UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) TOOLS BY STAFF AND STUDENTS IN UNIVERSITIES

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1. INTRODUCTION

Information played an important role in all societies since the dawn of civilization. However, in recent years its increase in volume and accuracy as well as greater access, have significantly elevated its value in all aspects of social life. The world community has recognized the revolutionary nature of information society. The world is undergoing an Information Communication Technology (ICT) revolution, a revolution that has enormous socio-economic implications for the developed and developing countries. Science and Technology have undergone revolutionary changes in recent past. Only a few decades ago, all telecommunications services were delivered over copper wires. More recently, the world has witnessed the exponential growth of ICT. Today, the dazzling collection of new technologies, services and applications has led to a digital age in which access has become a key component of people's lives.

The new information and communication technologies are among the driving forces of globalisation. They are bringing people together, and bringing decision makers unprecedented new tools for development. However, the gap between information 'have' and 'have-nots' is widening, and there is a real danger that the world's poor will be exclude from the emerging knowledge-based global economy.

Information and Communication Technologies form part of the functions of today's complex society. Without this, the present society would be inarticulate chaos devoid of direction and technology floods us with information and entertainment. The influence is tremendous in decisions of government, leap over national frontiers and stimulate trends in society especially in the field of education.

ICT comprises a diverse set of technological tools and resources to create, disseminate, store and manage data and information. Traditional ICT tools e.g. T.V., Radio and Telephone have already established their credibility and effectiveness in promoting the developmental schemes in rural and marginalized areas. The modern ICT tools are computers, internet, wireless communication technology along with powerful software which can process and integrate sound, text and video into electronic media.

The Information and Communication Technologies (ICTs) can create new opportunities to bridge the gap between information haves and information have-nots in the developing countries (Government of India, 2000). The task force on India as Knowledge Superpower (Government of India, 2001) emphasized the need to harness ICTs for societal transformation.

The use of Information and Communication Technologies has helped academicians, students, educationists and researchers as well as other groups to gather not only information which is normally not available through any other means or not easily available, but has also made the impact on helping students to surf for the information which is normally not available to them. However all these ICTs have also got their limitations and sometimes create problem.

A survey on status and trends of information and communication technologies (ICT) used for knowledge sharing in agriculture was attempted. Among Asian countries, India comes under the second next category after the advanced user category comprising Japan, South Korea and Taiwan. Both profit-motive and business augmentation on one hand and community services and rural welfare on the other have been the objectives of ICT-based models in agriculture in India. India successfully used little media (radio and TV) to bring about green revolution and White revolution by creating awareness among the farmers. ICTs are now being used to bring about second green revolution by providing information about improvement in agricultural practices.

ICT has the capacity to prepare learner for a rapidly changing world scenario. They may use ICT as a tool to find, explore, analyze, exchange and present information as per their need. The capabilities of ICT may be used for literacy mission in the following ways.

* Increasing access through the distance mode.

* Provide a knowledge network to the learners.

* Enhancing literacy.

* Broadening the availability of quality e-contents.

* Developing quality e-contents.

* Providing contents on demand.

* Professional development arid recurrent training of teachers

* Creating a literacy conducive environment.

* Virtual classrooms.

Information and Communication Technology (ICT) is a major factor in shaping the new global economy and producing rapid changes in society. Within the past decade, the new ICT tools have fundamentally changed the way people communicate and do business. They have produced significant transformations in industry, agriculture, medicine, business, engineering and other fields. They also have the potential to transform the nature of education, where and how learning takes place and roles of students and teachers in the learning process.

The new technologies challenge conventional conception of both teaching and learning methods and materials and by reconfiguring how teachers and learners gain access to knowledge, have radical implications for conventional teaching and learning process. To meet these challenges, schools must embrace the new technologies and appropriate the new ICT tools for learning. They must also move toward transforming the traditional paradigm of learning.

There has been alarmingly little progress with respect to ICT and the progress has been quite makeshift. Teacher training institutions are going in the right direction but they lack the quality, expertise, intensity, attention, momentum etc. The shortage of expertise is not so much in basic digital skills, but in the educational use of ICT. The structure and content of teacher training programmes on ICT in education are underdeveloped.

Teacher education institutions may either assume a leadership role in the transformation of education or be left behind in the swirl of rapid technological change. For education to reap the full benefits of ICT in learning it is essential that perceive and in service teachers are able to effectively use these new tools for learning. Teacher education institution and programmes must provide the leadership for preservice and in service teachers and model the new pedagogies and tools for learning. They must also provide leadership in determining how the new technologies can best be used in the context of the culture, needs and economic conditions within their country.

ICTs allow faster delivery and a more adapted content of technical assistance in a variety of sectors-ranging from long-distance education, to telemedicine and the creation of new livelihoods. ICTs can involve more people, hitherto unreached or under serviced, and accomplish a deeper geographic penetration, especially to rural areas, than is the case with traditional means and modalities. ICTs allow access to information sources worldwide, promote networking transcending borders, languages and cultures, foster empowerment of communities, women, youth and socially disadvantaged groups, and help spread knowledge about ‘best practices’ and experiences. ICTs are indispensable to realize the global information society and the global knowledge society.

Inexpensive technology is an increasingly influential factor in education. Computers and mobile phones are being widely used in developed countries to both complement established education practices and develop new ways of learning such as online education (a type of distance education). This gives students the opportunity to choose what they are interested in learning. The proliferation of computers also means the increase of programming and blogging. Technology offers powerful learning tools that demand new skills and understandings of students, including multimedia literacy, and provides new ways to engage students, such as classroom management software. Technology is being used more not only in administrative duties in education but also in the instruction of students. The use of technologies such as Power Point and interactive whiteboard is capturing the attention of students in the classroom. Technology is also being used in the assessment of students.

The ICT penetration in primary, secondary and higher secondary level is not satisfactory at all. Only a limited number of urban schools and colleges have ICT facilities for

education purposes. Increasingly ICT is becoming a tool of problem solving. Computer aided modelling and simulations are now powerful aids of sciences as well as economics and business. The processes in research paradigm-literature searches, collecting relevant articles and data, discussions with other researchers, writing papers, peer review of works and finally journal publications-can now be carried out electronically from a networked PC in a researcher's office. Use of ICT in education management is becoming compelling needs throughout the world.

SCOPE AND IMPORTANCE OF THE STUDY

After independence, India has made great strides in the growth and development of education. There has been an impressive growth of colleges from about 700 to 20,700 Universities from 25 to 435 and students enrolment from one lakh to 1.16 crore. However, literacy rate today is 68.78%, out of which computer literacy is 6.1% only. In case of internet utilization, India scored the fourth position i.e. 4.9%.

Information and Communication Technologies (ICTs) are being used in various fields since quite some time in education. Apart from making the learning and teaching more interesting the ICTs provide opportunity to the teacher and taught to gain information. Through the integration of these technologies the communication becomes more seamless. Usefulness of ICTs can be gauged by way of its usage now in various countries as one of the basic thing to make teaching and learning more interesting. At the same time ICTs also provide challenge to teacher and students in terms of subject specific ICT resources for each other's understanding with various kinds of activities. Information and Communication Technologies provide more interactive and less didactic approach, where the class can interact with the content and context of the lessons digitally through the ability to capture, combine and manipulate information from a variety of sources.

It is very essential to know the awareness, knowledge, extent of use and problem faced during the uses of ICT tools. Hence the present study on "Utilization of Information and Communication Technology (ICT) tools by staff and students in Universities" is conducted with the following objectives:-

1. To understand the awareness of ICT tools by staff and students.
2. To find out the knowledge of ICT tools by staff and students.
3. To assess the extent of utilization of ICT tools.
4. To elicit the problems faced during the usage of ICT tools and elucidate suggestions for improvement.
5. To study the relationship of knowledge and utilization level of ICT tools users with their socio-personal characteristics.

LIMITATIONS OF THE STUDY

Due to limitation of time, money and other resources to the student researcher, the present investigation was confined only to two universities of Karnataka State i.e. University of Agricultural Sciences and Karnataka University of Dharwad. Sample included only staff and students for the study. Sample size consisted of only 92 staff and 92 students because of the time constraint.

2. REVIEW OF LITERATURE

A comprehensive review of literature is an integral part of any investigation, as it not only gives an idea on the work done in the past and assists in delineation of problem area and also provides basis of interpretation and discussion of findings.

A review of the existing literature relevant to the study area helps the researcher to design the theoretical frame of the study and also access the nature and quantum of studies already undertaken in that particular area of research.

Fleishman (1969) said, "Better ways are needed to generalize research findings from laboratory studies to operational setting from experimental study to another and from one operational setting to another." Published literature on studies conducted on utilization of ICT tools by the staff and students in universities are very limited. However, an effort is made to review the available literature pertaining to the objectives of the study. This literature reviewed which helps to gain insight into the past and present investigation is grouped under the following headings.

2.1 Socio-personal characteristics of the respondents.

2.2 Awareness about ICT tools.

2.3 Knowledge regarding ICT tools.

2.4 Utilisation of ICT tools.

2.5 Problems faced during the usage of ICT tools.

2.6 Information and Communication Technology (ICT) Tools.

2.1 SOCIO-PERSONAL CHARACTERISTICS OF THE RESPONDENTS

Chakarborty *et al.* (2000) opined the effect of some important personal and socio-economic factors on gain of knowledge through radio. The findings revealed that the seven variables viz., education, social participation, extension contact, annual income, herd size, land size and economic motivation were positively and significantly correlated with knowledge gain after radio broadcast.

Maniar (2002) studied on internet usage by the female post-graduate students related to the socio-economic status. The results showed that majority of the respondents were residing in hostel, high majority of the respondent's father were professional and half of them were post graduates, nearly half of the respondents had family income between Rs.10, 001 to 25,000 per month and sixty percent of them belonged to lower socio-economic status.

Pandey and Mehta (2002) conducted a study on awareness of educational technologies in open learning system by target group. Majority of the respondents were from active age group, unmarried, unemployed, belonged to nuclear families and were having service as the main family occupation. Nearly half of the respondents were having medium media-ownership and more than half of them had medium media exposure.

Pandey and Mehta (2003) evaluated the extent of use of educational technologies by distance learner. Results indicated that majority of the respondents were from active age group, unmarried, unemployed and were having service as main family occupation.

Pandey and Mehta (2003) surveyed utilization pattern of educational technologies in open learning system by target group. The results revealed that the variables like place of living, monthly income and mass media exposure had been found to be highly significant with utilization pattern. Nearly half of the respondents were having medium media-ownership and more than half of them had medium media exposure.

Sharma and Malaviya (2004) observed that there was a significant relationship of independent variables like communication, training and residence in hostel with internet utilization by post- graduate girl students in Hisar city of Haryana State.

Hedjazi *et al.* (2006) identified the relation between extension specialist's personal characteristics and the extent of utilization of ICTs. The results revealed that majority of the

extension specialists (83.7%) was male. Regarding education, only 3.8% of the specialists had a Ph. D. degree, 34.6% of them had Masters Degree and more than half of them (61.5%) had Bachelor degree.

Adesope *et al.* (2007) focused on extensionists and researchers proficiency requirements in information and communication technologies in south eastern Nigeria. It was found out that researchers had mean Information Technology self rating of 1.49, while extensionists had mean Information Technology rating of 2.29, implying that extensionists had higher mean Information Technology rating than researchers.

Bansibihari and Lata (2007) studied on cognitive and affective computer attitudes of teachers. The results indicated that both male and female teachers have favourable computer attitude. Sex and the subject of specialization have no significant influence on cognitive computer attitude, affective computer attitude and computer attitude.

Best and Maier (2007) surveyed on gender, culture and ICT use in rural South India to find out the relationship between the use of ICTs with personal characteristics of the users. The results indicated that the average age of the ICT users was 20 and of non-users were 31. There was no significant relationship in educational levels of the users verses non-users.

Gunawardana and Sharma (2007) conducted a study on information seeking behaviour of tribal and non-tribal farmers in Udaipur district of Rajasthan. The study revealed that there exists an association between some of the selected personal characteristics viz. education, size of land holding, extension contacts, innovation proneness and information seeking behaviour of respondents on improved farm practices.

Ommani and Chizari (2007) surveyed regarding appropriateness of e-learning based information technology to improve the productivity of crops. The results of the study revealed there was a significant relationship between the IT skill and knowledge, income, social participation, the extent of information-seeking motivation, level of job satisfaction and level of education with perceptions of agricultural extension agents.

Patel and Rajendran (2007) made an effort to study e-culture in India from socio-demographic perspective. The study consisted the respondents between the age group 20 and 76 years. The results of the study found that chronological age does not influence e-culture. That means e-culture equally spreads across different age group, with the view that education influence e-culture but age does not.

Singh *et al.* (2007) defined personal characteristics of key communicators and their role in the diffusion of agricultural technology. It was observed that key-communicators with comparatively high social participation, larger operational land holding and more total gross income and socio-economic status performed the role better. Caste of the key-communicators was significantly related to the role performed by them.

Wims (2007) analysed the adoption and use of ICTs among Irish farm families. It was found that 56% of respondents owned a home PC while 48% had home internet connectivity. The personal factors found to be associated wit ICT adoption included: middle age; married, with dependent children, particularly with older school-going children. Respondents were more likely to have adopted ICT if they or their spouses had off-farm income; if medium sized farms and if their main enterprise was suckling beef.

Chauhan (2008) elucidated that independent variables like education, land holding, contact with NRI's, experience of internet use and mass media exposure are significantly and positively correlated with the judgment of farmers about the use of internet for farming community..

Dhanavandan *et al.* (2008) conducted a study on the Use of Information and Communication Technology (ICT) Tools by Librarians. There is no significant relationship between the use of e-mail and Internet and gender or between age (below or above 40) and the use of ICT, although there is some variation.

Murali and Venkataramaiah (2008) conceptualised the relationship between profile characteristics of students with their exposure to agricultural websites. The results of the study revealed that selected independent variables viz., attitude, information seeking behaviour, scientific orientation, innovativeness, achievement motivation, knowledge about

websites, mass media exposure, level of aspiration and economic status correlated significantly, whereas, rural and urban background was non significantly correlated with exposure to agricultural websites.

Thangaraja *et al.* (2008) detailed about the utilization behaviour of online journals by the students of Tamil Nadu Agricultural University (TNAU). The study revealed that more than half (57.50%) of the students were male. Regarding educational qualification nearly one third (32.50%) of the students belonged to second year post graduation and nearly one fourth (22.50%) of the students belonged to first year doctoral programme. Two-thirds (67.50%) of the students did not possess personal computer where as about three-fourths (77.50%) of them had lack of internet connectivity.

So, from all above studies, it can be summarized that, socio-personal characteristics of ICT tools users like age, sex, education, annual income, place of residence, caste, marital status etc. definitely have an influence on the utilization or exposure towards ICT tools.

2.2 AWARENESS ABOUT ICT TOOLS

Pandey and Mehta (2002) pointed out the awareness of educational technologies in open learning system by target group. It was found that cent-percent respondents were completely aware about print material and contact session, where as awareness regarding rest of the technologies was completely low. Awareness index of more than half of the respondents was medium level.

Pandey and Mehta (2003) stated about the utilization pattern of educational technologies in open learning system by target group. The study was conducted in Hisar district of Haryana state with a list of students of P.G. Diploma and Bachelor Diploma under distance education. The results revealed that the awareness index of more than half of the respondents was medium level. The total utilization pattern in terms of awareness media habit and audience response was of medium level exactly half of the respondents.

Thambiratti (2008) explored that the teacher must create awareness among students about proper use of technology. Teachers can make use of technology to create an appetite for learning among the students.

Thangaraja *et al.* (2008) attempted a study on the utilization behaviour of online journals by the students of Tamil Nadu Agricultural University (TNAU). The results showed that majority (95.00%) of the students were aware about the availability of online journals in their respective subjects.

Hence, above recent studies have shown that, majority of the respondents having awareness regarding the ICT tools. One of the studies explored that the teacher must create awareness among students about proper use of technology.

2.3 KNOWLEDGE REGARDING ICT TOOLS

Chakarborty *et al.* (2000) opined about effect of some important personal and socio-economic factors or gain of knowledge through radio. The knowledge gained by the respondents through the exposure to radio broadcast was medium to high.

Atreja and Dwivedi (2005) with the advent of third generation cellular technologies (3G), wireless connectivity and its associated outreach capabilities, internet access is no more a distant or unaffordable dream for the developing countries. In this light, this paper will review the recent developments in the area of e-learning and knowledge management that can provide support for evidence based policies and practices.

Hedjazi *et al.* (2006) conducted a study on factors affecting the use of ICTs by Iranian agriculture extension specialists. The results revealed that specialist's level of knowledge and skill in producing and preparing papers was more than their skill in producing and preparing papers was more than their skill in producing other ICT-related materials.

Ommani and Chizari (2007) observed that the level of education, IT knowledge, social participation, level of job satisfaction, income and extent of information seeking motivation may well account for 76% of changes in perceptions of agricultural extension agents.

Mishra (2008) suggested that more research and development in the ICTs will not only help in the development and information area but will also help people to get skill, knowledge etc. easily if the gadgets are in affordable limits. The information and communication technology has got a very high stake for development of various combinations, which can be adopted in the traditional market and society.

Reddy (2008) made an effort to present a solution to bridge the information gap by exploiting advances in Information Technology (IT). A frame work was proposed of cost-effective agriculture knowledge to the farming community to improve the crop with expertise as that of an agricultural expert, by disseminating both crop and location specific expert advice in a personalized and timely manner.

Yadav and Ansari (2009) made an effort on ICT's e-chaupal: enabling and empowering farmers of India. ICT's e-chaupal provides real time information and customised knowledge to enhance the ability of farmers to take decisions and align their farm output with market demands and secure quality and productivity.

It is evident from above reviewed literature that, majority of the respondents had knowledge regarding ICTs. We believe knowledge is power and information is the key element of knowledge base. In order to achieve sustainable development, different communication methods and tools have to be used to share required knowledge and information.

2.4 UTILISATION OF ICT TOOLS

Maniar (2002) conceptualised the internet usages for educational purposes by the female post-graduate students. The results revealed that most of them used internet for class assignment than research work and other educational purposes.

Intsiful *et al.* (2003) made an effort on use of ICT for Education, Research and Development in Ghana: Challenges, Opportunities and Potentials. They found that to create an enabling environment for the use of ICT, foster information exchange among local scientists, and to facilitate the interactions and collaboration between researchers in institutions and the world.

Meera (2003) conducted research on a critical analysis of information technology in agricultural development: Impact and implications. It was found that irrespective of the land holding, all types of farmers were using the IT services.

Pandey and Mehta (2003) conducted a study on extent of use of educational technologies by distance learner. Results indicated that cent percent respondents using print material and contact session because these two technologies were most commonly used and the frequency of using other technologies were not up to mark. Nearly one fourth of the total respondents were using print material, contact and video in combination. Exactly half of the respondents had medium level of utilization.

Sharma and Malaviya (2004) conceptualised about Internet utilization among post-graduate girl students. The study revealed that 35% students belonged to low level of Internet usage followed by 37.14% and 27.86% having medium and high level of Internet utilization respectively. Thus the utilization of Internet was in medium level for majority of the respondents.

Atreja and Dwivedi (2005) made an effort on Utilizing Information Technology Tools to Provide Affordable Access to Evidence -based Resources in the Developing World. Really Simple Syndication (RSS) and web logs (blogs) can help subscribe to current "headlines" from a website or journal, which can be invaluable in disasters and epidemics. In addition, these technologies carry other distinct advantages over traditional means of communications. First, their content can easily be delivered for various mobile plat forms, such as cellular phones, which might play a predominant role in developing countries. Secondly, they can be integrated with entrez tools of Pubmed and can automate the process of querying new research. Thirdly, their information can be readily archived, indexed and retrieved for future use and shared with colleagues and researchers across the world.

Gullick (2005) revealed the use of Information Technology in education. In the 21st century IT has became a buzzword. IT means Information or data processing using computer

technology. IT is important for institutions and University research and will gain importance over the next decade. Computers are being speedily introduced over every level of education i.e. schools, colleges, vocational institutions.

Krishnan (2005) conducted a study on Experiences in Effective Utilization of ICT Tools for Developing Scientific Content for e-Learning: A Case Study. He had been paying attention to the development and use of visual aids which are developed using some of the best ICT tools, and had been experimenting them in class rooms at all levels, from 9th standard to a Ph.D. course. The student response had been the only prime motivation to develop visual aids in chemistry which are plentiful, but rarely used in education in India where the form and quality are much less emphasized than quantity leading to a plethora of poorly trained and motivated scientists and engineers.

ICTs can be personal or communal and are used to maintain contacts with friends and family members abroad. It was also found that ICTs are bringing down the costs associated with migration. The field of IT itself may be a gateway for migration for many high-skilled workers, but ICTs are not enabling the creation of cultures, identities, or families where none existed (Wilding, 2006).

Akpabio (2007) attempted to determine the level of utilization of Information Communication Technology (ICT) for agricultural extension activities by Agricultural Extension officers in Nigeria's Niger Delta region. Findings revealed that public extension officers utilized a wider range of ICT (especially the broadcast and print ICT) than their private agency counterparts.

Mehera and Mital (2007) pointed out that despite research and testimony that technology is being used by more faculties, the diffusion of technological innovations for teaching and learning has not been widespread, nor has IT become deeply integrated into the curriculum. Although there are a growing number of faculties who are very enthusiastic about adopting technology because of the potential of newer tools for their students, there is still a large number of faculties who seem hesitant or reluctant to adopt technology for their teaching tasks.

Michailidis (2007) detailed about the adoption of Internet in agriculture. It was found that landholders in rural areas were increasing their use of computers and internet. This was because of the increased availability of hardware, software and communication infrastructure at reasonable cost.

Ommani and Chizari (2007) conducted a study on appropriateness of e-learning based information technology to improve the productivity of crops with the objective to determine how extension agents were using IT on the job. The results revealed that 31% of respondents had used e-mail whereas 66.6% of them had used World Wide Web.

Wims (2007) opined about the analysis of adoption and use of ICTs among Irish farm families. It was found that 64% of those with a PC used this for farming matters while 27% had farm management software. It was concluded that while levels of adoption were reasonable, the usage of ICT for farm management purposes was low.

Dhanavandan *et al.* (2008) conducted a study on the Use of Information and Communication Technology (ICT) Tools by Librarians. The results of the study indicate that all respondents use some kind of ICT tools, particularly the Internet and mobile phones. The use of ICT by the female respondents is somewhat higher than that of male respondents.

Kumari *et al.* (2008) observed the utilization of computer based information technology by undergraduate students. The study indicated that 4^{th} year students use more computer than 1^{st} year students for writing assignment, presentation and e-mail. In 4^{th} year students frequency of use for computer is more than that of 1^{st} year students.

Swathilekshmi *et al.* (2008) concluded about the Information utilization behaviour and constraint analysis among Shrimp farmers. The findings of the study revealed that private consultants followed by feed technicians were the most important sources of information utilized by 76.67 per cent and 71.67 per cent of Shrimp farmers.

