft. As of September 2021, LinkedIn has 774+ million registered members from over 200 countries and territories.

LinkedIn allows members (both workers and employers) to create profiles and "connect" with each other in an online social network which may represent real-world professional relationships. Members can invite anyone (whether an existing member or not) to become a "connection". LinkedIn can also be used to organize offline events, join groups, write articles, publish job postings, post photos and videos, and more.

- **Snapchat** is an American multimedia instant messaging app and service developed by Snap Inc., originally Snapchat Inc. One of the principal features of Snapchat is that pictures and messages are usually only available for a short time before they become inaccessible to their recipients. The app has evolved from originally focusing on person-to-person photo sharing to presently featuring users' "Stories" of 24 hours of chronological content, along with "Discover," letting brands show ad-supported short-form content. It also allows users to keep photos in the "my eyes only" which lets them keep their photos in a password-protected space. It has also reportedly incorporated limited use of end-to-end encryption, with plans to broaden its use in the future.

  Snapchat was created by Evan Spiegel, Bobby Murphy, and Reggie Brown, former students at Stanford University. It has become known for representing a new, mobile-first direction for social media, and places significant emphasis on users interacting with virtual stickers and augmented reality objects. As of July 2021, Snapchat had 293 million daily active users, a 23% growth over a year. On average more than four billion Snaps are sent each day. Snapchat is popular among the younger generations, particularly those below the age of 16, leading to many privacy concerns for parents.

- **WeChat** is a Chinese multi-purpose instant messaging, social media and mobile payment app developed by Tencent. First released in 2011, it became the world's largest standalone mobile app in 2018, with over 1 billion monthly active users. WeChat has been described as China's "app for everything" and a "super app" because of its wide range of functions. WeChat provides text messaging, hold-to-talk voice messaging, broadcast (one-to-many) messaging, video conferencing, video games, sharing of photographs and videos and location sharing.
- **Pinterest** is an American image sharing and social media service designed to enable saving and discovery of information (specifically "ideas") on the internet using images and, on a smaller scale, animated GIFs and videos, in the form of pinboards. The site was created by Ben Silbermann, Paul Sciarra, and Evan Sharp and had over 478 million global monthly active users as of March 2021. It is operated by **Pinterest, Inc.**, based in San Francisco.

Social media and other related activities, and how they might become active players, the use of social media in poverty reduction and development have ignited much interest over the past decade. To take advantages of the rapid expansion of social media in developing countries, business, government agencies and NGOs are increasingly turning their attention to the delivery of services through mobile phones in areas such as health, education and agriculture. Recent studies assessing the impacts of social media already point to the potential benefits for poverty reduction and rural development. However, there is a risk that the poorest and marginalized may fall behind.

Agriculture extension professionals and social media

Social media includes a variety of dynamic Internet-based and mobile communication applications that can be selected according to target audience, purpose, or personal preference. These easily accessible and often free tools can be used to provide information to readers and/or to interact with clients in almost any location at any time. They can connect clients to other websites supply information

globally recruit additional clients and enhance group interaction. Social media tools offer quick and widespread distribution of information, which can be valuable to Extension personnel reaching out to audiences who may not know about Extension otherwise. Although Facebook, Twitter, LinkedIn, and YouTube might be the most cited social media applications, there are many other sites that allow users to interact and collaborate. These include blogs, mashups, rich site summary (RSS) syndicated Web feeds, podcasting, photo sharing, tagging, video sharing, virtual worlds, widgets, and provide definitions and examples of social media applications.

The ‘extension education’ term was first introduced by University of Cambridge in 1873, which is to explain something educational innovation (Maunder et al., 1972). This brings the advantages of university education to ordinary people in their job. Initially, the term 'extension' was introduced in England instead of the familiar America. In the tradition of the American people, the extension of education as a term is encouraged to use extensional activities in teaching people to solve problems through the ‘extending’ information (Zwane et al., 2012).

Agricultural extension is the application of scientific research and new knowledge to agricultural practices through farmer education. Many ideas have been merged to extension.

There is a growing consensus that social media is fundamentally changing the way people communicate, consume and collaborate. Within just a few years, social media has integrated itself into almost every aspect of our personal and professional lives, and as a result, has brought a lot of changes on advisory service, information sharing and many more. Professionals try to identify problems of farmers and gives solution through social media applications such as Blogs, YouTube, Facebook, and Twitter.

Extension professionals should understand that social media tools are already used to inform the public on important events, trends, and decisions. Many Extension clients are willing to receive information electronically (Bardon, Hazel, & Miller,

2007) and are able to use electronic technologies. There are 119048 working in India as agriculture extension professionals (Source: RAS org.in)

Statement of problem

Extension activities are generally performed by chalk, painting, poster, chart paper. As the time changed the way of performing extension activities also changed. There was no idea that extension activities can perform through mobile but now a days it is performing as big channel for extension activities. In similar fashion the social media is playing a great role in communication of technology to regional. national and global clients. The experimentation of co-operative extension in the USA has proved that Facebook and other social media can be used as platform to reach the farmers along with the traditional channels of communication. Since social media is a larger channel for sharing of news, views, communication, selling and advertisement of product and services so it is necessary to know the happening and discussion being carried out in social media. During the review of literature an attempt was made to know different studies of social media related Extension Education, but there were found no such relevant documents, reports and researches about social media focussed on Agricultural extension professionals. So, it was decided take up the study with following questions.

- What is the socio-economic and psychological characters of the agriculture extension professionals involved in social media?
- What is the level of involvement of agriculture extension professionals in social media?
- What kind of activities being carried out in social media sites by agriculture extension professionals in social media?
- What are the advantages and disadvantages perceived by agriculture extension professionals in social media?

To answer the above research questions and realizing the importance of the problem, a study entitled "**Study on involvement of agriculture extension**

professionals in social media" has been taken up with the following specific objectives:

Objectives

- To know the socio-economic and psychological profile of the agriculture extension professionals.
- To assess the involvement of agriculture extension professionals in different social media
- To document the activity performed by the agriculture extension professionals in the social media.
- To assess the extent of Constraints and Advantages perceived by the agriculture extension professionals in social media.
- To study the self-appraisal of agriculture extension professionals regarding their activities in social media.
- To establish relationship between some selected dependent and independent variable.

Scope and importance of the study

Social media has colossal to be the greatest centre of agricultural information where farmer friendly contact can be generated with the relationship of researchers, agricultural institute and extension agents to bring about fruitful interaction for agricultural development. Presently, there are limited studies on social media usage by agriculture extension professionals. So, the study was conducted to assess the role of social media for advisory services, information sharing services, marketing activities, research and developmental activities. The findings from the present study would serve as guidelines for planners, trainers, and extension professionals, so that they can pay required attention in minimizing the existing constraints about social media and develop a social media model on the basis of findings of the present study.

Limitation of the study

- As a student researcher these findings cannot be generalized and explored in greater depth and in a more comprehensive manner due to constraints of time and resources, location specific nature of the study.
- The study was conducted only with a limited sample, hence the generalizations of the findings will be restricted
- Due to COVID-19 responses were collected through questionnaire. The trouble with not presenting questions to users face-to-face is that each may have different interpretations of your questions**.**
- The response rates through questionnaire are very low.
- A survey or questionnaire cannot fully capture emotional responses or feelings of respondents. Without administering the questionnaire face-to-face, there is no way to observe facial expression, reactions or body language.
- Through questionnaire survey we are unable to take data in deeper way.

Presentation of the Study

The present study has been completed in six chapters as indicated below.

- First chapter titled Introduction gives general overview about concept, role of Extension professional, type of social media and their use in agriculture for getting agricultural information. The chapter also specifics research objectives, scope and limitation of the study.
- Second chapter titled **"Review of Literature"** compiles the scientific work conducted at national and international level related to present study.
- Third chapter **"Methodology"** outlines the research design, locale of the study, research methodology presents the procedure and technique adopted for carrying out the study,

- Fourth chapter titled **"Result and Discussion"** sheds light on the findings of the research conducted and places them in the context of earlier researches. The results have been interpreted and presented in the form of tables.
- Fifth chapter deals with **"Summary and Conclusions"** of the whole research and has been presented in summarised form.
- Sixth chapter named **"Bibliography"** referred to and cited in the study has been acknowledged by enlisting the works under the head of bibliography.

Chapter II

REVIEW OF LITERATURE

A systematic and critical study of past research gives us a clear perspective for scientific inquiries. The Literature Review allows one to work out the knowledge available relates to the goals of the research proposed and to the objectives of the research proposed and helps to delineate the problem area, in addition to providing a framework for interpretation of the results. This helps us to identify holes in selective subjects for study studies. In addition to obtaining the available methods that can be used to estimate the variables to equate the current findings with the results of previous research. An effort has been made to bear in mind the goals of the present report. This chapter discusses all literature explicitly or indirectly related to the current literature. The review of literature has been presented in the following lines in accordance with the objectives.

2.1 Socio-economic and psychological profile of the agriculture extension professionals.

2.2 Assessment of the involvement of agriculture extension professionals in different social media

2.3 Documentation of the activity performed by the agriculture extension professionals in the social media.

2.4 Relationship between some selected dependent and independent variable.

2.5 Self-appraisal of agriculture extension professionals regarding their activities in social media.

2.6 Assessment of the extent of advantages and constraints faced by agriculture extension professionals in social media.

2.1 Socio-economic and psychological profile of respondents.

2.1.1 Age of the respondents

Al-Subaiee *et al.* (2005) has reported in their study entitled "Extension agents' perceptions of sustainable agriculture in the Riyadh Region of Saudi Arabia" that the majority of the extension agents were of age 31 to 40 that is middle age group and percentage is 52.4 percent.

Best and Maier (2007) in a study entitled "Gender, Culture and ICT Use in Rural South India" and found that the average age of ICT users was 20 years old, whereas non-users were 31 years old.

Omotesho *et al.* (2012) concluded in their study naming that "Assessment of access to information and communication technology among agricultural extension officers in Kwara State, Nigeria". the majority (74.70%) extension service providers and subject matter specialist were belongs to the middle age group that the age ranging from 31 to 50 in years.

Allahyari *et al.* (2014) reported in his study on "Perceptions of Iranian Agricultural Extension Professionals Toward Sustainable Agriculture Concepts" that majority of the agriculture extension professionals were 31 to 40 years of age.

Raghava and Rao (2014) found out in a study "ICT use behaviour of scientists of KrishiVigyan Kendra's" and concluded that near half number 47.00 percent of the agriculture scientists belongs to the middle age group and age is ranging from the 35 to 50 in years.

Raksha *et al.* (2014) concluded in their study naming that "Attitude of the agricultural extension personnel towards use of information technologies in field work". Nearly half of the extension agents were young age group and slightly more than one-fourth of the extension agents were middle age group and less than one-fourth of the extension agents were old age group.

Kirti (2017) revealed that the most of respondents, (46.47 percent), belonged to the 21–25-year age group, followed by 53 (31.18 percent) below 21 year and 38 (22.35 percent) above 25 years in her research at Banaras Hindu University titled "A study on digital empowerment of digital natives".

Alotaibi *et al.* (2021) in his research "Extension Agents' Perceptions of the Role of Extension Services in Organic Agriculture: A Case Study from Saudi Arabia" mentioned that nearly half (46%) of the agriculture extension agents are belongs to middle age group that is 31 to 40 years and nearly one fourth (22%) of the agriculture extension agents belongs to the upper age group that 41 to 50 years old, (18%) of belongs to less than 30 years and 14.00 percent are more than 51 years.

Singh (2021) stated in a study entitled "A study on perception of KVK professionals towards In-Tension of Ex-Tension" found that 67.33 per cent of respondents belongs to middle age group i.e., (36 to 53 years) followed by young age group 20.00 per cent i.e., (less than 36yrs) and old age 12.67 per cent i.e., (more than 53 years).

Shah *et al.* (2021) conducted a study on "Influence of Human Resource Development Skills Towards Work Performance of Agriculture Extension Agents" and observed that majority of the agriculture extension agents are belongs to the middle age group that is 25 years to 35 years.

2.1.2 Gender of the respondents

Allahyan *et al.* (2008) in a study entitled "Extensionists attitude toward sustainable agriculture in Iran" and found that most of the respondents were male (93.7%) and only (6.3%) were female. Equal percentage of respondents (50%) belonged to rural and urban background

Tanko *et al.* (2013) observed in his research on "Evaluation of the access to and utilization of Information Communication Technology (ICT) facilities among extension officers in Shiroro LGA, Niger State, Nigeria" that manifest those studies

on extension officers that 66.70 per cent of the respondents were males, whereas the remaining 33.30 per cent were females.

Ezeh *et al*. (2013) made a study on "Extension Agent's access and utilization of Information and Communication Technologies (ICTs) in extension service delivery in South-east Nigeria" and reported that majority (61.6 per cent) of the extension agents were male and less than half (38.33 per cent) of the extension agents were female.

Allahyari *et al.* (2014) conducted study on "Perceptions of Iranian Agricultural Extension Professionals Toward Sustainable Agriculture Concepts" and stated that majority of the agriculture extension professionals were male that is 93.70 percent and very less of the female that is 6.3 percent.

Raghava *et al.* (2014) study entitled "ICT use behaviour of scientists of KrishiVigyan Kendra's" found that more than two third (69.00%) of the KVK scientists were males, whereas 31 per cent were females.

Zwane (2014) reported that in the study "The Role of Extension as a Profession Is Critical in Delivering Excellent Services: An Experience from Limpopo, South Africa." majority of the respondents were male constituting 70 percent and 30 percent female. This is not surprising because a study conducted in Limpopo Provinces of South Africa display a similar tendency This could be seen as a legacy of colonialism and apartheid which connoted a negative image to women's roles in society.

Olorunfemi (2020) conducted study on "Borich needs model analysis of extension agents' competence on climate smart agricultural initiatives in South West Nigeria". And found that majority of the agriculture extension agents were male.

Singh (2021) study entitled "A study on perception of KVK professionals towards In-Tension of Ex-Tension" in which observed that majority of 87.33 per cent of respondents were male and only 12.67 per cent were female.

2.1.3 Education of the respondents

Mishra *et al.* (1988) in his study "factor affecting the role of rural agriculture extension officers working in the Jablpur district of Maharastra" found that majority of the rural agriculture extension officer having education above high school level performed their functions better.

Kooganurmath *et al.* (1999) found that the majority of users utilised the Internet for communication, followed by access to information. More over 70 percent of users said they used it for higher education and study, whereas only 39 percent said they used it for peer group conversations. E-mail, the Web, discussion forums, FTP, and Telnet were the most popular Internet services, by the study "Use of the Internet by social science research scholars: A study in academic libraries in the Internet era"

Al-Subaiee *et al.* (2005) has reported in their study naming that "Extension agents' perceptions of sustainable agriculture in the Riyadh Region of Saudi Arabia" that Over one-half of the extension agents (54%) reported a diploma from a Saudi agricultural institute as their highest education level. Just over one-third of the extension agents (34.9%) had a bachelor's degree, and 6.3% reported high school or less as their highest level of education. Only 4.8% of extension agents had a master's degree.

Joshi (2009) did research on **"**Computer inclination of Agricultural Extension Educationists working in state Agricultural Universities of Gujarat" According to the research, the nearly cent per cent (97.33 per cent) of extension educators working in Gujarat's SAUs were highly qualified, holding PG or Ph. D. degrees.

Farooq *et al.* (2010) made a study on **"**Agriculture extension agents and challenges for sustainable development" and the empirical results indicate that more than half of the field assistants were educated up to Matric plus two years agricultural training course. On average the extension agents had a job experience of 16 years and attended on average nine (9) in service training.

Amar *et al.* (2011) conducted study on 'Information and communication technology used by the scientists in Krishi Vigyan Kendra and Regional Research Centre' and observed that most (83.33%) of the respondents were have M.Sc. degree while; 16.67 per cent of the respondents were have Ph.D. degree of education.

Patel *et al.* (2011) found that most (93.34%) of multimedia application requisite teachers were with Ph.D. degree, while merely 6.66 per cent of the teachers were with M.Sc. degree in their research "The profile of the multimedia application expecting teachers for higher agricultural education".

Kassa *et al.* (2014) stated that the educational background of the respondents, all of them completed the 4 years at high school where they studied agriculture as a subject. With respect to post-high school education, one respondent reported having a diploma or two years of post-high school college education in agriculture, in their study "Challenges Facing Agricultural Extension Agents: A Case Study from South-western Ethiopia".

Singh *et al*. (2018) reported that in the study naming that "Factors Influencing Attitude of Extension Professionals towards Principles of Extension Education" Majority of professionals (47%) had doctorate degree followed by 20 per cent with post-graduate degree and 33 per cent respondents were having graduation degree and Majority of professionals (80%) had medium degree of job-satisfaction followed by 13 per cent high and 7 per cent low degree of job-satisfaction. The reason of being their low satisfaction was due to their less salary and their major involvement in other official work rather than extension work.

Alotaibi *et al.* (2021) in his research "Extension Agents' Perceptions of the Role of Extension Services in Organic Agriculture: A Case Study from Saudi Arabia" and found that more than of the agriculture extension agents are did bachelor's degree.

Olorunfemi *et al.* (2020) did research on "Borich needs model analysis of extension agents' competence on climate smart agricultural initiatives in South West

Nigeria". results from the study show that More than one-fourth of the agriculture extension agents did graduation and negligible number of the agriculture extension agents did Ph.D.

2.1.4 Annual income

Joshi (2009) made a study on "Computer inclination of Agricultural Extension Educationist working in state Agricultural Universities of Gujarat". And found that majority of the extension educationists got up to 2 lakh rupees and nearly one fourth of the extension educationists are got 3 lakh to 4 lakh and 20 percent got 2lakh to 3lakh and other 3 percent are above Rs. 4 lakh and above.

Ezeh Ann (2013) conducted study on "Extension agents access and utilization of information and communication technology (ICT) in extension service delivery in South East Nigeria" and stated that majority of the extension agents are getting 21000 to 40000 in Nigerian Doller [Rs. 3400 to Rs. 7300].

Nurhayati *et al.* (2021) in his study "The Effect of Personal and Situational Factors on The Performance of Agriculture Extension Worker on the Behaviour of Seeking Information as an Intervening Variable (Study Case in Lebak Regency Banten Province)" mentioned that private extension workers were got more salary than the public extension worker with same duties and functions.

2.1.5 Social media exposer

Ellison (2007) found that majority use smart phones by adopting the Web 2.0-based applications of SNSs and approximately 72% use Facebook, 31% Pinterest, 28% Instagram, 25% LinkedIn, and 23% Twitter. In a study entitled "The benefits of Facebook "friends:" Social capital and college students' use of online social network sites."

Subramanyam *et al.* (2008) in his study 'Online and offline social networks: Use of social networking sites by emerging adults' and reported that majority of the

respondents have account in Myspace Email, Facebook and YouTube other instant messaging application.

Kolowich (2010) conducted study on "Professors and social media. Inside Higher Education". And observed that majority of the professors use at least one social media for the teaching purpose and have at least one account with Facebook, twitter, YouTube, Skype, LinkedIn, Myspace, Flicker, Slide share and google.

Chen (2013) in his study "Member use of social networking sites—an empirical examination" stated that 95.00 percent of respondents had account in Facebook.

Saravanan *et al.* (2018) conducted study on "The online culture of agriculture: exploring social media readiness of agricultural professionals" found that in India Major social media platforms used by agriculture extension professionals is Facebook, WhatsApp, Google, YouTube, Blogs, Wikis and Twitter.

Singh (2021) study entitled "A study on perception of KVK professionals towards In-Tension of Ex-Tension" in which observed that 71.03 percent of respondents were having Facebook page and 28.93 percent not having their Facebook page, 62.06 percent respondents didn't have YouTube channel and 37.94 percent were having YouTube channel. 97.24 percent respondents were having their WhatsApp group and 2.76 percent respondents do not have WhatsApp group. 57.93 percent of respondents had twitter handle and 42.17 percent were not had twitter handle. 90.07 percent not had their Instagram account and 9.93 respondents were had Instagram account.

2.1.6 Time spent on social media

Subramanyam *et.al* (2008) made a study on 'Online and offline social networks: Use of social networking sites by emerging adults' and reported that majority of the respondents use to spend 30min to 1hour per day in social media.

Vinay (2017) in his study "A study on effect of social media intervention on knowledge level of agricultural input dealers" observed that 58.00 percent of the respondents use social media 1-2 per day followed by 18.00 percent use 2-4 fours and 12.00 percent use less than 1hour.

Ahmad *et al.* (2018) stated in their study "Social Networking and Depression among University Students" that most (53.5%) of the respondents were of the view that they used social media for one to three hours per day which is a significant time period for adults. Twenty nine percent of the respondents spend almost six hours per day on Facebook and twitter, while 17.5% respondents were of the view that they spend more than six hours a day on social media.

Saravana *et al.* (2018) conducted study on "The online culture of agriculture: exploring social media readiness of agricultural professionals" and stated that globally in 2017, on an average a person spent 2.15 h on social media, 21.7% of the respondents used social media for 1–2 h a day, 19.5% used it for 31–60 min a day, and 19.5% used social media for 15–30 min a day. Among the Indian respondents, 23.5% spend 31–60 min every day on social media while 23.1% spent 1–2 h, 22.3% spent 15–30 min, and 13.3% spent 2–3 h per day on social media.

Fayaz (2020) made a study on "Study on social media utilization pattern of the Ph D students in Acharya Narendra Deva University of Agriculture and Technology Kumarganj Ayodhya UP". observed that distribution of respondents on the basis of time spent per sitting daily on social media. (75%), respondents reported that the use of social media 2-4 hours, (11%), of respondents use time one hours daily. (1%), were spending time 8-10 hours per day found using social media and indicates the proportion of respondents on the basis of amount of rupees spent on social media per month. Out of respondents, use near to Rs. 500 or between (200-500 Rs.) of (63%) of respondents (32%), of respondents use up to Rs. 200 (3%) of respondents use Rs.1000, and (2%) of respondents use Rs. 1500 use on social media respectively.

Cunliffe (2013) stated that English is the most preferred language among the respondents for using social networking sites like Facebook. The study entitled

"Young Bilinguals' Language Behaviour in Social Networking Sites: The Use of Welsh on Facebook".

2.1.7 ICT Training received

LawalAdebowale (2009) conducted a study on "Information and Communication Technology: Its Potentials for Enhanced Agricultural Extension Service and Rural Development in Agbamu, J.U. (ed), Perspectives in Agricultural Extension and Rural Development", and stated that knowledge and operating procedure of ICT is a pre-requisite to effective and successful extension service delivery.

