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# Frequency of Utilization of ICT Tools by Krishi Vigyan Kendra Scientists of Rajasthan State, India

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***Authors' contributions***

*This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.*

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## ABSTRACT

Information communication technology (ICT) is a multidimensional term for information technology (IT) that addresses the role of integrated communication and the integration of telecommunications (telephone lines and wireless signals) and computers as well as essential enterprise software, middleware, storage, communication which enable users to access, store, transmit and manipulate information. ICT's is emerging as an important tool for the progress of society. The new technology has significantly improved lifestyle and efficiency levels in all sectors of the economy. This enables the utility of information & communication technology to overcome physical distances and time gaps in communication. Rapid improvements in information technology have increased their cost and space requirements, speed and storage capacity in a short span of time with traditional communication materials such as posters, charts, leaflets, folders, bulletins, audio tapes, transparency, photographs, prepared slides, videotape etc. In simple terms, ICT is a set of techniques evolved to manage information and move it from one place to another. It has been observed that in this traditional system used to take a lot of time to convey the information given to the farmers and the information was not received correctly. The rapid development of information technology has given a new look to communication systems. Now connecting two computers across the country has become an easy task. Separate ICT projects have been initiated by government, NGO's and private companies. As a result, villages in many parts of the country have been

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connected through a wired network to eliminate the distance between rural and urban people. Krishi Vigyan Kendra are established by Indian Council Of Agricultural Research (ICAR) all over the country as an institutional innovation for application of agricultural science and technology on the farmer's field with the help of multidisciplinary team i.e. Senior Scientists and Subject Matter Specialists. Who give skill or knowledge oriented training to farmers in multidisciplinary areas like Horticulture, Animal Husbandry and Fisheries, Home Science Agriculture Extension, Agronomy, Plant Protection Entomology/Pathology and Agriculture Engineer. The result of the study depict that the frequency of utilization of ICT tools by scientists for the farmers the tool which is utilized maximum by the KVK scientist is Smart phone, Internet and WhatsApp with (**x =** 5.00) and Rank-I and the minimum utilized by scientists Agri Guru, Mahadhan App, Agro medix agriculture app, Farm Key were not very frequently used ICT tools with (x= 0.21, 0.17., 0.7,.0.00). Rank L,LI,LII.LIII,LIV.

*Keywords: ICT; utilization; frequency; users.*

## 1. INTRODUCTION

Information communication technology is the cornerstone of agricultural development at this time. Information communication technology promotes the productivity, efficiency and stability of the agricultural sector [1-3]. This new information system can add more population and more villagers in developing countries. In order to provide nutrition and salary to a large section, communication is a core issue in developing societies. Communication policies, techniques and strategies need to be revolutionized so that instead of making it privileged by rich people it can be made a fundamental right of poor people [4,5]. Communication science comes as a profession, particularly in natural and agricultural communication. It seeks to transform knowledge and skills about advanced agricultural technology with the aim of changing the existing agricultural practices of farmers to increase production in rural areas [6-8]. KVK's under ICAR, SAU, and NGO is one of the premier institutes dedicated to the upliftment of rural agricultural research. As an institutional innovation, KVK has been set up by ICAR across the country for application of agro-science and technology, with the help of a multi-disciplinary team i.e. senior scientists and subject matter specialists in agriculture sector [9-10]. Those who provide skills and knowledge training to farmers in areas like Horticulture, Animal Husbandry and Fisheries, Home Science, Agricultural Extension, Agricultural Science, Plant Protection Entomology / Pathology and Agricultural Engineer. The responsibility of KVK's scientists is to transfer recent technologies / information required for their work, including crop production, input supply, pest and disease control, crop harvesting etc so that farmers can get agricultural information quickly and effectively.

## 2. RESEARCH OBJECTIVES

To assess the utilization behavior of KVK scientists towards ICT tools

a) Day to day duration of ICT tools utilization by scientists
b) To access the ICT tools by scientists in day to day working
c) Purpose of utilization of ICT tools by scientists
d) Frequency of utilization of ICT tools by scientists
e) Opinion about usefulness of ICT tools by scientists at work and job place
f) Usefulness of ICT tools by scientists to the farmers for future use

The main focus on this study on Frequency of utilization of ICT tools by scientists and the frequencies namely as: Every Day, 2-3 times a week, Once a Week, Fortnightly, Rarely, Never

### 2.1 List of ICT Tools

| S.No. | ICT Tools |
|---|---|
| 1 | Computer |
| 2 | Laptop |
| 3 | Smart Phone |
| 4 | Telephone |
| 5 | Internet |
| 6 | Agricultural Official Websites |

| | |
|---|---|
| a | www.kvk.icar.gov. in |
| b | www.atarijodhpur.in |
| c | www.icar.gov.in |
| d | www.manage.gov. in |
| e | www.fao.org |
| f | www.mpuat.ac.in |
| g | www.raubikaner.org |
| h | www.aujodhpur.ac.in |
| i | www.sknau.ac.in |
| j | www.rajuvas.org |
| k | www.agriculture.rajasthan.gov.in |
| 7 | Kisan Call Centre |
| 8 | Information Kiosks |
| a | E-Chaupal |
| b | E-Mitra |
| 9 | TV |
| 10 | Radio |
| 11 | Demonstration Models |
| 12 | Digital Video Camera |
| 13 | e-newspaper |
| 14 | e-booklets |
| 15 | Messenger App |
| a | Whats App |
| b | M Kisan App or Kisan Suvidha |
| c | IQ App |
| d | KVK Sandesh App |
| 16 | Video Conferencing |
| 17 | e-books |
| 18 | e-journals |
| 19 | e-agricultural magazines |
| 20 | Agriculture Information portals |
| 21 | Agriculture App |
| a | IFFCO Kisan App |
| b | Agri Media Video App |
| c | Kisan Yojana |
| d | Farmer Bee- RML Farmers |
| e | Farmer's Portal |
| f | E-Nam |
| g | KVK Mobile App |
| h | Agro Advisory and Weather Forecast |
| i | Crop Contingency Plan |
| j | RML Farmer –Krishi Mitra |
| k | Pusa Krishi |
| l | Kheti- Badi |
| m | Krishi Gyan |
| n | Crop Insurance |
| o | Agri Market |
| p | App to gather crop information |
| q | Smart Farm |
| r | Fasal Salah |
| s | Agriculture and Farming App |
| t | Agro connect |
| u | Farm Key |
| v | Agro Medix Agriculture App |
| w | Mahadhan App |
| x | My Agri Guru |
| y | Uzhawan |
| z | Any other (Please specify) |
| 22 | You-Tube |