Thangaraja *et al.* (2008) studied on the utilization behaviour of online journals by the students of Tamil Nadu Agricultural University (TNAU). The results revealed that two-third of the students referred online journals for their purpose of assignment, seminar and research.

Hattangdi and Ghosh (2009) opined that ICT can be used as a tool in the process of education in various ways like, Informative tool: It provides vast amount of data in various formats such as audio, video, documents, Situating tool: It creates situations, which the student experiences in real life, Constructive tool: To manipulate the data and generate analysis and Communicative tool: It can be used to remove communication barriers such as that of space and time.

Huda *et al.* (2009) conducted a study on Use of ICT in the Private Universities of Bangladesh. It was found that almost all the private universities of Bangladesh use ICT for managing the administrative processes. Among these 20 universities, around 40% of the universities are using ICT at a large extent for administrative purposes and 60% are using ICT not at so large extent but at a moderate level. It was also found that around 35% of the universities use ICT for teaching at a large extent, 55% of the universities use ICT at a moderate level, and rest 10% use ICT for teaching but at a smaller extent.

Reddi and Sinha (2009) found that the country's decision-makers, at both the central and state levels, have chosen to explore the use of newer computer and Internet based ICTs for education, along with broadcast ICTs, and have been promoting the use of open and distance learning for both the formal and non-formal education sectors.

Singh *et al.* (2009) elucidated the use of Internet based e- resources at Manipur University. It was noticed that 30.7% of respondents use Internet to little extent, 28.8% to some extents and 13.1% of respondents use Internet to full extent. However 27.4% of respondents are non-users of Internet.

It could be inferred from the above studies that, the utilization pattern of ICT tools were varied based on different purposes. Use of ICT in the field of education has not demeaned the role of a teacher, but further strengthened it by providing him with tools, which enhance his efficiency and effectiveness.

2.5 PROBLEMS FACED DURING THE USAGE OF ICT TOOLS

Maniar (2002) studied the differences in the problems faced by the female senior master students during and due to the use of Internet for educational purposes. The problems faced during the use of Internet were wastage of time in getting connected to different websites and search engines, opening web pages, downloading files and photographs. Whereas, due to the use of Internet services, the respondents faced physiological and social problems to a less extent.

Intsiful *et al.* (2003) The major challenge facing the development of the full potential of ICT for education, research and development in the county is brain drain which has resulted in the lack of the critical mass of ICT-engineers and scientists relevant for undertaking ICT-related project professionally. Another major obstacle is the lack of an enabling environment and a sound ICT-roadmap and strategies by policy makers resulting in uncoordinated and unsustainable ICT-development activities. Other problems include: High running and subscription costs, Lack of good publicity and incentives to attract potential users, Identification of information sources that meet the needs of users, Poor Quality of Service of the internet and telecommunication services, Regulatory issues (exclusivity policies and ban on use of VOIP) and Effective management of network traffic and infrastructure.

Shenoy and Banerjee (2004) stressed that obstacles in order to use information and communication technology to best benefit women are basically focused on two principal themes that emerge as barriers for women i.e. economics and awareness.

Best and Maniar (2007) conducted a study on gender, culture and ICT use in rural South India. The study revealed that obstacles to ICT use were generally structural (time, location, illiteracy) and not personal (e.g. a prohibition from a relative).

Kumar *et al.* (2008) detailed about constraints faced by Agricultural development officers in transfer of Agricultural technology to the farmers of Punjab. The constraints were classified into five categories like technological, administration, constraints related to

extension system, personal constraints and other constraints. The findings viewed that the state department of Agriculture, Punjab should make sincere efforts to overcome these constraints for quick transfer of latest technology to the ultimate users.

Kumari *et al.* (2008) made an effort about the utilization of computer based information technology by undergraduate students. Students of B. Sc. 1st year and 4th year were taken from two colleges i.e. college of Agriculture and College of Home Science. The results revealed that 1st year students felt more constraints than 4th year students in using computer for various activities.

Thangaraja (2008) opined that majority of the students faced problems like getting user name, password, and long time to download article, read only content and limited availability of online journals during access and usage of online journals.

Reddi and Sinha (2009) conducted a study on ICT use in Education: National Policies, Strategies and Programmes. They found that access and availability of technology also becomes patchy since a piecemeal rather than a co-ordinated effort by different implementing agencies is followed. Lack of stable electric power, non-existent or unreliable telecommunication lines and a mismatch between funding allocation and actual needs all add to the problems. Sustainability is also a major obstacle, with many initiatives failing because donors have not anticipated the cost of maintenance and upgrading of technology and services.

Sing *et al.* (2009) found the difficulties in browsing the Internet based information resources. It was found that low speed Internet access, erratic power supply and lack of required full text journals are problems with regards to the use of internet based e-resource.

From the above studies it has been concluded that, ICT users were experiencing practical constraints like insufficient specific information, inadequate subject matter coverage, inadequate infrastructure/ electricity etc. Some of the respondents were also experiencing physiological as well as social problems regarding ICT tools utilization. Therefore sincere efforts should make to overcome these constraints for quick transfer of latest technology to ultimate users.

2.6 INFORMATION AND COMMUNICATION TECHNOLOGY TOOLS

Rao (2000) conducted a study on e-mail networking at block level of Ahmednagar district and reported that total number of offices covered under e-mail connectivity were about thirty within Ahmednagar district. These offices were equipped with Internet facilities to keep in touch with the entire world by click of a button.

Geographic Information System refers to scientific, processing, storage, manipulation, transforming and retrieval spatial and non-spatial or attributes data. This technique provides a methodology for analysis and storage of data in the form of maps for rural development programmes. (Balselvakumar, 2001)

Geographic Information System (GIS) is a powerful analytic tool, invented due to advancement of computer technology and which has made it to digitize, store and overlay of several maps to create a new set of maps as per the requirements of the concerned. (Balselvakumar, 2001)

Balselvakumar (2001) elucidated the relevance of Geographic Information System (GIS) to the Integrated Rural Development Programme as it makes possible to digitise, store and overlay of several maps to create new set of maps as per the requirements of the analysis on the subjects such as geographical location, demographic details (population, literacy levels, income level, socio-economic parameters, infrastructure available resource map etc.

According to Kar (2001), literacy the 'GIS' comprises three words viz., 'Geographical' means relevance of location, 'Information' means data (textural or graphical) and 'System' means tools for manipulation. GIS is a data base system in which most of the data are spatially indexed and upon which a set of procedures are operated in order to answer queries about spatial entities in the data base.

Mohideen (2001) elucidated that World Wide Web or www is the hottest and most promising tool to hunt for useful resources on the Internet. It allows user to retrieve information from graphics files, video clips and sound tracks, besides text based files.

Subramanian *et al.* (2001) made an effort that the advent of computers and the fast paced software development, now-a-days, makes the job easier by means of application oriented models and expert systems for real time solution. MS-Excel, the spread sheet application software comes to our rescue and relief in this context and offers a good lot of capabilities and support towards vast area water budgeting problems.

Surendran and Jagadesswaram (2004) studied that a Decision Support System (DSS) known as DSSAT (Decision Support System for Agro technology Transfer) will be an effective tool to solve the simulation to crop growth and development on a day to day basis, in response to genotype, soil conditions, climate and many types of management input, such as time of sowing, planting density, fertilizer application (timing and quantity) and irrigation schedules. An unlimited number of theoretical experiments/simulations are possible, by changing the starting conditions and input data of the model (soil data, weather data of a particular location) without going for field experiment.

Mohansundaram and Jebaraj (2007) made an effort towards the Integrating Mobile Phone Technology in Teaching-Learning Process at Higher Education Level. They conducted that Mobile technology and the concept of m-learning is an evolving trend in education now-a-days. It will extend the desktop-based online learning environment to mobile and will make the education to take place anytime and anywhere.

Ghose *et al.* (2008) revealed that the advent of one of the ICT tools i: e Geographic Information System (GIS) has added new vistas in the field of Dairy Farm and Management. It also helps in integrating the whole Dairy Farm in a more precise way to get correct information about the various factors related with the whole dairy farm.

Kumar and Dabas (2008) made an effort towards Google Scholar: An Internet Search Service for Academic Contents. They found that Google Scholar allows the research scholars to specifically search for the academic contents on the Internet, which may be thesis, books, technical reports and the peer reviewed research articles from most broad areas of research and learning.

Murahari and Kumar (2008) pointed out that new technologies like web based PCs, Mobile phones, Satellites and Wireless technologies and Internet etc. are helping the teachers and the students to gather and disseminate information which is normally not possible through any other means. Unlike the previous society the present information society has accepted the new technologies for faster development and growth due to global competition.

Narender and Anandaraja (2008) conducted research on information and communication technology for women experience of women managed Internet kiosks at Melur, Tamil Nadu. As part of this initiative, 20 Internet Kiosks were established covering 26 villages to offer various services and owned and managed by poor women through the support of their savings and credit groups and federation.

Parikh *et al.* (2008) conducted study on ICT tool to reach the unreached. E-learning was studied with objectives i: e improves employment prospects, helps people escape from poverty and overcomes the wastage of potential talent.

Senthilvadivoo (2007) studied about farm technologies through Interactive Multimedia. A multi-stake holder's perspective analysis. The study shown that the IMCD aims at fastening the diffusion of good agricultural practices and novel farm technologies through active involvement and participation of farmers with the help of computer based user friendly Interactive Multimedia Compact Disc (IMCD).

Yogisha *et al.* (2008) conducted a study on Information and Communication Technology (ICTs) in India: An insight into progress of rural economy. Sustainable economic growth in the rural India can be achieved through public private partnership. The multi service public private kiosks will be the engine of growth in the rural markets and ICT infrastructure is the backbone of this engine.

Ganapuram *et al.* (2009) made an effort towards Disaster Preparedness using IT Tools: Case Studies on the use of ICT and GIS Derived Tools for Micro-Level Drought Preparedness. The finding revealed that with natural calamities such as drought becoming a recurrent phenomenon, Science-based interventions using GIS based tools to predict the severity of drought in an area can potentially contribute to mitigation efforts.

Gulati (2009) reported that high speed broadband connectivity for rural areas is a vital component of inclusive growth. It can provide villagers with much needed access to financial inclusion, health and education services.

From the above all collected reviews it can be noted that modern ICT tools permit to develop systems as powerful tools with extensive potential in the reach of unreach. The ICTs are potential tools for poverty alleviation, health, education, judiciary, agricultural marketing and sustainable development. The new information technology tools and techniques can play a great role to improve communication especially by the way of effective media.

3. METHODOLOGY

Research methodology is the blue print of the research architect. In this chapter, it is attempted to critically evaluate and explain the various methods and procedures followed in the present study in order to enable the researcher to answer the research problems in question. A detailed description of the methods and procedures followed in carrying out the research is furnished under the following heads.

3.1 Research design

3.2 Locale of the study

3.3 Selection of the population

3.4 Selection of the respondents

3.5 Selection of ICT tools

3.6 Instruments for data collection

3.7 Variables selected for the study

3.8 Statistical tools employed for data collection

3.1 Research Design

The research design adopted for the present study was ex-post facto, since the phenomenon had already taken place. According to Kerlinger (1973) ex-post facto research is a systematic empirical enquiry in which the research does not have direct control over dependent variables because either their manifestation has already occurred or they are not inherently manipulated. Keeping this in view, the adaptability of the proposed design with respect to the type of variables under consideration, size of respondents and phenomenon to be studied, the ex-post facto was selected as an appropriate research design. The main focus of investigation was to know the extent of awareness, knowledge, extent of utilization and the problems faced during the usage of Information and Communication Technology (ICT) tools.

3.2 Locale of the study

Dharwad district is situated in northern part of Karnataka State 74°28' north latitude and 14º31' eastern latitude. The district comes under northern dry zone and northern transitional zone. Geographical area of Dharwad district is 4092 square km. The population of Dharwad district is 16, 03,794 comprising 8,23,415 male and 7, 80,379 female. The literacy rate of the district is 71 per cent. Male literacy rate is 78.50 per cent and female literacy rate is 63.5 per cent.

The study was conducted in the purposively selected Dharwad district of northern Karnataka. It included two universities viz. Karnatak University and University of Agricultural Sciences, situated in Dharwad which is considered as 'education centre' of northern Karnataka region as well as the third city in Karnataka, which got the prestige to have 'Microsoft IT Academy Centre' under the project "Shiksha" after Bangalore and Mysore.

3.3 Selection of the population

Population of the study consisted of Post Graduate (P.G.) students including M.A. / M.Sc. /Ph.D. and staff including Teaching, Research and Extension Personnel of both the universities i.e. Karnatak University, Dharwad (KUD) and University of Agricultural Sciences, Dharwad (UASD).

3.4 Selection of the respondents

The total number of departments in Karnatak University and University of Agricultural Sciences, Dharwad is 48 and 22 respectively. Out of which eight departments were selected randomly from each University. Forty per cent of the students and 60 per cent of the staff were selected using proportionate random sampling method from the selected departments. The total sample size was 184. The samples selected for the study are as shown in flow chart. (Fig. 1.)

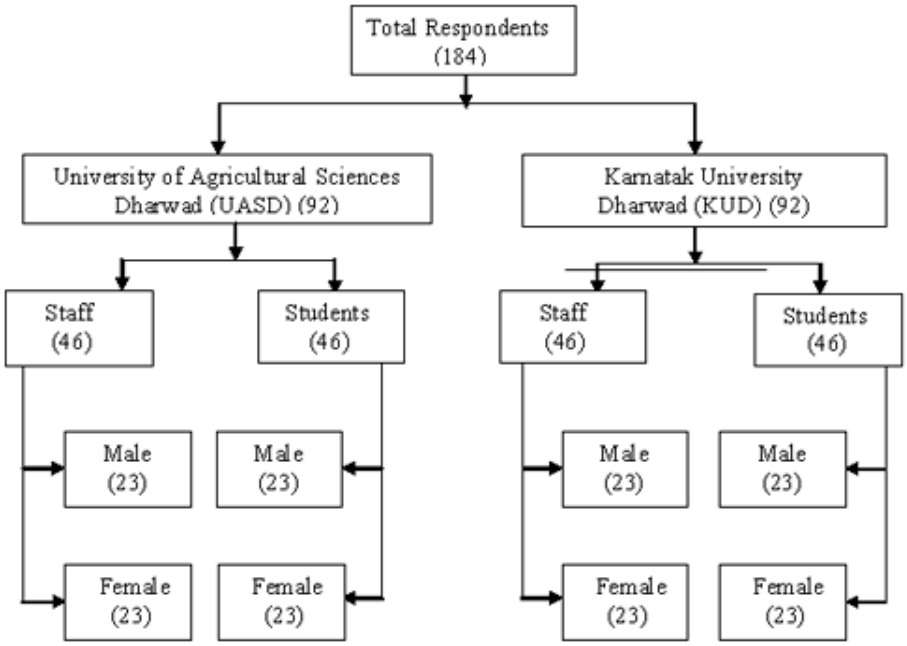

Fig.1. Selection of the respondents for the study

Fig. 1. Selection of the respondents for the study

3.5 Selection of ICT tools

Information and Communication Technology include use of computers, IT, audio and video conferencing, networks and internet in teaching for all level of education. Our educational sector must use ICT to replace or supplement the classroom teaching. These technologies can be used to reach geographically dispersed students, minimum attention is being paid to the effectiveness of each and combination of technologies for education. Through ICT, the role of teacher changes from that of instructor to that of a facilitator. Different kinds of ICT tools are available in this world. In this study 15 ICT tools were selected after relevant review of literature, getting suggestions and guidance of the experts. The ICT tools selected for the study were Internet/Web services, MS Word, MS Excel, MS Power Point, Analytical package-SPSS, m-Stat, Mobile Map Technology, Satellite Tele Communication (SATCOM), Interactive Multimedia Compact Disc (IMCD, Geographical Information System (GIS), Kiosks, e-kisan, Computer programming, Decision Support System and Web based search engines.

3.6 Instruments for data collection

Keeping in view the objectives and the variables under study, an interview schedule was prepared and pre-tested in a non-study area to locate any ambiguity in the questions. After pre-testing certain modifications were made in schedule by consulting experts and finalized schedule was used for data collection.

The schedule consists of four parts. Part one was to study the socio-personal characteristics of the respondents. Part two was to elicit information about awareness and knowledge of the respondents. The third part was used to know the extent of utilization and the last part was used to elicit the problem faced during the usage of ICT tools and their suggestions for improvement in usage of ICT tools.

Plate 1. Internet or Web services

Plate 2. MS Word

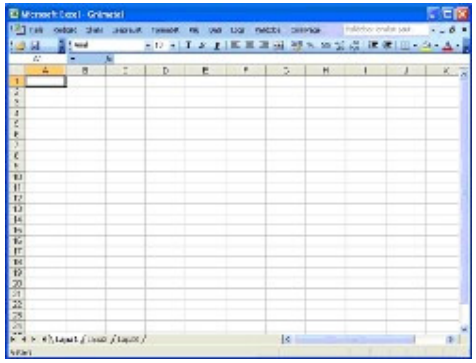

Plate 3. MS Excel

Plate 4. MS Power Point

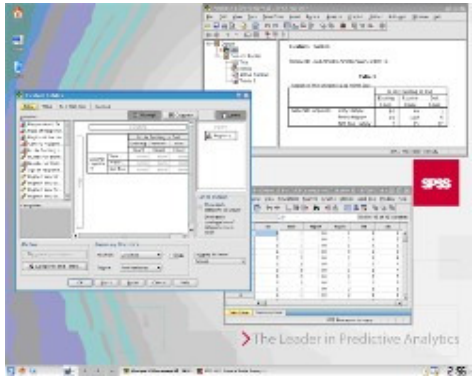

Plate 5. Statistical Package for Social Science (SPSS)

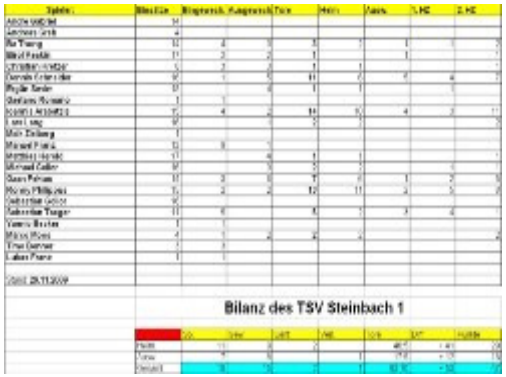

Plate 6. m-stat

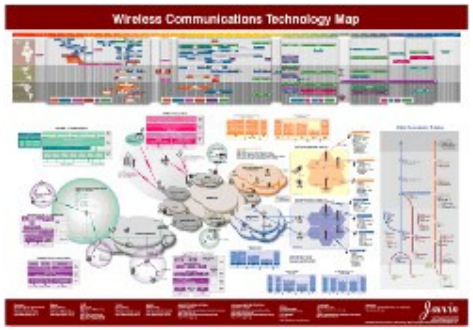

Plate 7. Mobile Map Technology (MMT)

Plate 8. Satellite Tele Communication

Plate 9. Interactive Multimedia Compact Disc (IMCD)

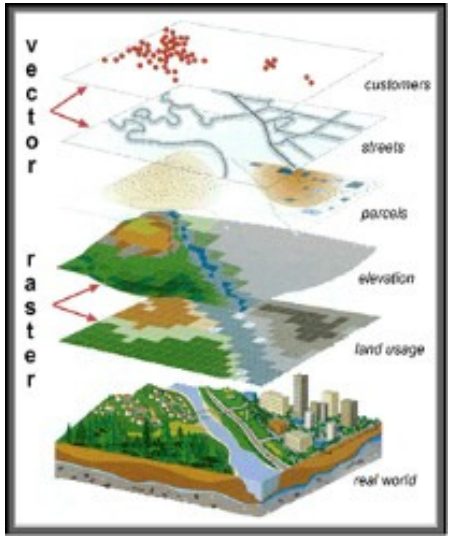

Plate 10. Geographical Information System (GIS)

Plate 11. Kiosks

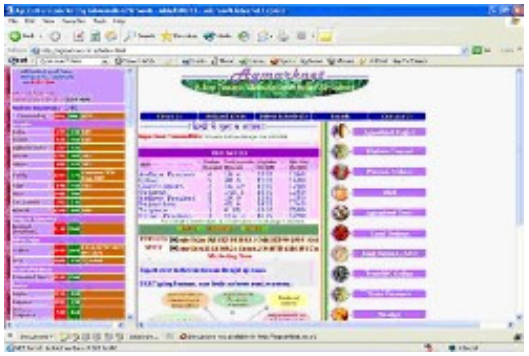

Plate 12. e-Kisan

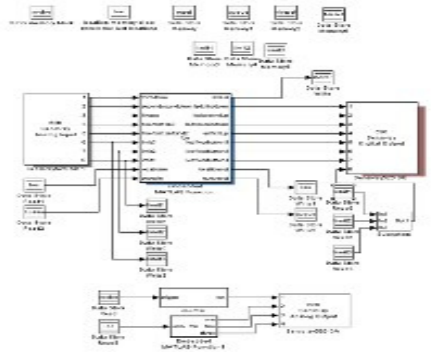

Plate 13. Computer Programming

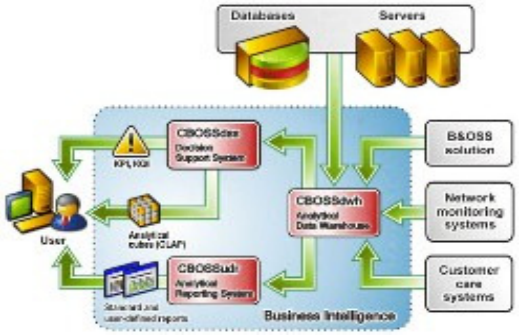

Plate 14. Decision Support System

Plate 15. Web based search engines

3.7 Variables selected for the study

A variable means some characteristic of each member of the unit that is to be studied such as income, age, test score, land holding etc.

According to John Galtung, "A variable can be regarded as some kind of yardstick that gives us a basis for the evaluation of the single unit of analysis. e.g. Dimension of education, task orientation.

He further defines that "A variable is a set of values that turn a classification. A value is anything which can be predicted of a unit."

The categorization of independent and dependent variables are presented in the following tables. (Fig.2.)

1. Independent variables

Sl.No.	Variables	Empirical measurements
1.	Age	Mean and Standard Deviation
2.	Education	Procedure followed by Bhairamkar *et al.* (1997) and Thangaraja *et al.*(2008)
3.	E-mail ID	-
4.	Marital status	Procedure followed by Annapurna (2004)
5.	Type of Family	Procedure followed by Chandrakala (2001) and Pooja (2009)
6.	Size of Family	Procedure followed by AICRP, Child Development (2002)
7.	Occupation of Parents/ Husband/ Wife	Procedure followed by Uma (2002)
8.	Education back ground	-
9.	Accessibility to Computer	-

2. Dependent variables

Sl.No.	Variables	Empirical measurements
1.	Awareness about ICT tools	According to Thangaraja *et al.* (2008)
2.	Sources of Awareness	-
3.	Awareness regarding the selected ICT tools	According to Thangaraja *et al.* (2008)
4.	Knowledge regarding ICT tools	Procedure followed by Belgavimath (1994)
5.	Sources of Knowledge	-
6.	Extent of Utilization	Procedure followed by Shaik and Rao (2001) and Belgavimath (1994)
7.	Usage of paid service of ICT tools	-
8.	Purpose of Utilization	According to Thangaraja *et al.* (2008)

9.	Preference of Utilization	According to Thangaraja *et al.* (2008)
10.	General problems faced in using ICT tools	Procedure followed by Telaprolu and George (2005)
11.	Specific problems faced in using ICT tools	Procedure followed by Massey and Dhillon (2005)

3.7.1 QUANTIFICATION OF INDEPENDENT VARIABLES

1. Age

Age was measured as the number of calendar years reported to have completed by the respondents at the time of interview. Based on their age the respondents were categorized as follows.