Raghava *et al.* (2014) reported that about one sixth (16.00%) had attended one training programme on ICT and slightly more than one-fourth (26.00%) had attended more than two trainings on ICTs. In their study naming that "ICT use behaviour of scientists of Krishi Vigyan Kendra's".

Kabir (2015) made a study on "Attitude and level of Knowledge of farmers on ICT based farming. European Academic Research", stated that more than three-fourth (88.90%) of respondents were participated in training programmes on ICTs.

Albert (2014) revealed that Lack of ICT training and skill development is major factor in extension agents of the Nigeria in their study "constraints to effective use of ICT among extension professionals and farmers in extension delivery in rivers state, Nigeria".

Khamoushi *et al.* (2015) did a study on "Factors affecting familiarity and usage of Information and Communication Technologies by Agricultural Extension Scientists in North India". And reported that more than half (67.53%) of the respondents were not received any ICT training, slightly less than one-fourth (22.73%) of them had in low category of ICT training, while 5.2 per cent of them had in high category of ICT training.

Ritesh (2016) in his thesis "Access and Use of ICT tools by Extension Personnel for Transfer of Technology" mentioned that, near one fourth (26.00%) of Extension Personnel received training on ICT tools for 1 to 3 days duration followed by 41.00 per cent for 4 to 6 days, 28.47 per cent for 7 to 14 days and 2.72 per cent for 15 to 21 days, respectively.

Kirti (2017) discovered that the majority of respondents (92.11 percent) had neither received training nor participated in a computer-related competition, followed by 45 (26.46 percent) respondents who had either received any training on computer or participated in any computer-related competition, and 33 (19.41 percent) respondents who had both received training on computer and participated in any computer-related competition found in her research at Banaras Hindu University titled "A study on digital empowerment of digital natives." Taking training as a parameter.

2.1.8 Scientific orientation

Rama Rao (1992) in his study "A study on utilization and credibility of information sources by tobacco cultivating farmers of Praksam district of Andra Pradesh", mention that more than half of the respondents had average scientific orientation.

Haridasan (1995) conducted study on 'resource use management among coconut growers of Kerala' and stated that more than half (52.44 per cent) of the growers had high level of scientific orientation followed by medium (32.44 per cent) and low (15.12 per cent) level.

Kamarajan (1996) did research on "knowledge and adoption technology of rainfed crops" and found that 70.00 percent of the respondents were had high level of scientific orientation followed by 30.00 percent low level.

Venugopal Rao (1996) observed in his study "adoption determinants of coconut production technologies in Yanam region of union territories of Pondicherry". That majority i.e., 63.33 per cent of the respondents had medium level

of scientific orientation followed by (27.50 per cent) low level and (22.50 per cent) high level.

Alagirisamy (1997) found that nearly 50.00 percent of the vegetable growers had average scientific orientation followed by low and high.in his research 'knowledge and adoption behaviour of vegetable growers'

Arunadevi (1998) in her study "critical analysis of factors contributing for participation of TANWA trainer in farming". Found that more than half (71.60 per cent) of the respondents had medium level of scientific orientation followed by (21.2 percent) high level and (7.20 per cent) low level.

Palaniswamy *et.al* (2001) observed in their 'study on modernization characteristics of sugarcane growers' that majority of the farmers belongs to the medium level of scientific orientation followed by high level and low level.

Hemant (2002) conducted study on 'attitude, knowledge and adoption of recommended practice by oriental tobacco farmers in Chittor district of Andhra Pradesh'. And concluded that nearly one fourth (70.84 per cent) of the respondents had medium scientific orientation followed by (18.33 per cent) low and (10.33 per cent) high.

Sivasubramanian (2003) inferred that nearly half (49.17 per cent) of the respondents had medium level scientific orientation followed by (27.50 per cent) high level and (23.33 per cent) low level. Title of the study is 'impact of coconut development schemes among coconut growers.

Sajith (2004) conducted study on "adoption of recommended package of practices by coconut farmers of Mahe region in Union territory of Pondicherry". And found that majority i.e., 68.67 per cent of the respondents had medium level of scientific orientation followed by (17.33 per cent) low level and (14.00 per cent) high level.

2.2 Assess the involvement of agriculture of extension professions in social media

Wakefield *et al.* (2006) conducted research on **"**Mobile computing: A user study on hedonic/utilitarian mobile device usage" and observed that individuals can access social networking sites via mobile devices, desktop computers, and notebook computers, because these information and communication technologies have become crucial tools for content creation and information sharing. The various access methods' usage patterns may have an impact on the various social networking sites' usage behaviour and information sharing.

Ashwini (2008) study entitled "Integrating Information Communication Technologies (ICT) with Multiple functions for efficient Agricultural Marketing". that it was observed that majority of respondents agreed that ICT tools are best suited for disseminating marketing technologies and ICT integration with multiple functions provides need based and timely information.

Erickson (2011) stated that use of social media sites for sharing information and engaging target audiences have been shown to have positive outcomes**.** In his study "Social media, social capital, and seniors: The impact of Facebook on bonding and bridging social capital of individuals over"

Neill *et al.* (2011) made a study on "Social Media Use of Cooperative Extension Family Economics Educators: Online Survey Results and Implications" stated that using social media as a tool for agricultural extension might be considered a 21st-century talent.

Shanthinichandra *et al.* (2013) revealed in his study "Farmers' Willingness to Pay (WTP) Behaviour for ICT Based Extension Approach" that ICT-based agricultural applications ranged from web portals to telecentres, mobile telephony, and hybrid projects (ICTs with traditional extension aspects). WTP (Willingness to Pay) Behaviour of Farmers for ICT-Based Extension Approach

Lathiya *et al*. (2015) did research on "Role of social media in agriculture" and found that social media is a mainstream form of communication around the world, and continues to grow in popularity with the increase in the number of smart phones. However, it has not been widely accepted in agriculture in India. The purpose of paper is to assess the value social media could have for the agricultural industry. This paper depicts four main pillars of the value of social media for agriculture industry viz., Networking, Industry Knowledge, Extension and Marketing, Consumer Engagement and Crisis communication.

Noor (2017) conducted a study on - "Use of information and communication technologies by extension personnel to disseminate agricultural information" published on International Journal of Current Microbiology and Applied Sciences. She reported that majority of the extension personnel was used mobile phone to seek farmers' participation and to deliver extension services or delivery services, majority of the respondent (80 %) used Facebook and about 60 percent of the respondents used What's App for extension activities or transfer of information to the farmers.

Goswami and Ghadei (2014) made a study on "issues and activities related to agriculture extension in social media" and found that that 65 percent of extension professionals were aware about the promotion of product and 35 percent was not aware about the promotion of product, 51 percent of the students are aware about the issues related to recruitment of extension professionals and 49 percent are not aware about the issue and 64 percent of the agriculture extension professionals are aware about the problems related to the agriculture extension and remaining 36 percent are not aware .

Raj *et al.* (2018) in his study "The online culture of agriculture: exploring social media readiness of agricultural professionals" observed that WhatsApp, Facebook and YouTube were the most preferred platforms because of easier user interface and higher percentage of users, and personal mobile phones were the most preferred mode of access. Organizations were found to be catching up in use of social media but still lagged behind in concrete policies to guide the use of digital tools. The

findings strongly advocate increased use of social media in agricultural extension and advisory services.

Thakur *et al.* (2018) conducted study on "use of social media in agricultural extension: some evidences from India" stated that YouTube has become a good source of animal husbandry-based information, as evident from number of videos uploaded in different Indian languages. Annual percentage increase in viewership (April 2015 –April 2016) of dairy and goat farming based videos varied from 228.25 per cent to 2308.21 per cent in goat farming and 180.83 per cent to 1961.66per cent in dairy farming.

Akintunde *et al.* (2019) revealed in his study **"**Use of Information Communication Technologies and E-Readiness Among Public and Private Extension Officers in Lesotho" that 79.1 percent of Extension officers use ICT tools to obtain information on new technology.

Dhital (2019) surveyed on - ICT. in a local government unit in Salyan district of Nepal and found that most of the respondent had the access of 4 ICT devices, that is Mobile, T.V, Radio and telephone. They regularly use these devices for making a call to friends and relatives, for getting new information related to agriculture and for entertainment purpose.

Kamruzzaman *et al*. (2019) conducted a study on "How do extension agents of DAE use social media for strengthening agricultural innovation in Bangladesh?". and found that extension agents mostly used social media to learn professional tasks and to some extent technical knowledge. Extension agents considered social media as a means of supporting innovation functions, such as entrepreneurial activities, market formation, resource mobilisation and legitimisation.

Sahar (2019) made a study on – "Usage pattern of ICT among the members of PAU Kisan club for seeking farm information at Punjab agriculture university". Ludhiana. He shows that 93.40 percent of respondents used WhatsApp and it was the most frequently used ICTs by the respondents in research for acquiring agriculture

information, followed by YouTube (76.16%). Facebook (59.16%) and PAU farmers portal (29.17%) respectively.

Panda (2020) did study on "Advances in Application of ICT in Crop Pest and Disease Management. In Natural Remedies for Pest, Disease and Weed Control". And concluded that Advances in the Application of ICT in Crop Pest and Disease Management. He showed that mostly used mobile phone application in agriculture is the Plantix, Kisan Suvidha, Pusa Krishi, Field check-up, Agri sync and Climate Basic. This app helps Farmers to identify the disease and pest and provide appropriate information related to the management of pest and disease.

2.3 Documentation of activity performed by the agriculture extension professionals in social media

Rao (1997) conducted a research on "Training and visit system in the eyes of VLWs" and found that more than three-fourth of the village agricultural extension workers use mass media for technology transfer slightly more than one fourth of VLWs use for messaging for technology transfer.

Akman *et al.* (2010) report discovered that concerns with internet use review, as well as the effects of gender, age, and wealth on employee internet use in Turkey. The participants in this study include 200 personnel from both the public and commercial sectors. The findings of this research revealed that gender had a positive impact. They spend an average of four hours every day on the internet, both for access and communication. The age element has a good effect on more internet use in general, but it also has a negative effect on internet use. It means that three elements had no substantial impact on how electronic services used the internet on a daily basis by research naming that "Gender, age and income differences in Internet usage among employees in organizations".

Meena *et al.* (2013) in their research on "Impact of social media in sharing information on issues related to agriculture among researchers and extension professionals" and stated that social media has been effectively described as one of the most participative extension tools of recent times, it has been noticed. Facebook,

WhatsApp, WeChat, QQ, Tumblr, Tumblr, Twitter, Pinterest, Blogs, YouTube, Instagram, Wikis, Facebook Messenger, Snap Chat, and other social media platforms are just a few examples. Facebook, WhatsApp, and YouTube might be considered the three most popular social media technologies in the Indian environment. These three types of social media have modest distinctions in their approaches. Facebook is a social networking service that allows users to create personal webpages and then connect with friends to exchange information and content. Facebook remains most popular social media platform by agricultural research and extension professional in India).

Saravanan *et al.* (2015) found in his study entitled "M-Extension Mobile Phones for Agriculture Advisory" and discussed the philosophy and principles Extension, implementation factors and capacities required to make it a success. The focus has been on mobile telephony since, it has developed significantly in the past few years, and the subscription rate in developing countries has gone up from 22 per 100 inhabitants in 2005 to 91.8 per 100 inhabitants in 2015.

Aliyu *et al.* (2017) made a study on "An overview of social media use in agricultural extension service delivery" found that agricultural extension service delivery is primarily a communication process, proper integration of social media is necessary. However, owing to the conducted researches so far this study was centred on making an overview of the current perspective of social media and agricultural extension service delivery. Evidences obtained revealed that there are many social media platforms being used in agricultural extension service delivery worldwide with Facebook having highest popularity (64.7%). Most of the agricultural stakeholders using social media are versatile users (33.5%) who usually visit only to find information (75.7%).

Ghadei and Jyoti (2017) conducted a study on "Social Media Activity of Agriculture Extension Graduate Students in India" Stated that the students of extension education were engaged in eighteen activities on social media. In addition, the three activities which majority of Indian extension students performed in social media were creating, strengthening and debating on extension forums (98%), writing

blogs related to extension education (74%), and videoconferencing (61%). The evidence shows that in the future social media will increase its role in educating students, as well as training farmers and other agriculture stake holders in India.

Jayathilake *et al.* (2017) observed in his study entitled "Fostering technology stewardship approach to promote knowledge sharing among farming communities in Sri Lanka" that extension agencies adopted ICT technology stewardship models using messenger platforms such as What's App to promote knowledge sharing amongst farming communities.

Kamruzzaman (2017) conducted research on "How do extension agents of DAE use social media for strengthening agricultural innovation in Bangladesh?" And found that majority of the agriculture extension agents of the DAE of Bangladesh use Facebook followed by other social media like YouTube, Twitter, Instagram and LinkedIn.

Garcia *et al.* (2018) in a study "Impact of an extension social media tool kit on audience engagement. Journal of Extension" and revealed that Using social media applications such as Facebook, Twitter, Instagram and Pinterest allow for a pluralistic interface between stakeholders along the agriculture value chain.

Sarvanan *et al.* (2018) made a study on "The online culture of agriculture: exploring social media readiness of agricultural professionals" and found that 77.7 percent of the extension professionals use social media for news and events, 88.3 percent for share information, 82.2 for Exchange knowledge, 76.1 percent to for share professional activity, 70.5 percent for connect with friends and 62.1 percent Discuss new events related to profession.

Singh *et al.* (2018) conducted a study on "changing perception and awareness towards ICT along with changing role of stakeholders in agriculture" published on research journal of agriculture sciences they showed that uses of ICTs on agriculture is increasing day by day through various stakeholders of agriculture such as farmers, researchers, extension agents. They suggest that sharing of new or relevant information on agriculture is essential element for increasing the production,

productivity and income of the farmers and connecting farmers in the rural areas with the ICT will ultimately develop agriculture on a remote area of India.

Wongsathan *et al.* (2018) revealed in a study entitled "Using Facebook page to support extension work of agricultural training institute network in the Philippines" that Facebook pages seem very satisfied on the ATI performance as they can extend their reach to a very large number of people with cost effectiveness.

Bardon *et al.* (2019) in a study naming that "Preferred information delivery methods of North Carolina Forest landowners" and found that many extension professionals in developed countries are now using social media applications to reach and remain relevant with their clientele.

Doval (**The Times of India 2021)** in a news article "TikTok, WeChat, baidu and UC browser among 59 Chinese apps permanently banned in India" that Indian government is officially banned the chines WeChat social media platform.

2.4 Association between dependent and independent variable

Shobana (1982) Conducted study on "An analysis of the role of junior agriculture officers in implementing agriculture development programs in Kerala". And concluded that there was no significant positive correlation between training and role of performance of junior agriculture officers in Kerala.

Vaje *et al.* (2000) did a study on "A study of communication media utilized for diffusion of Agril. Extension, UAS, Hebbal, Bangalore". And found that The use of communication medium and social participation were both significantly linked to profession. A person with an outward oriented and a diverse occupation used communication mediums more frequently.

Benedic *et al.* (2007) revealed in a study "the annual meeting of the North American Society for the Psychology of Sport and Physical Activity, San Diego, CA" that the among the US students, mobile phone and social networking usage are correlated in terms of intensity and scope of use.

Best and Maier (2007) conducted study on "Gender, Culture and ICT Use in Rural South India" and stated that There was no significance relation in educational levels between users and non-users.

Wattal *et al.* (2009) reported in his study "Employee adoption of corporate blogs: A quantitative analysis". That use of social media can also influenced Decisions of respondents who actively communicate. To examine what they influenced in organization they examined log data from 2,667 employees at a multinational electronics corporation. The study found that blog use by one's manager and others in one's office was Associated with a greater likelihood of individual blog use. Blog participation can also be influenced by the knowledge one has about the viewers of Contributed material.

Goswami *et al.* (2018) in his study "study on issues and activities related to agriculture extension in social media" stated that there was an association between age and awareness of the respondents towards the issues of extension education appearing in social sites and there is no association between sex and awareness of the respondents towards the issues shared in social networking sites.

Singh (2020) conducted research on "Study on the role of social media in dissemination of agricultural information to the farmers in Ayodhya district of Uttar Pradesh". stated that age, caste, annual income, size of the family, occupation, marital status, land holding, and housing pattern is non-significant and positively correlated and rest of the variable like material possession, social participation, social media exposure and economic motivation is non-significant and negatively correlated respectively.

2.5 Assess the extent of advantages and constraints faced by agriculture extension professionals in social media

Wilson (2009), made a study on "Social networking: the business case," stated that there are five principal risks that organization has in regard to social networking: perceived loss in staff productivity, data leakage from staff gossiping freely in an

open environment, damage to a business's reputation, scam practiced by cyber crooks, and the open access to organization's information due to outdated passwords.

Fahmy (2009) in a study on "Facebook, YouTube at work make better employees", and found that the employees who use social media are 9 percent more productive than those who do not. And also observed that 70 percent of the people who use social media for their personal surfing had sharpened their concentration.

Lucas (2011) did research on "An analysis and recommendations of the use of social media within the Co-operative extension system" and concluded that social media Constraints can be addressed by social media sensitization, knowledge, and training. Another option is to keep track of and share best practises for using social media. This can help extension educators who teach about the use of social media in agricultural extension.

Aguenzait (2012) conducted a study on 'Social Media and Productivity in the Workplace: Challenges and Constraints' was found that the use of social media has a positive impact on employee productivity, two-way communication and effective collaboration. Nonetheless, several other studies found the opposite as it was somewhat difficult to make direct correlation between productivity and social media. Thus, organizations should establish appropriate policies at workplace and determine how much use will be made of social media sites for job purposes. In general, organizations should work with, not against social media because organizations that fight the advancing technology are combating a losing battle.

Venkatesh *et al.* (2014) revealed in a study naming that "Understanding e government portal use in rural India: The role of demographic and personality characteristics" People's innovativeness, personality, motivations, and needs to use the internet play powerful roles in overcoming internal traits that restrain their adoption and use.

Saravanan *et al.* (2015) conducted research on **"**Social Media for Rural Advisory Services" and stated that using social media for professional purposes poses

a number of difficulties. This includes quality control and monitoring of posts, ensuring participation, satisfying diverse users, institutionalising social media, continuous engagement, skilled human resource to maintain social media, measuring the impact, a lack of capacity for tools and analytics that help monitor and assess the value of information, and raising awareness about social media's potential at the organisation.

Barau *et al.* (2017) made a study on "An overview of social media use in agricultural extension service delivery" and found that Many challenges are currently faced in using social media for agricultural extension service delivery; viz. illiteracy, shortage of infrastructure, limited participation, non-institutionalisation, lack of quality control, lack of adequate yardstick for measuring impact and need for gender sensitive approach.

Drahosova M (2017) concluded in his study **"**The analysis of advantages and disadvantages of use of social media in European Union". found that biggest drawback of social media use is the internet addiction followed by lack of security and information overload. And the biggest advantage is the exchange of information and communication.

Nchabeleng *et al.* (2018) conducted study on 'The uses, benefits and limitations of social media for public relations in South African non-governmental organisations' The results provide a holistic view of their experience in social media. The key benefits of using social media were identified as the increasing public relations interactions with audience, improving the accessibility of public relations communication, increasing the speed for feedback and input, social/peer and emotional support, potential to influence the public, improving the long-term cost-effective relationship of public relations communication, reaching youth and other audiences on specific issues. The limitations were identified as quality concerns, confidentiality and private information leaking to the public, and the reliability of information.

Ranieri (2019) study entitled 'Professional development in the digital age. Benefits and constraints of social media for lifelong learning' and found that benefits, including facilitating knowledge exchange by connecting communities of practice; keeping up to date; building a support network (which also includes providing feedback and mentorship as well as nurturing a sense of community); sharing resources and ideas (comprising the sharing of information during conferences); facilitating knowledge translation and post-publication peer review; and constraints, including propagation of inaccurate or inappropriate information (including hate speech or violent content); threats to professionalism (e.g., difficulty to mark the difference between personal and professional use); threats to privacy; lack of evaluation strategy of learning results; threats to productivity (especially in terms of waste of time); slow adoption due, for instance, to resistance to change or a lack of technical skills; lack or low level of assistance, especially for the pedagogical use of technological tools; lack of representation in participation (e.g., women, blacks, etc.)

Rostam (2020) conducted study on "Investigating The Advantages And Disadvantages Of Social Networks On Social Media" and found that Proponents of social media sites say online communities increase interaction with friends and family, give teachers, librarians and students valuable access to support and educational materials, facilitate social and political change, and accelerate the dissemination of useful information.

Poudel (2020) reported in her study "ICT Mediated extension services in Agharkhanchi district of Nepal" that the high cost of internet facilities in villages was first ranked among the financial constraints faced by the respondents for ICT tools utilization in agriculture.

Chapter III

RESEARCH METHODOLOGY

This chapter deals with research methods and techniques used under the study. It mainly describes the procedure followed in the selection of respondents. Besides, variables studied and their measurement procedure, data collection methods, and use of statistical tools have also been outlined. For better understanding, the chapter is divided into following sub heads:

3.1 Location of the study area

3.2 Research Design

3.3 Sampling and selection of respondents

3.4 Selection of Variables and their measurement

3.5 Hypothesis formulation

3.6 Tools and technique of data collection

3.7 Analysis and interpretation of data

3.1 Location of the study area

India is one of the oldest civilizations in the world with a kaleidoscopic variety and rich cultural heritage. It has achieved all-round socio-economic progress during the last 65 years of its Independence. India has become self-sufficient in agricultural production and is now one of the top industrialized countries in the world and one of the few nations to have gone into outer space to conquer nature for the benefit of the people. It covers an area of 32, 87,263 sq. km, extending from the snow-covered Himalayan heights to the tropical rain forests of the south. Agriculture is the primary source of livelihood for about 58% of India's population. Gross Value Added by agriculture, forestry, and fishing was estimated at Rs. 19.48 lakh crore (US$ 276.37 billion) in FY20. Share of agriculture and allied sectors in gross value added (GVA) of India at current prices stood at 17.8 % in FY20. Consumer spending in India will

return to growth in 2021 post the pandemic-led contraction, expanding by as much as 6.6%.(source IBEF). Presently India consists of 28 states and 8 union territories. The departments of agriculture of State governments are still the main agricultural extension agencies in India in terms of number of personnel and geographical coverage. India has a total of 0.12 million agricultural extension workers to serve a net cropped area of 141 million hectares and 158 million operational holdings.