Category	Score
Young	Less than (mean-0.425 S.D.)
Middle	Between (mean±0.425 S.D.)
Old	More than (mean+0.425 S.D.)

2. Education

Education was operationally defined as the number of years of formal education acquired by a respondent. The respondents were grouped into following categories.

Category	Score
M.A./ M.Sc.	1
Ph.D.	2

Similar classification was followed by Bhairamkar *et al.* (1997) and Thangaraja *et al.* (2008)

3. E-mail ID

In this study the possession of e-mail ID was categorized into two categories. Those are having means 'yes' and those are not having means 'no'.

Category	Score
Yes	1
No	0

4. Marital Status

Marital status of the respondents was noted by asking them directly and was categorized into following five categories as single, married, widow, divorced, separated.

Category	Score
Single	1
Married	2
Widow	3
Divorced	4
Separated	5

This procedure was followed by Annapurna (2004)

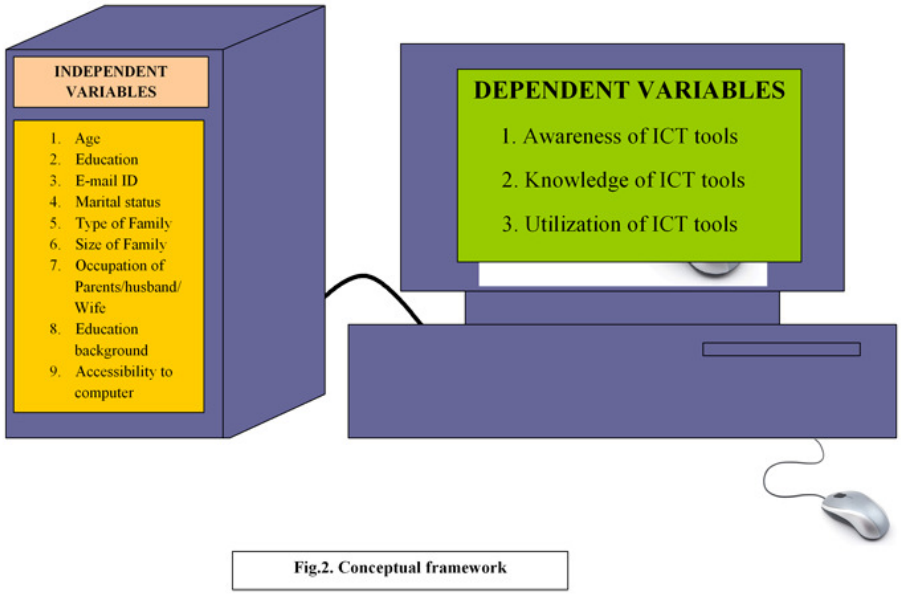

Fig. 2. Conceptual framework

5. Type of Family

Types of family were classified into 3 categories.

I Category: Nuclear family consists of husband, wife and children.

II Category: Joint family consists of more than one nuclear family that includes grandparents, uncles, aunts and cousins.

III Category: Extended family consists of more than the nuclear family, that includes one or other relatives, but not more than one couple.

Category	Score
Nuclear family	1
Joint family	2
Extended family	3

This procedure followed by Chandrakala (2001) and Pooja (2009)

6. Size of Family

On the basis of family members living together the family size was classified into three categories.

Category	Score
Small (≤4)	1
Medium (5-8)	2
Large (9 and above)	3

Similar classification was followed by AICRP, Child Development (2002)

7. Occupation of Parents/ Husband / Wife

Occupation refers to the cadre of the persons in which they were working. Here the occupation of respondent's father/ husband is classified into four categories.

Category	Score
Govt. Service	1
Business	2
Agriculture	3
Private Companies	4

Above procedure is modification of the procedure followed by Uma (2002)

8. Education back ground

The education background of respondents was categorised based upon the area from where they completed their study. The education background of primary, high school and PUC is categorized into three types.

Category	Score
Rural	1
Semi urban	2
Urban	3

9. Accessibility to Computer

The accessibility to computer was categorized into three types i.e. self owned, department owned and use on rent.

Category	Score
Self owned	1
Department owned	2
Use on rent	3

3.7.2 MEASUREMENT OF DEPENDENT VARIABLES

Awareness

Awareness model has two fold natures, that is they involve a representation of one's current state or behaviour matched to some standards or criterion. This implies that awareness consists of both an object of attention and an evaluate context in which that object is framed. This is proposed by Wegner and Guliano (1982), who suggested that awareness have both a "focal" and a "trait" dimension. The focus (target) of awareness is what it is explicitly about, where as the trait aspect of an awareness concern the implicit perspective from which the target appears.

1. Awareness about ICT tools

The awareness about the ICT tools was categorized into two types.

Category	Score
Yes	1
No	0

Similar classification was followed by Thangaraja *et al.* (2008)

2. Sources of Awareness

The sources of awareness were classified under four categories.

Category	Score
Radio	1
T.V.	2
Print Media	3
Friends/ Relatives	4

3. Awareness regarding the selected ICT tools

Here the awareness regarding the selected ICT tools was classified into following categories.

Category	Score
Yes	1
No	0

Similar classification was followed by Thangaraja *et al.* (2008)

Knowledge

Bloom *et al.* (1969) defined knowledge as those behaviours and test situations, which emphasize the remembering either by recognition or by recall of ideas and materials on the same phenomenon.

4. Knowledge regarding ICT tools

Statements based on certain important aspects of Information and Communication Technology Tools were formulated and pre-tested in non sample area. Finally on the basis of the experience gained in pre testing, 75 statements were selected regarding 15 ICT tools. They were presented to the respondents with 5 possible answers for each tool and selecting the correct answer. A score of one was given to the right answer and zero to the wrong answer. The possible obtainable scores ranged between 75 and 0 respectively. Based on the total scores, the respondents were classified into three categories namely low, medium and high. This procedure was followed by Belgavimath (1994).

Category	Range
Low	Less than (mean-0.425 S.D.)
Medium	Between (mean±0.425 S.D.)
High	More than (mean+0.425 S.D.)

Knowledge Index

Based on the total score obtained by all the beneficiaries knowledge index was worked out by using the following formula.

$$\text{Knowledge index} = \frac{\text{Scores obtained}}{\text{Obtainable scores}} \times 100$$

5. Sources of Knowledge

The sources of knowledge regarding ICT tools were categorized into following types.

Category	Score
Self	1
Home	2
Office	3
Through teaching	4
Through training	5
Through Summer/ Winter Camp	6
Cyber Café	7
Through friends/ Colleagues	8

Utilization

6. Extent of Utilization

Extent of utilization was categorized under following types.

Category	Score
Very Frequently (VF)	4
Frequently (F)	3
Rarely (R)	2
Very Rarely (VR)	1
Never (N)	0

Procedure followed by Shaik and Rao (2001)

The possible obtainable scores ranged between 60 and 0 respectively. Based on the total scores, the respondents were classified into three categories namely low, medium and high. This procedure was followed by Belgavimath (1994).

Category	Range
Low	Less than (mean-0.425 S.D.)
Medium	Between (mean±0.425 S.D.)
High	More than (mean+0.425 S.D.)

7. Usage of paid services of ICT tools

On the basis of total expenditure regarding the usage of ICT tools, the amount spent will be calculated per month and per week. The categorization of amount spent was made based on the following types.

Category	Score
Paid	1
Unpaid	0

8. Purpose of Utilization

The purpose of utilization was classified under following categories.

Category	Score
For gaining knowledge	1
For making presentation	2
For data analysis	3

Above procedure is modification of the procedure followed by Thangaraja *et al*. (2008).

9. Preference of Utilization

The preference of utilization was categorized under following types.

Category	Score
Clarity	1
Easy to operate	2
Need based	3
Effective	4
Attractive	5

Above procedure is modification of the procedure followed by Thangaraja *et al*. (2008).

Problems and Suggestions

Respondents were asked to mention the problems faced by them during the usage. The problems were classified into two categories like general problems and specific problems. The specific problems again classified into two types i.e. social problems and physiological problems. The suggestions for improvement of usage of ICT tools were also obtained.

10. General problems faced in using ICT tools

The general problems faced in using ICT tools were categorized on the following basis.

Category	Score
Always	2
Some times	1
Never	0

This procedure is modification of the procedure followed by Telaprolu and George (2005)

11. Specific problems faced in using ICT tools

The specific problems faced in using ICT tools were categorized on the following basis.

Category	Score
Regularly	2
Occasionally	1
Never	0

This procedure is modification of the procedure followed by Massey and Dhillon (2005).

3.8 Statistical tools employed for data collection

The data collected from the respondents were scored, tabulated and analyzed using suitable statistical methods. The statistical methods used in the present study are described below.

1. Frequency and Percentage

Frequency and percentage were used to interpret the socio-personal characteristics, awareness, knowledge and utilization of the ICT tools by the respondents. They were also used for elicit the problems faced and suggestions given by the respondents.

2. Mean and Standard Deviation

Mean and Standard Deviation were used for classification of respondents into various categories.

3. Chi-square

Chi-square-non-parametric test was employed to find out the association between dependent and independent variables using formula,

$$\chi^2 = \sum_{i=1}^{r} i \sum_{j=1}^{c} j \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

χ^2 Values are compared with table values for (r-1) (c-1) degrees of freedom.

Where,

E_{ij} =Expected frequency of (i, j) th cell

O_{ij} =Observed frequency of (i, j) th cell

r= number of rows

c= number of columns

χ^2 values are compared with table values for (r-1)(c-1) degrees of freedom (df) 'r' denoting the number of rows, 'c' denoting number of columns in the contingency table.

4. Modified Chi-square

Modified Chi-square-non parametric test of independence was applied to determine the association between dependent and independent variables, wherever the frequencies were less than five. Test of independence was applied to determine the association between dependent and independent variables using the formula,

$$\left[1 - \frac{1}{n}(1 - d^{-1/2})\right] x^2$$

Where,

χ^2 d (0.05) =Table χ^2 value at 'd' degrees of freedom for 5 per cent level of significance.

n= Sample size

4. RESULTS

Information and Communication Technology comprises a diverse set of technological tools and resources to create, disseminate, store and manage data and information.

Thus with this philosophy in mind, an attempt was made to study the utilization of Information and Communication Technology (ICT) tools by the staff and students in Universities.

In consistence with the objectives of the study, the necessary data collected from the Universities were analysed and interpreted. The results of the present study are presented under the following headings.

4.1 Socio-personal characteristics of respondents.

4.2 Awareness regarding ICT tools by respondents.

4.3 Knowledge level of staff and students of Universities about ICT tools.

4.4 Utilization of ICT tools by University staff and students.

4.5 General and specific problems faced by the respondents during usage of ICT tools.

4.6 Suggestions for improvement of utilization of ICT tools.

4.7 Influence of personal characteristics of respondents with knowledge and utilization of ICT tools.

4.1 Socio-personal characteristics of respondents

An attempt has been made to know the distribution of staff and students of Universities with respect to socio-personal characteristics and results are presented in Table-1 and Table-2.

Staff of Universities

The data presented in Table-1 indicated that majority of staff belonged to age group of 40-47 years (39.14%) followed by the age group more than 47 years (34.78%) and less than 40 years age group (26.08%). Majority of the staff of UASD were from the age group more than 47 years (43.49%) where most of the KUD staff belonged to 40-47 years age group at a percentage of 41.32.

With regard to education, 83.70 per cent of the staff were Ph.D. holders while few per cent of them (16.30%) were master degree holders. Ph.D. holders were found to be more in UASD (93.48%) as compared to KUD (73.92%).

It becomes clearly evident from Table-1, that majority of the staff (79.34%) having e-mail ID where in, 89.13 per cent staff of UASD were possessing e-mail ID which was more than that of KUD staff (69.56%).

As far as marital status was considered, 93.49 per cent were married followed by single (5.43%) and widow or widower (1.08%). There were no respondents under the categories of divorced and separated. Married person of UASD staff (95.66%) was more than that of the KUD staff (91.31%).

A close perusal of Table-1 elicits that majority of the staff were living in nuclear family (63.05%) followed by joint (33.69%) and extended (3.26%) family. Majority of the staff from both Universities having nuclear family indicated 71.73 per cent from UASD and 54.34 per cent from KUD.

With respect to the family size of staff, it was found that 48.91 per cent of them having small family followed by medium (45.66%) and large (5.43%) family. Majority of staff from UASD were belonged to small family (65.22%) where as in case of KUD staff it was medium family (56.54%).

Table-1: Socio-personal characteristics of the staff of Universities n=92

Sl. No.	Variables	Categories	UAS, Dharwad			Karnatak University, Dharwad			Total
			Male(23)	Female(23)	Total(n=46)	Male(23)	Female(23)	Total(n=46)	
1.	Age	i) < 40	1(4.34)	8(34.78)	9(19.56)	11(47.84)	4(17.39)	15(32.60)	24(26.08)
		ii) 40-47	10(43.48)	7(30.42)	17(36.95)	5(21.73)	14(60.88)	19(41.32)	36(39.14)
		iii) >47	12(52.18)	8(34.78)	20(43.49)	7(30.43)	5(21.73)	12(26.08)	32(34.78)
2.	Education	i) M Sc.	1(4.34)	2(8.69)	3(6.52)	7(30.43)	5(21.73)	12(26.08)	15(16.30)
		ii) Ph.D.	22(95.66)	21(91.31)	43(93.48)	16(69.57)	18(78.27)	34(73.92)	77(83.70)
3.	E-mail ID		23(100.00)	18(78.26)	41(89.13)	15(65.21)	17(73.91)	32(69.56)	73(79.34)
4.	Marital status	i) Single	-	1(4.34)	1(2.17)	3(13.04)	1(4.34)	4(8.69)	5(5.43)
		ii) Married	23(100.00)	21(91.31)	44(95.66)	20(86.96)	22(95.66)	42(91.31)	86(93.49)
		iii) Widow/Widower	-	1(4.34)	1(2.17)	-	-	-	1(1.08)
		iv) Divorced	-	-	-	-	-	-	-
		v) Separated	-	-	-	-	-	-	-
5.	Type of family	i) Nuclear	14(60.87)	19(82.61)	33(71.73)	11(47.82)	14(60.88)	25(54.34)	58(63.05)
		ii) Joint	8(34.79)	3(13.05)	11(23.93)	12(52.18)	8(34.78)	20(43.49)	31(33.69)
		iii) Extended	1(4.34)	1(4.34)	2(4.34)	-	1(4.34)	1(2.17)	3(3.26)
6.	Size of family	i) Small(1-4)	13(56.52)	17(73.91)	30(65.22)	7(30.43)	8(34.78)	15(32.60)	45(48.91)
		ii) Medium (5-8)	10(43.48)	6(26.09)	16(34.78)	15(65.23)	11(47.83)	26(56.54)	42(45.66)
		iii) Large(>8)	-	-	-	1(4.34)	4(17.39)	5(10.86)	5(5.43)
7.	Occupation of Parents / Husband / Wife	i) Govt. Service	6(26.09)	12(52.18)	18(39.13)	13(56.53)	13(56.54)	26(56.54)	44(47.82)
		ii) Business	10(43.48)	10(43.48)	20(43.49)	-	5(21.73)	5(10.86)	25(27.19)
		iii)Agriculture	6(26.09)	-	6(13.04)	9(39.13)	-	9(19.56)	15(16.30)
		iv) Private Companies	1(4.34)	1(4.34)	2(4.34)	1(4.34)	5(21.73)	6(13.04)	8(8.69)
8.	Education background	i) Rural	2(8.69)	-	2(4.34)	3(13.04)	1(4.34)	4(8.69)	6(6.52)
		ii) Semi urban	2(8.69)	3(13.04)	5(10.88)	5(21.73)	4(17.39)	9(19.58)	14(15.22)
		iii) Urban	19(82.62)	20(86.96)	39(84.78)	15(65.23)	18(78.27)	33(71.73)	72(78.26)
9.	Accessibility to computer	i) Yes	10(43.47)	16(69.58)	26(56.51)	11(47.82)	11(47.82)	22(47.83)	48(52.18)
		ii) No	13(56.53)	7(30.42)	20(43.49)	12(52.18)	12(52.18)	1(2.17)	44(47.82)

Note: Figures in the parenthesis indicate percentage

Regarding the occupation of parents or husband or wife, majority of them were Government service holders (47.82%) followed by business (27.19%), agriculture (16.30%) and private companies (8.69%). Higher number of occupation of parents or husband or wife of UASD staff was business (43.49%) whereas, in case of KUD staff, most of them were Government service holders (56.54%).

A glance at Table-1 elucidates education background of staff. Majority of the respondents belonged to urban area (78.26%) followed by semi urban (15.22%) and rural (6.52%). More number of staff of UASD (84.78%) and staff of KUD (71.73%) had similar education background i.e. from urban area.

A close examination of findings revealed that 52.18 per cent staff were accessing computer. High number of UASD staff were accessing computer (56.51%) as compared to KUD staff (47.83%).

Students of Universities

A cursory look on the data of Table-2 gives us an idea about the socio-personal characteristics of the students of Universities.

As it could be observed from Table-2 that higher number of the students belonged to age group of 22-23 years (72.82%) followed by the age group more than 23 years (20.66%) and less than 22 years age group (6.52%). Majority of the students from UASD (78.26%) and KUD (67.39%) belonged to same age group i.e. 22-23 years.

With regard to education, cent per cent of the students were master degree holders. It was similar for both the Universities.

It becomes clearly evident from Table-2, that majority of the students (90.21%) having e-mail ID whereas, cent per cent students of UASD were possessing e-mail ID which was more than that of KUD students (80.43%).

With regard to marital status, majority of the students were belonged to the category of single or unmarried (93.49%) followed by married (5.43%). Very negligible per cent of them were belonged to widow or widower category (1.08%). Cent percent of the students of UASD were single, which is more than that of KUD (86.95%).

As far as type of family was considered, 53.26 per cent students belonged to nuclear family followed by joint (43.48%) and extended (3.26%) family. Majority of the students from UASD (63.05%) were belonged to nuclear family whereas most of the students from KUD (52.19%) belonged to joint family.

Regarding the size of family, 47.83 per cent of them having medium family followed by small (39.13%) and large (13.04%). Majority of the students from both Universities belonged to medium size family (47.84%).

With respect to the occupation of parents or husband or wife, majority of them were Government service holders (40.24%) followed by agriculture (35.86%), business (13.04%) and private companies (10.86%). Majority of the occupation of parents or husband or wife of students of in case UASD was Government service (52.19%) whereas; in case of the KUD students it was agriculture (36.95%).

A close perusal of Table-2 elicits that majority of students were having education background from urban area (55.43%) followed by rural (22.84%) and semi urban (21.73%). Likewise education background of majority of the students of UASD (63.04%) was similar to that of KUD students (47.84%) i.e. in urban area.

With regard to the accessibility to computer, 61.96 per cent respondents were accessing computer. More number of students of UASD were accessing computer (65.22%) as compared to students of KUD (58.70%).

4.2 Awareness regarding ICT tools by respondents

This part includes the general awareness of ICT tools (Table-3), source of awareness (Table-4) and awareness of selected tools (Table-5) by staff and students of Universities.

General awareness of ICT tools

Table-2: Socio-personal characteristics of the students of Universities

n=92

Sl. No.	Variables	Categories	UAS, Dharwad			Karnatak University, Dharwad			Total
			Male(23)	Female(23)	Total(n=46)	Male(23)	Female(23)	Total(n=46)	
1.	Age	i) < 22	-	-	-	2(8.69)	4(17.39)	6(13.05)	6(6.52)
		ii) 22-23	20(86.96)	16(69.57)	36(78.26)	15(65.23)	16(69.57)	31(67.39)	67(72.82)
		iii) >23	3(13.04)	7(30.43)	10(21.74)	6(26.08)	3(13.04)	9(19.56)	19(20.66)
2.	Education	i) M Sc.	23(100.00)	23(100.00)	46(100.00)	23(100.00)	23(100.00)	46(100.00)	92(100.00)
		ii) Ph.D.	-	-	-	-	-	-	-
3.	E-mail ID		23(100.00)	23(100.00)	46(100.00)	19((82.60)	18(78.26)	37(80.43)	83(90.21)
4.	Marital status	i) Single	23(100.00)	23(100.00)	46(100.00)	23(100.00)	17(73.93)	40(86.95)	86(93.49)
		ii) Married	-	-	-	-	5(21.73)	5(10.88)	5(5.43)
		iii) Widow/Widower	-	-	-	-	1(4.34)	1(2.17)	1(1.08)
		iv) Divorced	-	-	-	-	-	-	-
		v) Separated	-	-	-	-	-	-	-
5.	Type of family	i) Nuclear	16(69.57)	13(56.53)	29(63.05)	8(34.78)	12(52.19)	20(43.47)	49(53.26)
		ii) Joint	7(30.43)	9(39.13)	16(34.78)	14(60.88)	10(43.47)	24(52.19)	40(43.48)
		iii) Extended	-	1(4.34)	1(2.17)	1(4.34)	1(4.34)	2(4.34)	3(3.26)
6.	Size of family	i) Small(1-4)	7(30.43)	9(39.13)	16(34.78)	10(43.49)	10(43.47)	20(43.47)	36(39.13)
		ii) Medium (5-8)	13(56.53)	9(39.13)	22(47.83)	11(47.82)	11(47.83)	22(47.84)	44(47.83)
		iii) Large(>8)	3(13.04)	5(21.74)	8(17.39)	2(8.69)	2(8.70)	4(8.69)	12(13.04)
7.	Occupation of Parents / Husband / Wife	i) Govt. Service	10(43.48)	14(60.88)	24(52.19)	5(21.73)	8(34.80)	13(28.26)	37(40.24)
		ii) Business	1(4.34)	1(4.34)	2(4.34)	5(21.73)	5(21.73)	10(21.74)	12(13.04)
		iii) Agriculture	10(43.48)	6(26.09)	16(34.78)	13(56.54)	4(17.39)	17(36.95)	33(35.86)
		iv) Private Companies	2(8.70)	2(8.69)	4(8.69)	-	6(26.08)	6(13.05)	10(10.86)
8.	Education background	i) Rural	5(21.73)	2(8.69)	7(15.23)	10(43.48)	4(17.39)	14(30.43)	21(22.84)
		ii) Semi urban	3(13.04)	7(30.43)	10(21.73)	3(13.04)	7(30.44)	10(21.73)	20(21.73)
		iii) Urban	15(65.23)	14(60.88)	29(63.04)	10(43.48)	12(52.17)	22(47.84)	51(55.43)
9.	Accessibility to computer	i) Yes	15(65.22)	15(65.22)	30(65.22)	12(52.18)	15(65.22)	27(58.70)	57(61.96)
		ii) No	8(34.78)	8(34.78)	16(34.78)	11(47.82)	8(34.78)	19(41.30)	35(38.04)

Note: Figures in the parenthesis indicate percentage

Table-3: General awareness of ICT tools by staff and students of Universities N=184

Sl. No.	Awareness	Staff					Students					Total
		UASD		KUD		Total (n=92)	UASD		KUD		Total (n=92)	
		Male	Female	Male	Female		Male	Female	Male	Female		
1.	Yes	23 (100.00)	20 (86.95)	20 (86.95)	22 (95.65)	85 (92.40)	23 (100.00)	23 (100.00)	22 (95.65)	23 (100.00)	91 (98.92)	176 (95.66)
2.	No	-	3 (13.04)	3 (13.04)	1 (4.34)	7 (7.60)	-	-	1 (4.34)	-	1 (1.08)	8 (4.34)

Note: Figures in the parenthesis indicate percentage

Table-4: Source of awareness of ICT tools by staff and students of Universities N=184

Sl. No.	Source	Staff					Students					Total
		UASD		KUD		Total (n=92)	UASD		KUD		Total (n=92)	
		Male	Female	Male	Female		Male	Female	Male	Female		
1.	Radio	-	3 (13.04)	3 (13.04)	4 (17.39)	10 (10.87)	6 (26.08)	2 (8.69)	2 (8.69)	5 (21.73)	15 (16.30)	25 (13.58)
2.	TV	7 (30.43)	8 (34.78)	6 (26.08)	9 (39.13)	30 (32.61)	13 (56.52)	5 (21.73)	11 (47.82)	6 (26.08)	35 (38.04)	65 (35.32)
3.	Print media	19 (82.60)	17 (73.91)	13 (56.52)	11 (47.82)	60 (65.22)	10 (43.47)	8 (34.78)	11 (47.82)	6 (26.08)	35 (38.04)	95 (51.63)
4.	Friends/ Relatives	7 (30.43)	15 (65.21)	5 (21.73)	11 (47.82)	38 (41.30)	19 (82.60)	15 (65.21)	5 (21.73)	20 (86.95)	59 (64.13)	97 (52.71)

Note: 1. Figures in the parenthesis indicate percentage
2. Multiple responses are possible

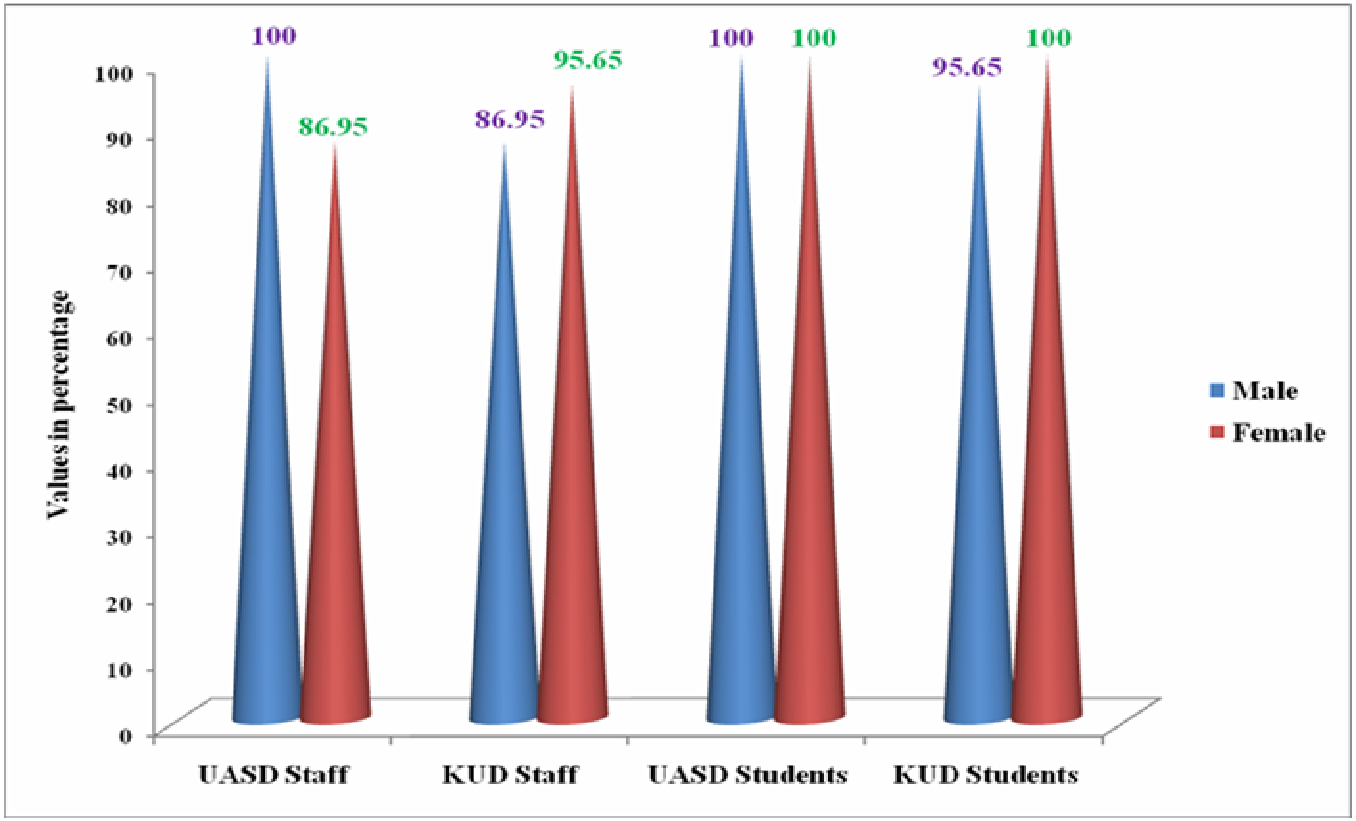

Fig. 3. General awareness of ICT tools by staff and students of University

A glance at Table-3 and Fig. 3. shows that majority of the respondents (95.65%) were aware of ICT tools. It can be observed that students were having more awareness (98.91%) than that of staff (92.39%). Cent per cent of male staff of UASD had more awareness as compared to male staff of KUD (86.95%). Female staff of KUD had more awareness regarding ICT tools (95.65%) than that of UASD female staff (86.95%). Male students of UASD and female students of both the Universities were having cent per cent awareness.

Source of awareness of ICT tools

The data of Table-4 and Fig. 4. depicts the source of awareness of ICT tools by staff and students of Universities. Majority of respondents were getting awareness of ICT tools from friends or relatives (52.71%) followed by print media (51.63%), TV (35.32%) and radio (13.58%).

Source of awareness of teaching faculty and students of UASD and KUD depicts that, most of the staff were having awareness from print media (65.22%) whereas in case of students, highest source was friends or relatives (64.13%). It was also found that the print media played the major source of awareness for UASD male (82.60%) and female (73.91%) staff and KUD male (56.52%) staff. For female staff of KUD both print media and friends or relatives played the major role for source of awareness (47.82%).Majority of the male students (82.60%) and female students (65.21%) of UASD and female students of KUD (86.95%) were getting awareness from friends or relatives. While male students of KUD were getting equal source of awareness (47.82%) both from TV and print media.

Awareness of selected tools

It is clear from Table-5 that majority of respondents were having awareness regarding internet or web services (93.47%) followed by MS Word (92.39%) and MS Excel (89.13%).

With respect to staff more number of them having awareness about internet or web services (92.39%) followed by MS Word (89.13%), MS Excel (89.13%) and MS Power Point (84.78%). In case of students, majority of them were aware of both Internet and MS Word (94.56%) followed by MS Power Point (91.30%) and MS Excel (89.13%).

It was marked that in UASD cent per cent of male staff and students having awareness of Internet, MS Word and MS Excel.

4.3 Knowledge level of staff and students of Universities about ICT tools

This section includes the knowledge of ICT tools (Table-6) and the source of knowledge by staff (Table-7 and 8) and students (Table-9 and 10) of Universities.

Knowledge level

Table-6 and Fig. 5. depicts the knowledge level of ICT tools by staff and students of Universities. Half of the staff (50.00%) were having high knowledge level followed by low (47.82%) and medium (2.17%). Majority of the staff from UASD were having high knowledge level (58.69%) whereas, majority of the staff from KUD were having low knowledge level with same percentage (58.69%).

It is clear from the table that, more number of students were having low knowledge level (48.91%) followed by high (47.82%) and medium (3.26%). Majority of the students of UASD were having high knowledge level (69.56%) whereas low knowledge level was observed in majority of KUD students (67.39%).

Source of Knowledge

This part highlights the source of knowledge of staff (Table-7and 8) and students (Table-9 and10) of Universities regarding the selected fifteen ICT tools like Internet or Web services, MS Word, MS Excel etc.. Eight sources like self, home, office/Institution, through teaching, through training, through summer or winter camp, cyber cafe and friends or colleagues were taken for the study. Majority source of knowledge was taken for explaining the results regarding the selected tools.

Table-5: Awareness of selected ICT tools by staff and students of Universities N=184

Sl. No.	ICT tools	Staff					Students					Total
		UASD		KUD		Total (n=92)	UASD		KUD		Total (n=92)	
		Male	Female	Male	Female		Male	Female	Male	Female		
1.	Internet/web services	23(100.00)	20(86.95)	22(95.65)	20(86.95)	85(92.39)	23(100.00)	23(100.00)	21(91.30)	20(86.95)	87(94.56)	172(93.47)
2.	MS Word	23(100.00)	20(86.95)	21(91.30)	19(82.60)	82(89.13)	23(100.00)	23(100.00)	18(78.26)	23(100.00)	87(94.56)	170(92.39)
3.	MS Excel	23(100.00)	20(86.95)	21(91.30)	18(78.26)	82(89.13)	23(100.00)	23(100.00)	14(60.86)	22(95.65)	82(89.13)	164(89.13)
4.	MS PowerPoint	23(100.00)	20(86.95)	19(82.60)	16(69.56)	78(84.78)	23(100.00)	22(95.65)	17(73.91)	22(95.65)	84(91.30)	162(88.04)
5.	SPSS	14(60.86)	16(69.56)	11(47.82)	4(17.39)	45(48.91)	14(60.86)	6(26.08)	3(13.04)	2(8.69)	25(27.17)	70(38.04)
6.	m-Stat	12(52.17)	10(43.47)	3(13.04)	2(8.69)	27(29.34)	9(39.13)	1(4.34)	1(4.34)	2(8.69)	13(14.13)	40(21.73)
7.	MMT	-	4 (17.39)	5(21.73)	-	9(9.78)	3(13.04)	2(8.69)	6(26.08)	3(13.04)	14(15.21)	23(12.50)
8.	SATCOM	4(17.39)	8(34.78)	5(21.73)	1(4.34)	18(19.56)	6(26.08)	2(8.69)	6 (26.08)	4(17.39)	18(19.56)	36(19.57)
9.	IMCD	10(43.47)	5(21.73)	7(30.43)	2(8.69)	24(26.08)	1(4.34)	2(8.69)	4 (17.39)	4(17.39)	11(11.95)	35(19.02)
10.	GIS	11(47.82)	13(56.52)	5(21.73)	3(13.04)	32(34.78)	10(43.47)	8(34.78)	-	4(17.39)	22(23.91)	54(29.34)
11.	Kiosks	16 (69.56)	12(52.17)	4 (17.39)	3(13.04)	35(38.04)	13(56.52)	7(30.43)	1(4.34)	1(4.34)	22(23.91)	57(30.97)
12.	e-Kisan	14(60.86)	8 (34.78)	4(17.39)	1(4.34)	27(29.34)	13(56.52)	9(39.13)	3 (13.04)	3(13.04)	28(30.43)	55(29.89)
13.	Computer programming	12(52.17)	14(60.86)	10(43.47)	6(26.08)	42(45.65)	7(30.43)	8(34.78)	15(65.21)	11(47.82)	41(44.56)	83(45.10)
14.	Decision support system	7 (30.43)	2(8.69)	4(17.39)	1(4.34)	14(15.21)	4 (17.39)	1(4.34)	1(4.34)	-	6(6.52)	20(10.86)
15.	Web based search engines	19(82.60)	15 (65.21)	16(69.56)	9(39.13)	59(64.13)	20(86.95)	12(52.17)	17(73.91)	9 (39.13)	58(63.04)	117(63.58)

Note: 1. Multiple responses are possible

2. Figures in the parenthesis indicate percentage

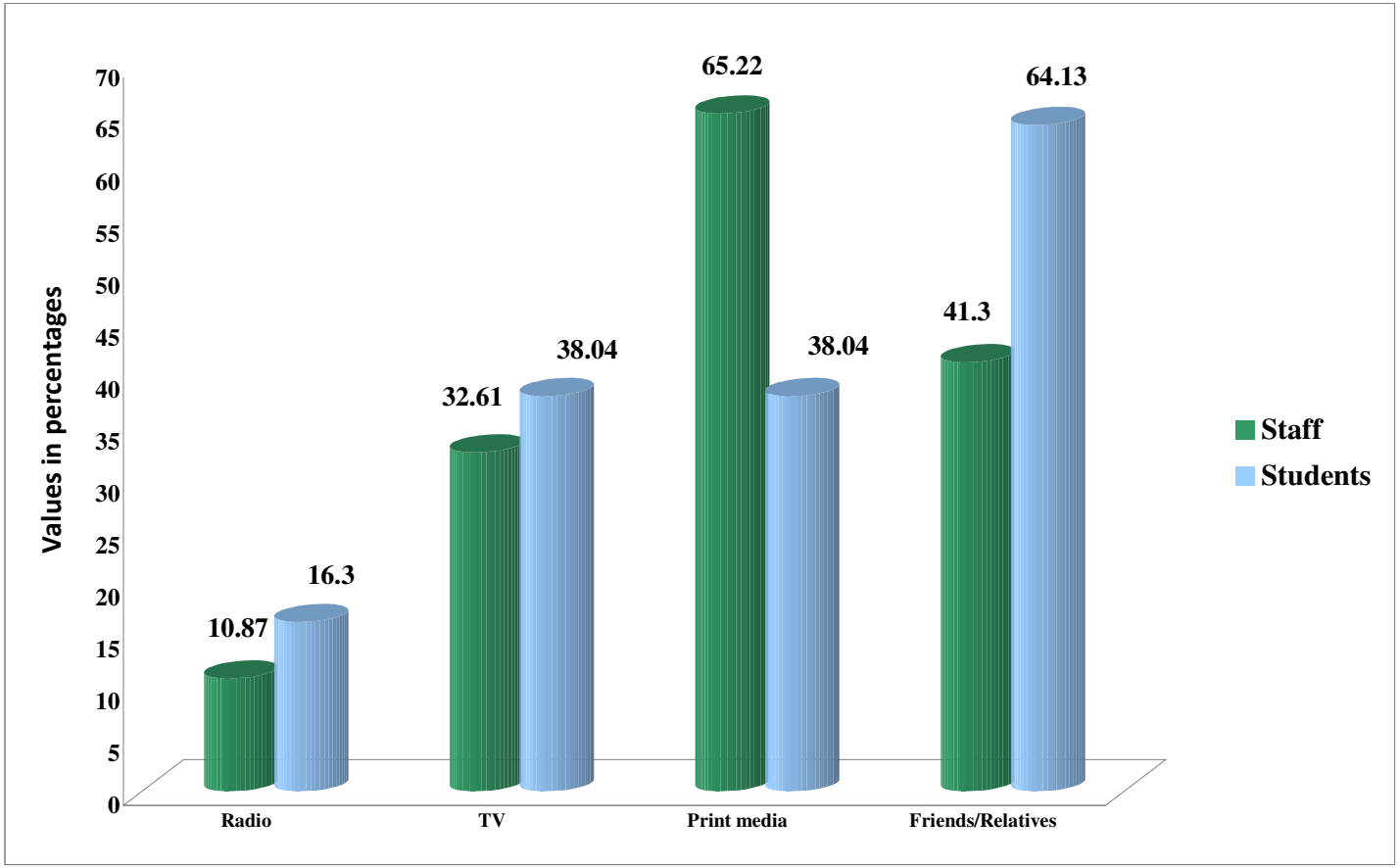

Fig: 4 Source of awareness of ICT tools by staff and students of University

Table-6: Knowledge index of ICT tools by staff and students of Universities N=184

Sl. No.	Knowledge categories of staff	Staff						Total (n=92)
		UASD			KUD			
		Male	Female	Total (n=46)	Male	Female	Total (n=46)	
1.	Low(<28)	8 (34.78)	9 (39.13)	17 (36.95)	10 (43.47)	17 (73.91)	27 (58.69)	44 (47.82)
2.	Medium(28-29)	-	2 (8.69)	2 (4.34)	-	-	-	2 (2.17)
3.	High(>29)	15 (65.21)	12 (52.17)	27 (58.69)	13 (56.52)	6 (26.08)	19 (41.30)	46 (50.00)
Sl. No.	Knowledge categories of students	Students						Total (n=92)
		UASD			KUD			
		Male	Female	Total (n=46)	Male	Female	Total (n=46)	
1.	Low(<27)	2 (8.69)	12 (52.17)	14 (30.43)	14 (60.86)	17 (73.91)	31 (67.39)	45 (48.91)
2.	Medium(27-28)	-	-	-	3 (13.04)	-	3 (6.52)	3 (3.26)
3.	High(>28)	21 (91.30)	11 (47.82)	32 (69.56)	6 (26.08)	6 (26.08)	12 (26.08)	44 (47.82)

Note: Figures in the parenthesis indicate percentage

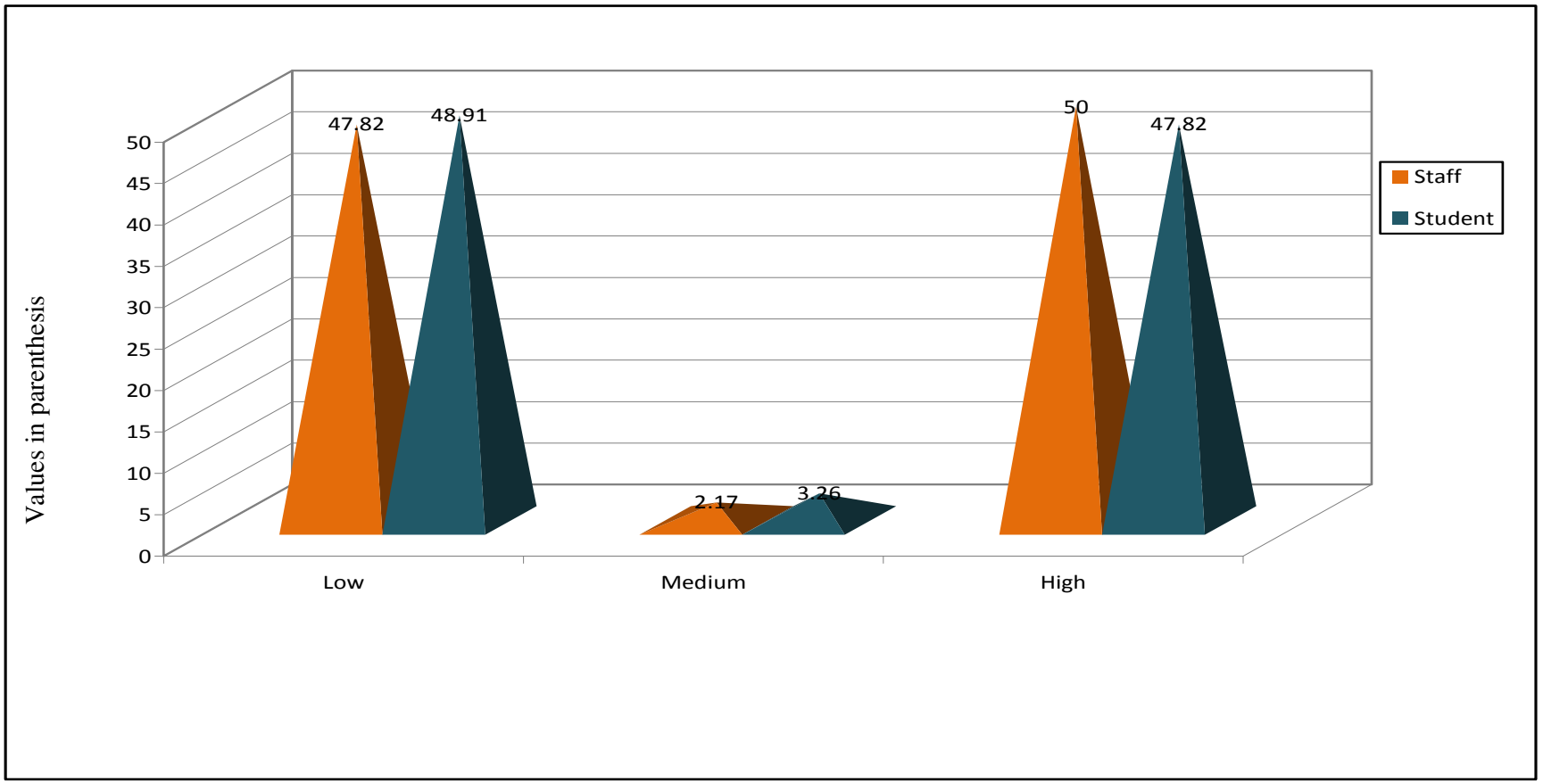

Fig: 5 Knowledge level of ICT tools by staff and students of Universities

Table-7: Source of knowledge of staff regarding ICT tools of University of Agricultural Sciences, Dharwad

n=46

Sl. No.	ICT Tools	Source of Knowledge							
		Self	Home	Office/ institution	Through teaching	Through training	Through Summer/ winter camp	Cyber cafe	Through Friends/ Colleagues
1.	Internet/web services	20(43.47)	16(34.78)	17(36.95)	16(34.78)	18(39.13)	15(32.60)	8(17.39)	22(47.82)
2.	MS Word	22(47.82)	14(30.43)	19(41.30)	20(43.47)	19(41.30)	11(23.91)	6(13.04)	15(32.60)
3.	MS Excel	21(45.65)	11(23.91)	17(36.95)	14(30.43)	14(30.43)	5(10.86)	5(10.86)	11(23.91)
4.	MS PowerPoint	20(43.47)	12(26.08)	19(41.30)	16(34.78)	12(26.08)	6(13.04)	6(13.04)	16(34.78)
5.	SPSS	8(17.39)	3(6.52)	3(6.52)	6(13.04)	18(39.13)	8(17.39)	-	12(26.08)
6.	m-Stat	4(8.69)	6(13.04)	7(15.21)	6(13.04)	3(6.52)	4(8.69)	2(4.34)	10(21.73)
7.	Mobile Map Technology	2(4.34)	1(2.17)	-	-	2(4.34)	3(6.52)	1(2.17)	6(13.04)
8.	SATCOM	3(6.52)	1(2.17)	-	1(2.17)	5(10.86)	-	1(2.17)	13(28.26)
9.	IMCD	3(6.52)	3(6.52)	3(6.52)	3(6.52)	6(13.04)	4(8.69)	3(6.52)	10(21.73)
10.	GIS	-	4(8.69)	2(4.34)	3(6.52)	6(13.04)	5(10.86)	3(6.52)	6(13.04)
11.	Kiosks	1(2.17)	2(4.34)	7(15.21)	-	4(8.69)	2(4.34)	-	2(4.34)
12.	e-Kisan	-	3(6.52)	8(17.39)	3(6.52)	8(17.39)	4(8.69)	1(2.17)	3(6.52)
13.	Computer programming	4(8.69)	4(8.69)	7(15.21)	5(10.86)	9(19.56)	4(8.69)	5(10.86)	6(13.04)
14.	Decision support system	-	-	-	2(4.34)	9(19.56)	5(10.86)	-	7(15.21)
15.	Web based search engines	10(21.73)	9(19.56)	13(28.26)	9(19.56)	13(28.26)	5(10.86)	5(10.86)	13(28.26)

Note: 1. Figures in the parenthesis indicate percentage
2. Multiple responses are possible

Table-7 depicts that more number of staff of UASD were getting knowledge regarding internet through friends or colleagues (47.82%) followed by home (34.78%), summer or winter camp (32.60%) and cyber cafe (17.39%). They procure more knowledge regarding MS Word through self (47.82%) followed by teaching (43.47%), office (41.30%) and through training (41.30%). Office helped them more, to abstract knowledge regarding MS Power Point (41.30%).