3.2 Research Design

According to Kerlinger (1986: 279), 'a research design is a plan, structure and strategy of investigation so conceived as to obtain answers to research questions or problem. In (1998) defined it as the detailed blue print which guides a research study toward its objectives. Investigator has planned the research design according to the nature of the present study. There are several types of research designs are there but in the present study, Ex-post facto was adopted working upon the phenomena which is already taken place. The Research was conducted from December 2020 to November 2021. Due to emergence of second wave of COVID-19 data was collected through Google form Data collection tool. Online survey was conducted via Mail, WhatsApp, Facebook and phone call.

3.2.1 Method used in the study-Descriptive Survey

A descriptive survey method is one in which information is collected without changing the environment (i.e., nothing is manipulated). It is used to obtain information concerning the current status of the phenomenon to describe “what exist” with respect to variable or condition in a situation. Present trend, belief, public mind their view point and attitude their effect and development of new trend are described. This survey is most popular form of method used in quantitative research and for this data can be collected through different data collection tools like questionnaire, interview etc. questionnaire with closed ended questions are used in quantitative research while open ended are used in qualitative research. Here, for this study investigator has used closed ended question method. Questionnaire was circulated through the social media.

3.3 Sampling and selection of respondents

3.3.1 Selection of the study area.

The present "Study on Involvement of agricultural extension professionals in social media" was conducted in India.

3.3.2 Selection of respondents

Extension educationists and Extension service providers working in public sector, private sector and NGOs are selected for the study as respondents.

S.No.	Name of the State	No. of Respondents
1.	Andhra Pradesh	03
2.	Arunachal Pradesh	02
3.	Bihar	06
4.	Chhattisgarh	04
5.	Goa	02
6.	Gujarat	03
7.	Haryana	05
8.	Himachal Pradesh	03
9.	Jharkhand	04
10.	Karnataka	24
11.	Kerala	06
12.	Madhya Pradesh	02
13.	Maharashtra	03
14.	Manipur	02
15.	Mizoram	01
16.	Odisha	08

17.	Punjab	02
18.	Rajasthan	04
19.	Tamil Nadu	03
20.	Telangana	05
21.	Uttar Pradesh	17
22.	Uttarakhand	02
23.	West Bengal	06
S.No.	**Name of Union Territory**	**No. of Respondents**
1.	Delhi	06
2.	Jammu and Kashmir	01
3.	Puducherry	01
Total	**23 States+3 UT**	**120**

3.4 Operationalization of variables and their measurement

The two main variables in an experiment are the independent and dependent variable.

An **independent variable** is the variable that is changed or controlled in a scientific experiment to test the effects on the dependent variable.

A **dependent variable** is the variable being tested and measured in a scientific experiment.

The independent variable is the one the experimenter controls. The dependent variable is the variable that changes in response to the independent variable.

The two variables may be related by cause and effect. If the independent variable changes, then the dependent variable is affected. (Source: Carlson, Robert. A concrete introduction to real analysis. CRC Press, 2006. P.183.)

In this study investigator has taken involvement of agriculture extension professionals in social media as dependent variable and Age, Education, gender, place of work, sector of service, language use pattern in social media, scientific orientation, time spent on social media, approximate expenditure spent on social media, and ICT Training received as independent variable in the study.

Table 3.4.1 Measurement of Independent and dependent variable.

Variables	**Measurement**
Independent variables	
1. Age	Procedure followed by Hinge
2. Gender	Direct questioning
3. Education	Direct questioning
4. Income	Direct questioning
5. Place of work	Direct questioning
6. Sector of service	Direct questioning
7. Social media exposer	Modified scale of Supe
8. Language use pattern	Direct questioning
9. Time spent on social media	Direct questioning
10. Expenditure	Direct questioning
11. Duration of social media use	Direct questioning
12. ICT training received	Procedure followed by Bosco
13. Scientific orientation	Modified Scale of Supe
Dependent variables	
14. 1. Involvement	Questionnaire was developed for study.

1. Socio-economic and personal variable:

3.4.1.1 Age

Age is operationalized as the chronological age of the agricultural extension professionals in completed years at the time of investigation. The respondents were categorized into three age groups based on the procedure followed by Hinge (2009).

Table 3.4.2 Categorization of respondents according to their Age

S.No.	Category	Age (years)	Score
1.	Young	Less than 31	1
2.	Middle	31 to 50	2
3.	Old	More than 50	3

3.4.1.2 Gender

It is operationalized as the either of the two main categories (male and female) into which humans and most other living things are divided on the basis of their reproductive functions. Gender of the respondents was worked out on the basis of actual sex (male or female) of the respondents.

Table 3.4.3 Categorization of respondents according to their gender.

S.No.	Category	Indicants
1.	Female	1
2.	Male	2

3.4.1.3 Education

The variable education was operationalized as the level of formal education acquired by an agricultural extension professional. Here education of the respondents

is worked on the basis of formal education received by the respondents like Graduation / Post graduation /Ph.D.

Table 3.4.4 Categorization of respondents according to their Education

S.No.	Education level	Indicants
1.	Graduation	1
2.	Post-graduate	2
3.	Ph.D.	3

3.4.1.4 Income

It is operationalized as the earnings received from any physical work, mental work or both in monetary terms by the agriculture extension professionals. It is categorised into three types and score was assigned as follows.

Table no. 3.4.5 Categorization of respondents according to their Income.

S.No.	Category	Indicants
1.	Less than ₹. 50,000	1
2.	₹. 50,000 To ₹. 1.00,000	2
3.	More than ₹. 1,00,000	3

3.4.1.5 Place of work

It is operationalized as the location in which a currently employed person performs his or her job or work. Here we took place of work of the respondents on the basis of urban / semi-urban / rural. indicants are given in the below table.

Table 3.4.6 Categorization of respondents according to their place of work.

S.No.	Place of work	Indicants
1.	Urban	1
2.	Semi-urban	2
3.	Rural	3

3.4.1.6 Sector of service

A sector is an area of the economy in which businesses share the same or related business activity, product, or service. Sectors represent a large grouping of companies with similar business activities, such as the extraction of natural resources and agriculture. 1. Public sector means the part of an economy that consists of state-owned institutions, including nationalized industries and services provided by local authorities. Private sector-the part of a country's economy that consists of privately owned enterprises. NGO-it is a voluntary group or institution with a social mission, which operates independently from the government and others like own enterprises and business. The respondents were classified as per the sector they are belonged to and table is given below.

Table3.4.7 Categorization of respondents according to their place of work.

S.No.	Sector	Indicants
1.	Public sector	1
2.	Private sector	2
3.	NGO	3
4.	Other	4

3.4.1.7 Social media exposer

It is the extent to which audience members have encountered specific messages or classes of messages/media content in social networking sites. The

respondent was asked to indicate whether they were having the account in some popular social media platform.

Table 3.4.8 Categorization of respondents according to their social media exposer

S.No.	Platform	Indicants
1.	No	1
2.	Yes	2

3.4.1.7.1 Extent of social media use

It refers to extent to which agriculture extension professionals have encountered or used various popular social media platforms. The frequency of utilization of social media was classified as regular occasional and never. score assigned is three, two, one Respectively. On the basis of arithmetic mean (19.72) and standard deviation (03.00) data was classified into low, Medium and High. The table is given below.

Table 3.4.9 Categorization of respondents according to degree of social media use

S.No.	Platform	Indicants
1.	Low (<Mean- S.D.)	**<16.72**
2.	Medium (Mean±S.D)	**16.72-22.72**
3.	High (>Mean+ S.D.)	**>22.71**

Mean (19.72), Sd (03.00)

3.4.2.8 Language use pattern

It is operationalised that the principal method of human communication, consisting of words used in a structured and conventional way and conveyed by speech, writing, or gesture. The language used during the usage of the social media is categorised into five type and score was assigned as follows

Table 3.4.10 Categorization of respondents according to Language use pattern in social media

S.No.	Language	Indicants
1.	English	1
2.	Hindi	2
3.	Both English and Hindi	3
4.	Regional language	4
5.	Regional language and English	5

3.4.1.9 Time spent on social media

It is the average time spent on the social media by agriculture extension professionals such as 1 hour, 2-4 hour, 4-6 hour, more than 6 hour. Indicants are given in table.

Table 3.4.11 Categorization of respondents according to time spent on social media

S.No.	Time spent	Indicants
1.	1 Hour	1
2.	2-4 Hours	2
3.	4-6 Hours	3
4.	More than 6 Hours	4

3.4.1.13 Expenditure spent on social media

It is the amount of money spent on social media/internet over a period of time. In this study we took amount spent per month on social media such as ₹ 200, ₹ 500, ₹ 1000, ₹ 1500 and ₹ 3000. The indicants assigned as follows

Table 3.4.12 Categorization of respondents according to Expenditure spent on social media

S.No.	Expenditure	Indicants
1.	₹ 200	1
2.	₹ 500	2
3.	₹ 1000	3
4.	₹ 1500	4
5.	₹ 3000	5

3.4.1.14 Duration of social media use

It is operationalized as the since when the respondents started to use the social media. Score was assigned to the duration is given below.

Table 3.4.13 Categorization of respondents according to duration of social media use

S.No.	Duration	Indicants
1.	Less than 5 years	1
2.	5 years	2
3.	10 years	3
4.	More than 10 years	4

3.4.1.12 ICT training received

It is the acquisition of knowledge and skills by the respondent which is characterized by pre- service and in-service training. Procedure followed by Bosco (2000) with some modifications was used for the purpose of analysis. The respondents were categorised with the following scoring pattern.

Table 3.4.14 Categorization of respondents according ICT training received

S.No.	ICT Training Undergone	Score
1.	Yes	1
2.	No	0

3.4.1.13 Scientific orientation

It is the degree to which agricultural extension professionals is oriented to the use of scientific methods in decision making and agricultural services, this variable was measured with the help of scale developed by Supe (2007) with some modifications. The score was assigned to the statements as follows.

Table 3.4.15 Categorization of respondents according to scientific orientation towards social media

S.No.	Category	Score for positive statements	Score for negative statements
1	Strongly Agree	05	01
2	Agree	04	02
3	Undecided	03	03
4	Disagree	02	04
5	Strongly Disagree	01	05

And respondents were categorized as followed using mean value (40.23) and standard deviation (04.48). range is given in the below table.

Table 3.4.16 Categorization of respondents according to degree scientific orientation towards social media

S.No.	Category	Range
1.	Low (mean - SD)	Below 35.74
2.	Medium (mean ± SD)	35.74 to 44.17
3.	High (mean + SD)	Above 44.17

Mean (40.23) SD (04.48)

3.2 Dependent variable

3.2.1 Involvement of agriculture extension professionals in social media

It is operationally defined as the level of involvement of extension professionals in agricultural advisory services, information sharing, marketing services, research and development activities by use of social media. The involvement of agriculture extension professionals through social media was assessed through developed questionnaire. Respondents were categorized with the following score pattern.

Table 3.4.17 Categorization of respondents according to involvement in social media

S.No.	Category	Score
1.	Very high involvement	5
2.	high involvement	4
3.	Not decided	3
4.	Low involvement	2
5.	Very low involvement	1

The respondents were also grouped into three categories based on their involvement by taking mean and standard deviation as a measure of check.

Table 3.4.18 Categorization of respondents according to degree of involvement in social media

S.No.	Categories	Range	Score
1.	**Advisory services in social media**		
	Low	<11.75	**1**
	Medium	11.75-19.30	**2**
	High	>19.3	**3**
		Mean (15.52), SD (03.77)	
2.	**Information sharing in social media.**		
	Low	<11.29	**1**
	Medium	11.29-18.65	**2**
	High	>18.65	**3**
		Mean (14.97), Sd (03.68)	
3.	**Marketing Services in social media**		
	Low	<6.34	**1**
	Medium	6.34-13.86	**2**
	High	>13.86	**3**
		Mean (10.10), Sd (03.76)	
4.	**Use of social media for Research purpose**		
	Low	<12.65	**1**
	Medium	12.65-19.49	**2**
	High	>19.49	**3**
		Mean (16.07), Sd (03.42)	
5.	**Development purpose**		
	Low	11.69	**1**
	Medium	11.69-19.45	**2**
	High	>19.45	**3**
		Mean (15.57), Sd (03.87)	
6.	**Overall level involvement in social media**		
	Low	<72.25	**1**
	Medium	72.25-87.85	**2**
	High	>87.87	**3**
		Mean (72.25), Sd (15.59)	

a. Constraints of using social media

The constraints faced by the agriculture extension professionals were studied in terms of socio-psychological, economic, technological, institutional constraints. a three- point rating scale was used to measure the extent of constraints faced by the agriculture extension professionals in terms of major problem, minor problem and not a problem. With score Three, two and one respectively. The weighted mean scores of the individual respondents were then calculated. And then constraints are further ranked on the basis mean score obtained.

b. Benefits or advantages of social media platforms

To analyze the benefits relating to the social media by Agriculture Extension Professionals. A list of possible advantages is listed from contacting agriculture extension professionals, A three- point rating scale was used to measure the extent of advantage perceived by the agriculture extension professionals in terms of highly benefited, benefited and not benefitted with score three, two and one respectively. By using mean (24.80) and standard deviation (03.84) data was categorized into low, medium and high.

Table 3.4.19 Categorization of respondents according to degree benefits perceived in social media

S.No.	Category	Score
1.	Low (mean - SD)	Below 20.96
2.	Medium (mean $\pm$SD)	20.96 to 28.65
3.	High (mean + SD)	Above 28.65

Mean (24.80), Sd (03.84)

c. Impact perceived by agriculture extension professionals on online services

Five- point rating scale was used to measure the level of impact perceived by the agriculture extension professionals on their activity by social media. The score was assigned in terms of strongly impacted=5, moderately impacted= 4, undecided=3,

not impacted= 2 and negatively impacted=1. By using mean (21.11) and standard deviation (02.67) data was categorized into low, medium and high.

Table 3.4.20 Categorization of respondents according to their level of impact perceived in their online services in social media

n=120

S.No.	Category	Score
1.	Low (mean - SD)	Below 18.44
2.	Medium (mean ± SD)	18.44 to 23.78
3.	High (mean + SD)	Above 23.78

Mean (21.11) Sd (02.67)

3.5 Hypothesis Formulation

According to Kerlinger (1973) Hypothesis is the conjectural statement of the relation between two or more variables. Hypothesis is always in declarative sentence form, and they relate either generally or specifically, variables to variables.

H_{0a}: There is no significant association between independent variables and involvement of agriculture extension professionals in social media.

H_{1b}: There is significant association between independent variables and involvement of agriculture extension professionals in social media.

3.6 Tools and technique of data collection

For the present study, the investigator has developed questionnaire as tool for data collection and it is meant for the agricultural extension professionals. Based on the objectives of the study, the questionnaire was prepared. Expert advice has been taken before finalization of questionnaire. For developing questionnaire lots of study has been done by going through newspaper, journals, research papers, thesis etc. A questionnaire was developed for collection of data in the study which consists of four

parts based on objectives of the study. "Part A" deals with questions related to Socio-Economic and psychological characteristics of respondents, "Part B" deals with questions on involvement of agriculture extension professionals in social media, "Part C" deals with questions related to the impact perceived by the respondents and "Part D" deals with advantages and constraints related to social media. The google form was used for collection of data where questionnaire were sent by researcher and filled in by respondents in online mode.

3.7 Analysis and interpretation of data

The data collected from the respondents were tabulated and scored according to respective categories. Various Statistical methods were used in the study for precise and meaningful analysis and interpretation of the data collected which are given as follows.

3.8 Statistical analysis of Data

a. Frequency and percentage

Simple comparisons were made on the basis of frequency and percentage. In order to calculate percentage, the frequency of a particular cell was divided by the total no. of respondents in that particular category to which cell belongs and multiplied with hundred, percentage was calculated up to two places after a decimal point. This has been used in the thesis and proved helpful in organizing the data with clarity and precision percentage were calculated to find out distribution of respondents according to different independent and dependent variables.

b. Arithmetic mean

Mean or arithmetic average is the obtained by dividing the sum of scores by the total number of respondents.

Mean was calculated by using following formula,

$$\overline{X} = \frac{\sum X}{n}$$

Where,

X = Mean

∑ X = Sum of observations

n = Number of respondents

c. Standard Deviation

In statistics, the standard deviation is a measure of the amount of variation or dispersion of a set of values**.** Operational definition of standard deviation – Standard deviation is the square root of the arithmetic mean of the squares of all deviations being measured from the arithmetic mean of the distribution. The symbol for Standard Deviation is **σ** (the Greek letter sigma). This is the formula for Standard Deviation:

This is the formula for Standard Deviation:

$$\sigma = \sqrt{\frac{1}{N}\sum_{i=1}^{N}(x_i - \mu)^2}$$

Where,

μ = mean of all the scores of the respondents

σ = standard deviation

N = total number of respondents

Xi = each score of the respondents

d. Rank order

According to the frequencies and percentages of respective categories rank order was given to the observations. First rank given to that category whose frequency and percentage is highest and so on. Roman numerals are used to denote rank order I, II, III, IV, V and so on.

e. Chi- square test

Chi-square test was used to check the relationship between the independent variables and dependent variables were qualitative in nature thus correlation was not possible.

Chi-square test is done to test independence of variables. While it does not give magnitude of relationship, it is a reliable test to identify whether the difference between both the variables are significant or not.

Formula for calculating Chi-square, X^2 =

$$\chi_c^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

With a degree of freedom (r-1)*(c-1)

Where,

Oi = observed frequency

Ei = Expected frequency

r = no. of rows

c = no. of columns

Chapter IV

RESULTS AND DISCUSSION

This chapter deals with the findings of the present study. On the basis of objectives data were collected and collected data were coded, classified, tabulated and collected data were analyzed by using statistical methods and interpreted. Then results were presented and discussed systematically under the following sub heads. :-

4.1 Socio-economic and psychological profile of the agriculture extension professionals.

4.2 Assessment the involvement of agriculture extension professionals in different social media

4.3 Documentation of activity performed by the agriculture extension professionals in the social media.

4.4 Assessment of extent of advantages and constraints faced by agriculture extension professionals in social media.

4.5 Self-appraisal of agriculture extension professionals regarding their activities in social media.

4.6 Relationship between some selected dependent and independent variable.

4.1 Socio-economic and psychological profile of the agriculture extension professionals

Respondents of the study were agriculture extension professionals. Their socio-economic and psychological profiles were studied in terms of Age, Gender, Education, Income, Place of work, Sector of service, Social media exposer, Language use pattern in social media, Time spent on social media, Expenditure spent on social media, Duration of social media, ICT training received and Scientific orientation.

4.1.1 Age

Table 4.1. Distribution of respondents according to their age

S.No.	Age group (yrs.)		Respondents n=120	
			Frequency	**Percentage**
1.	Young	Less than 30	58	48.34
2.	Middle	30 to 50	53	44.16
3.	Old	Above 50	9	07.50

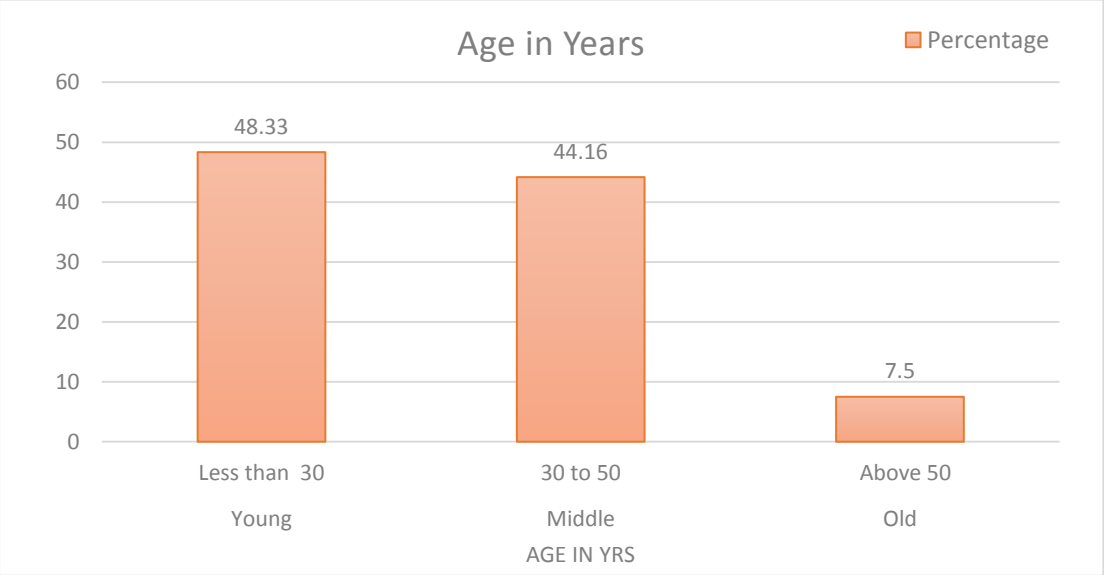

Fig. No. 2. Graphical representation of age (in years)

The data regarding age of the respondents presented in Table 4.1 that 48.34 per cent of the agriculture extension professionals were belongs to young age followed by middle age 44.16 per cent and old age 7.5 percent. From the data we can conclude that majority of the extension professionals were belongs to young age group that is less than 30 years the similar findings were also observed by **Raksha *et.al* (2014)** in his study "Attitude of the agricultural extension personnel towards use of information technologies in field work" that nearly half of the extension agents

were belongs to young age group, slightly more than one-fourth of the extension agents are belongs to middle age group and less than one-fourth of the extension agents are belongs to the old age group.

4.1.2 Gender

Table 4.2 Distribution of respondents according to their Gender.

S.No.	Gender	Respondents n=120	
		Frequency	Percentage
1.	Male	90	75.00
2.	Female	30	25.00

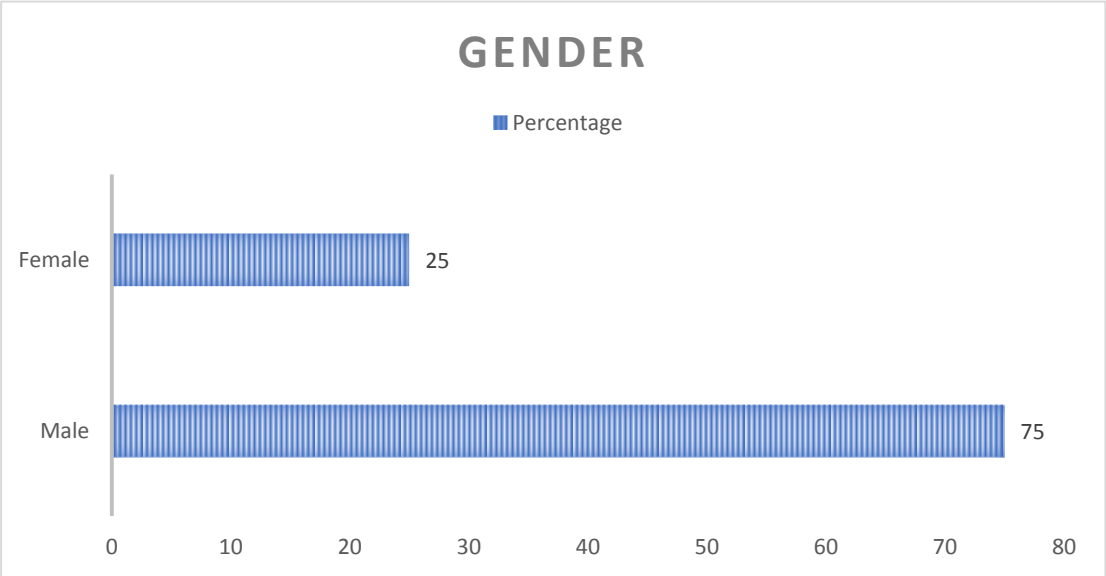

Fig. No. 3. Graphical representation of Gender in percentage

The Table 4.2 revealed that three-fourth of respondents (75.00%) were male and rest of 25.00 per cent were female. Thus, we can conclude that majority of the agricultural extension professionals were male. Similar results found by **Raghava *et.al.* (2014)** in his study "ICT use behaviour of scientists of KrishiVigyan Kendra's" that more than two third (69.00%) of the KVK scientists were males, whereas 31 per cent were females.

4.1.3 Education

Table 4.3 Distribution of respondents according to their Education.

S.No.	Education	Respondents n=120	
		Frequency	Percentage
1.	Graduation	15	12.50
2.	Post-graduation	61	50.84
3.	Ph.D.	44	36.66

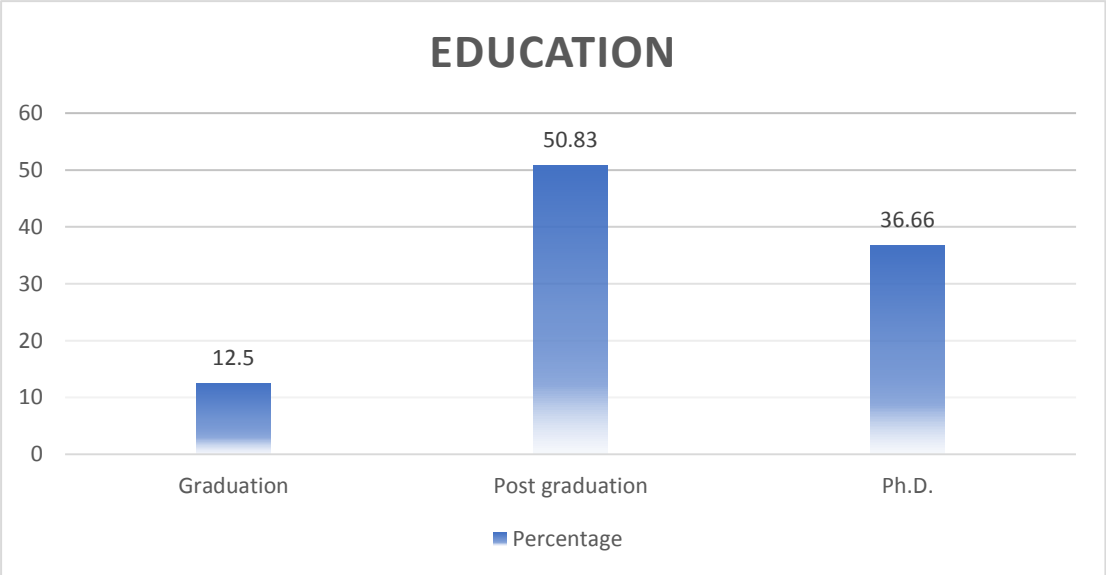

Fig. No. 4 Graphical representation of respondent's education

The above Table 4.3 represents that 50.84 per cent of the respondents stated that they had post-graduation followed by 36.66 per cent Ph.D. and 12.50 per cent graduation. From the result we can conclude that majority of the agricultural extension professionals were had post-graduation degree with them. The results are in line with the study of **Amar et.al (2014)** in his research 'Information and communication technology used by the scientists in Krishi Vigyan Kendra and Regional Research Centre' that 83.33 per cent of the respondents were had M.Sc. degree while 16.67 per cent of the respondents were had Ph.D. degree of education.

4.1.4 Income

Table 4.4 Distribution of respondents according to their Income.

S.No.	Income in ₹. per month	Respondents n=120	
		Frequency	**Percentage**
1.	Less than ₹. 50,000	48	40.00
2.	₹. 50,000 to ₹. 1,00,000	36	30.00
3.	More than ₹. 1,00,000	36	30.00

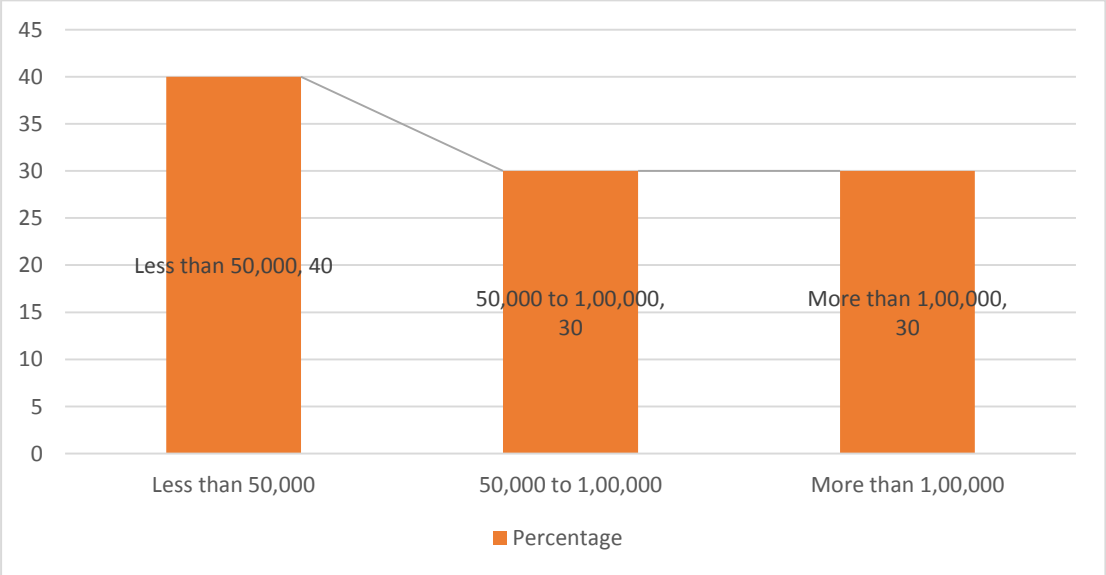

Fig. No. 5. Graphical representation of respondents according to their Income.

From the Table 4.4 we can observe that 40.00 per cent of the respondents said that they are getting less than ₹. 50,000 income followed by 30.00 per cent getting ₹.50,000 to 1,00,000 and remaining 30.00 per cent getting more than ₹. 1,00,000. From the above table we can conclude that majority were in the income group of less than ₹. 50,000.

4.1.5 Place of work

Table 4.5 Distribution of respondents on the basis of their place of work

S.No.	Place of work	Respondents n=120	
		Frequency	Percentage
1.	Urban	57	47.50
2.	Semi-urban	45	37.50
3.	Rural	18	15.00

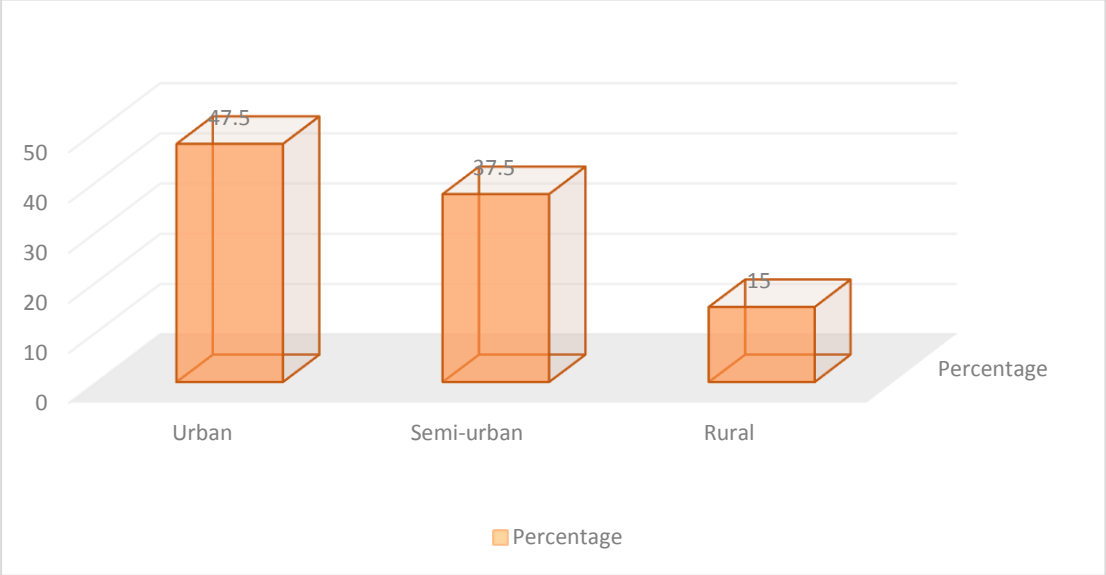

Fig. No. 6. Graphical representation of respondents on the basis of their place of work

The Table 4.5 represented 57.00 per cent of respondents were told that they are working in urban areas followed by 45.00 per cent in semi-urban and 18.00 per cent in Rural areas. From the above result we can conclude that majority of the agriculture extension professionals are working in urban areas. The reason may be getting greater opportunities to receive education, health care, and services such as entertainment in urban areas as compare to rural and semi-urban areas.

4.1.6 Sector of working

Table 4.6 Distribution of respondents according to their sector of working.

S.No.	Sector	Respondents n=120	
		Frequency	Percentage
1.	Public sector	58	48.34
2.	Private sector	27	22.50
3.	NGO	3	02.50
4.	Other	32	26.66

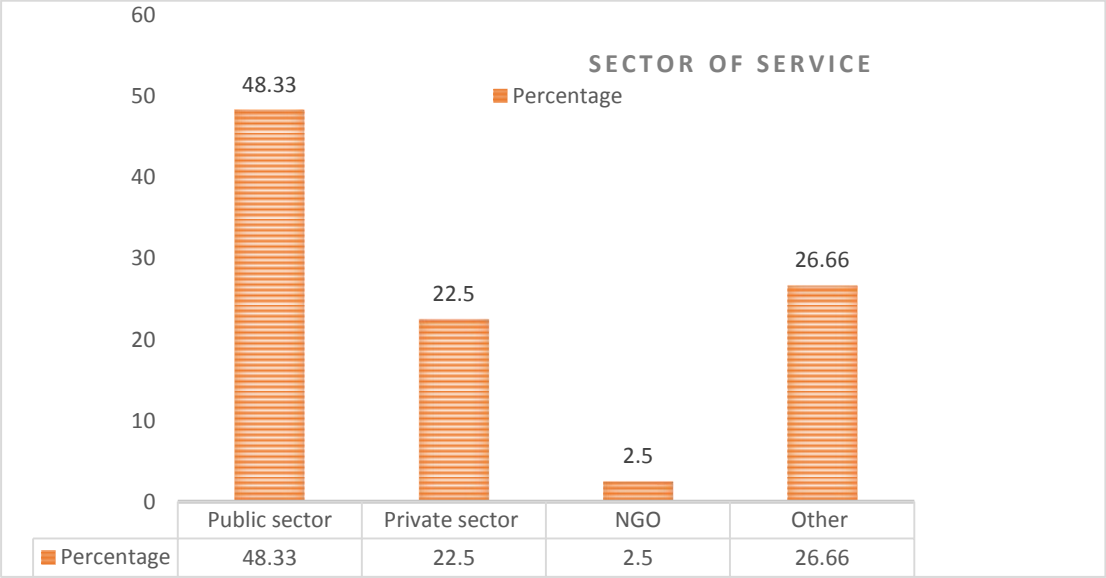

Fig. No.7. Graphical representation of respondents according to their sector of working.

Table 4.6 reveals that 48.33 per cent of the respondents stated that they are working in public sector followed by 26.66 per cent others like their own business, 22.50 per cent private sector and 02.50 per cent in NGOs. From the above table we can conclude that majority of the agricultural extension professionals are working in public sector. The reason may be that public sector employees get good salary as compared to private sector.

4.1.7 Exposer to Social Media

Table 4.7 Distribution respondents according to their social media platforms.

n= 120

S.No.	Platform	Yes		No	
		f	%	f	%
1	Facebook	105	87.50	15	12.50
2	WhatsApp	120	100.00	00	00.00
3	Email	120	100.00	00	00.00
4	Instagram	75	62.50	45	37.50
5	Twitter	66	55.00	54	45.00
6	YouTube	104	86.66	16	13.34
7	LinkedIn	77	64.16	43	35.84
8	Snapchat	30	25.00	90	75.00
9	WeChat	07	05.84	113	94.16
10	Pinterest	17	14.16	103	85.84

From the above Table 4.7 it was observed that cent per cent of the agricultural extension professional had account in WhatsApp and Email followed by 87.50 per cent in Facebook, 86.66 per cent in YouTube, 64.16 per cent LinkedIn, 62.50 per cent in Instagram, 55.00 per cent in Twitter, 25.00 per cent in Snapchat, 14.16 per cent in Pinterest and 5.84 per cent in WeChat.

Almost all of agricultural extension professionals are had account in WhatsApp and email. More than three fourth of the agricultural extension professionals had account in Facebook these findings are matching with findings of the **Saravanan *et.al.*, (2018)** who conducted study on "The online culture of agriculture: exploring social media readiness of agricultural professionals" found that in India Major social media platforms used by agriculture extension professionals is Facebook, WhatsApp, Google, YouTube, Blogs, Wikis and Twitter and **Ellison (2007)** found that majority use smart phones by adopting the Web 2.0-based

applications of SNSs and approximately 72 per cent use Facebook, 31 per cent Pinterest, 28per cent Instagram, 25 per cent LinkedIn, and 23 per cent Twitter. In a study entitled "The benefits of Facebook "friends:" Social capital and college students' use of online social network sites.".

4.1.7.1 Extent of use of social media

Table 4.8 Distribution of respondents according to their extent of use of social media platforms.

n=120

S.No.	Platform	Regular		Occasional		Never	
		f	%	f	%	f	%
1	Facebook	53	44.16	49	40.84	18	15.00
2	WhatsApp	118	98.34	02	01.66	00	00.00
3	Email	103	85.84	17	14.16	00	00.00
4	Instagram	53	44.16	23	19.16	44	36.66
5	Twitter	22	18.33	39	32.50	59	49.16
6	YouTube	77	64.16	33	27.50	10	08.33
7	LinkedIn	19	15.83	51	42.50	50	41.66
8	Snapchat	09	07.50	22	18.33	89	74.16
9	WeChat	00	00.00	05	04.16	115	95.83
10	Pinterest	03	02.50	12	10.00	105	87.50

It is evident from Table 4.8 that 98.34 per cent of the respondents stated that they are using WhatsApp application regularly followed by email that is 85.83 percent, YouTube 64.16 percent, Instagram and Facebook 44.16 percent, 18.33 per cent respectively, twitter, 07.50 per cent snapchat, 02.50 per cent Pinterest and 00.00 per cent WeChat.

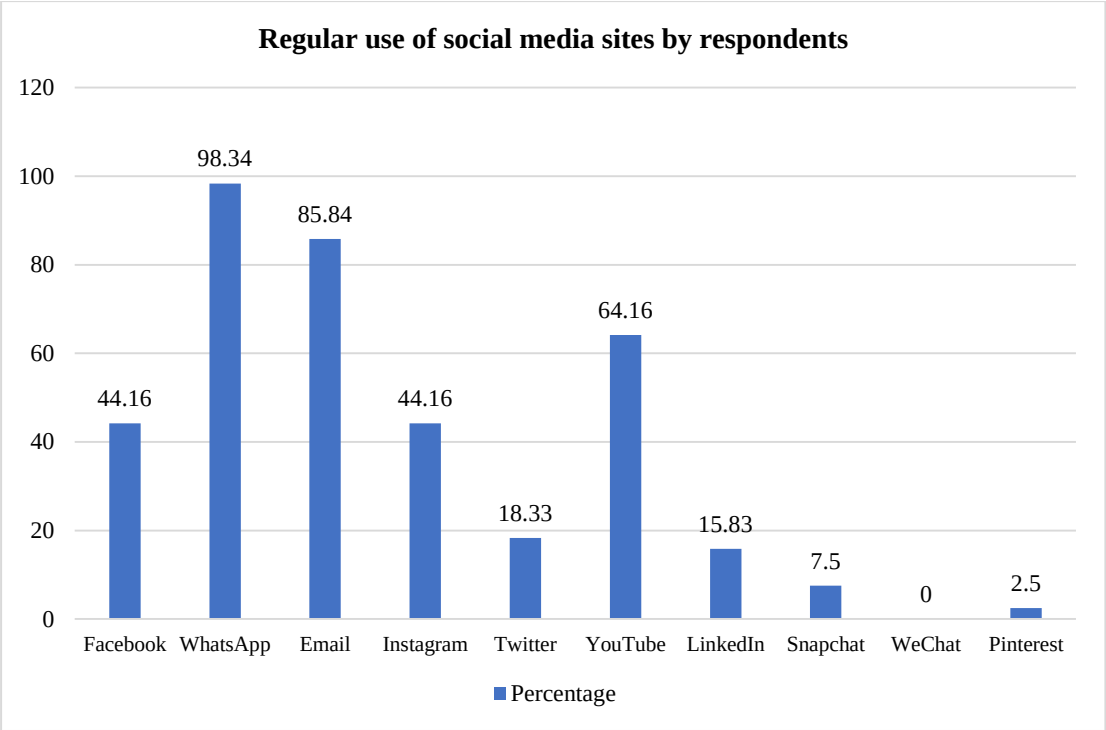

Fig. No. 8 Graphical representation of regular using social media platforms by respondents

Similar findings also found in **Kamruzzaman (2017**) in his research on "How do extension agents of DAE use social media for strengthening agricultural innovation in Bangladesh?" also reported that majority of the agriculture extension agents of the DAE of Bangladesh use Facebook followed by other social media like YouTube, Twitter, Instagram and LinkedIn. In that way results of the present study is similar to the findings in Bangladesh. **Doval** (**The Times of India 2021)** in a news article "TikTok, WeChat, baidu and UC browser among 59 Chinese apps permanently banned in India" that Indian government is officially banned the chines WeChat social media platform. Hence, WeChat users in India is zero.

The total score of extent of use were added and three strata were made based on the basis of Cumulative square root frequency method (CSRF) for overall adoption category.

Table.4.9: Distribution of the respondents on the basis of level of use of social media platforms.

n=120

S.No.		Category	Strata	Frequency	Percentage
1.	Extent of use	Low	<16.72	34	28.34
		Medium	16.72-22.72	68	56.66
		High	>22.71	18	15.00

Mean (19.72), Sd (03.00)

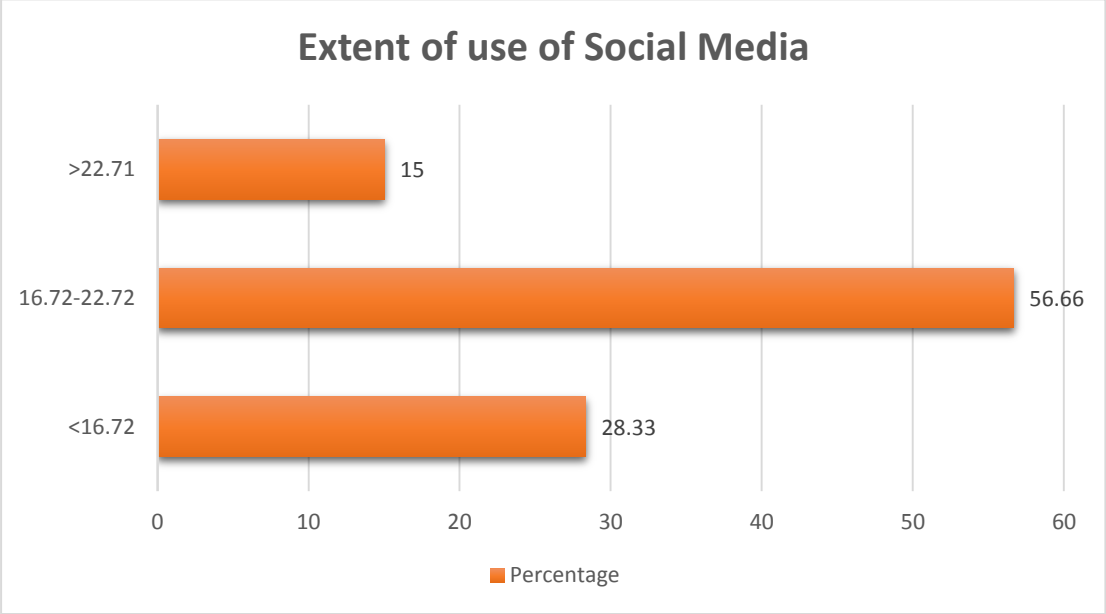

Fig.No.9. Graphical representation of respondents on the basis of level of use of social media platforms.

The data from the Table 4.9 represents that 56.66 per cent of respondents show medium level of use in social media followed by 28.34 per cent low level and 15.00 per cent high level.

From the result we can conclude that majority (56.66 per cent) of the agriculture extension professionals had shown medium level of use of social media. The reason may be social media is so popular because it allows people to manage and accomplish their everyday activities. It is often easier and more convenient to access

information, provide information and communicate via social media. The results of the study is supported by **Guraya et. al (2019)** who conducted study on "Comparing the extent and pattern of use of social networking sites by medical and non-medical university students: a multi-centre study" that majority of the respondents i.e., 54.00 per cent using social media for "keep in touch with peers and tutors" was three to five times a day.