Whereas in case of KUD staff, office played a major role to get knowledge about internet (30.43%) followed by friends or colleagues (26.08%), home (17.39%) and cyber cafe (15.21%). Training made them to get knowledge more regarding MS Word (30.43%). Teaching provided them high knowledge about MS Excel (32.60%) followed by summer or winter camp (4.34%). Most of them get knowledge regarding Web based search engines (32.60%) by themselves (Table-8).

Students of UASD gained more knowledge about internet through cyber cafe (30.43%) followed by home (17.39%) and through summer or winter camp (13.04%). They were getting more knowledge regarding MS Word through friends or colleagues (63.04%) followed by teaching (43.47%), institution (28.26%) and through training (23.91%).Teaching (43.47%) and training (23.91%) made them to get knowledge about MS Excel. Teaching helped them more to know about Web based search engines (30.43%) by themselves. (Table-9)

With respect to source of knowledge of ICT tools by students of KUD (Table-10), it was found that majority of them got knowledge regarding internet through friends (41.30%) followed by self (30.43%), cyber cafe (28.26%), through training (23.91%) and through home (10.86%). They procure more knowledge about MS Word through learning in class (36.95%) followed by training (23.91%) and by summer or winter camp (17.39%). They got more knowledge about MS Excel from training (23.91%) and institution (6.52%).

4.4 Utilization of ICT tools by University staff and students

This part depicts the extent of utilization (Table-11), usage of paid services (Table-12), purpose of utilization (Table-13) and preference of utilization (Table-14 and 15) of ICT tools by staff and students of Universities.

Utilization of ICT tools

It is clear from Table-11 and Fig. 6. that more than half of staff (54.43%) were using ICT tools at low extent followed by high extent (40.21%) and medium extent (5.43%). Majority of staff from UASD had high extent utilization (52.17%) whereas, it was low in case of KUD staff (63.04%).

In case of students, medium level utilization was more (44.56%) followed by high (28.26%) and low level (27.17%). Majority of students from UASD (43.47%) and KUD (45.65%) were having medium level utilization.

Usage of paid services of ICT tools

A close review of Table-12 and Fig.7. revealed that maximum number of respondents were spending amount on usage of internet or web services (66.84%) followed by Web based search engines (38.58%), MS Word (12.50%) and MS Power Point (11.95%). The expenditure on usage of ICT tools was nil in case of mobile map technology, interactive multimedia compact disc, GIS, kiosks, e-kisan and decision support system by respondents.

Majority of staff of both Universities spending money on internet or web services (50.00%) followed by Web based search engines (32.60%), MS Power Point (5.43%) and MS Word and MS Excel (4.34%). Majority of KUD staff (69.56%) spent more on internet or web services than that of UASD staff (30.43%).

More number of students of both Universities made expenditure on internet or web services (83.69%) followed by Web based search engines (44.56%), MS Word (20.65%) and MS Power Point (18.47%). Majority of students of UASD spend money on internet (97.82%) rather than KUD students (69.56%).

Table-8: Source of knowledge of staff regarding ICT tools of Karnatak University, Dharwad

n=46

Sl. No.	ICT Tools	Source of Knowledge							
		Self	Home	Office/ Institution	Through teaching	Through training	Through Summer/ winter camp	Cyber cafe	Through Friends/ Colleagues
1.	Internet/web services	14(30.43)	8(17.39)	14(30.43)	8(17.39)	7(15.21)	-	7(15.21)	12(26.08)
2.	MS Word	13(28.26)	3(6.52)	12(26.08)	12(26.08)	14(30.43)	-	4(8.69)	10(21.73)
3.	MS Excel	11(23.91)	2(4.34)	11(23.91)	15(32.60)	9(19.56)	2(4.34)	4(8.69)	8(17.39)
4.	MS PowerPoint	12(26.08)	4(8.69)	7(15.21)	7(15.21)	6(13.04)	-	2(4.34)	7(15.21)
5.	SPSS	4(8.69)	-	7(15.21)	7(15.21)	6(13.04)	-	1(2.17)	4(8.69)
6.	m-Stat	-	-	4(8.69)	1(2.17)	1(2.17)	-	-	2(4.34)
7.	Mobile Map Technology	3(6.52)	-	3(6.52)	2(4.17)	-	-	2(4.34)	2(4.34)
8.	SATCOM	5(10.86)	-	4(8.69)	1(2.17)	1(2.17)	-	1(2.17)	3(6.52)
9.	IMCD	4(8.69)	2(4.34)	3(6.52)	2(4.34)	2(4.34)	-	2(4.34)	2(4.34)
10.	GIS	3(6.52)	2(4.34)	4(8.69)	2(4.34)	2(4.34)	1(2.17)	2(4.34)	4(8.69)
11.	Kiosks	4(8.69)	-	5(10.86)	1(2.17)	-	-	1(2.17)	4(8.69)
12.	e-Kisan	1(2.17)	-	3(6.52)	2(4.34)	-	-	-	2(4.34)
13.	Computer programming	5(10.86)	1(2.17)	4(8.69)	4(8.69)	5(10.86)	-	-	3(6.52)
14.	Decision support system	3(6.52)	-	2(4.34)	2(4.34)	2(4.34)	1(2.17)	1(2.17)	3(6.52)
15.	Web based search engines	15(32.60)	5(10.86)	8(17.39)	6(13.04)	8(17.39)	1(2.17)	3(6.52)	8(17.39)

Table-9: Source of knowledge of students regarding ICT tools of University of Agricultural Sciences, Dharwad

n=46

Sl. No.	ICT Tools	Source of Knowledge							
		Self	Home	Office/ Institution	Through teaching	Through training	Through Summer/ winter camp	Cyber cafe	Through Friends/ Colleagues
1.	Internet/web services	10(21.73)	8(17.39)	9(19.56)	10(21.73)	3(6.52)	6(13.04)	14(30.43)	25(54.34)
2.	MS Word	11(23.91)	5(10.86)	13(28.26)	20(43.47)	11(23.91)	2(4.34)	6(13.04)	29(63.04)
3.	MS Excel	9(19.56)	2(4.34)	9(19.56)	20(43.47)	11(23.91)	2(4.34)	5(10.86)	24(52.17)
4.	MS PowerPoint	10(21.73)	5(10.86)	8(17.39)	20(43.47)	10(21.73)	2(4.34)	4(8.69)	25(54.34)
5.	SPSS	2(4.34)	-	1(2.17)	11(23.91)	4(8.69)	-	-	8(17.39)
6.	m-Stat	1(2.17)	1(2.17)	-	9(19.56)	3(6.52)	2(4.34)	1(2.17)	5(10.86)
7.	Mobile Map Technology	4(8.69)	-	-	2(4.34)	-	-	-	5(10.86)
8.	SATCOM	6(13.04)	2(4.34)	1(2.17)	5(10.86)	-	-	1(2.17)	5(10.86)
9.	IMCD	-	-	-	3(6.52)	-	-	-	5(10.86)
10.	GIS	5(10.86)	-	2(4.34)	8(17.39)	2(4.34)	-	1(2.17)	6(13.04)
11.	Kiosks	8(17.39)	-	3(6.52)	8(17.39)	3(6.52)	-	1(2.17)	7(15.21)
12.	e-Kisan	4(8.69)	-	3(6.52)	9(19.56)	3(6.52)	1(2.17)	1(2.17)	6(13.04)
13.	Computer programming	1(2.17)	-	1(2.17)	9(19.56)	3(6.52)		1(2.17)	11(23.91)
14.	Decision support system	-	-	2(4.34)	1(2.17)	-	-	-	8(17.39)
15.	Web based search engines	14(30.43)	1(2.17)	2(4.34)	10(21.73)	4(8.69)	-	2(4.34)	11(23.91)

Note: 1. Figures in the parenthesis indicate percentage
2. Multiple responses are possible

Table-10: Source of knowledge of students regarding ICT tools of Karnatak University, Dharwad

n=46

Sl. No.	ICT Tools	Source of Knowledge							
		Self	Home	Office/ Institution	Through teaching	Through training	Through Summer/ winter camp	Cyber cafe	Through Friends/ Colleagues
1.	Internet/web services	14(30.43)	5(10.86)	2(4.34)	9(19.56)	11(23.91)	6(13.04)	13(28.26)	19(41.30)
2.	MS Word	8(17.39)	3(6.52)	1(2.17)	17(36.95)	11(23.91)	8(17.39)	5(10.86)	9(19.56)
3.	MS Excel	11(23.91)	3(6.52)	3(6.52)	13(28.26)	11(23.91)	7(15.21)	3(6.52)	7(15.21)
4.	MS PowerPoint	10(21.73)	2(4.34)	2(4.34)	15(32.60)	9(19.56)	6(13.04)	3(6.52)	7(15.21)
5.	SPSS	2(4.34)	-	-	3(6.52)	-	-	2(4.34)	5(10.86)
6.	m-Stat	1(2.17)	-	-	3(6.52)	1(2.17)	-	4(8.69)	1(2.17)
7.	Mobile Map Technology	2(4.34)	1(2.17)	1(2.17)	2(4.34)	-	1(2.17)	1(2.17)	9(19.56)
8.	SATCOM	2(4.34)	2(4.34)	2(4.34)	3(6.52)	2(4.34)	2(4.34)	2(4.34)	8(17.39)
9.	IMCD	1(2.17)	-	1(2.17)	2(4.34)	2(4.34)	3(6.52)	-	1(2.17)
10.	GIS	3(6.52)	-	-	3(6.52)	-	1(2.17)	2(4.34)	-
11.	Kiosks	1(2.17)	-	-	-	1(2.17)	-	-	1(2.17)
12.	e-Kisan	1(2.17)	1(2.17)	1(2.17)	-	1(2.17)	-	1(2.17)	2(4.34)
13.	Computer programming	1(2.17)	-	1(2.17)	8(17.39)	6(13.04)	3(6.52)	2(4.34)	7(15.21)
14.	Decision support system	-	-	1(2.17)	1(2.17)	-	-	-	1(2.17)
15.	Web based search engines	2(4.34)	-	1(2.17)	5(10.86)	5(10.86)	4(8.69)	8(17.39)	10(21.73)

Note: 1. Figures in the parenthesis indicate percentage

2. Multiple responses are possible

Table-11: Extent of utilization of ICT tools staff and students of Universities

N=184

Sl.No.	Utilization categories of staff	Staff						Total (n=92)
		UASD			KUD			
		Male	Female	Total (n=46)	Male	Female	Total (n=46)	
1.	Low(<28)	8 (34.78)	13 (56.52)	21 (45.65)	11 (47.82)	18 (78.26)	29 (63.04)	50 (54.34)
2.	Medium(28-29)	1 (4.34)	-	1 (2.17)	1 (4.34)	3 (13.04)	4 (8.69)	5 (5.43)
3.	High(>29)	14 (60.86)	10 (43.47)	24 (52.17)	11 (47.82)	2 (8.69)	13 (28.26)	37 (40.23)
Sl.No.	Utilization categories of students	Students						Total (n=92)
		UASD			KUD			
		Male	Female	Total (n=46)	Male	Female	Total (n=46)	
1.	Low(<22)	3 (13.04)	6 (26.08)	9 (19.56)	8 (34.78)	8 (34.78)	16 (34.78)	25 (27.18)
2.	Medium(22-30)	11 (47.82)	9 (39.13)	20 (43.47)	10 (43.47)	11 (47.82)	21 (45.65)	41 (44.56)
3.	High(>30)	9 (39.13)	8 (34.78)	17 (36.95)	5 (21.73)	4 (17.39)	9 (19.56)	26 (28.26)

Note: Figures in the parenthesis indicate percentage

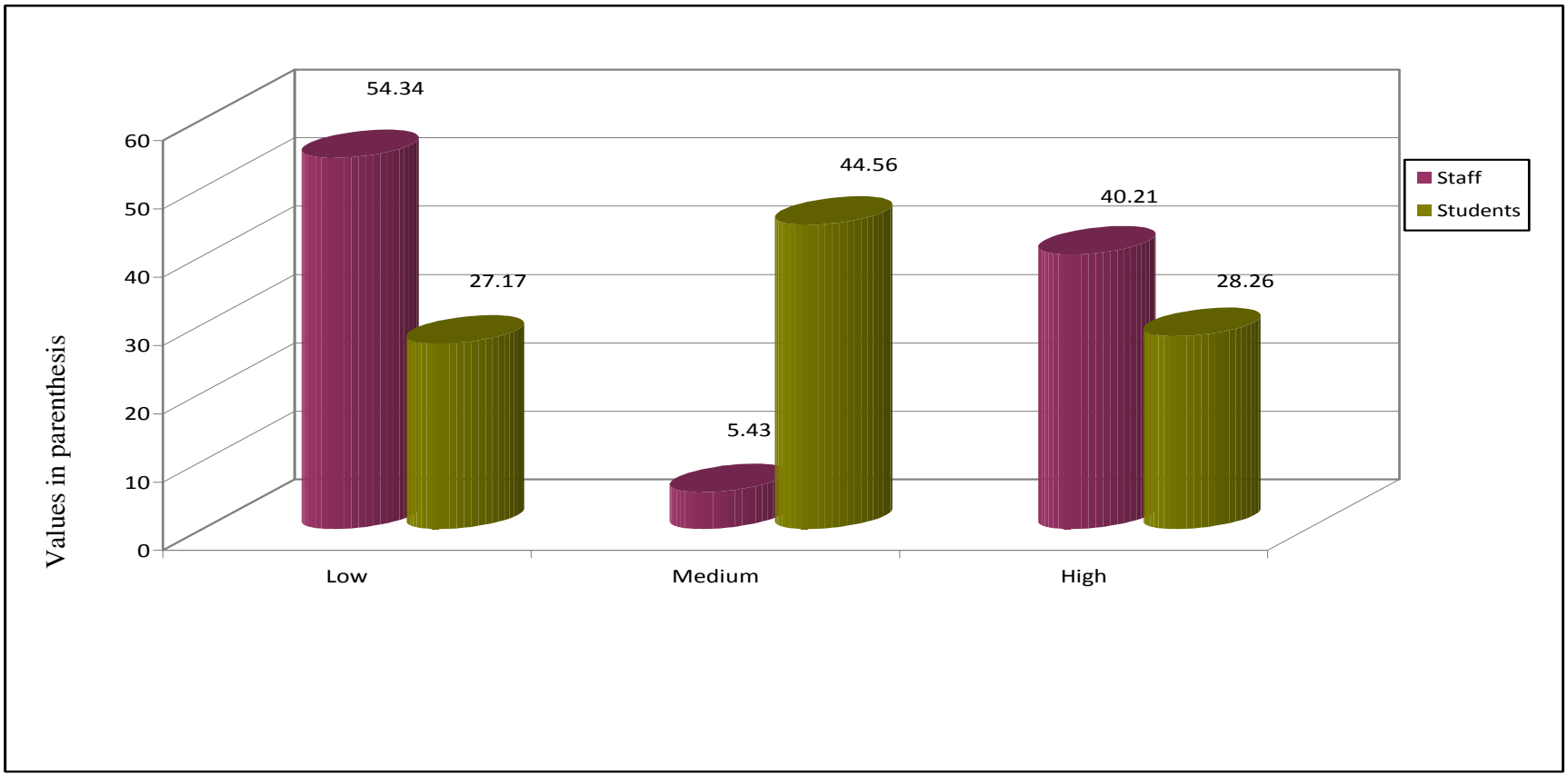

Fig: 6 Extent of utilization of ICT tools by staff and students of Universities

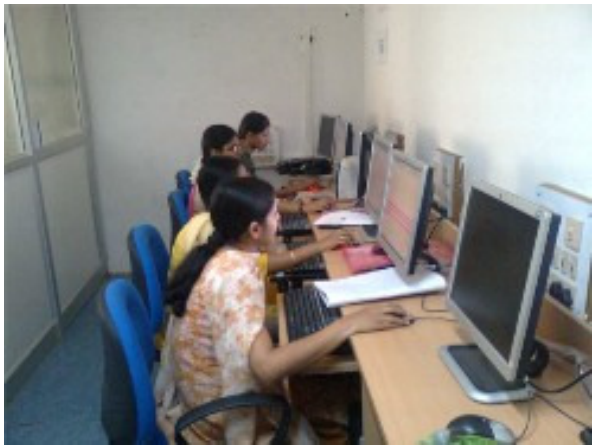

Plate 16. Students of UASD using ICT tools

Plate 17. Staff of UASD using ICT tools

Plate 18. Staff and Students of UASD using Kiosks

Plate 19. Students of KUD using ICT tools

Plate 20. Staff of KUD using ICT tools

Table-12: Usage of paid services of ICT tools by staff and students of Universities (Monthly/Weekly) N=184

Sl. No.	ICT Tools	Staff			Students			Total
		UASD	KUD	Total (n=92)	UASD	KUD	Total (n=92)	
1.	Internet/web services	14(30.43)	32(69.56)	46(50.00)	45(97.82)	32(69.56)	77(83.69)	123(66.84)
2.	MS Word	1(2.17)	3(6.52)	4(4.34)	9(19.56)	10(21.73)	19(20.65)	23(12.50)
3.	MS Excel	1(2.17)	3(6.52)	4(4.34)	7(15.21)	9(19.56)	16(17.39)	20(10.86)
4.	MS PowerPoint	2(4.34)	3(6.52)	5(5.43)	9(19.56)	8(17.39)	17(18.47)	22(11.95)
5.	SPSS	-	1(2.17)	1(1.08)	-	-	-	
6.	m-Stat	-	-	-	1(2.17)	-	1(1.08)	1(0.54)
7.	Mobile Map Technology	-	-	-	-	-	-	-
8.	SATCOM	-	-	-	3(6.52)	-	3(3.26)	3(1.63)
9.	IMCD	-	-	-	-	-	-	-
10.	GIS	-	-	-	-	-	-	-
11.	Kiosks	-	-	-	-	-	-	-
12.	e-Kisan	-	-	-	-	-	-	-
13.	Computer programming	-	-	-	-	1(2.17)	1(1.08)	1(0.54)
14.	Decision support system	-	-	-	-	-	-	-
15.	Web based search engines	12(26.08)	18(39.13)	30(32.60)	30(65.21)	11(23.91)	41(44.56)	71(38.58)

Note: 1. Figures in the parenthesis indicate percentage
2. Multiple responses are possible

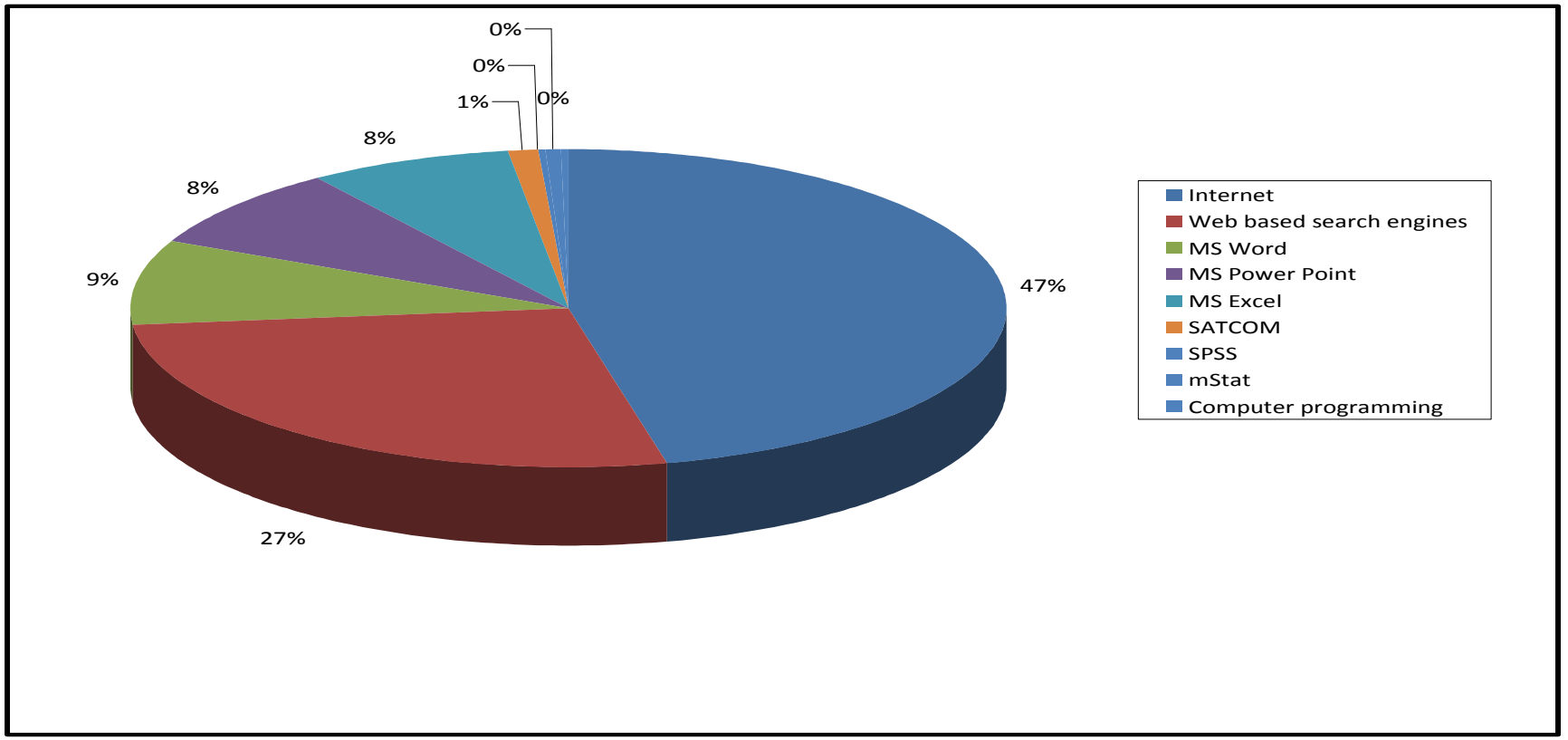

Fig: 7 Usage of paid services of ICT tools by staff and students of Universities

Table-13: Purpose of utilization of ICT tools by staff and students of Universities

N=184

Sl. No.	Purposes	ICT tools	Staff (92)		Students (92)		Total
			UASD	KUD	UASD	KUD	
1.	For gaining knowledge	i) Internet / Web services	30 (65.21)	26 (56.52)	38 (82.60)	30 (65.21)	124 (67.39)
		ii) SATCOM	2 (4.34)	2 (4.34)	5 (10.86)	1 (2.17)	10 (5.43)
		iii) GIS	5 (10.86)	4 (8.69)	7 (15.21)	5 (10.86)	21 (11.41)
		iv) Kiosks	11 (23.91)	4 (8.69)	10 (21.73)	-	25 (13.58)
		v) e-kisan	5 (10.86)	3 (6.52)	10 (21.73)	2 (4.34)	20 (10.86)
		vi) Web based search engines	22 (47.82)	18 (39.13)	21 (45.65)	10 (21.73)	71 (38.58)
2.	For making presentation	i)MS power point	35 (76.08)	16 (34.78)	43 (93.47)	25 (54.34)	119 (64.67)
3.	For data analysis	i) SPSS	23 (50.00)	9 (19.56)	17 (36.95)	-	49 (26.63)
		ii) m-Stat	13 (28.26)	4 (8.69)	11 (23.91)	-	28 (15.21)
		iii) MS Excel	26 (56.52)	19 (41.30)	32 (69.56)	9 (19.56)	86 (46.73)

Note: 1. Multiple responses are possible
2. Figures in the parenthesis indicate percentage

Purpose of utilization

This section includes the purpose of utilization of ICT tools by staff and students (Table-13) of Universities. The main purposes were listed into three categories such as for gaining knowledge, making presentation and data analysis.

The data projected in Table-13 elucidates that internet was highly used by most of the respondents for gaining knowledge with per cent age of 67.39 followed by web based search engines and kiosks with the percentage 38.58 and 13.58 respectively. MS power point was highly used (64.62%) for making presentation. For data analysis MS Excel was highly (46.73%) used.

Staff from UASD and KUD were using internet highly for gaining knowledge with the percentage 65.21 and 56.52 respectively. MS power point was highly used for making presentation by staff of UASD (76.08%) and KUD (34.78%). MS Excel was used more in number for data analysis by staff of UASD (56.52%) and KUD (41.30%).

Students from UASD (45.65%) and KUD (21.73%) were using internet highly for gaining knowledge. MS power point was highly used for making presentation by students of UASD (93.47%) and KUD (54.34%). In case of data analysis MS Excel was used more in number by students of UASD (69.56%) and KUD (19.56%).

Preference of utilization

This part highlights the preference of utilization of ICT tools by staff (Table-14) and students (Table-15) of Universities. The preferences are divided into five categories like clarity, easy to operate, need based, effective and attractive.

Table-14 indicates the preference of utilization of ICT tools by staff of Universities. In case of staff of UASD, the preference of internet was more due to need based (67.39%) followed by effectiveness (60.86%) and clarity (30.43%). Whereas, MS Word was highly used by them due to easy operation (54.34%). Most of the staff of UASD preferred MS Power Point (23.91%) because of its attractiveness.

The staff of KUD (Table-14) preferred internet more due to need based (50.00%) and clarity (41.30%). They gave more importance on MS Word because of its easy operation (56.52%). MS Power Point was used by them because of the effectiveness (47.82%). Attractiveness played a major role for preferring Web based search engines (36.95%).

The data presented in Table-15 depicts that students of UASD prefer internet more due to need based (86.95%) followed by effectiveness (71.73%), easy operation (63.04%) and clarity (52.17%). Easy operation insisted more number of students to prefer MS Word (63.04%). Majority of students liked MS Power Point due to its attractiveness (41.30%).

Table-15 also presents the preference of utilization of ICT tools by students of KUD. They liked internet more for its clarity and need based (30.43%). Effectiveness of MS Excel insisted them more for its preference (19.56%). MS Power Point was highly preferred due to its effectiveness (19.56%) and attractiveness (28.26%).

4.5 General and specific problems faced by the respondents during usage of ICT tools

This section includes the general (Table-16 and 17) and specific (Table-18 and 19) problems faced by the staff and students of Universities during usage of ICT tools. The general problems are classified into eight categories with three scales such as always, sometimes, and never. Whereas, the specific problems were mainly classified into two main parts i.e. social problems and physiological problems. Again the social problems were categorised into five types and the physiological problems into six types. The extent of problems was expressed into regularly, occasionally and never.

General problems faced by the staff

With respect to the general problems (Table-16) faced by the staff of UASD, it was found that 19.56 per cent of them faced obstacle always regarding read only content and articles giving only abstract. Sometimes, most of them faced the problems like unable to

download full articles and reliability of content (26.08%). Lack of proper training was not a problem to use ICT tool (internet) with the per cent age of 54.34.

With respect to the staff of KUD lack of proper training always played a major problem for them (26.08%). Sometimes majority of them found the problems like, lack of proper training, read only content and unable to down load full articles (19.56%). Maximum of them never found the problem to find free and paid online service (47.82%).

General problems faced by the students

The result presented in Table-17 indicates the general problems faced during usage of ICT tool (internet) by students of Universities. Students of UASD always (32.60%) faced the problem of low or poor connection of internet. Sometimes reliability of content became a problem (32.60%). Most of them never faced any problem regarding read only content (30.43%). In case of students of KUD, difficult to download full article (17.39%) became a problem for always. Sometimes they were facing the problem of inadequate computer facility (23.91%). Majority of them (54.34%) never faced the problem of lack of proper training and articles giving only abstract.

Specific problems faced by the staff

Table-18 shows the less conversation (8.69%) with parents became a regular social problem for staff of UASD (8.69%). Occasionally they faced the problem like spending less time in social events or gathering outside home (34.78%). Nearly three forth of them never faced the problem of visit to their relative house (73.91%). Major number of staff of KUD regularly faced the problem of meeting friends and conversation with parents (23.91%) whereas 47.82 per cent of them never faced this as their problem. Occasionally they felt the problems like visit to relative house and spending time in social events or gathering outside home (41.30%).

Most of the UASD staff faced the physiological problem like eye pain regularly (10.86%). Eye pain and back ache (32.60%) became occasional problems for majority of them. Hand pain and arm pain never became problems for most of them (84.78%).Eye pain, back ache and head ache played regular problems for most of the KUD staff (17.39%). Occasionally most of them faced the problem of eye pain (23.91%). High number of them never faced the problem related to nerve pain (82.60%).

Specific problems faced by students

The data presented in Table-19 shows that majority of students of UASD faced the problem of meeting friends regularly (8.69%). Time spent in social events or gathering outside home became an occasional problem for major number of them (41.30%).Whereas high number of students of KUD felt the social problem like time spent with siblings (28.26%) regularly. Occasionally most of them faced the problem of visit to relative house (54.34%). Conversation with parents (58.69%) was not a problem for them.

Students of UASD had the problem of head ache (13.04%) regularly. Whereas, majority of them faced eye pain occasionally (60.86%). Most of the students never faced the problem of nerve pain (82.60%).In case of KUD, for most of the students, eye pain became a regular (36.95%) and occasional (30.43%) problem. Majority of them never faced nerve pain (86.95%).

4.6 Suggestions for improvement of utilization of ICT tools

This part depicts different suggestions mentioned by the respondents for improvement of utilization of ICT tools by staff and students in Universities (Table-20). Suggestions were classified into five categories. It is noted from Table-20 that most of the staff and students of Universities suggested that internet connection must be provided (83.69%) followed by training by the host institution (79.89%) and enhancement of computer facility (77.71%).

Majority of staff of both Universities suggested for training by host institution (76.08%) followed by internet connection (75.00%) and enhancement of computer facility (70.65%). More than 90.00 per cent of students from both Universities suggested about internet connection (92.39%) followed by computer facility (84.78%) and training by host institution (83.69%).

Table-14: Preference of utilization of ICT tools by staff of Universities n=92

Sl. No.	ICT Tools	Preference of utilization									
		University of Agricultural Sciences, Dharwad					Karnatak University, Dharwad				
		Clarity	Easy to operate	Need Based	Effective	Attractive	Clarity	Easy to operate	Need Based	Effective	Attractive
1.	Internet/web services	14(30.43)	22(47.82)	31(67.39)	28(60.86)	6(13.04)	19(41.30)	21(45.65)	23 (50.00)	15(32.60)	14(30.43)
2.	MS Word	12(26.08)	25(54.34)	28 (60.86)	14(30.43)	2 (4.34)	16 (34.78)	26(56.52)	19(41.30)	12 (26.08)	11(23.91)
3.	MS Excel	11(23.91)	16(34.78)	18(39.13)	10(21.73)	3 (6.52)	9(19.56)	17(36.95)	18(39.13)	14(30.43)	8(17.39)
4.	MS PowerPoint	12(26.08)	19(41.30)	13(28.26)	14(30.43)	11(23.91)	10(21.73)	14(30.43)	16(34.78)	22(47.82)	11(23.91)
5.	SPSS	7(15.21)	10(21.73)	12(26.08)	5 (10.86)	-	5(10.86)	5 (10.86)	14(30.43)	6(13.04)	2(4.34)
6.	m-Stat	5 (10.86)	2(4.34)	9(19.56)	2 (4.34)	-	-	2(4.34)	3 (6.52)	1 (2.17)	-
7.	Mobile Map Technology	-	-	2 (4.34)	-	-	-	2(4.34)	-	-	-
8.	SATCOM	-	-	2 (4.34)	-	-	1 (2.17)	1 (2.17)	1 (2.17)	3(6.52)	-
9.	IMCD	-	-	-	-	-	2 (4.34)	1(2.17)	2(4.34)	1 (2.17)	2(4.34)
10.	GIS	2(4.34)	2(4.34)	6(13.04)	1 (2.17)	-	1 (2.17)	1(2.17)	-	-	-
11.	Kiosks	1(2.17)	3 (6.52)	7 (15.21)	3 (6.52)	1 (2.17)	2 (4.34)	1 (2.17)	4 (8.69)	2(4.34)	3(6.52)
12.	e-Kisan	-	1 (2.17)	2 (4.34)	1 (2.17)	-	1(2.17)	-	3(6.52)	-	-
13.	Computer programming	5(10.86)	3(6.52)	6(13.04)	5(10.86)	-	6(13.04)	8(17.39)	6(13.04)	5(10.86)	5(10.86)
14.	Decision support system	1(2.17)	-	-	-	-	1 (2.17)	1 (2.17)	1 (2.17)	3 (6.52)	2 (4.34)
15.	Web based search engines	9(19.56)	14(30.43)	18(39.13)	16 (34.78)	2(4.34)	14 (30.43)	13(28.26)	14(30.43)	13(28.26)	17(36.95)

Note: 1. Figures in the parenthesis indicate percentage
2. Multiple responses are possible

Table-15: Preference of utilization of ICT tools by students of Universities n=92

Sl. No.	ICT Tools	Preference of utilization									
		University of Agricultural Sciences, Dharwad					Karnatak University, Dharwad				
		Clarity	Easy to operate	Need Based	Effective	Attractive	Clarity	Easy to operate	Need Based	Effective	Attractive
1.	Internet/web services	24(52.17)	29(63.04)	40(86.95)	33(71.73)	16(34.78)	14(30.43)	10(21.73)	14(30.43)	6(13.04)	9(19.56)
2.	MS Word	14(30.43)	29(63.04)	22(47.82)	9 (19.56)	4(8.69)	13(28.26)	19(41.30)	14(30.43)	5 (10.86)	4(8.69)
3.	MS Excel	15(32.60)	20(43.47)	25(54.34)	15(32.60)	6 (13.04)	9(19.56)	14(30.43)	8(17.39)	9(19.56)	4(8.69)
4.	MS PowerPoint	10(21.73)	25(54.34)	26(56.52)	17(36.95)	19(41.30)	8(17.39)	11(23.91)	5(10.86)	9(19.56)	13(28.26)
5.	SPSS	1(2.17)	5(10.86)	7(15.21)	6(13.04)	-	7(15.21)	3(6.52)	3(6.52)	2(4.34)	1(2.17)
6.	m-Stat	1(2.17)	4(8.69)	9 (19.56)	-	-	1(2.17)	-	-	-	-
7.	Mobile Map Technology	-	-	3(6.52)	-	-	-	2(4.34)	1(2.17)	-	2(4.34)
8.	SATCOM	1(2.17)	1(2.17)	6(13.04)	3 (6.52)	2(4.34)	2(4.34)	1(2.17)	2(4.34)	1(2.17)	-
9.	IMCD	-	-	3(6.52)	1(2.17)	1 (2.17)	1(2.17)	2(4.34)	1 (2.17)	-	1 (2.17)
10.	GIS	-	1(2.17)	7(15.21)	4(8.69)	-	2(4.34)	1(2.17)	-	1 (2.17)	1(2.17)
11.	Kiosks	3 (6.52)	6(13.04)	5(10.86)	4(8.69)	3(6.52)	-	-	1(2.17)	-	-
12.	e-Kisan	3 (6.52)	6(13.04)	6(13.04)	4 (8.69)	3(6.52)	1 (2.17)	-	1(2.17)	1(2.17)	-
13.	Computer programming	4(8.69)	6(13.04)	6 (13.04)	5 (10.86)	2(4.34)	-	2(4.34)	8(17.39)	-	2 (4.34)
14.	Decision support system	2(4.34)	2 (4.34)	4 (8.69)	3 (6.52)	2(4.34)	1 (2.17)	-	-	1(2.17)	5(10.86)
15.	Web based search engines	13(28.26)	14(30.43)	19(41.30)	21(45.65)	12(26.08)	5(10.86)	7(15.21)	8(17.39)	6(13.04)	5(10.86)

Note: 1. Figures in the parenthesis indicate percentage
2. Multiple responses are possible

Table-16: General problems faced during usage of ICT tool (internet) by staff of Universities n=92

Sl. No.	Problems	University of Agricultural Sciences, Dharwad			Karnatak University, Dharwad		
		Always	Some times	Never	Always	Some times	Never
1.	Inadequate computer facility	7(15.21)	9(19.56)	15(32.60)	6(13.04)	8(17.39)	20(43.47)
2.	Lack of proper training	4(8.69)	7(15.21)	25 (54.34)	12(26.08)	9(19.56)	17(36.95)
3.	Read only content	9(19.56)	11(23.91)	16(34.78)	4(8.69)	9(19.56)	21(45.65)
4.	Cannot down load full articles	5(10.86)	12(26.08)	12(26.08)	6(13.04)	9(19.56)	17(36.95)
5.	Internet connection is poor/ low	8(17.39)	9(19.56)	12(26.08)	8(17.39)	8(17.39)	16(34.78)
6.	Articles giving only abstract	9(19.56)	15(32.60)	8(17.39)	6(13.04)	8(17.39)	18(39.13)
7.	Difficulties to find out the free and paid online services	3(6.52)	11(23.91)	18(39.13)	5(10.86)	7(15.21)	22(47.82)
8.	Reliability of the content	5(10.86)	12(26.08)	14(30.43)	6(13.04)	(19.56)	16(34.78)

Note: Figures in the parenthesis indicate percentage

Table-17: General problems faced during usage of ICT tool (internet) by students of Universities n=92

Sl. No.	Problems	University of Agricultural Sciences, Dharwad			Karnatak University, Dharwad		
		Always	Some times	Never	Always	Some times	Never
1.	Inadequate computer facility	10(21.73)	7(15.21)	12(26.08)	4(8.69)	11(23.91)	17(36.95)
2.	Lack of proper training	6(13.04)	11(23.91)	12(26.08)	5(10.86)	6(13.04)	25(54.34)
3.	Read only content	7(15.21)	13(28.26)	14(30.43)	6(13.04)	8(17.39)	19(41.30)
4.	Cannot down load full articles	8(17.39)	12(26.08)	7(15.21)	8(17.39)	6(13.04)	18(39.13)
5.	Internet connection is poor/ low	15(32.60)	6(13.04)	5(10.86)	4(8.69)	9(19.56)	20(43.47)
6.	Articles giving only abstract	8(17.39)	11(23.91)	9(19.56)	2(4.34)	9(19.56)	25(54.34)
7.	Difficulties to find out the free and paid online services	10(21.73)	9(19.56)	9(19.56)	6(13.04)	6(13.04)	23(50.00)
8.	Reliability of the content	4(8.69)	15(32.60)	9(19.56)	5(10.86)	7(15.21)	22(47.82)

Note: Figures in the parenthesis indicate percentage

Table-18: Specific problems faced during usage of ICT tools by staff of Universities n=92

Categories	Problems	Extent of problem					
		University of Agricultural Sciences, Dharwad			Karnatak University, Dharwad		
		R	O	N	R	O	N
A. Social Problems: There is decrease in frequency of-	i) Visit to relative house	-	12(26.08)	34(73.91)	6(13.04)	19(41.30)	21(45.65)
	ii) Time spent in social events or gathering outside home	-	16(34.78)	30(65.21)	6(13.04)	19(41.30)	21(45.65)
	iii) Meeting with friends	-	14(30.43)	32(69.56)	11(23.91)	14(30.43)	21(45.65)
	iv) Time spent with siblings	2(4.34)	13(28.26)	31(67.39)	10(21.73)	15(32.60)	21(45.65)
	v) Conversation with parents	4(8.69)	9(19.56)	33(71.73)	11(23.91)	13(28.26)	22(47.82)
B. Physiological problems:	i) Eye pain	5(10.86)	15(32.60)	26(56.52)	8(17.39)	11(23.91)	27(58.69)
	ii) Back ache	2(4.34)	15(32.60)	29(63.04)	8(17.39)	10(21.73)	28(60.86)
	iii) Head ache	2(4.34)	13(28.26)	31(67.39)	8(17.39)	10(21.73)	30(65.21)
	iv) Hand pain	2(4.34)	5(10.86)	39(84.78)	5(10.86)	10(21.73)	31(67.39)
	v) Arm pain	-	7(15.21)	39(84.78)	4(8.69)	9(19.56)	33(71.73)
	vi) Nerve pain	2(4.34)	3(6.52)	38(82.60)	3(6.52)	5(10.86)	38(82.60)

Note: 1. R- Regularly, O- Occasionally, N- Never
2. Figures in the parenthesis indicate percentage

Table-19: Specific problems faced during usage of ICT tools by students of Universities n=92

Categories	Problems	Extent of problem					
		University of Agricultural Sciences, Dharwad			Karnatak University, Dharwad		
		R	O	N	R	O	N
A. Social Problems: There is decrease in frequency of-	i) Visit to relative house	1(2.17)	10(21.73)	35(76.08)	2(4.34)	25(54.34)	19(41.30)
	ii) Time spent in social events or gathering outside home	1(2.17)	19(41.30)	26(56.52)	6(13.04)	19(41.30)	8(17.39)
	iii) Meeting with friends	4(8.69)	13(28.26)	29(63.04)	10(21.73)	16(34.78)	20(43.47)
	iv) Time spent with siblings	2(4.34)	8(17.39)	36(78.26)	13(28.26)	6(13.04)	23(50.00)
	v) Conversation with parents	2(4.34)	7(15.21)	37(80.43)	9(19.56)	10(21.73)	27(58.69)
B. Physiological problems:	i) Eye pain	3(6.52)	28(60.86)	15(32.60)	17(36.95)	14(30.43)	15(32.60)
	ii) Back ache	5(10.86)	26(56.52)	15(32.60)	11(23.91)	11(23.91)	24(52.17)
	iii) Head ache	6(13.04)	19(41.30)	21(45.65)	11(23.91)	13(28.26)	22(47.82)
	iv) Hand pain	4(8.69)	13(28.26)	29(63.04)	3(6.52)	9(19.56)	34(73.91)
	v) Arm pain	5(10.86)	8(17.39)	33(71.73)	4(8.69)	5(10.86)	37(80.43)
	vi) Nerve pain	2(4.34)	6(13.04)	38(82.60)	1(2.17)	5(10.86)	40(86.95)

Note: 1. R- Regularly, O- Occasionally, N- Never
2. Figures in the parenthesis indicate percentage

4.7 Influence of personal characteristics of respondents with knowledge and utilization of ICT tools

This part includes the association and relationship between the personal characteristics of staff and students such as age, type of family, size of family, occupation of parents or husband or wife, education background and accessibility to computer related to knowledge (Table-21 and 22) and utilization level (Table-23 and 24) of ICT tools.

Influence of personal characteristics with knowledge level of ICT tools

Staff

The data in Table-21 denotes the influence of personal characteristics of staff with knowledge level. It was inferred that there was no association between age, type of family, occupation of parents or husband or wife, education background and accessibility to computer with knowledge level of staff of Universities. While, there was association between the size of family at 0.05 level of significance.

Students

Table-22 depicts association of personal characteristics of students of Universities with their knowledge level. It was found that there was no association between age and education background with knowledge level of students of Universities. Whereas, there was association between type of family and size of family at 0.05 level of significance and occupation of parents or husband or wife and accessibility of computer with their knowledge of ICT tools at 0.01 level of significance.

Influence of personal characteristics with utilization level of ICT tools

Staff

It is noted from Table-23 that there was no association between the personal characteristics of staff of Universities like age, type of family, occupation of parents or husband or wife, education background and accessibility to computer with their utilization level. While, there was association between size of family with their utilization at five per cent level of significance.

Students

Table-24 elucidates the influence of personal characteristics of students of Universities with their utilization level of ICT tools. It was marked that there was no association between the personal characteristics such as age, type of family, size of family, education background and accessibility to computer with their utilization level of ICT tools. But there was association between utilization levels with occupation of parents or husband or wife at one per cent level of significance.