4.1.8 Language use pattern in social media

Table 4.10: Distribution of respondents according to Language use pattern in social media

S.No.	Language	Respondents n=120	
		Frequency	Percentage
1.	English	58	48.34
2.	Both English and Hindi	27	22.50
3.	Regional language	03	02.50
4.	Regional language and English	32	26.66

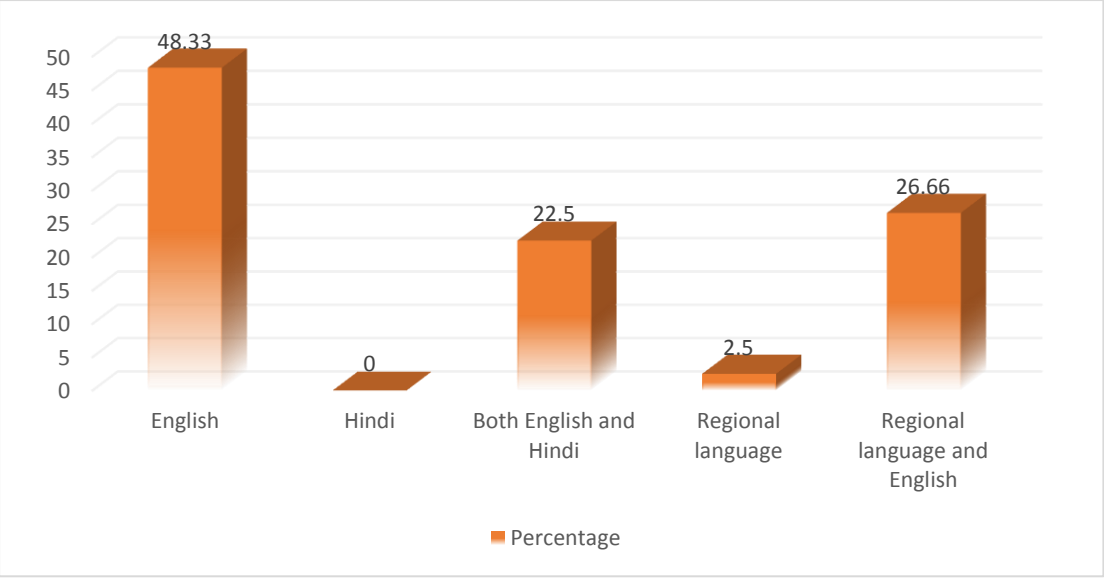

Fig. No. 10. Graphical representation of respondents according to Language use pattern in social media

The Table 4.10 indicates that 48.34 per cent of the respondents stated that they use social media in English language followed by 26.66 per cent in regional language and English, 22.50 per cent in both English and Hindi and 02.50 per cent in regional language. From the result we can conclude that majority of the extension professional use English language in social media. The reason may be that the English is considered to use as worldwide language of the internet (**Korpela, 1995)** this progress force professionals to acquire more information through internet. **Cunliffe (2013)** stated that English is the most preferred language among the respondents for using social networking sites like Facebook. The study entitled "Young Bilinguals' Language Behavior in Social Networking Sites: The Use of Welsh on Facebook".

4.1.9 Time spent on social media

Table 4.11 Distribution of respondents according to their time spent on social media

S.No.	Time spent on social media	Respondents n=120	
		Frequency	Percentage
1.	1 Hour	25	20.84
2.	2-4 Hour	69	57.50
3.	4-6 Hour	24	20.00
4.	More than 6 Hour	2	01.66

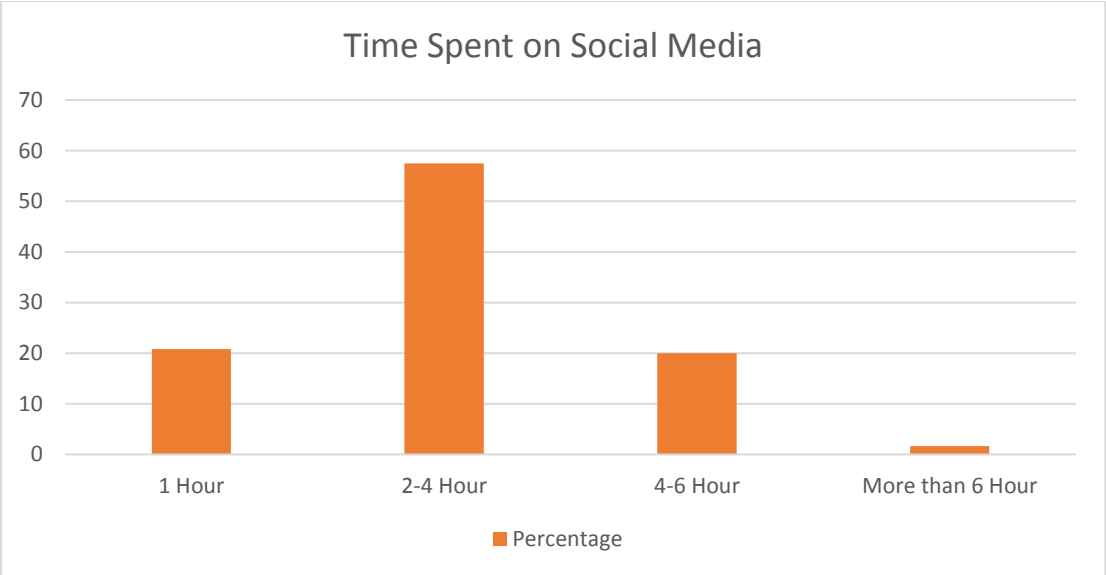

Fig. No. 11. Graphical representation of respondents according to their time spent on social media.

The data given in the Table 4.11 reveals that 57.50 per cent of the respondents indicated that they use social media 2-4 Hours per day followed by 20.84 per cent respondents for 1 hour per day, 20.00 per cent respondents for 4-6 hour per day and 01.66 per cent respondents for more than 6 hours per day. From the result we can conclude that majority of the agriculture extension professionals use social media for 2-4 hours per day. Similar findings also found in **Ahmad *et.al.*, (2018)** stated in their study "Social Networking and Depression among University Students" that most (53.5%) of the respondents were of the view that they used social media for one to three hours per day which is a significant time period for adults. Twenty-nine per cent of the respondents spend almost six hours per day on Facebook and twitter, while 17.5% respondents were of the view that they spend more than six hours a day on social media and **Vinaya (2017)** also stated that 58.00 per cent of the respondents use social media for 1-2 Hours per day followed by 18.00 per cent use 2-4 hours per day and 12.00 percent use less than one hour. In his research "A study on effect of social media intervention on knowledge level of agriculture input dealers". **Chandramouli (The times of India, 2020)** stated that social media usage, on average, before the lockdown was nearly 2:00 to 2:30 hours per day. But after lockdown figures jumped to 4:00 to 4:30 hours per day because of the lockdown effect**.**

4.1.10 Expenditure spent on social media

Table 4.12: Distribution of respondents according to the expenditure spent on social media per month

n=120

S.No.	Expenditure in ₹. Per Month	Respondents n=120	
		Frequency	**Percentage**
1.	₹. 200	68	56.66
2.	₹. 500	43	35.84
3.	₹. 1000	09	07.50

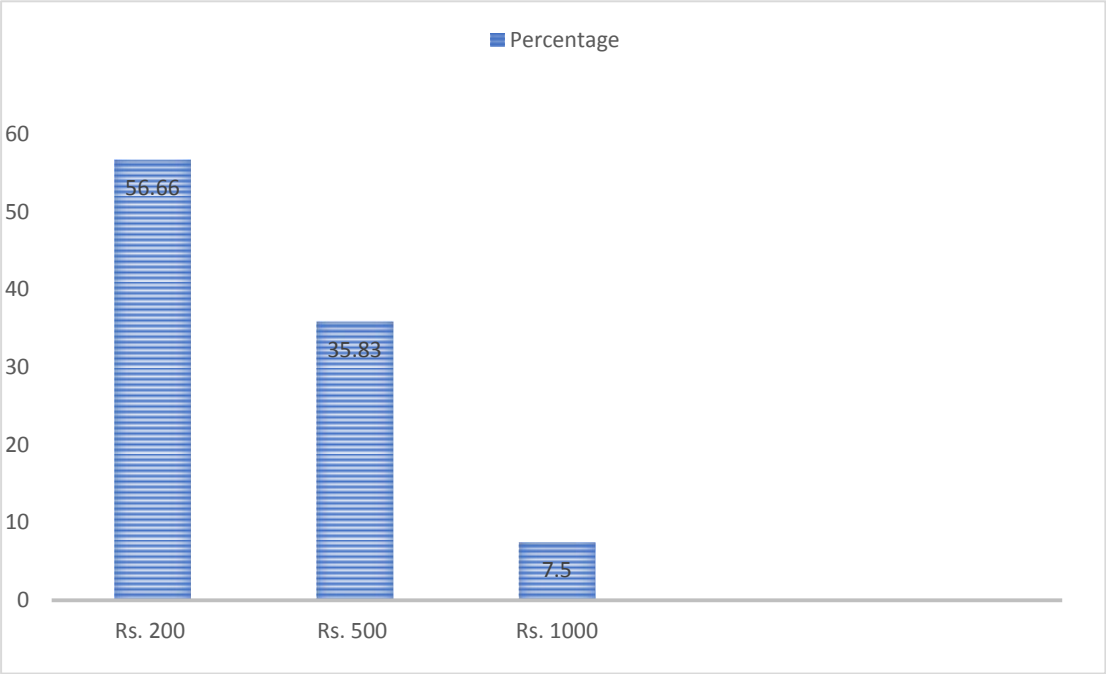

Fig. No. 12. Graphical representation of respondents according to the expenditure spent on social media

Data regarding expenditure spent on social media per month in Table 4.12 clearly states that more than half of the respondents i.e., 56.66 per cent spends ₹. 200 Per month, 35.84 per cent spends ₹. 500 Rs. And 07.50 per cent spends ₹. 1000 Per

month. Contradictory results are found by the **Fayaz (2020)** that majority i.e., 63.00 per cent of respondents spending ₹. 500 per month followed by 32.00 per cent ₹. 200 and 05.00 percent more than ₹. 1000. in study entitled "Study on social media utilization pattern of the Ph D students in Acharya Narendra Deva University of Agriculture and Technology".

4.1.11 Duration of social media use

Table 4.13 Distribution of respondents according to duration of social media use.

n=120

S.No.	Duration	Respondents n=120	
		Frequency	Percentage
1.	Less than 5 years	14	11.66
2.	5 years	55	45.83
3.	10 years	34	28.33
4.	More than 10 years	17	14.16

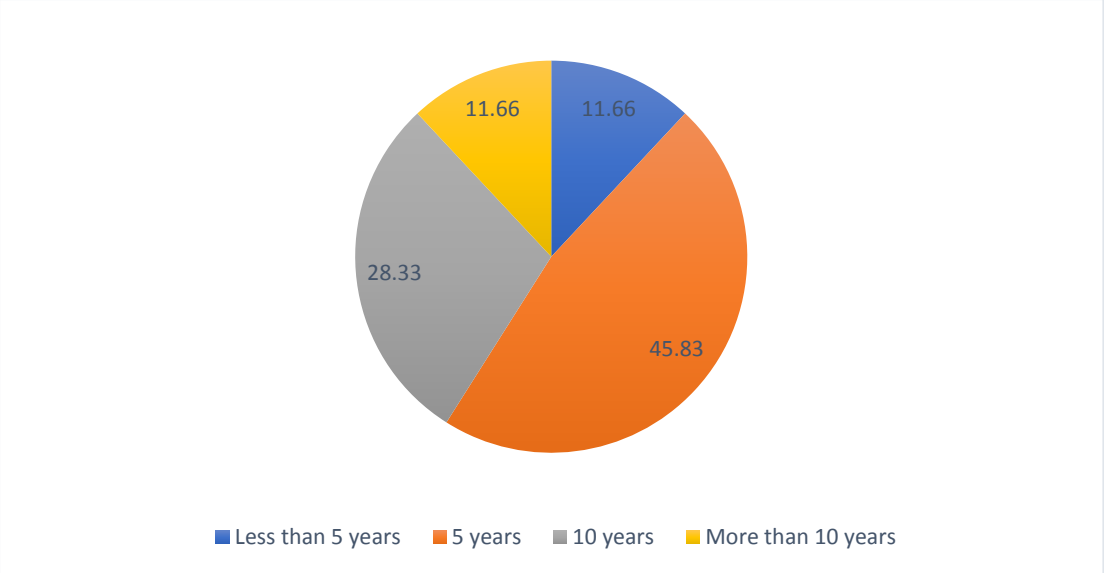

Fig. No. 13. Graphical representation of respondents according to duration of social media use.

From the Table 4.13 we can observe that 45.83 per cent of the respondents said that they are using social media for '5 years' followed by 28.33 per cent for'10 years', 14.16 per cent was for "more than 10 years" and 11.66 per cent of each for 'less than 5 year'. From the above result we can conclude that majority of the agricultural extension professionals(45.83 per cent) using social media since five to ten years. The reason may be that majority of the social networking sites are popularized after 2010 in India. **Sardesai (The Indian Express 2021)** stated in a news article that majority of the social media platforms are become popular after 2014 in India.

4.1.12 ICT training Received

Table 4.14 Distribution of respondents according to ICT training received.

n=120

S.No.	Training received	Respondents n=120	
		Frequency	Percentage
1.	Yes	24	20.00
2.	No	96	80.00

The data given in Table 4.14 reveals that 80 per cent of the respondents didn't receive ICT training followed by 20 per cent respondents received the ICT related training. From the result we can conclude that majority of the agricultural extension professionals were didn't received any training related to the ICT. Similar findings also observed by **Khamoushi *et al.*, (2015)** in his study "Factors affecting familiarity and usage of Information and Communication Technologies by Agricultural Extension Scientists in North India" where they found more than half (67.53%) of the respondents were not received any ICT training, slightly less than one-fourth (22.73%) of them had in low category of ICT training, while 5.2 per cent of them had in high category of ICT training and also **Kirti (2017)** stated that majority of respondents i.e., 92.11 per cent had neither received training nor participated in a computer-related competition, followed by 26.46 per cent respondents who had either received any training on computer or participated in any computer-related competition, and 19.41 per cent respondents who had both received training on

computer and participated in any computer-related competition found in her research at Banaras Hindu University titled "A study on digital empowerment of digital natives." Taking training as a parameter.

4.1.13 Scientific Orientation

Table 4.15 Distribution of respondents based on their scientific orientation towards social media

n=120

S.No.	Statements	Strongly agree		Agree		Undecided		Disagree		Strongly disagree	
		f	%	f	%	f	%	f	%	f	%
1	Using social media for better agriculture development.	56	46.66	54	45.00	05	04.16	04	03.33	01	00.83
2	Using social media for collection of scientific information	55	45.83	50	41.66	05	04.16	08	06.66	02	01.66
3	Attending webinar for gaining knowledge	56	46.66	56	46.66	04	03.33	03	02.50	01	00.83
4	Reading scientific journals in social media	34	28.33	55	45.83	12	10.00	13	10.83	06	05.00
5	Using social media for time pass	35	29.16	67	55.83	18	15.00	00	00.00	00	00.00
6	Subscribing of scientific journals through social media	27	22.50	53	44.16	16	13.33	21	17.50	03	02.50
7	Use of social media to share the knowledge	61	50.83	52	43.33	05	04.16	01	00.83	01	00.83
8	Guiding farmers through social media about agricultural issue	48	40.00	52	43.33	11	09.16	06	05.00	03	02.50
9	Use of social media for entertainment purpose	40	33.33	53	44.16	15	12.50	07	05.83	05	04.16
10	Getting information from social media is time taking	31	25.83	18	15.00	25	20.83	31	25.83	15	12.50

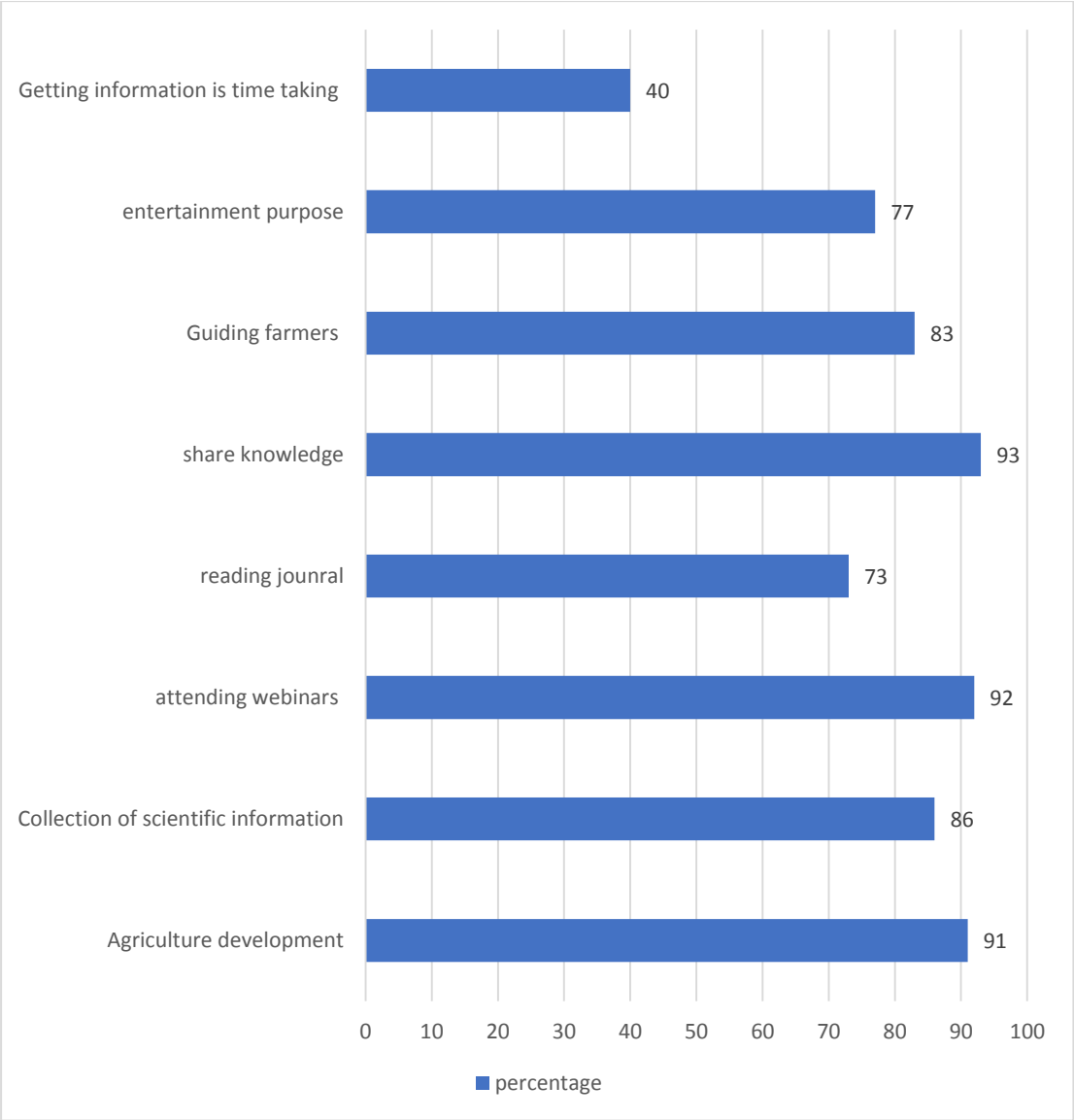

Fig. No. 14 Graphical representation of respondents according to their responses to the statements

The Table 4.15 reveals that 50.83 per cent of agriculture extension professionals strongly agreed to the statement "Use of social media to share the knowledge", followed by 43.33 per cent agreed, 04.16 per cent were undecided, 0.83 per cent were disagreed and 0.83 per cent are strongly disagreed. From the statement we can conclude that about 94.00 per cent of agriculture extension professionals are agreed that they are using social media for sharing the knowledge. Similar findings also found by **Kiron et.al. (2012)** that about 86.00 per cent of managers of the organization valued social media as a means of knowledge sharing for their business.

The reason may be that advanced social media (SM) tools have increasingly attracted global attention, due to their pervasiveness and social impact. The dramatic development of this media form has revolutionized how people share their knowledge, and communicate and collaborate. With respect to the third statement "Attending webinar for gaining knowledge". About 92.00 per cent of the respondents were agreed. Majority of the professionals are scientifically orientated towards social media for attending webinars through social media. Because since Webinars take place over the Internet directly on their computer, there is no need to leave the office or factor in travel time and many agricultural extension professionals are using this technology as a time-efficient method of training and delivering knowledge. Social media applications are also making it easier to attend Webinars. Being able to listen and/or view a session from your tablet or smartphone gives you the option to view them at any time, in any place, because of these reasons many professionals are attending webinars in social media **(Hopkins 2014).** Also, we can observe from the statement "Getting information from social media is time taking" about 39.00 per cent of the agriculture extension professionals are disagreed. The reason may be getting information through social media is not time taking and it is very fast.

On the basis of mean (40.23) and standard deviation (04.48) data was further classified into low, medium and high.

Table 4.16. Distribution of the respondents on the basis of level of scientific orientation

n=120

S.No.		Category	Strata	Frequency	Percentage
1.	Scientific Orientation	Low	<35.74	19	15.83
		Medium	35.74-44.17	91	75.83
		High	>44.17	10	08.33

Mean (40.23), Sd (04.48)

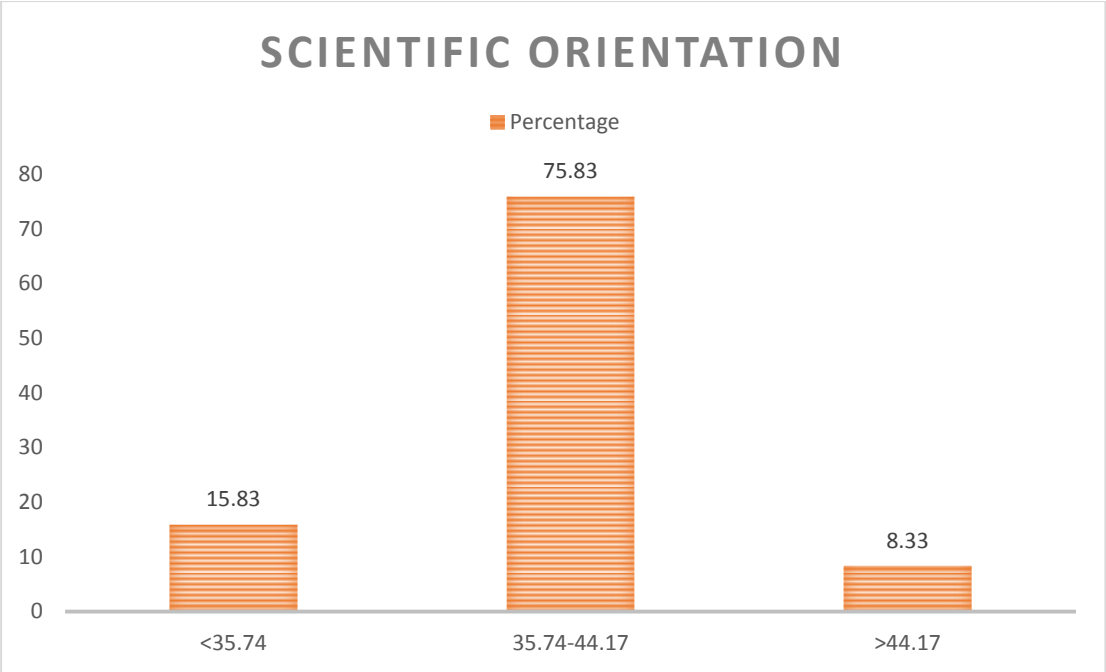

Fig. No. 15. Graphical representation of respondents on the basis of level scientific orientation.

It is apparent from the Table 4.16 that the maximum number of respondents i.e., 75.83 per cent had medium level of scientific orientation followed by 15.83 per cent of respondents low level and 08.33 per cent respondents high level.

Scientific orientation is a systematic approach to researching questions and problems through objective and accurate observation, collection and analysis of data, direct experimentation, and replication (repeating) of these procedures. Almost all the professionals having graduation and master degree. Majority of agricultural extension professionals had shown medium level of scientific orientation towards social media the reason may be because of the education level of the agriculture extension professionals. The results are in line with results of **Sajith (2014)** made a study on "adoption of recommended package of practices by coconut farmers of Mahe region in Union territory of Pondicherry" found majority i.e., 68.67 per cent of the respondents had medium level of scientific orientation followed by (17.33 per cent) low level and (14.00 per cent) high level.

4.2 Assess the involvement of agriculture extension professionals in different social media

4.2.1 Advisory services in social media

Table 4.17. Distribution of respondents based on their involvement in social media for advisory services

n=120

S.No.	Statements	VHI		HI		MI		LI		NI	
		f	%	f	%	f	%	f	%	f	%
1.	Advising farmers related to package of practices.	34	28.33	38	31.66	33	27.50	11	09.16	04	3.33
2.	Advising farmers about new technologies.	41	34.16	46	38.33	24	20.00	06	05.00	03	02.50
3.	Advising farmers about new govt schemes.	44	36.66	38	31.66	26	21.66	07	05.83	05	04.16
4.	Advising farmers about disease and pest	46	38.33	38	31.66	20	16.66	13	10.83	03	02.50

VHI: Very High Involvement, HI: High Involvement, MI: Medium involvement, LI: Low Involvement, NI: No Involvement

From the above Table 4.17 it was observed that 38.33 per cent of the agricultural extension professional had shown high involvement in advising farmers about new technologies followed by 34.16 per cent very high involvement, 20.00 per cent medium involvement, 05.00 per cent low involvement and 02.50 per cent no involvement.

Also, it was found that 36.66 per cent of the agricultural extension professional had shown very high involvement in advising farmers about new government schemes followed by 38.00 per cent high involvement, 21.66 per cent medium involvement and 5.00 per cent no involvement.

Very less number that is 02.50 per cent of the agricultural extension professional had shown no involvement in advising farmers about new technologies and 10.83 per cent of the agricultural extension professional stated that they show low involvement in advising farmers about disease and pest.

From the result we can conclude that majority of the extension professionals involved in giving information about the new technologies which are more useful for the farmers. Improved availability of, and access to, information and communication technologies (ICTs) – especially mobile phones, computers, internet, and social media – has provided many more opportunities for agriculture extension professionals to advice farmers. and agricultural extension professionals are working for the transfer of technology from the government institution to the farmer's land. It might be because of these reason agriculture extension professionals shows high involvement towards advisory services in social media. Similar results are found by the **Ghadei and Jyoti (2017)** in their study "Social Media Activity of Agriculture Extension Graduate Students in India" that 78.00 per cent of respondents are stated that they are doing activities like "asking queries and replaying queries related to extension" and 22.00 per cent of the respondents are not doing such activity.

The data was further classified into low, medium and high by using mean score (15.52) and standard deviation (03.77).

Table 4.18: Distribution of respondents according to their level of involvement in social media for advisory services.

n=120

S.No.		Category	Strata	Frequency	Percentage
1.	Advisory services	Low	<11.75	24	20.00
		Medium	11.75-19.30	77	64.16
		High	>19.3	19	15.83

Mean (15.52), SD (03.77).

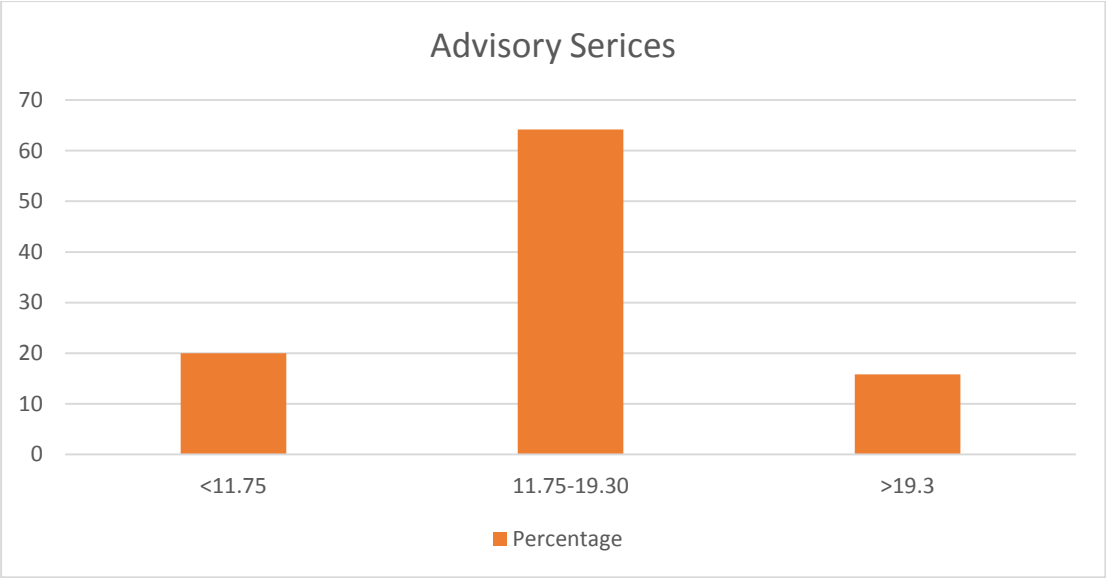

Fig. No.16. Graphical representation of respondents according to their level involvement in social media for advisory services.

Table 4.18 gives the distribution of agriculture extension professionals according to their level of involvement in the social media for advisory services to the farmer. It indicates that majority that is 64.16 per cent of agriculture extension professionals were under the category of medium use of social media for the agriculture advisory services followed by 20.00 per cent respondents were in low use of social media for advisory services and 15.83 per cent agriculture extension professionals were under high use of social media for the advisory services to the farmers.

Thus, it can be concluded that the majority of the agriculture extension professionals had shown medium involvement in social media. because main purpose of the agricultural extension professional is to advise the farmers for the betterment of their life, the advises related to package of practices, new technology, new government schemes which are very useful for the farmers development. The results are in line with the study of **Gakuru (2009)** that ICTs have become increasingly integrated into information disseminated to farmers. For decades "traditional" forms of ICTs have become more prevalent in advisory service provision. In a study entitled "Innovative Farmer Advisory Services Using ICT".

4.2.2 Information sharing in social media.

Table 4.19. Distribution of respondents based on their involvement in social media for information sharing.

n=120

S.No.	Statements	VHI		HI		MI		LI		NI	
		f	%	f	%	f	%	f	%	f	%
1.	Sharing questions related to agriculture extension.	33	27.50	39	32.50	32	26.66	11	09.16	05	04.16
2.	Sharing farmers success stories to motivate farmers.	52	43.33	36	30.00	21	17.50	09	07.50	02	01.66
3.	Sharing information about forthcoming weather	36	30.00	31	25.83	20	16.66	22	18.33	11	09.16
4.	Sharing information about higher job vacancies in field of extension	37	30.83	39	32.50	23	19.16	16	13.33	05	04.16

VHI: Very High Involvement, HI: High Involvement, MI: Medium involvement, LI: Low Involvement, NI: No Involvement

The data regarding involvement of agriculture extension professionals in social media has presented in Table 4.19. It was observed that 43.33 per cent of the agriculture extension professionals shows very high involvement to share farmers success story to motivate other farmers because it might be too easy to share or forward the stories of the successful farmers to other farmers.

And with respect to the first statement that is "sharing questions related to the agriculture extension" 39.00 per cent of the agriculture extension professionals shows high involvement to share the questions related to agriculture the reason may be that the majority of the agriculture extension professionals are interest to get the answer through the social media. About 18.33 per cent of the professionals showed low involvement to share the information regarding to the weather because they might be also not getting weather reports properly by the other government websites or meteorological department**.** The results are supported by **Erickson (2011)** that use of social media sites for sharing information and engaging target audiences have been shown to have positive outcomes**.** In his study "Social media, social capital, and

seniors: The impact of Facebook on bonding and bridging social capital of individuals over"

Based on the mean (14.97) and standard deviation (03.68) the given data was further classified into low, medium and high.

Table 4.20: Distribution of respondents according to their level of involvement in social media for information sharing.

n=120

S.No.		Category	Strata	Frequency	Percentage
1.	Information sharing	Low	<11.29	22	18.33
		Medium	11.29-18.65	81	67.50
		High	>18.65	17	14.16

Mean (14.97), Sd (03.68)

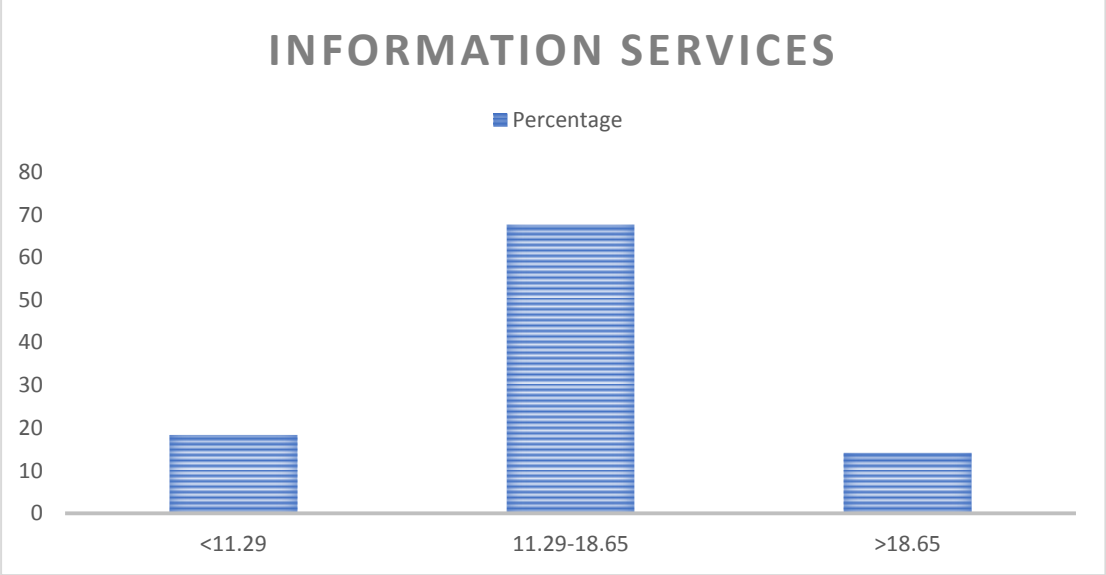

Fig. No. 17. Graphical representation of respondents according to their level involvement in social media for information sharing.

Table 4.20 gives the distribution of agriculture extension professionals according to their level of involvement in the social media for information sharing to the farmer. It indicates that majority (67.5 per cent) of agriculture extension professionals were under the category of medium level of involvement in social media

for the information sharing followed by 18.33 per cent respondents were in low use of social media for information sharing and 14.16 per cent agriculture extension professionals were under high use of social media for the information sharing to the farmers.

Thus, it can be concluded that the majority of the agriculture extension professionals showed medium involvement in social media for sharing information. Information sharing includes forwarding messages from one person to another person in the social media and downloading contents like farmer success stories and sharing to the other farmers for the betterment of the other farmer. This might be less time consuming for the agricultural extension professional because of this majority of the agricultural extension professionals showed medium involvement in social media for sharing information. the results are in the line with the results of **Saravanan *et.al.*, (2018)** where 88.30 per cent of the professionals use social media for the sharing information. In his study "The online culture of agriculture: exploring social media readiness of agricultural professionals".

4.2.3 Marketing Services in social media

Table 4.21. Distribution of respondents based on their involvement in social media for marketing services.

n=120

S.No.	Statements	VHI		HI		MI		LI		NI	
		f	%	f	%	f	%	f	%	f	%
1.	Marketing of new agriculture input which is not available in the market.	29	24.16	26	21.16	32	26.66	20	16.66	13	10.83
2.	Promotion of product.	36	30.00	31	25.83	16	13.33	24	20.00	13	10.83
3.	Marketing farmers produce through social media	32	26.66	29	24.16	22	18.33	23	19.16	14	11.66

VHI: Very High Involvement, HI: High Involvement, MI: Medium involvement, LI: Low Involvement, NI: No Involvement

It is clearly visible from the above Table 4.21 that 30.00 per cent of agricultural extension professionals showed very high involvement in promotion of the product through social media followed by 25.83 per cent showed high involvement, 13.33 per cent had shown medium involvement, 20.00 showed low involvement and 10.83 per cent had showed no involvement. Also, we can observe that 19.16 per cent of agriculture extension professionals showed low involvement in marketing farmers produce through social media followed by 11.66 per cent had showed no involvement in marketing farmers produce through social media. And 26.66 per cent of the agricultural extension professional showed medium involvement in social media for the marketing of new agricultural inputs which is not available in the market followed by 16.66 per cent had shown low involvement.

Social media for marketing is the use of social media platforms and websites to promote a product or service and also to establish a connection with its customers. Social media for marketing has increased due to the growing active user rates on social media sites. The majority of the extension professional involved in marketing activities for the betterment of the farmers through marketing of the farmer's produce and marketing of the product which is not available in the market which is more required for the farmers for the agriculture purpose. Thus, it can be concluded that agricultural extension professionals are involved in marketing activities also. Contrast results are observed by **Ashwini (2008)** study entitled "Integrating Information Communication Technologies (ICT) with Multiple functions for efficient Agricultural Marketing". that it was observed that majority of respondents agreed that ICT tools are best suited for disseminating marketing technologies and ICT integration with multiple functions provides need based and timely information.

Based on the mean and standard deviation the data was further categorized into low, medium and high.

Table 4.22. Distribution of respondents according to their degree of involvement in social media for marketing services.

n=120

S.No.		Category	Strata	Frequency	Percentage
3.	Marketing services	Low	<6.34	28	23.33
		Medium	6.34-13.86	71	59.16
		High	>13.86	21	17.50

Mean (10.10), Sd (03.76)

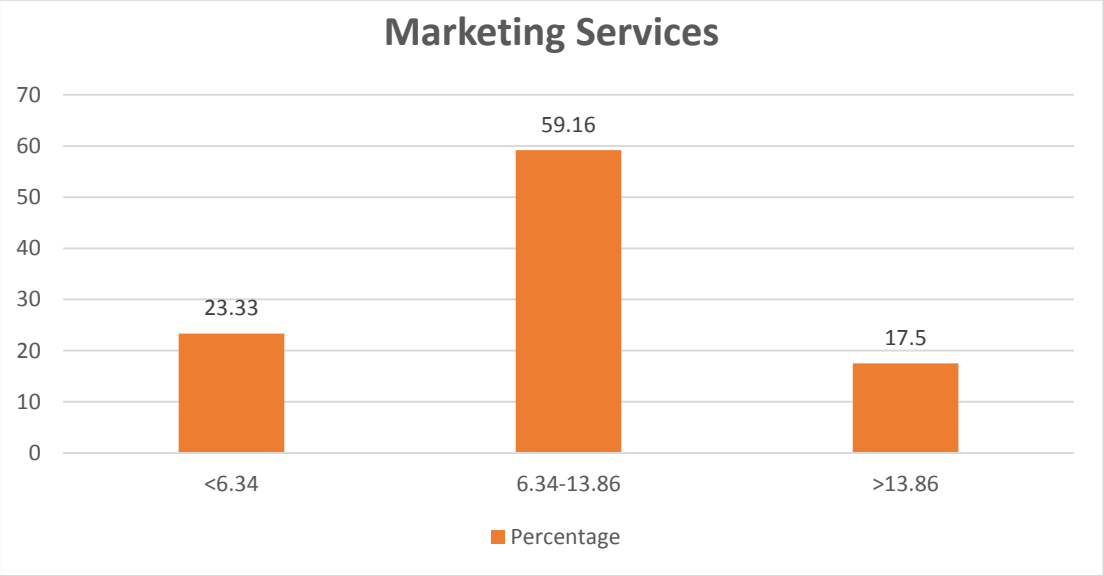

Fig. No. 18. Graphical representation of respondents according to their level involvement in social media for marketing services.

The Table 4.22 shows that majority of the agriculture extension professionals found medium degree involvement in social media for the marketing services that is 59.16 per cent followed by the low degree involvement and 17.50 per cent high degree involvement in the social media for the marketing purpose. It can be concluded that maximum number of the agriculture extension professionals had shown medium involvement in marketing services.

Majority of the agricultural extension professional found to be had medium involvement in the marketing services in agricultural extension through social media. Because it may be easy to earn money through marketing in social media and also work for the farmers. The results are in line with the study of **Goswami and Ghadei (2014)**found that 65.00 per cent of the respondents are aware about the issue related to promotion of product in social media by the agriculture extension professionals in social media and 35.00 per cent are not aware in their study "Study on issues and activities related to agriculture extension in social media".

4.2.4 Use of social media for Research purpose

Table 4.23. Distribution of respondents based on their involvement in social media for research purpose.

n=120

S.No.	Statements	VHI		HI		MI		LI		NI	
		f	%	f	%	f	%	f	%	f	%
1.	Attending conference \ webinars \ seminars.	60	50.00	41	34.16	12	10.00	04	3.34	03	02.50
2.	Attending online training program.	64	53.34	38	31.66	11	09.16	04	03.34	03	02.50
3.	Reading scientific journals.	38	31.66	36	30.00	25	20.83	16	13.34	05	04.16
4.	Publishing research papers.	37	30.84	44	36.66	21	17.50	14	11.66	04	03.34

VHI: Very High Involvement, HI: High Involvement, MI: Medium involvement, LI: Low Involvement, NI: No Involvement

The data from the above Table 4.23 reveals that 53.34 per cent of the agriculture extension professionals had shown very high involvement in social media for attending online training. About 36.66 per cent had shown high involvement in social media for the publishing research paper. 13.34 per cent of the respondents showed low involvement in the reading scientific journals through social media because it might be not comfortable for the professionals read through soft copy also

4.16 per cent had shown no involvement in the social media for publishing research paper.

Majority of the agricultural extension professional are taking part in online training through social media because they may be looking for career enhancement activities and developing different skills which is more required for agricultural extension activities. By attending online training, they can save the time and money. Similar results are found by the **Ghadei and Jyoti (2017)** in their study "Social Media Activity of Agriculture Extension Graduate Students in India" that 58.00 per cent of the respondents are doing activities like "Searching for workshop and conference related to extension" and 42.00 per cent are not doing such activities.

The data was further divided into low, medium and high on the basis of mean and standard deviation.

Table 4.24. Distribution of respondents according to their involvement in social media for research purpose.

n=120

S.No.		Category	Strata	Frequency	Percentage
4.	Research purpose	Low	<12.65	24	20.00
		Medium	12.65-19.49	70	58.34
		High	>19.49	26	21.66

Mean (16.07), Sd (03.42)

Table 4.24 gives the distribution of agriculture extension professionals according to their level of involvement in the social media for research activities. It indicates that majority (58.33 per cent) of agriculture extension professionals were under the category of medium use of social media for research activities followed by 21.66 per cent respondents were categorized under high level of involvement in social media for the research activities and 20.00 per cent of agriculture extension professionals show low level of involvement in social media for the research purpose. Similar results were found by **Goswami and Ghadei (2014)** that 58.00 per cent of the

respondents involved in social media for searching information related to the conference and training and 42.00 per cent respondents are not involved.

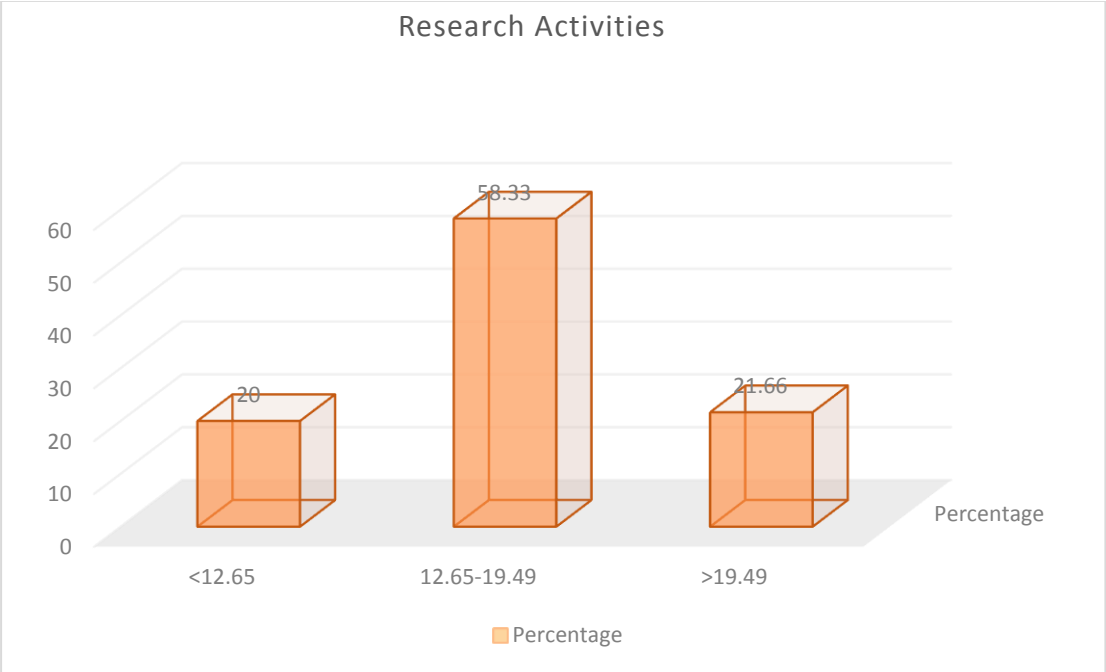

Fig. No. 19. Graphical representation of respondents according to their level involvement in social media for research purpose.