Table-20: Suggestions for improvement of utilization of ICT tools by staff and students of Universities N=184

Sl. No.	Suggestions of Respondents	Staff			Students			Total
		UASD	KUD	Total (n=92)	UASD	KUD	Total (n=92)	
1.	Computer facility should be enhanced	38 (82.60)	27 (58.69)	65 (70.65)	42 (91.30)	36 (78.26)	78 (84.78)	143 (77.71)
2.	Internet connection must be provided for each computer	32 (69.56)	37 (80.43)	69 (75.00)	43 (93.47)	42 (91.30)	85 (92.39)	154 (83.69)
3.	Training should be provided by the host institution	33 (71.73)	37 (80.43)	70 (76.08)	38 (82.60)	39 (84.78)	77 (83.69)	147 (79.89)
4.	Separate course should be provided in the syllabus	11 (23.91)	6 (13.04)	17 (18.47)	3 (6.52)	8 (17.39)	11 (11.95)	28 (15.22)
5.	Information regarding these tools should be broadcasted or telecasted over radio and TV	12 (26.08)	16 (34.78)	28 (30.43)	22 (47.82)	27 (58.69)	49 (53.26)	77 (41.84)

Note: 1. Figures in the parenthesis indicate percentage
2. Multiple responses are possible

Table-21: Influence of socio-personal characteristics of staff with knowledge level of ICT tools

n=92

Sl. No.	Personal characteristics	Categories	Knowledge level				χ^2-value
			Low (<28)	Medium (28-29)	High (>29)	Total (n=92)	
1.	Age	i) <40	9(37.5)	2(8.33)	13(54.16)	24(26.08)	1.827 NS
		ii) 40-47	18(50.00)	1(2.77)	17(47.22)	36(39.14)	
		iii) >47	16(50.00)	-	16(50.00)	32(34.78)	
		Total	43	3	46	92	
2.	Type of family	i) Nuclear	26(44.82)	1(1.72)	31(53.44)	58(63.05)	0.763NS
		ii) Joint	17(54.83)	1(3.22)	13(41.93)	31(33.69)	
		iii)Extended	1(33.33)	-	2(66.66)	3(3.26)	
		Total	44	2	46	92	
3.	Size of family	i) Small(1-4)	18(40.00)	-	27(60.00)	45(48.92)	3.189*
		ii) Medium (5-8)	22(52.38)	2(4.76)	18(42.85)	42(45.65)	
		iii) Large(>8)	4(80.00)	-	1(20.00)	5(5.43)	
		Total	44	2	46	92	
4.	Occupation of Parents / Husband / Wife	i) Govt. Service	20(45.45)	1(2.27)	23(52.27)	44(47.82)	1.706 NS
		ii) Business	11(44.00)	2(8.00)	12(48.00)	25(27.17)	
		iii)Agriculture	8(53.33)	-	7(46.66)	15(16.32)	
		iv) Private Companies	4(50.00)	-	4(50.00)	8(8.69)	
		Total	43	3	46	92	
5.	Education background	i) Rural	4(66.66)	-	2(33.33)	6(6.52)	0.996NS
		ii)Semi urban	8(57.14)	-	6(42.85)	14(15.21)	
		iii) Urban	32(44.44)	2(2.77)	38(52.77)	72(78.27)	
		Total	44	2	46	92	
6.	Accessibility to computer	i) Yes	22(45.83)	2(4.16)	24(50.00)	48(52.17)	0.555NS
		ii) No	22(50.00)	-	22(50.00)	44(47.82)	
		Total	44	2	46	92	

Note: 1. NS-Non-significant
2. *-Significant at 0.05 level

Table-22: Influence of socio-personal characteristics of students with knowledge level of ICT tools

n=92

Sl. No.	Personal characteristics	Categories	Knowledge level				χ^2-value
			Low (<28)	Medium (28-29)	High (>29)	Total (n=92)	
1.	Age	i) <22	3(50.00)	1(16.66)	2(33.33)	6(6.52)	2.131 NS
		ii) 22-23	33(49.25)	2(2.98)	32(47.76)	67(72.82)	
		iii) >23	9(47.36)	-	10(52.63)	19(20.66)	
		Total	45	3	44	92	
2.	Type of family	i) Nuclear	24(48.97)	1(2.04)	24(48.97)	49(53.26)	4.411*
		ii) Joint	20(50.00)	1(2.50)	19(47.50)	40(43.47)	
		iii)Extended	1(33.33)	1(33.33)	1(33.33)	3(3.27)	
		Total	45	3	44	92	
3.	Size of family	i) Small(1-4)	22(61.11)	1(7.69)	13(36.11)	36(39.14)	2.876*
		ii) Medium (5-8)	20(45.45)	1(2.27)	23(52.27)	44(47.82)	
		iii) Large(>8)	3(25.00)	1(8.33)	8(66.66)	12(13.04)	
		Total	45	3	44	92	
4.	Occupation of Parents / Husband / Wife	i) Govt. Service	17(45.94)	-	20(54.05)	37(40.21)	3.791**
		ii) Business	8(66.66)	1(8.33)	3(25.00)	12(13.05)	
		iii)Agriculture	14(42.42)	2(6.06)	17(51.51)	33(35.87)	
		iv) Private Companies	6(60.00)	-	4(40.00)	10(10.87)	
		Total	45	3	44	92	
5.	Education background	i) Rural	8(38.09)	1(4.76)	12(57.14)	21(22.82)	1.981 NS
		ii) Semi urban	13(65.00)	1(5.00)	6(30.00)	20(21.74)	
		iii) Urban	24(47.05)	1(1.96)	26(50.98)	51(55.44)	
		Total	45	3	44	92	
6.	Accessibility to computer	i) Yes	32(56.14)	-	25(43.85)	57(61.95)	2.021**
		ii) No	13(37.14)	3(8.57)	19(54.28)	35(38.05)	
		Total	45	3	44	92	

Note: 1. NS-Non-significant

2. *-Significant at 0.05 level
3. **- Significant at 0.01 level

Table-23: Influence of socio-personal characteristics of staff with utilization level of ICT tools

n=92

Sl. No.	Personal characteristics	Categories	Knowledge level				χ^2-value
			Low (<28)	Medium (28-29)	High (>29)	Total (n=92)	
1.	Age	i) <40	14(58.33)	1(4.16)	9(37.50)	24(26.08)	0.604 NS
		ii) 40-47	18(50.00)	3(8.33)	15(41.66)	36(39.13)	
		iii) >47	18(56.25)	1(3.12)	13(40.62)	32(34.79)	
		Total	50	5	37	92	
2.	Type of family	i) Nuclear	31(53.44)	3(5.17)	24(41.37)	58(63.04)	0.63 NS
		ii) Joint	18(58.06)	2(6.45)	11(35.48)	31(33.69)	
		iii)Extended	1(33.33)	-	2(66.66)	3(3.27)	
		Total	50	5	37	92	
3.	Size of family	i) Small(1-4)	21(46.66)	2(4.44)	22(48.88)	45(48.91)	3.021*
		ii) Medium (5-8)	24(57.14)	3(7.14)	15(35.71)	42(45.65)	
		iii) Large(>8)	5(100.00)	-	-	5(5.44)	
		Total	50	5	37	92	
4.	Occupation of Parents / Husband / Wife	i) Govt. Service	23(52.27)	1(2.27)	20(45.45)	44(47.82)	0.886 NS
		ii) Business	12(48.00)	2(8.00)	11(44.00)	25(27.17)	
		iii)Agriculture	7(46.66)	-	8(53.33)	15(16.32)	
		iv) Private Companies	4(50.00)	-	4(50.00)	8(8.69)	
		Total	46	3	43	92	
5.	Education background	i) Rural	4(66.66)	1(16.66)	1(16.66)	6(6.52)	1.847 NS
		ii)Semi urban	9(64.28)	-	5(35.71)	14(15.22)	
		iii) Urban	37(51.38)	4(5.55)	31(43.05)	72(78.26)	
		Total	50	5	37	92	
6.	Accessibility to computer	i) Yes	24(50.00)	2(4.16)	22(45.83)	48(52.17)	0.283 NS
		ii) No	22(50.00)	-	22(50.00)	44(47.83)	
		Total	46	2	44	92	

Note: 1. NS-Non-significant
2. *-Significant at 0.05 level

Table-24: Influence of socio-personal characteristics of students with utilization level of ICT tools

n=92

Sl. No.	Personal characteristics	Categories	Knowledge level				χ^2-value
			Low (<28)	Medium (28-29)	High (>29)	Total (n=92)	
1.	Age	i) <22	3(50.00)	2(33.33)	1(16.66)	6(6.52)	0.838 NS
		ii) 22-23	18(26.86)	31(46.26)	18(26.86)	67(72.83)	
		iii) >23	5(26.31)	8(42.10)	6(31.57)	19(20.65)	
		Total	26	41	25	92	
2.	Type of family	i) Nuclear	14(28.57)	20(40.81)	15(30.61)	49(53.26)	1.003 NS
		ii) Joint	12(30.00)	19(47.50)	9(22.50)	40(43.47)	
		iii)Extended	-	2(66.66)	1(33.33)	3(3.27)	
		Total	26	41	25	92	
3.	Size of family	i) Small(1-4)	11(30.55)	16(44.44)	9(25.00)	36(39.13)	0.270 NS
		ii) Medium (5-8)	11(25.00)	20(45.45)	13(29.54)	44(47.82)	
		iii) Large(>8)	4(33.33)	5(41.66)	3(25.00)	12(13.05)	
		Total	26	41	25	92	
4.	Occupation of Parents / Husband / Wife	i) Govt. Service	12(32.43)	17(45.94)	8(21.62)	37(40.23)	3.734**
		ii) Business	3(25.00)	4(33.33)	5(41.66)	12(13.05)	
		iii)Agriculture	11(33.33)	14(42.42)	8(24.24)	33(35.86)	
		iv) Private Companies	-	6(60.00)	4(40.00)	10(10.86)	
		Total	26	41	25	92	
5.	Education background	i) Rural	9(42.85)	8(38.09)	4(19.04)	21(22.84)	2.083 NS
		ii) Semi urban	3(15.00)	11(55.00)	6(30.00)	20(21.73)	
		iii) Urban	14(27.45)	22(43.13)	15(29.41)	51(55.43)	
		Total	26	41	25	92	
6.	Accessibility to computer	i) Yes	18(31.57)	25(43.85)	14(24.56)	57(61.95)	0.283 NS
		ii) No	8(22.85)	16(45.71)	11(31.42)	35(38.05)	
		Total	26	41	25	92	

Note: 1. NS-Non-significant
2. **- Significant at 0.01 level

5. DISCUSSION

The discussion of the results and findings regarding present study is explained under the same headings in result chapter as given below.

5.1 Socio-personal characteristics of respondents.

5.2 Awareness regarding ICT tools by respondents.

5.3 Knowledge level of staff and students of Universities about ICT tools.

5.4 Utilization of ICT tools by University staff and students.

5.5 General and specific problems faced by the respondents during usage of ICT tools.

5.6 Suggestions for improvement of utilization of ICT tools.

5.7 Influence of socio-personal characteristics with knowledge and utilization of ICT tools of respondents.

5.1 Socio-personal characteristics of respondents

The results of the Table-1 and 2 shows that majority of the staff belonged to age group of 40-47 (39.14%) where as students belonged to age group of 22-23 (72.82%). The plausible reason behind this is staffs were service holder where as students were just continuing their post graduation.

With regard to education, 83.70 per cent of the staff were Ph.D. holders but in case of students cent percent of them were master degree holders as it was purposively selected. This can be justified as all most all of the staff from both Universities were senior most teaching faculty. Every one prefers to be highly qualified with minimum of master degree which helps them in getting promotions, increments and other facilities.

It becomes clearly evident that majority of staff (79.39%) having e-mail ID whereas 90.21 per cent of students possessing e-mail ID. This trend might be due to the fact that the nature of sharing, storage and dissemination of information has been changed with life style of users. It also makes communication faster as it eliminates time spent to type, edit despatch and deliver. In present days students are more exposure towards the new technologies rather than staff.

As far as marital status was considered, 93.49 per cent of staff were married while majority of the students belonged to the category of single or unmarried (93.49%). Large percentage of staff belonged to age group 40-47. So it became a social demand and custom towards getting married at this age. Whereas, all most all students are busy in study, they feel marriage may hamper their study due to family responsibility. This might be the probable reason to express undesirableness to get marry.

A close perusal of Table-1 elicits that majority of the staff (63.05%) and students (53.26%) were living in nuclear family. The probable reason might be nuclear family system became a present trend. There is reduction in sharing the responsibilities due to their busy schedule. Further migration in search of education and job motivates many to have nuclear families.

With respect to the family size, 48.91 per cent of staff having small family whereas 47.83 per cent of students having medium family. The reason could be attributed to this finding that the cost of living is increasing day by day. They might have found to be beneficial to have small families to lead a better and comfortable life. They also realise the advantages of small family in terms of educating the children, for saving money, assets etc.

As far as the occupation of parents or husband or wife of staff was considered majority of them were Government service holders (47.82%) and it was similar in case of students (40.24%). Job security, pension and other financial facilities might be the attractive factors to opt Government jobs.

A close perusal of results elicits that education background of majority of the staff and students belonged to urban area with percentage 78.26 and 55.43 respectively. The

plausible reasons might be that most of the facilities related to study such as quality teaching, special coaching and tuitions, vacation classes etc. made them migrate towards urban area rather than semi urban and rural.

With regard accessibility to computer 52.17 per cent staff and 61.96 per cent students were accessing computer. The probable reason might be that computer mediated learning is playing a major role in academic and research in recent years. Computer communication are used for variety of purposes, from personal messages to peer group communication, tele conferencing, access to electronic news bulletin boards, electronic journals, subject database etc. With access to global networks, research institutes and scientists can gain access to a vast array of information very quickly.

5.2 Awareness regarding ICT tools by respondents

General awareness of ICT tools:

Table-3 denotes that majority of the respondents (95.65%) were aware of ICT tools. It can be observed that students were having more awareness (98.91%) than that of staff (92.39%). The findings are in conformation with Thangararaja et.al. (2008). The reason behind this is that teaching staff today are using the web to find resources to incorporate into their teaching. Teachers are guiding the students to use resources on the web directly and students are findings resources themselves. Learning has become student centric and teacher has become a facilitator (Barr and Tagg, 1995).

Source of awareness of ICT tools:

Table-4 depicts majority of respondents were getting awareness of ICT tools from friends or relatives (52.71%) unlike other sources such as print media, TV and radio. The results also depicted that most of the staff were having awareness from print media (65.22%) but in case of students it was from friends or relatives (64.13%). The probable reasons might be friends or relatives are seemed to be more faithful than that other source. Students are more prone to extract information from peer groups whereas staff feel more comfortable with written materials.

Awareness of selected ICT tools:

The findings in Table-5 shows that majority of respondents were having awareness regarding internet or web services (93.47%) followed by MS Word (92.39%), MS Excel (89.13%) and MS Power Point (88.04%) instead of other tools. The reason behind this might be they are more exposed and other ICT tools like SPSS, m-stat, Mobile Map Technology, SATCOM, IMCD, GIS etc. as selected for this study. Lack of advertisement and frequent utilization might be other reasons.

5.3 Knowledge of staff and students of Universities about ICT tools

Knowledge level

The critical evaluation of results (Table-6) predicts that half of the staff (50.00%) were having high knowledge level whereas, majority of the students (48.91%) having low knowledge level.

Knowledge is possible only through the enrolment in higher education. It can be created and developed through long life learning. Knowledge can be overwhelmed with more research, experience and training. As the staff are highly qualified and exposed towards more training and research. So it is obvious that they have more Knowledge than that of students.

Source of Knowledge

Table-7 depicts that more number of staff of UASD (47.82%) and KUD (Table-8) (30.43%) were getting knowledge regarding Internet through friends or relatives.

Whereas Table-9 encompasses students of UASD procure more knowledge about Internet through cyber cafe (30.43%) but in case of KUD students (Table-10) it was through friends or relatives (41.30%).

Though there are so many sources are present to get knowledge regarding ICT tools but human resources contain vast fund of experience. Friends or relatives are more social

entities based upon personal relationship. They are usually homogenous in nature. As for the concept of diffusion of any innovation homogenous group played a major role. So this might be the probable reason that friends or relatives played a major role for source of knowledge regarding ICT tools.

5.4 Utilization of ICT tools by University staff and students

Utilization of ICT tools

A glance at Table-11 elucidates that 40.21 per cent of staff having high utilization level whereas in case of students it was only 28.26 per cent. More number of staff of UASD (52.17%) having high level of knowledge than that of KUD staff (28.26%). In case of students the same trend was found i.e. UASD students having more knowledge (36.95%) than that of KUD students (19.56%).This findings was in line with findings of Sharma and Malaviya (2004).

The plausible reason behind this might be that staff are more prone towards teaching, research and extension than that of students. The UASD staff and students are more exposed towards these three (TRE) components than that of KUD staff and students. In case of KUD students, they are not doing any research in master degree whereas in case of UASD students it has been made compulsory. So during the research, students of UASD are utilizing most of the ICT tools like internet, MS Word, MS Excel, MS Power Point, SPSS, m-stat, Web based search engines more frequently. Some of the ICTs like GIS, Kiosks and e-kisan used more by UASD staff than that of KUD staff.

Usage of paid services

A close review of Table-12 reveals that maximum number of respondents were using paid services on internet (66.84%). This trend might be due to the fact that Internet is the greatest revolution in the world of technology in the last decade. It is being used extensively for sharing information about people, products, services, international affairs, hobbies, science etc. The World Wide Web is the easiest and most popular way to access the internet and has emerged as a mode of institution in different areas such as education, Communication, entertainment and many others.

Purpose of Utilization

Table-13 elucidates that internet was highly used by staff of UASD for gaining knowledge (65.21%) but for KUD staff it was specific topics or research information (71.73%). The purpose of utilization of internet by students from UASD was for specific topics or research information (84.78%) while in case of KUD students it was for gaining knowledge (65.21%). Similar result was found by Thangaraja *et al.* (2008).

The probable reason might that internet has its wide application in the field of higher education. In case of research, internet helps an individual to access unlimited information and expose to wider spectrum of ideas and concepts. Review of important relevant literature related to the problem under study is almost a magnum opus. Manual search is laborious and time consuming whereas online search made retrieval of information. It helps browsing electronic journals, research reports and books. Indeed, Internet is a rich academic and professional resource.

Preference of Utilization

The findings in Table-14 indicates staff of UASD preferred internet more due to need based (67.39%) followed by effectiveness (60.86%) and clarity (30.43%) whereas staff of KUD prefer internet more due to its need based (50.00%) and clarity (41.30%).

The data presented in Table-15 depicts that students of UASD prefer internet more due to need based (86.95%) followed by effectiveness (71.73%), easy operation (63.04%) and clarity (52.17%). In case of students of KUD, they liked internet more for its clarity and need based (30.43%). The findings are in conformation with Maniar (2002) and Tangaraja *et al.* (2008).

The reason behind this might that internet has brought about a revolution of a different kind. It has brought the entire world at four fingertips, literally. It has not only made available an almost unlimited information resource at our disposal but has also facilitated

several activities for which we had to venture out of our homes. It has also made instant communication across continents possible at negligible cost, which is a great boon to students, teachers, research persons and the people who need communicate frequently. The sharing and searching of information has become easier than opening a book. One can send text, images and even videos to any part of the world over internet.

5.5 General and specific problems faced by the respondents during usage of ICT tools

With respect to the general problems (Table-16) faced by the staff of UASD, it was found that 19.56 per cent of them always faced the obstacle of read only content whereas in case of KUD staff lack of proper training played a major problem (26.08%).

Table-17 indicates students of UASD always (32.60%) faced the general problem of low or poor connection of internet while for students of KUD, difficulties to download full article (17.39%) became a problem for always.

Under specific problems faced by the staff, Table-18 shows few conversion with parents (8.69%) became social problem and regular eye pain became a physiological problem (10.86%) for the staff of UASD. Staff of KUD regularly faced the social problems of meeting friends and conversion with parents (23.91%) while eye pain, back ache and head ache played regular physiological problem (17.39%) for them.

The findings of Table-19 with respect to specific problems faced by students elicits that majority of students of UASD faced the social problem of meeting friends regularly (8.69%) and headache became a regular physiological problem for them (13.04%). High number of students of KUD faced the social problem like time spent with siblings (28.26%) regularly and eye pain became a regular physiological problem for them (36.95%).The finding was in concurrence with the findings with Sharma and Malaviya (2004) and Tangaraja *et al.* (2008).

The plausible reason behind this may be that like the two sides of coin, each and everything has benefits as well as constraints. Constraint is nothing but anything which tends to prevent or obstruct the achievement of an objective. It is beyond any doubt that Information and Communication Technology is the gift of science. Along with all the advantages, there are certain problems, which the user faces in his or her day to day life. As both staff and students are engaged in their relevant jobs so hardly they get time to mingle with social activities and friends or relatives. Long time use of the ICT tools also creates a physiological problem for them.

5.6 Suggestions for improvement of utilization of ICT tools

It is noted from Table-20 that most of the staff and students Universities suggested that provision of Internet connection for each computer (83.69%) followed by training by the host institution (79.89%) and enhancement of computer facility (77.71%).

Twenty first century is characterised as information age. Information revolution has profound impact on all walks of life. Both staff and students need to keep themselves updated with current happenings to be competent in this globalised era. All these things can be the possible through proper facilities. Hence this might be the probable reason to give suggestions for improvement of utilization of ICT tools by the staff and students of Universities.

5.7 Influence of socio-personal characteristics with knowledge and utilization of ICT tools of respondents

Age

Non significant association was found between age of staff (table-21 and 23) and students (Table-22 and 24) with knowledge and utilization of ICT tools. The probable reason for this trend may due to the fact that, irrespective of age the person shows more eagerness to learn new things and to be with a stream of utilizing advanced technology. Knowledge will be gained when somebody having more experiences both practically and theoretically. More exposure brings fineness in knowledge.

Type of family

The result revealed that there was an association between types of family i.e. nuclear family of students with their knowledge level (Table-22). Usually nuclear families are economically strong and sound which might have made them to avail more facilities regarding educational materials and other such provisions.

Size of family

The findings showed that there was association between size of family i.e. small family of staff (Table-21) and students (Table-22) with knowledge level and of staff (Table-23) with their utilization level. The plausible reason might be, small size people having more advantages related to money, assets, education etc. So they get more chance to utilise more ICT tools which ultimately made them to procure more knowledge.

Occupation of parents/husband/wife

The result elicits that occupation of parents/husband/wife i.e. Government service holders of students (Table-22 and 24) with their knowledge and utilization level. The finding is in line with Sharma and Malaviya (2004). The probable reason for association could be that the Government service holders are availing facilities and subsidies like education loan, book allowance etc. for their family. So it would help them to purchase more study materials and equipments.

Education background

It was found that, there was no significant association between education background of staff (Table-21 and 23) and students (Table-22 and 24) with their knowledge and utilization level of ICT tools. The finding is in concurrence with the findings of Murali and Vekataramaiah (2008). ICT can reach a larger number of dispersed people and yet ensure a higher level of interaction than other forms of media. ICT can enhance two ways information flows and act as catalyst for improved information sharing and greater participation at the community level and can bring new services to rural area (Zijp, 1994). So this might be the attractive reason to get more exposure towards ICT tools beyond the limit of area.

Accessibility to computer

The result elicits that accessibility of computer of students (Table-22) found to be significantly associated with knowledge level. This finding is in confirmation with Murali and Vekataramaiah (2008). Computer is a device which can receive and display information. It was being conveniently used for data storage, processing and retrieval. Now through internet facility, popularity and use of computer among people has increased to a greater extent. So more accessibility of computer not only imparting skills but also enhancing the knowledge.