Research activities include attending webinars conference and seminar to gain the knowledge about the subject and career activities. majority of agricultural extension professional are involved in social media for attending conferences because they may be looking for educational information from the webinars, conference, association related activities and career enhancement. It also involves less expenditure for attending online training through social media. Researchers and academics tend to view social media as a personal indulgence, a diversion from work. But social media platforms can be one of the most effective ways to promote new research and academic pursuits.

4.2.5 Development purpose

Table 4.25. Distribution of respondents based on their involvement in social media for developmental activity.

n=120

S.No.	Statements	VHI		HI		MI		LI		NI	
		f	%	f	%	f	%	f	%	f	%
1	Organizing awareness program related to agriculture.	47	39.16	38	31.16	21	17.50	08	06.66	06	05.00
2	Making professionals association.	33	27.50	48	40.00	22	18.34	13	10.83	04	03.33
3	Taking part in awareness program organized by govt. or private agency.	41	34.16	49	40.83	20	16.66	07	05.83	03	02.50
4	Assistance for building organizations among farmers.	43	35.83	42	35.00	19	15.83	10	08.33	06	05.00

VHI: Very High Involvement, HI: High Involvement, MI: Medium involvement, LI: Low Involvement, NI: No Involvement

From the above Table 4.25 it was observed that 40.00 per cent of the extension professional showed involvement in social media for making professional association followed by 27.50 per cent showed very high involvement 18.34 per cent had shown medium involvement 10.80 per cent had shown low involvement 03.33 per cent had shown no involvement

And also found that 39.16 per cent of respondents showed very high involvement in social media for organizing awareness programs related to agriculture followed by 31.16 per cent showed high involvement, 17.50 per cent had shown medium involvement 06.66 per cent had shown low involvement and 05.00 per cent show no involvement.

Only 02.50 per cent of agricultural extension professional stated that they are not involved in social media for taking part in awareness program organized by government or private agencies.

From the above result we can conclude that farmers awareness program includes market awareness programs, post production activities, information about transportation of the agricultural produce, storage of agricultural produce and many more. These programs may give results like good price for the agricultural produce and betterment of the farmers. This type of activities may give good satisfaction for the agricultural extension professionals. Results are in line with the results of **Ghadei and Jyoti (2017)** who did research on "Social Media Activity of Agriculture Extension Graduate Students in India" that 59.00 per cent are doing activities like "Assistance for building organization among farmer" while remaining i.e., 41.00 per cent of the respondents are not involved in such type of activity.

Based on mean and standard deviation data was further categorized as low, medium and high.

Table 4.26. Distribution of respondents according to their level involvement in social media for developmental activity.

n=120

S.No.		Category	Strata	Frequency	Percentage
5.	Developmental activity	Low	11.69	27	22.50
		Medium	11.69-19.45	74	61.66
		High	>19.45	19	15.83

Mean (15.57), Sd (03.87)

The Table 4.26 shows that majority of the agriculture extension professionals showed medium level of involvement in social media for the developmental activity that is 61.66 per cent followed by the low level of involvement and 22.5 per cent of the agriculture extension professionals showed low level involvement in the social media for the developmental activity. It can be concluded that maximum number of the agriculture extension professionals had shown medium involvement in developmental activity. The results are in line with the study of the **Sarvanan et.al. (2015)** that 62.10 per cent of the respondents are involved in social media for discussion of new events related to profession.

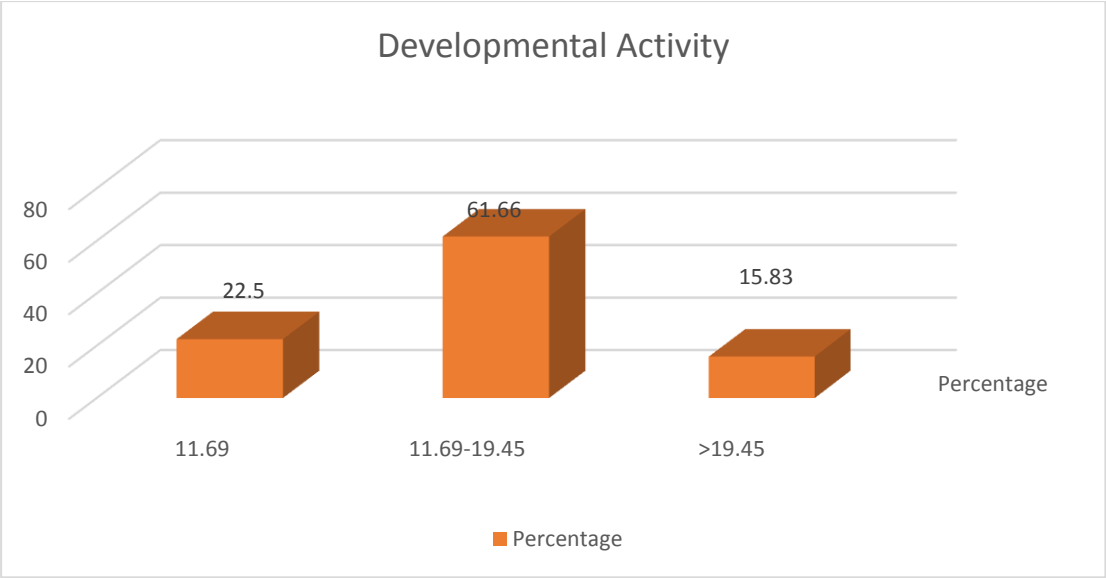

Fig.No.20. Graphical representation of respondents according to their level involvement in social media for developmental activity.

Developmental activity includes career development activities like building professional organizations and building farmers association. And farmers developmental activities like association building and awareness programs. Majority of agricultural extension professionals are involved in developmental activities the reason may be digital literacy of the professional and farmers in India. and low-cost availability of the internet.

Table 4.27. Distribution of agriculture extension professionals based on their overall level involvement in the social media

n=120

Category	Strata	Frequency	Percentage
Low	<72.25	17	14.16
Medium	72.25-87.85	83	69.16
High	>87.87	20	16.66

Mean (72.25), Sd (15.59)

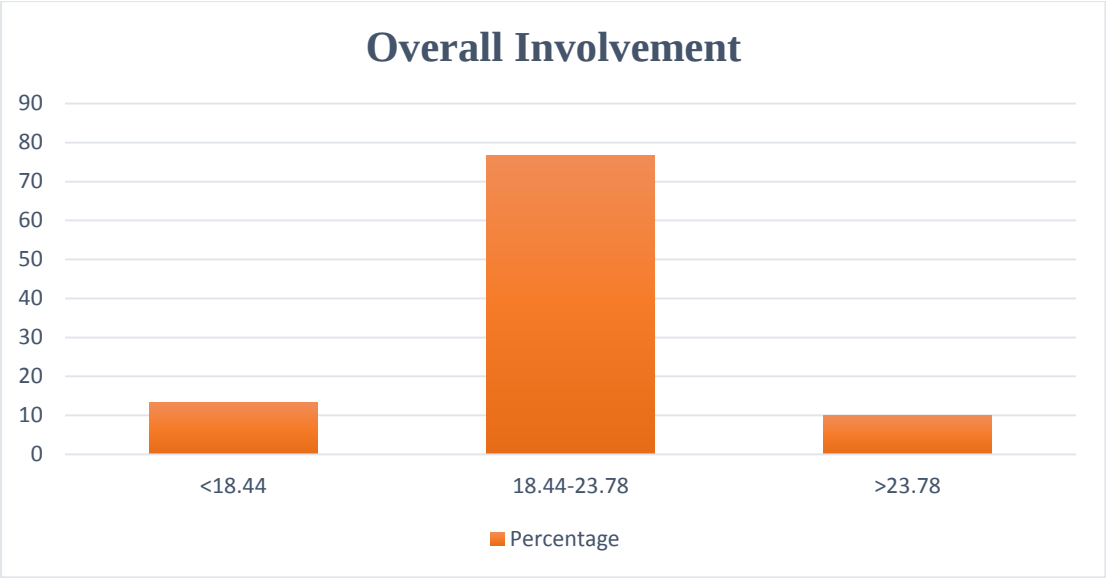

Fig. No. 21. Graphical representation of agriculture extension professionals based on their overall level involvement in the social media.

From the Table 4.27 we can say that more than half of i.e., 69.16 per cent of agricultural extension professional showed medium level of involvement in social media for overall activities related to agricultural extension followed by 16.66 per cent of showed high level of involvement and 14.16per cent showed low level involvement.

Thus, we can conclude that majority of the agriculture extension professionals believed social media can be useful to agricultural extension and advisory services in multiple ways because of the global reach of the knowledge sharing platforms with multiple media formats that can be easy to access and understand and at times surpasses barriers like language. Real time communication with constant and instant feedback also encourages the use of social media in agricultural extension. Social media tools help facilitate the free flow of information, knowledge, and creativity, enabling innovations by different stakeholders of agriculture extension, social media is ideal to inform, share, create awareness, and mobilise extension professionals and farmers. This may be the reason for medium involvement in social media.

4.3 Document the activity performed by the agriculture extension professionals in the social media.

By contacting some agriculture extension professionals, the researcher had listed out some popular activities doing in social media by agriculture extension professionals. Researcher classified the activities like advisory services, information sharing, marketing services, research and developmental activities**.**

Table No 4.28: Activities of social media platforms in social media

1.	**Advisory services**
	a. Advising farmers related to package of practices b. Advising farmers about new technologies. c. Advising farmers about new govt schemes. d. Advising farmers about disease and pest.
2.	**Information sharing**
	a. Sharing questions related to agriculture extension. b. Sharing farmers success stories to motivate farmers. c. Sharing information about forthcoming weather d. Sharing information about higher job vacancies in field of extension
3.	**Marketing services**
	a. Marketing of new agriculture input which is not available in the market. b. Promotion of product. c. Marketing farmers produce through social media.
4.	**Research Purpose**
	a. Attending conference \ webinars \ seminars. b. Attending online training program. c. Reading scientific journals. d. Publishing research papers.
5.	**Developmental activity**
	a. Organizing awareness program related to agriculture. b. Making professionals association. c. Taking part in awareness program organized by govt. or private agency. d. Assistance for building organizations among farmers.

4.5 Assess the extent of advantages and constraints faced by agriculture extension professionals in social media.

4.4.1 Advantages/benefits perceived by social media

Table 4.29. Distribution of respondents based on their advantages perceived in social media

n=120

S.No.	Advantages or Benefits	Highly benefited		Benefited		Not benefited	
		f	%	f	%	f	%
1	Time saving	65	54.16	45	37.50	10	08.33
2	Reach large audience at a time	86	71.66	30	25.00	04	03.33
3	Easy to obtain new information	80	66.66	37	30.83	03	02.50
4	Paid Advertising service	18	15.00	43	35.83	59	49.16
5	Getting information when need	78	65.00	40	33.33	02	01.66
6	Increase in knowledge about new technology	78	65.00	40	33.33	02	01.66
7	Freedom of expression of opinions regarding ongoing issues	59	49.16	54	45.00	07	05.83
8	Direct connection with Audience	69	57.50	46	38.33	05	04.16
9	Online education	59	49.16	57	47.50	04	03.33
10	Easy to share knowledge	83	69.16	35	29.16	02	01.66

From the Table 4.29 we can observe that 71.16 per cent of the total agricultural extension professionals showed that they were highly benefited by social media for reach large audience at a time, followed by 25.00 said benefited and 3.33 per cent said not benefited. before invention of social media, reaching large audience is too difficult, professional told to go to home and fields of the farmers. After popularizing of social media, it become easy to contact farmers through their phone and internet. With respect to the fourth benefit "Paid Advertising service" 49.16 per cent of the respondents said they are not benefitted followed by 35.83 benefited and 15.00 per cent highly benefited. The reason may majority of extension professionals are satisfied with their salary.

Also, we can observe that 69.16 per cent of agricultural extension professionals are said that they are highly benefited by social media for sharing knowledge followed by 29.16 per cent said benefitted and 1.66 per cent said not benefitted. From the above statement we can conclude that majority of the extension professionals are benefitted by sharing knowledge in social media. The reason may be that advanced social media (SM) tools have increasingly attracted global attention, due to their pervasiveness and social impact. The dramatic development of this media form has revolutionized how people share their knowledge, and communicate and collaborate. The study is in line with the study of **Drahosova (2017**) in his study "The analysis of advantages and disadvantages of use of social media in European Union" found that biggest drawback of social media use is the internet addiction followed by lack of security and information overload. And the biggest advantage is the exchange of information and communication. And also, **Ranier (2019)** stated that in his study "Professional development in the digital age. Benefits and constraints of social media for lifelong learning" that knowledge exchange, sharing of the resources and ideas were the advantages perceived by the respondents.

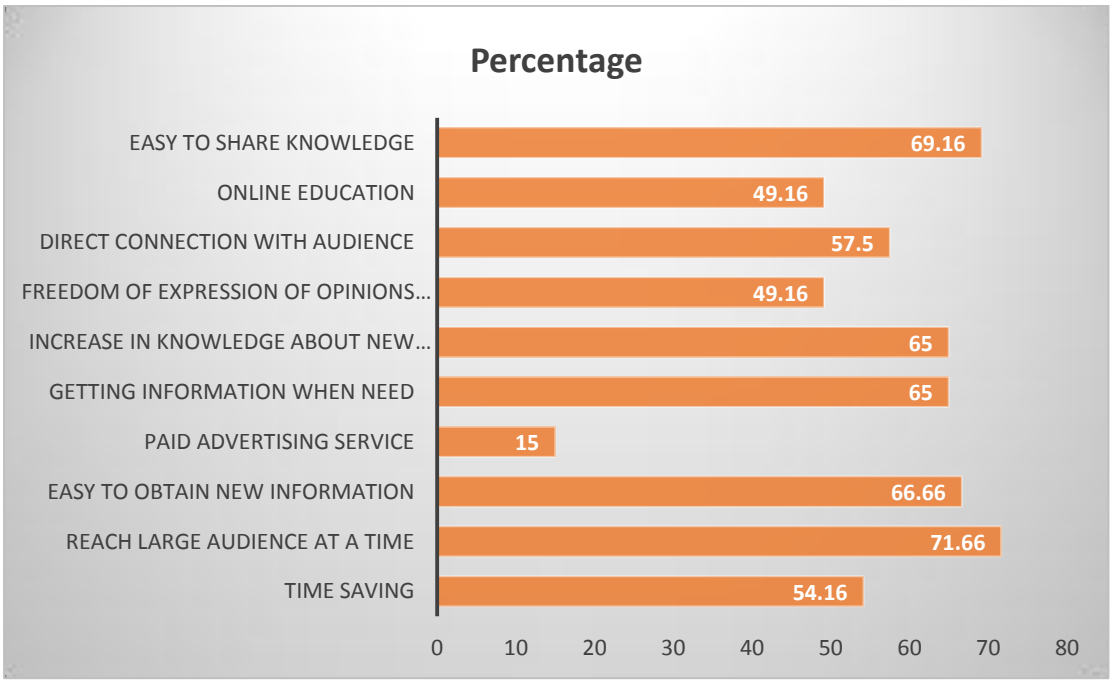

Fig. No. 22. Graphical representation of the respondents those are highly benefitted by the social media

The was further categorized into low, medium and high on the basis of mean and standard deviation.

Table 4.30. Distribution of agriculture extension professionals based on their level of benefits they got from social media

n=120

S.No.		Category	Strata	Frequency	Percentage
1.	Advantages	Low	<20.96	24	20.00
		Medium	20.96-28.65	90	75.00
		High	>28.65	06	05.00

Mean (24.80), Sd (03.84)

From the Table 4.30 we can observe that 75.00 per cent of the respondents indicated that they received medium level of benefits from the social media, followed by high level and low level.

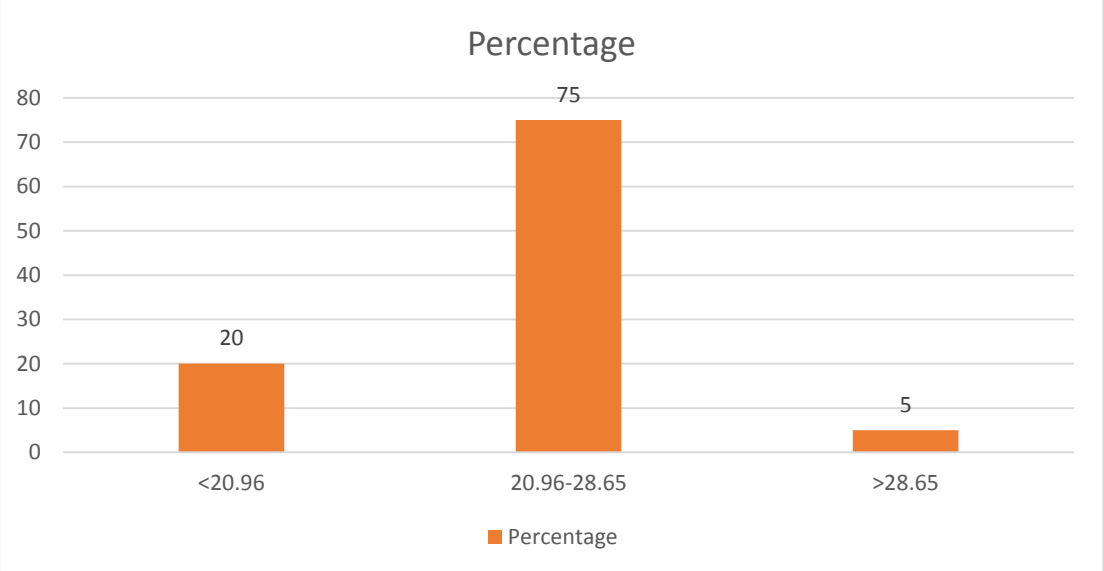

Fig. No. 19. Graphical representation of agriculture extension professionals based on their level of benefits they got from social media

4.4.2 Extent of constraints faced by social media

Table 4.31. Distribution of respondents based on their extent of constraints faced by social media

n=120

S.No.	Problems	Major Problem		Minor Problem		Not a problem		Mean score	Rank
		F	%	F	%	F	%		
1.	Lack of proper network	39	32.50	65	54.16	16	13.33	2.19	V
2.	Wi-Fi not present in the working area	46	38.33	46	38.33	28	23.33	2.15	VI
3.	High cost of internet package for recharging	40	33.33	49	40.83	31	25.83	2.075	VIII
4.	Spreading Fake news in social media pattern	91	75.83	23	19.16	06	05.00	2.70	I
5.	Broadcasting of Religious news	60	50.00	46	38.33	14	11.66	2.38	IV
6.	Some people make Fake account	82	68.33	33	27.50	05	04.16	2.64	II
7.	Problem of language when using social media	19	15.83	52	43.33	49	40.83	1.75	X
8.	New mobile phone is costly to purchase	31	25.83	47	39.16	42	35.00	1.90	IX
9.	Cause mental problems	34	28.33	63	52.50	23	19.16	2.09	VII
10	Eye pain during continuous use	67	55.83	43	35.83	10	08.33	2.47	III

Table 4.31 reveals that among constraints, “Spreading Fake news in social media pattern” was ranked first by the agriculture extension professionals as major problem (75.83 per cent) and minor problem (19.16 per cent) with mean score 2.70. The second rank was assigned to some people make fake account as major problem

68.83 per cent and minor problem 27.50 per cent with mean score 2.64. Third rank was given to the eye pain during continuous use of social media with mean score 2.47. majority of the respondents reported lack of proper network as a minor problem. Last rank was assigned to the problem of language when using social media with mean score 1.75.

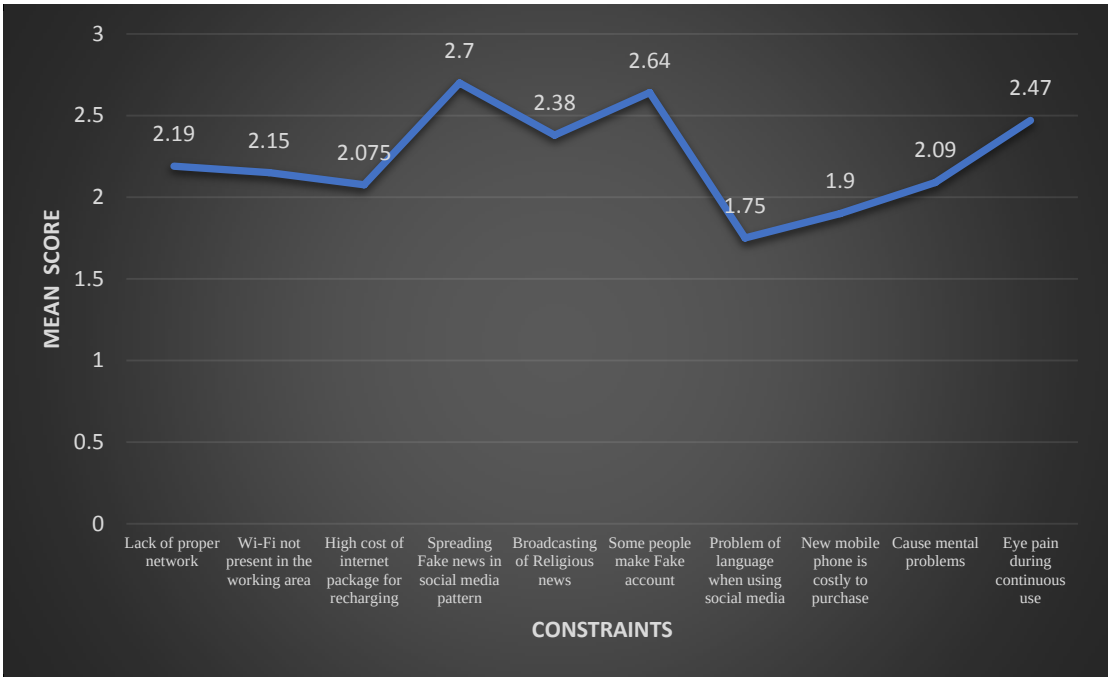

Fig. No. 23. Graphical representation of constraints with mean score

Fake news consists of fabricated stories, without any verifiable facts, sources, or quotes. Those stories are forged to influence reader's own opinions or to deceive them. Fake news has an impact on people due to some previous personal issues are especially shared in social media. With a business or professional account, the focus is audience-centered. Professional organizations' social media pages should ideally be informative about the business' goals and values. Falling victims to misinformation or fake news with a professional or business account can have serious consequences, it may be because of these reasons professionals said that they are facing major problem with fake account and fake news spreads through the social media. In contrast to the study **Poudel (2020)** found that "high cost of internet facilities in villages" was the I ranked constraint with the mean score 1.455 among the financial constraints and

"Lack of network connectivity in rural areas" was the major problem among the infrastructural constraints faced by the respondents in utilizing the ICT tools in agriculture. **Nchabeleng (2018)** stated in his study "The uses, benefits and limitations of social media for public relations in South African non-governmental organisations" that limitations were identified as quality concern, confidentiality and private information leaking to the public, and the reliability of the information.

4.6 Study the self-appraisal of agriculture extension professionals regarding their activities in social media.

Table 4.32. Distribution of respondents based on their impact perceived by social media

n=120

S.No.		Strongly impacted		Moderately impacted		Undecided		Not impacted		Negatively impacted	
		f	%	f	%	f	%	f	%	f	%
1	Advisory services	50	41.66	53	44.16	10	08.33	07	05.83	00	00.00
2	Information sharing	74	61.66	42	35.00	03	02.50	01	00.83	00	00.00
3	Marketing services	38	31.66	49	40.83	18	15.00	15	12.50	00	00.00
4	Research Purpose	42	35.00	58	48.33	13	10.83	07	05.83	00	00.00
5	Developmental activity	50	41.66	58	48.33	08	06.66	04	03.33	00	00.00

From the Table 4.32 we can observe that 61.66 per cent of the agricultural extension professional were stated that they were strongly impacted by the social media for information sharing. Followed by 35.00 per cent stated moderately impacted, 2.50% stated undecided, 0.83 per cent stated not impacted 0.0 per cent stated negatively impacted.

And also observed that 48.33% of respondents stated that they have moderately impacted by the social media in research 10.83 per cent undecided 5.83 per cent not impacted.

About 12.50 per cent of the agricultural extension professional stated they are not impacted by the social media in marketing services followed by 15.00 per cent stated and undecide 40.83 per cent stated moderately factor and 31.66 per cent stated strongly impacted. Social media technologies such as social networking sites, blogs, forums, wikis and microblogging tools are becoming a reliable platform for sharing information to target audience in a timely manner. This may be the result of the wide user base and the rapid spread of information it affords to farmers and professionals. These findings are conformity with the findings of **Poudel (2020)** the study titled "The study on ICT mediated Extension Services in Agarkhanchi District of Nepal" that impact of ICTs on marketing price of crop stood first rank in impact of information on marketing of agriculture produce with mean score 1.37.

Data was further categorized low, medium and high based on mean and standard deviation.

Table 4.33. Distribution of agriculture extension professionals based on their level of impact perceived by social media

n=120

Category	Strata	Frequency	Percentage
Low	<18.44	16	13.33
Medium	18.44-23.78	92	76.66
High	>23.78	12	10.00

Mean (21.11), Sd (02.67)

Form Table 4.33 we can say that 76.66 per cent of the agriculture extension professionals were majorly impacted by social media related to agriculture extension. Followed by 13.33 per cent less impacted and 10.00 per cent reported high impact by social media.

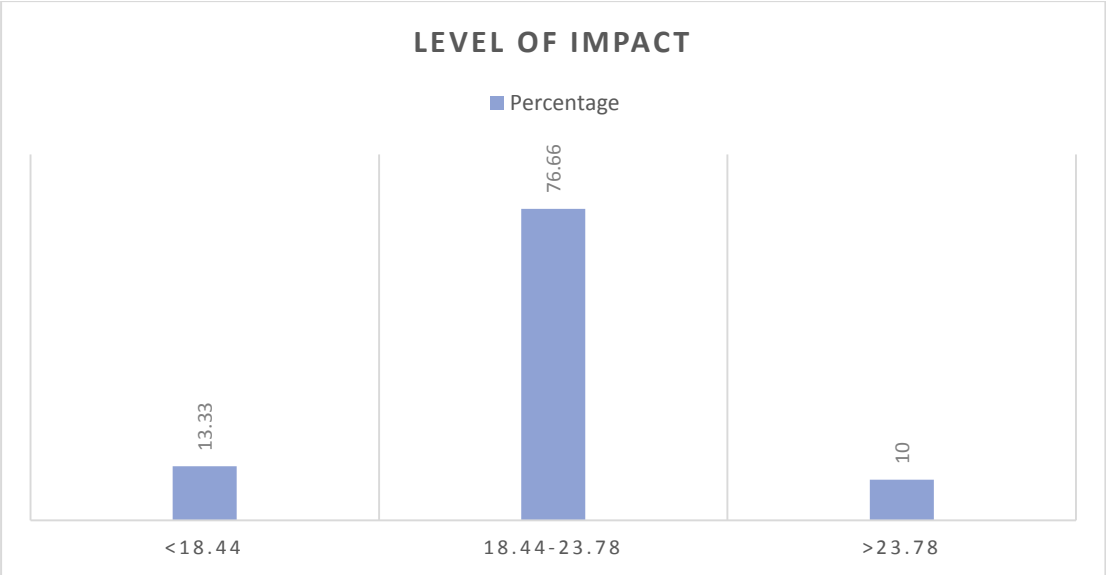

Fig. No. 24. Graphical representation of agriculture extension professionals based on their level of impact perceived by social media.

Advisory services related to agriculture extension includes full understanding of the goals of and objectives of the farmers- then developing strategies to improve life standards of the farmers. It needs suggesting farmers through social media applications. Extension professionals can get the crop sample photos directly from the farmers through social media. Also gives recommendation through social media. Thus, both farmers and the extension professionals can save the money and time. This may be the reason for the high impact of the social media.

4.6 Association between dependent and some independent variable.

An attempt has been made to calculate the relationship of selected socio-economic and psychological profile with involvement of agricultural extension professionals in social media. Chi square test between the selected independent variable (Age, Gender, Education, Income, Place of work, Sector of service, social media exposer, Language use pattern in social media, Time spent on social media, Expenditure spent on social media, Duration of social media, ICT training received and Scientific orientation) and dependent variable (involvement of agricultural extension professionals in social media) was worked out and tested for its significance. Results have been placed in the table 4.34.

Table 4.34. Result of chi square analysis of involvement of agricultural extension professionals in social media with independent variables.

n=120

S.No	Independent variable	Chi square value	P value	Phi value
1.	Age	4.686	0.321	0.198
2.	Gender	1.971	0.373	0.128
3.	Education	5.383	0.250	0.212
4.	Income	2.808	0.590	0.153
5.	Place of work	4.291	0.368	0.189
6.	Sector of service	2.533	0.865	0.145
7.	Social media exposer	15.285**	0.004	0.357
8.	Language use pattern	4.366	0.627	0.191
9.	Time spent on social media	11.412*	0.076	0.308
10.	Expenditure	9.152*	0.057	0.276
11.	Duration of social media use	17.205**	0.009	0.379
12.	ICT training received	2.698	0.259	0.150
13.	Scientific Orientation	17.121**	0.002	0.378

*Significant at 0.10level of probability

** Significant at 0.01 level of probability

It was observed from the above Table 4.34 independent variables like 'social media exposer', 'Duration of social media use' and Scientific orientation' had shown relationship with the dependent variable 'Involvement of agricultural extension professionals in social media' at one per cent level of significance. Since phi value of these variables were 0.357, 0.379 and 0.378 respectively i.e., more than the 0.25 hence these three independent variables show very strong relationship with the dependent variable.

Also, we found from the table that time spent on social media and expenditure spent on social media had shown relationship with involvement of extension professionals in social media at ten per cent level of significance, since the phi value of these variables were 0.308 and 0.276 respectively i.e., more than 0.25 hence the relationship between these two independent variables was found to be very strong relationship with the involvement of agricultural extension professionals in social media. With contrast to the results **Goswami and Ghadei (2018)** found that gender shown significant relationship between the activity performed in social media with chi square calculated value is 7.47 in their study "Study on issues and activities related to agriculture extension in social media".

Chapter V

SUMMARY AND CONCLUSION

The departments of agriculture of State governments are still the main agricultural extension agencies in India in terms of number of personnel and geographical coverage. India has a total of 0.12 million agricultural extension workers to serve a net cropped area of 141 million hectares and 158 million operational holdings. Extension activities are generally performed by chalk, painting, poster, chart paper. As the time changed the way of performing extension activities also changed. But now a days social media is playing a great role in communication of technology to regional. national and global clients. There is a growing consensus that social media is fundamentally changing the way people communicate, consume and collaborate. Within just a few years, social media has integrated itself into almost every aspect of our personal and professional lives, and as a result, has brought a lot of changes on advisory service, information sharing and many more. Professionals try to identify problems of farmers and gives solution through social media applications such as Blogs, YouTube, Facebook, and Twitter.

The present study entitled "A Study on Involvement of Agriculture extension professionals in social media" was carried out during 2020-21 with the following objectives:

- To know the socio-economic and psychological profile of the agriculture extension professionals.
- To assess the involvement of agriculture extension professionals in different social media
- To document the activity performed by the agriculture extension professionals in the social media.
- To assess the extent of Constraints and Advantages perceived by the agriculture extension professionals in social media.

- To study the self-appraisal of agriculture extension professionals regarding their activities in social media.
- To establish relationship between some selected dependent and independent variable.

5.1 Methodology

Study was conducted in India. Selected the agriculture extension professionals as respondents from throughout the India. Random sampling was adopted for selection of respondents for study. The Total sample size was 120. The structured survey questionnaire was specifically developed for this study using Google Forms and circulated through social media platforms like Facebook and Twitter, emails, and other Agriculture extension group throughout the India. collected data was coded, and then analysed using relevant statistical tools and techniques like; frequency, percentage, arithmetic mean, standard deviation, chi-square test and then results were interpreted. Descriptive Research Design was adopted for this study.

5.2 Major findings

- The young age category had highest number of respondents i.e., around 48.33%, followed by middle age category (44.16%) and old age category (07.50%).
- Majority of the respondents were male i.e., 75.00 percent and 25.00 percent were female.
- 50.83Percent of respondents were had post-graduation program followed by 36.66 percent PhD and 12.50 percent had Graduation.
- It was observed that 40.00 percent of the respondents said that they are getting less than Rs. 50,000 income followed by 30.00 percent getting RS.50,000 to 1,00,000 and remaining 30.00 percent getting more than Rs. 1,00,000.

- It was revealed that 57.00 percent of respondents were told that they are working in urban areas followed by 45.00 percent in semi-urban and 18.00 percent in Rural areas.
- 48.33 percent of the respondents stated that they are working in public sector followed by 26.66 percent others like their own business, 22.50 percent private sector and 02.50 percent in NGOs.
- Results reveals that 100.00 percent of the agricultural extension professional had account in WhatsApp and Email followed by 87.50 percent in Facebook, 86.66 percent in YouTube, 64.16 percent LinkedIn, 62.50 percent in Instagram, 55.00 percent in Twitter, 25.00 percent in Snapchat, 14.16 percent in Pinterest and 5.83 percent in WeChat.
- It was observed that 98.33 percent of the respondents stated that they are using WhatsApp application regularly followed by email that is 85.83 percent, YouTube 64.16 percent, Instagram and Facebook 44.16 percent, 18.33 percent twitter, 07.50 percent snapchat, 02.50 percent Pinterest and 00.00 percent WeChat.
- 56.66 percent of respondents show medium level of use in social media followed by 28.33 percent low level and 15.00 percent high level.
- Majority i.e., 48.33 percent of the respondents stated that they use social media in English language followed by 26.66 percent in regional language and English, 22.50 percent in both English and Hindi and 2.50 percent in regional language.
- The result reveals that 57.50 percent of the respondents indicated that they use social media 2-4 Hours per day followed by 20.83 percent 1 hour per day, 20.00 percent 4-6 hour per day and 01.66 percent more than 6 hours per day.
- It was observed that 56.66 percent of the respondents spends 200 Rs per month for social media, followed by 35.83 percent 500 Rs per month and 07.50 percent spends 1000 Rs per month.

- 45.83 percent of the respondents said that they are using social media 'since 5 years' followed by 28.33 percent since '10 years', 11.66 percent of each 'since less than 5 year' and 'since more than 10 year'.
- Out of 120 respondents 55(45.83%) respondents were using social media since 5 years followed by since 10 years 34(28.33%) and (14)11.66 percent each for 'less than 5 years' and 'since more than 10 years'.
- Majority i.e., 80.00 percent of the respondents didn't receive any ICT related training and 20.00 percent of the respondents received.
- Maximum number of respondents (75.83%), was found having medium level of scientific orientation while (15.83%), low level, and (08.33%) high level.
- Majority of the respondents had shown medium level of involvement in advisory services i.e., 64.16 percent followed by low level of involvement i.e., 20.00 percent and high level of involvement i.e., 15.83 percent.
- 67.50 percent of the respondents had shown medium level of involvement in social media for information sharing followed by low level (18.33 percent) and high level (14.16 percent)
- Majority of the agriculture extension professionals shows medium involvement in social media for the marketing services that is 59.16 percent followed by the low level and 23.33 percent and high level.
- 58.33 percent of the agriculture extension professionals had shown medium level of involvement in social media for research activities followed by high level 21.66 percent and low level 20.00 percent.
- Maximum number of respondents 61.66%) had shown medium level of involvement in social media for the development activity followed by low level of involvement (22.50%) and high level of involvement (15.83%).
- 69.16 percent of agricultural extension professional shows medium level of involvement in social media for overall activities related to agricultural extension followed by 16.66 percent of shows high level of involvement and 14.16percent shows low level involvement.

- It was observed that 71.16 percent of the total agricultural extension professionals had shown that they were highly benefited by social media for reach large audience at a time, followed by 25.00 said benefited and 3.33 percent said not benefited.
- Results reveals that 75.00 percent of the respondents indicated that they are receiving medium level of benefits from the social media, followed by high level and low level.
- Out of ten constraints, Spreading Fake news in social media pattern was ranked first by the agriculture extension professionals as major problem (75.83 per cent) and minor problem (19.16 per cent) with mean score 2.70.
- 61.66 percent of the agricultural extension professional are stated that they were strongly impacted by the social media for information sharing. Followed by 35.00 percent stated moderately impacted, 2.50% stated undecided, 0.83 percent stated not impacted 0.0 percent stated negatively impacted.
- It was observed that 48.33% of respondents stated that they are moderately impacted by the social media in research 10.83 percent undecided 5.83 percent not impacted and 0.0% stated negatively impacted.
- 76.66 percent of the agriculture extension professionals were majorly impacted by social media related to agriculture extension. Followed by 13.33 percent less impacted and 10.00 percent reported high impact by social media.
- Social media exposer had shown very strong relationship with involvement of agriculture extension professionals in social media.
- Independent variable ‘duration of social media use’ had shown very strong relationship with the dependent variable involvement of agriculture extension professionals in social media.
- Scientific orientation towards social media had shown one percent of level of significance. And had very strong relationship with the involvement of agriculture extension professionals in social media.

- Time spent on social media had shown very strong relationship with the involvement of agricultural extension professionals in social media.
- Independent variable like expenditure spent on social media had shown ten percent level of significance. And shown very strong relationship with the dependent variable involvement of agriculture extension professionals in social media.

5.3 Conclusion

On the basis of results of the present investigation the following conclusion may be drawn:

The popular social media tools are being used for information delivery and sharing across different agriculture subsectors (crops, horticulture, dairy, goat farming) in India. Many agriculture professionals were young age and had medium level of involvement in social media and most of the respondents feel that no training about use of social media. So, there is a need to provide intensive training to make them skilled so as to design user content of agricultural information in a competent and comprehensible manner. Social media is serving the basic objective and aim of agricultural extension but there is a need to ensure that the majority of the agricultural extension professionals across middle- and low-income economies become active users of social media for agricultural purposes. The findings strongly suggest that social media can be effectively used among agricultural extension professional for agricultural communication with proper and organized training and policy at individual, organizational, regional and national level.

5.4 Implication of the study

The findings of the study can help in the investigations and policy makers to frame policies which can pave the path of empowerment. Majority of agriculture extension professionals involved in social media for agriculture extension activities, hence government or private agencies should take initiatives to develop agriculture extension through social media. social media is gradually becoming an important tool

for sharing and getting useful information. So, it can be used as an effective extension delivery system.

5.5 Suggestion for future work

The study could be taken up in various other dimensions to know for which ICT is used by agricultural extension and also can be taken up to know the application and usage of ICT in various other sectors like home science extension, veterinary extension and detailed study of the multiple functions could be done. The study was taken as PG research with only few aspects of ICT. An in-depth study is demanded, regarding the problems and advantages associated with the application of social media in agriculture extension. Last but not least, similar to the present study may be conducted in different states according to agriculture extension system to confirm the data.

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Involvement of Agricultural Extension Professionals in Social Media

Request : Dear respondents, I thank you for being agreed to be part of my research work. Please give your valuable suggestions, responses towards questions related to use of social media in agricultural extension. Your response will be kept confidential and only will be used for research purpose only.

* Required

1. **Email ID [optional]

_____

2. **Name [optional]

_____

3. You belong to the age group *

Mark only one oval.

- ◯ Less than 30
- ◯ 30 to 50
- ◯ More than 50

4. Please mention your gender *

Mark only one oval.

- ◯ Female
- ◯ Male
- ◯ Other

5. Your education *

Mark only one oval.

- ◯ Graduation
- ◯ post graduation
- ◯ Ph.d
- ◯ Other

6. You belong to income group in Rs *

Mark only one oval.

- ◯ Less than 50,000
- ◯ 50,000 to 1,00,000
- ◯ More than 1,00,000

7. Place of work *

Mark only one oval.

- ◯ Urban
- ◯ Semi-urban
- ◯ Rural

8. Sector for which you are serving *

Mark only one oval.

- ◯ Public Sector
- ◯ Private sector
- ◯ NGO
- ◯ Other

9. Please mention your State. *

_____

10. Here there are some social media platforms. Please indicate the social media platform in which you have an account *

Mark only one oval per row.

	Yes	NO
Facebook	◯	◯
Whatapp	◯	◯
Email	◯	◯
Instagram	◯	◯
Twitter	◯	◯
Youtube	◯	◯
Linkdin	◯	◯
Snapchat	◯	◯
WeChat	◯	◯
Pintrest	◯	◯

11. Please mention how frequently do you use these accounts . *

Mark only one oval per row.

	Regular	Occasional	Never
Facebook	◯	◯	◯
Whatsapp	◯	◯	◯
Email	◯	◯	◯
Instgram	◯	◯	◯
Twitter	◯	◯	◯
Youtube	◯	◯	◯
Linkdin	◯	◯	◯
Snapchat	◯	◯	◯
Wechat	◯	◯	◯
Pintrest	◯	◯	◯

12. There are some statements listed below. Please state that applies to you *

Mark only one oval per row.

	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
Using social media for better agricultural development.					
Using social media for collection of scientific information					
Attending webinar for gaining knowledge					
Reading scientific journals in social media					
Using social media for time pass					
Subscribing of scientific journals through social media					
Use of social media to share the knowledge					
Guiding farmers through social media about agricultural issue					
Use of social media for entertainment purpose					
Getting information from social media is time taking					

13. Language use pattern in social media. *

Mark only one oval.

- English
- Hindi
- both English and Hindi
- Regional Language
- Regional language and English

14. Time spent on social media *

Mark only one oval.

- 1 hour
- 2- 4 hour
- 4-6 hour
- More than 6 hour

15. Approximate expenditure spent on social media per month. *

Mark only one oval.

- 200 Rs
- 500 Rs
- 1000 Rs
- 1500 Rs
- 3000 Rs

16. Duration of social media use *

Mark only one oval.

- ◯ less than 5 years
- ◯ 5 years
- ◯ 10 years
- ◯ More than 10 years

17. Have you undergone any ICT related training ? *

Mark only one oval.

- ◯ Yes
- ◯ No

18. If yes please mention.

_____

19. There are some social media activities related to agricultural extension enlisted below. Please rate your involvement in these activities that applies to you. *

Mark only one oval per row.

	Very high involvement	High involvement	Medium involvement	Low involvement	No involvement
Advising farmers related to package of practices					
Advising farmers about new technologies.					
Advising farmers about new govt schemes.					
Advising farmers about disease and pest					
Sharing questions related to agriculture extension.					
Sharing farmers success stories to motivate farmers.					
Sharing information about forthcoming weather					
Sharing information about higher job vacancies					

job vacancies in field of extension					
Marketing of new agriculture input which is not available in the market.					
Promotion of product.					
Marketing farmers produce through social media.					
Attending conference \ webinars \ seminars.					
Attending online training program.					
Reading scientific journals.					
Reading research papers.					
Organizing awareness program related to agriculture.					
Making professionals association.					
Taking part in awareness program organized by govt. or					

private agency.					
Assistance for building organizations among farmers.					

20. Please mention if any other activity

21. Please rate the impact of your online services among the targeted audience. *

Mark only one oval per row.

	Strongly impacted	Moderately	Undecided	Not impacted	Negatively impacted
Advisory services					
Information sharing					
Marketing services					
Research Purpose					
Developmental activity					

22. Any other impact on your social media activity

23. Please indicate how you been benefitted by the social media *

Mark only one oval per row.

	Highly benefited	Benefited	Not benefited
Time saving			
Reach large audience at a time			
Easy to obtain new information			
Paid Advertising service			
Getting information when need			
Increase in knowledge about new technology			
Freedom of expression of opinions regarding ongoing issues			
Direct connection with Audience			
Online education			
Easy to share knowledge			

24. Please mention if you have received any other benefit from social media

25. Please indicate the problems you are facing in using social media *

Mark only one oval per row.

	Major problem	Minor Problem	Not a problem
Lack of proper network			
WiFi not present in the working area			
High cost of internet package for recharging			
Spreading Fake news in social media pattern			
Broadcasting of Religious news			
Some people make Fake account			
Problem of language when using social media			
New mobile phone is costly to purchase			
Cause mental problems			
Eye pain during continuous use			

26. Please mention if any other problem

27. Would you be kind to suggest anything regarding this study.