Finally, in the present study, it has been found that students were having more awareness than that of staff. Friends and relatives played major source of awareness about ICT tools for most of the respondents. Majority of respondents were having awareness regarding internet followed by MS Word and MS Excel. Staff were leading with knowledge level whereas students were leading with utilization level of ICT tools. During usage of ICT tools, staff were facing the specific problems like less conversation with parents, eye pain, back ache and head ache whereas, students faced less meeting of friends and siblings, head ache and eye pain regularly. Respondents suggested for proper internet connection for each PC followed by training. There was association between type of family, size of family, occupation of parents/ husband / wife and accessibility to computer with the knowledge and utilization level of respondents of ICT tools.

6. SUMMARY AND CONCLUSIONS

Information technology has been geared up by the advent of effective technology innovations. The new information technology tools and techniques can play a great role to improve communication especially by the way of effective media, there is need to harness IT more efficiently. ICT ranges from traditional technologies such as the printed word to the most modern communications and data delivery systems such as terrestrial satellites that can download digital data to a laptop computer hooked up to a cellular network.

The new technologies challenge conventional conceptions of both teaching and learning methods and materials. To meet these challenges all educational institutions must embrace the new technologies and appropriate the new ICT tools for learning. Use of ICT in the field of education has not demeaned the role of a teacher, but further strengthened it by providing him with tools, which enhance his efficiency and effectiveness.

ICT, with its beneficial characteristics has improved students' efficiency by way of providing them the fastest, accurate, reliable versatile operations. The students can make use of ICT in every walk of their life like studies, sports, entertainment and research, which ultimately pattern their personality. Studies have shown that the use of ICT can enhance students' motivation and concentration, cognitive processing, independent learning and critical thinking. ICT can even benefit academically weak students as well as students with special needs. The study was designed with the following objectives:

1. To understand the awareness of ICT tools by staff and students.
2. To find out the knowledge of ICT tools by staff and students.
3. To assess the extent of utilization of ICT tools.
4. To elicit the problems faced during the usage of ICT tools and elucidate suggestion for improvement.
5. To study the relationship of knowledge and adoption level of ICT tools users with their socio-personal characteristics.

The present study was conducted during the year 2009-10 in Dharwad city of Karnataka State. Purposive random sampling procedure was used for selection of universities in Dharwad i.e. University of Agricultural Sciences and Karnatak University. Random sampling procedure was used for selection of respondents. The total sample size was 184 including 92 staff and 92 students.

Keeping in mind the objectives of the study, an interview schedule was structured. Based on the experience gained in pre-testing, the schedule was modified and standardized. Using this interview schedule, the required data was collected by personal interview method. Data was coded, tabulated, analyzed and interpreted using suitable statistical parameters. The summary of the salient findings is presented below;

Major findings of the study are as follows

Socio-personal characteristics of the respondents

1. It was observed that, majority of the staff belonged to age group of 40-47 (39.14%) where as students belonged to age group of 22-23 (72.82%).
2. With regard to education, 83.70 per cent of the staff were Ph.D. holders but in case of students cent percent of them were master degree holders as it was purposively selected.
3. It becomes clearly evident that majority of staff (79.39%) were having e-mail ID whereas 90.21 per cent of students possessing e-mail ID.
4. As far as marital status was considered, 93.49 per cent of staff were married while majority of the students belonged to the category of single or unmarried (93.49%).
5. It was elicited that majority of the staff (63.05%) and students (53.26%) were living in nuclear family.

6. With respect to the family size, 48.91 per cent of staff having small family whereas 47.83 per cent of students having medium family.
7. As far as the occupation of parents or husband or wife of staff was considered majority of them were Government service holders (47.82%) and it was similar in case of students (40.24%).
8. With regard to education background, majority of the staff and students belonged to urban area with percentage 78.26 and 55.43 respectively.
9. It was found that 52.18 per cent staff and 61.96 per cent students were accessing computer.

Awareness regarding ICT tools by respondents

1. Majority of the respondents (95.65%) were having general awareness of ICT tools. Students were having more awareness (98.91%) than that of staff (92.39%).
2. Most of the respondents were become aware about ICT tools from friends or relatives (52.71%) unlike other sources such as print media, TV and radio.
3. Majority of respondents were having awareness regarding internet or web services (93.47%) followed by MS Word (92.39%), MS Excel (89.13%) and MS Power Point (88.04%) instead of other tools.

Knowledge and Utilization of ICT tools by staff and students of Universities

1. Majority of the staff (50.00%) having high knowledge level where as in case of students (48.91%) it was low.
2. More number of staff of UASD (47.82%) and KUD (30.43%) were getting knowledge regarding internet through friends or relatives and by themselves respectively. Students of UASD (54.34%) and KUD (41.30%) gained more knowledge about internet through friends or relatives.
3. Majority of staff having low utilization level (54.34%) and in case of students it was medium 44.56 per cent.
4. Maximum number of respondents paid money on usage of internet (66.84%).
5. Internet was highly used by most of the respondents for gaining knowledge with the per cen tage of 67.39 followed by web based search engines and kiosks with the percentage of 38.58 and 13.58 respectively. MS power point was highly used for making presentation (64.67%). For data analysis MS Excel was highly (46.73%) used.
6. Staff of UASD (67.39%) and staff of KUD (50.00) preferred internet more due to need based. Students of UASD prefer internet more due to need based (86.95%) but in case of students of KUD, they liked internet more for its clarity and need based (30.43%).

General and specific problems faced by the respondents during usage of ICT tools

1. Staff of UASD (19.56%) faced the obstacle always regarding read only content and articles giving only abstracts whereas in case of KUD staff, lack of proper training played a major problem (26.08%).
2. Students of UASD always (32.60%) faced the general problem of low or poor connection of internet while for students of KUD, difficulties to download full article (17.39%) became a problem.
3. It was found that less conversation with parents (8.69%) became a regular social problem and eye pain regularly became a physiological problem (10.86%) for the staff of UASD. Staff of KUD regularly faced the social problems of meeting friends and conversation with parents (23.91%) while, eye pain, back ache and head ache played regular physiological problem (17.39%) for them.
4. Majority of students of UASD faced the social problem of meeting friends regularly (8.69%) and headache became a regular physiological problem for them (13.04%).

High number of students of KUD faced the social problem like time spent with siblings (28.26%) regularly and eye pain became a regular physiological problem for them (36.95%).

Suggestions for improvement of utilization of ICT tools

1. Most of the staff and students of Universities suggested that internet connection must be provided (83.69%) followed by training by the host institution (79.89%) and enhancement of computer facility (77.71%).

Influence of personal characteristics of respondents with knowledge and utilization of ICT tools

1. The result showed that in case of the staff, there was significant association between the personal characteristics with their knowledge level like size of family at 0.05 level.
2. It was depicted that association of personal characteristics of students like type of family and size of family at 0.05 level of significance and occupation of parents or husband or wife and accessibility to computer at 0.01 level of significance with their knowledge level.
3. There was association between size of family with their utilization level at 0.05 level of significance in case of the staff.
4. In case of students, there was association between utilization levels with the personal characteristics such as occupation of parents or husband or wife at 0.01 level of significance.

Implications of the study

The implications based on the findings of current investigation are as follows:

1. Major portion of respondents were not aware about most of the selected ICT tools. Hence there is a need for training to the staff and students so that they can acquire skills and implement those for their research purposes.
2. To create more awareness about these tools all sorts of mass media should be used in a proper manner.
3. Internet facility must be enhanced so that it will be easier for respondents to acquire and accumulate more knowledge in their related field of study.
4. Care should be taken to solve general and specific problems of the respondents regarding efficient utilization of ICT tools.

Suggestions for future line of work

1. Studies can be conducted on more applicable, perspective basis and covering wider geographical area.
2. Other independent variables which are not used in this study can be conducted in future.
3. Efforts to document utilization of Communication Technology tools by extension personnel can be considered for future research.
4. Comparative studies may be undertaken on the impact of different ICT tools by knowledge and adoption behaviour of both staff and students of different institutions.

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APPENDIX

Interview Schedule

Utilization of Information and Communication Technology (ICT) tools by Staff and Students in Universities

PART-I

I. General Information

1. Name of the respondent :
2. Status : Teacher/ Student
3. Permanent residence : Rural / Semi urban / Urban
4. Name of the university : University of Agricultural Sciences / Karnatak University
5. Personal characteristics :
   - i. Age :
   - ii. Sex : Female / Male
   - iii. Education :
   - iv. E-mail ID :
     - a) Personal :
     - b) Official :

iv. Marital status : Single / Married / Widow / Divorced / Separated

v. Place of Residence : Home / Hostel

vi. Type of family : Nuclear / Joint / Extended

vii. Size of family : Small (1-4) / Medium (5-8) / Large (>9)

viii. Occupation of father / husband :

Govt. Service / Business / Agriculture/ Private Companies

ix. Education background :

a) Primary : Rural/Semi urban/Urban

b) High School : Rural/Semi urban/Urban

c) PUC : Rural/Semi urban/Urban

x. Medium of study :

a) Primary : English/ Mother tongue

b) High school : English/ Mother tongue

xi. Accessibility to computer:

a) Desktop : Self owned / Department owned /Use on rent

b) Laptop : Self owned / Department owned /Use on rent

PART-II

I. Specific Information

A. Awareness of ICT tools by the staff and student:

1. Are you aware of ICT tools? Yes / No

2. How you come to know about ICT tools?
   i) Radio ii) T.V. iii) Print media iv) Friends/ Relatives v) Any other

3. Among the following which tools do you aware?

Sl. No.	ICT Tools	Awareness	
		Yes	No
1.	Internet/web services		
2.	MS Word		
3.	MS Excel		
4.	MS PowerPoint		
5.	Analytic package-SPSS		
6.	m-Stat		
7.	Mobile Map Technology		
8.	Satellite Tele Communication (SATCOM)		
9.	Interactive Multimedia Compact Disc (IMCD)		
10.	Geographical Information System (GIS)		
11.	Kiosks		
12.	e-Kisan		
13.	Computer programming		
14.	Decision support system		
15.	Web based search engines		

B. Knowledge test of ICT tools:

1. Please tick (√) the appropriate column you consider appropriate.

Sl. No.	ICT tools	Statements	Yes	No
1.	Internet/ web services	i) Internet is a worldwide network of networks.		
		ii) It is a global network connecting millions of computers.		
		iii) It makes contact with people by chat facility.		
		iv) It helps to get information, data and images almost instantaneously.		
		v) Unlike online services, which are centrally controlled, the Internet is decentralized by design.		
2.	MS Word	i) It is a word processor.		
		ii) Microsoft Word is a powerful tool to create professional looking documents.		
		iii) Bold, italic, underline, alignment, spelling and grammars can be checked through it.		
		iv) Word formatting is done through this software.		
		v) It creates a new, blank file based on the default template.		
3.	MS Excel	i) Excel is a data processor.		
		ii) Microsoft Excel also serves as database management.		
		iii) It stores data in the form of columns and rows.		
		iv) In Excel there are 256 columns and 65,536 rows.		
		v)Excel helps in entering values, text, formulas etc.		
4.	MS PowerPoint	i) Microsoft PowerPoint is a presentation program developed by Microsoft.		
		ii) PowerPoint presentations consist of a number of individual pages or "slides".		

Sl. No.	ICT tools	Statements	Yes	No
		iii) Professional quality slide show can be made through this.		
		iv) It helps in inserting pictures, diagrams etc.		
		v) Animation can be done through this.		
5.	Analytic package SPSS	i) SPSS is among the most widely used programs for statistical analysis in social science.		
		ii) It is used for market, health, government, education and other research purpose.		
		iii) It manages millions of rows effortlessly, so you will never again have to break up your data and analyze it piecemeal.		
		iv) This eliminates duplicate records and jumbled cases.		
		v) SPSS has measures of significance that allow confident, actionable conclusions.		
6.	m-Stat	i) M-Stat is a powerful tool used to simplify and enhance field and laboratory research.		
		ii) It is used to generate the design of experiments, print labels, collect, organize, and analyze the data.		
		iii) It will also generate files for field books, labels, and maps and that can be edited, printed and/or stored.		
		iv) User support is available via fax, email, or telephone.		
		v) MGRAPH can be used with MSTAT to create graphic output of data (line, pie, bar).		
7.	Mobile Map Technology	i) The technology introduces a powerful tool for serving spatial data on mobile.		
		ii) The technology is the combination of XML and J2ME.		
		iii) It reduces the storage size of data.		
		iv) It improves the performance of application.		
		v) It provides flexibility to adopt many different platforms.		
8.	Satellite Tele Communication (SATCOM)	i) It plays a major role for disseminating of messages.		
		ii) Information related to agriculture, health, livelihood related activities are communicated.		
		iii) At a shortest span of time we can get the messages.		
		iv) Messages can be disseminated directly to the grass root people through its VRC's (Village Resource Centers).		
		v) Possible to access, collect, process and deliver information from one location to another.		
9.	Interactive Multimedia Compact Disc (IMCD)	i) Multimedia extends the hyper text concept of non-linear and non-sequential links of textual material to all forms of material.		
		ii) It may be digitally encoded for storage and retrieval through computer-based systems.		
		iii) It is highly pragmatic, time saving, cost-effective, comprehensive and user friendly.		
		iv) Thus, it refers to a synthesis of text, data, graphics, animation, optical storage, image processing and sound.		
		v) It involves all possible sensory components like audio, text, video and graphics etc.		
10.	Geographical Information System (GIS)	i) GIS is for analysis and management of spatial data and mapping.		
		ii) It helps to get informations like population, literacy level, density of roads, land etc.		
		iii) It helps in storing and retrieving.		
		iv) It also helps in comparing spatial data to support some analytical process.		
		v) Use of GIS in socioeconomic research, characterization of		

Sl. No.	ICT tools	Statements	Yes	No
		production system according to adoption of improved technologies responds to policy and technological interventions.		
11.	Kiosks	i) It helps in access information on agriculture, education, health etc.		
		ii) Market prices, cropping pattern, weather forecast, agriculture extension through i kisan and AP online.		
		iii) It gives weather information, land records etc.		
		iv) Weather information on possible crops is known through it.		
		v) Access to all forms , copies of land records, collection of bills: electricity, telephone etc.		
12.	e-Kisan	i) It is the internet technology for benefit of the farmers.		
		ii) It helps in nurturing a new farming culture.		
		iii) It gives information related to the seeds, equipments, fertilizers, pesticides etc. to farmers.		
		iv) It also provides information regarding weather forecast, soil type, crisis management, expert system, mailing system etc.		
		v) Identification of proper market, preservation(cold storage/ Storage/ Ware house),packing, pricing list etc.		
13.	Computer programming	i) Computer programming is the process of writing, testing, debugging/troubleshooting.		
		ii) It maintains the source code of computer programs.		
		iii) The purpose of programming is to create a program that exhibits a certain desired behavior (customization).		
		iv) It is regarded as one phase in a software development process.		
		v) Programming is the craft of transforming requirements into something that a computer can execute.		
14.	Decision support system	i) Decision Support Systems (DSS) is computerized information system.		
		ii) The best decision support systems include high-level summary reports or charts.		
		iii) It allows the user to get more detailed information.		
		iv) It supports business and organizational decision-making activities.		
		v) A properly designed DSS is an interactive software-based system intended to help decision makers compile useful information.		
15.	Web based search engines	i) A Web search engine is a tool designed to search for information on the World Wide Web.		
		ii) It is only the software that helps to search items in the search statement.		
		iii) It includes ‘Google’, ‘Yahoo’ or ‘Alta Vista’ to find the information and documents on the internet.		
		iv) For this browser software like ‘Internet Explorer’,’Firefox’,’Netscape Navigator’ or ‘Mozilla’ is required on computer.		
		v) Information consists of web pages, images, information and other types of files.		

2. From where did you get the knowledge about these tools?

Sl. No.	ICT Tools	Source of knowledge							
		Self	Home	Office/ Institution	Through teaching	Through training	Through Summer/ Winter camp	Cyber cafe	Through Friends/ Colleagues
1.	Internet/web services								
2.	MS Word								
3.	MS Excel								
4.	MS PowerPoint								
5.	Analytic package-SPSS								
6.	m-Stat								
7.	Mobile Map Technology								
8.	Satellite Tele Communication (SATCOM)								
9.	Interactive Multimedia Compact Disc (IMCD)								
10.	Geographical Information System (GIS)								
11.	Kiosks								
12.	e-Kisan								
13.	Computer programming								
14.	Decision support system								
15.	Web based search engines								

C. Extent of utilization of ICT tools:

1. Which of the following tools you are using and up to what extent?

Sl.No.	ICT Tools	Utilization		Frequency of usage			
		Yes	No	VF	F	R	VR
1.	Internet/web services						
2.	MS Word						
3.	MS Excel						
4.	MS PowerPoint						
5.	Analytic package-SPSS						
6.	m-Stat						
7.	Mobile Map Technology						
8.	Satellite Tele Communication (SATCOM)						
9.	Interactive Multimedia Compact Disc (IMCD)						
10.	Geographical Information System (GIS)						
11.	Kiosks						
12.	e-Kisan						
13.	Computer programming						
14.	Decision support system						
15.	Web based search engines						

Note: VF- Very frequently (Once a day), F- Frequently (Once a week), R-Rarely (Once a month), VR- Very rarely (Less than once a month)

2. Duration of usage of ICT tools:

Duration of ICT tools usage	ICT tools														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
a)Days per week															
i)4-7 days															
ii) 2-3 days															
iii) 1 day															
b) Hours per week															
i) ½ to 2and ½ hrs															
ii) 3-5 hrs															
iii) 5 and ½ to 14 hrs															
c) Time of day															
i) Morning															
ii) Noon															
iii) Afternoon															
iv) Evening															
v) Night															
vi) No specific time															

Note: 1- Internet/web services
2- MS Word
3- MS Excel
4- MS PowerPoint
5- Analytic package-SPSS
6- M-Stat
7- Mobile Map Technology
8- Satellite Tele Communication (SATCOM)
9- Interactive Multimedia Compact Disc (IMCD)
10- Geographical Information System (GIS)
11- Kiosks
12- e-Kisan
13- Computer Programming
14- Decisions Support System
15- Web based Search Engine

3. Amount spent on usage of ICT tools:

Sl. No.	ICT Tools	Amount spent	
		Weekly	Monthly
1.	Internet/web services		
2.	MS Word		
3.	MS Excel		
4.	MS PowerPoint		
5.	Analytic package-SPSS		
6.	m-Stat		
7.	Mobile Map Technology		
8.	Satellite Tele Communication (SATCOM)		
9.	Interactive Multimedia Compact Disc (IMCD)		
10.	Geographical Information System (GIS)		
11.	Kiosks		
12.	e-Kisan		
13.	Computer programming		
14.	Decision support system		
15.	Web based search engines		

4. What is the purpose of utilization?

Sl.No.	ICT Tools	Purpose of Utilization					
		For gaining Knowledge	For getting reviews	For specific topics/ research information	For making Presentation	For data analysis	Others (Specify)
1.	Internet/web services						
2.	MS Word						
3.	MS Excel						
4.	MS PowerPoint						
5.	Analytic package-SPSS						
6.	m-Stat						
7.	Mobile Map Technology						
8.	Satellite Tele Communication (SATCOM)						
9.	Interactive Multimedia Compact Disc (IMCD)						
10.	Geographical Information System (GIS)						
11.	Kiosks						
12.	e-Kisan						
13.	Computer programming						
14.	Decision support system						
15.	Web based search engines						

5. Why do you prefer for utilization of ICT tools?

Sl. No.	ICT Tools	Preference of ICT tools					
		Saves time	Easy to operate	Effective	Need based	Attractive	Others
1.	Internet/web services						
2.	MS Word						
3.	MS Excel						
4.	MS PowerPoint						
5.	Analytic package-SPSS						
6.	m-Stat						
7.	Mobile Map Technology						
8.	Satellite Tele Communication (SATCOM)						
9.	Interactive Multimedia Compact Disc (IMCD)						
10.	Geographical Information System (GIS)						
11.	Kiosks						
12.	e-Kisan						
13.	Computer programming						
14.	Decision support system						
15.	Web based search engines						

D. Problems faced during the usage & suggestions for improvement of ICT tools:

1. Are you facing any general or specific problem during the use of ICT tools? Yes / No
2. Identify general problems faced in using ICT tools.

Sl. No.	Problems	How much				
		A	MT	ST	R	N
1.	Inadequate computer facility					
2.	Lack of proper training					
3.	Read only content					
4.	Cannot down load full articles					
5.	Internet connection is poor/ low					
6.	Sometimes articles giving only abstract					
7.	Difficulties to find out the free and paid online services					
8.	Reliability of the content					

Note: A-Always, MT-Most of the times, ST-Some times, R-Rarely, N-Never

3. Identify specific problems faced in using ICT tools.

Sl.No.	Types of problems	Extent of problem		
		Regularly	Occasionally	Never
A. Social Problems: There is decrease in frequency of-				
	i) Visit to relative house			
	ii) Time spent in social events, gathering outside home			
	iii) Meeting with friends			
	iv) Time spent with siblings			
	v) Conversation with parents			
B. Physiological problems: I get-				
	i) Eye pain			
	ii) Back ache			
	iii) Head ache			
	iv) Hand pain			
	v) Arm pain			
	vi) Nerve pain			

4. Suggestions for improvement of usage of ICT tools:

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UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) TOOLS BY STAFF AND STUDENTS IN UNIVERSITIES

SMARANIKA PARIDA **2010** **Dr. (Mrs.) UMA S. HIREMATH**
MAJOR ADVISOR

ABSTRACT

A study on "Utilization of information and communication technology (ICT) tools by staff and students in Universities" was undertaken in the year 2009-2010 with a sample size of 184 staff (92) and students (92) of Karnatak University and University of Agricultural Sciences in Dharwad district of Karnataka. The data was collected on awareness, knowledge, extent of utilization, problems faced and suggestions about selected ICT tools with the help of pre-structured interview schedule.

Majority of students were having more awareness (98.91%) than that of staff (92.39%). Friends and relatives played major source of awareness (52.71%) about ICT tools for most of the respondents. Most of the respondents were having awareness regarding Internet (93.47%) followed by MS Word (92.39%) and MS Excel (89.13%). Staff were leading with knowledge level (50.00%) whereas students were leading with utilization level (40.21%) of ICT tools. Maximum number of respondents paid money on usage of Internet (66.84%). Internet and MS power point were highly used for gaining knowledge (67.39%) and making presentation (64.67%) respectively. Staff and students preferred Internet more due to clarity and need based.

Both staff and students were facing the general problems like read only content, articles giving only abstracts, lack of proper training, low or poor connection of Internet and difficulties to download full article. During usage of ICT tools, staff were facing the specific problems like less conversation with parents, eye pain, back ache and head ache whereas, students faced less meeting of friends and siblings, head ache and eye pain regularly. Respondents suggested for proper Internet connection for each PC followed by training. There was association between type of family, size of family, occupation of parents/ husband / wife and accessibility to computer with the knowledge and utilization level of respondents of ICT tools.