**Table 1. Frequency of utilization of ICT tools by Krishi Vigyan Kendra scientists**

**(N=210)**

| Category | Frequency of ICT tools | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Every day | | 2-3 times week | | Once a week | | Fortnightly | | Rarely | | Never | | (X) | Rank |
| **Common ICT Tools** | **F** | **%** | **F** | **%** | **F** | **%** | **F** | **%** | **F** | **%** | **F** | **%** | | |
| Computer | 208 | 99.05 | 0 | 0.00 | 1 | 0.48 | 1 | 0.48 | 0 | 0.00 | 0 | 0.00 | 4.98 | II |
| Laptop | 151 | 71.90 | 43 | 20.48 | 10 | 4.76 | 1 | 0.48 | 5 | 2.38 | 0 | 0.00 | 4.59 | XI |
| Smart Phone | 210 | 100.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 5.00 | I |
| Telephone | 118 | 56.19 | 27 | 12.85 | 4 | 1.90 | 10 | 4.76 | 11 | 5.24 | 40 | 19.04 | 3.52 | XVII |
| Internet | 210 | 100.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 5.00 | I |
| **Agricultural Official Websites** | | | | | | | | | | | | | | |
| www.kvk.icar.gov. In | 188 | 89.52 | 20 | 9.52 | 2 | 0.95 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 4.89 | IV |
| www.atarijodhpur.in | 188 | 89.52 | 15 | 7.14 | 7 | 3.33 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 4.86 | V |
| www.icar.gov.in | 159 | 75.71 | 44 | 20.95 | 7 | 3.33 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 4.72 | VI |
| www.manage.gov.in | 1 | 0.48 | 24 | 11.43 | 89 | 42.38 | 79 | 37.62 | 3 | 1.42 | 14 | 6.67 | 2.51 | XXXIII |
| www.fao.org | 3 | 1.43 | 28 | 13.33 | 82 | 39.04 | 68 | 32.38 | 4 | 1.90 | 25 | 11.90 | 2.44 | XXXV |
| www.mpuat.ac.in | 14 | 6.67 | 15 | 7.14 | 133 | 63.33 | 37 | 17.62 | 11 | 5.24 | 0 | 0.00 | 2.92 | XXIV |
| www.raubikaner.org | 11 | 5.24 | 15 | 7.14 | 119 | 56.67 | 41 | 19.52 | 15 | 7.14 | 9 | 4.28 | 2.70 | XXIX |
| www.aujodhpur.ac.in | 28 | 13.34 | 9 | 4.29 | 100 | 47.62 | 33 | 15.71 | 22 | 10.48 | 18 | 8.57 | 2.68 | XXX |
| www.sknau.ac.in | 29 | 13.81 | 7 | 3.33 | 108 | 51.43 | 40 | 19.05 | 7 | 3.33 | 19 | 9.05 | 2.78 | XXV |
| www.rajuvas.org | 13 | 6.19 | 13 | 6.19 | 130 | 61.90 | 27 | 12.86 | 8 | 3.81 | 19 | 9.05 | 2.71 | XXVIII |
| www.agriculture.rajasthan.gov.in | 103 | 49.05 | 61 | 29.05 | 25 | 11.90 | 18 | 8.57 | 0 | 0.00 | 3 | 1.43 | 4.14 | XIV |
| Kisan Call Centre | 41 | 19.52 | 22 | 10.48 | 18 | 8.57 | 12 | 5.71 | 12 | 5.71 | 105 | 50.00 | 1.82 | XLIV |
| Information Kiosks | 13 | 6.19 | 47 | 22.38 | 50 | 23.81 | 33 | 15.71 | 6 | 2.86 | 61 | 29.05 | 2.26 | XL |
| E-chaupal | 1 | 0.48 | 9 | 4.29 | 149 | 70.95 | 26 | 12.38 | 0 | 0.00 | 25 | 11.90 | 2.57 | XXXI |
| E-mitra | 5 | 2.38 | 35 | 16.67 | 112 | 53.33 | 31 | 14.76 | 3 | 1.43 | 24 | 11.43 | 2.70 | XXIX |
| TV | 166 | 79.05 | 23 | 10.95 | 11 | 5.24 | 0 | 0.00 | 10 | 4.76 | 0 | 0.00 | 4.60 | X |
| Radio | 116 | 55.24 | 18 | 8.57 | 9 | 4.29 | 22 | 10.48 | 7 | 3.33 | 38 | 18.10 | 3.48 | XIX |
| Demonstration Models | 46 | 21.90 | 95 | 45.24 | 51 | 24.29 | 15 | 7.14 | 3 | 1.43 | 0 | 0.00 | 3.79 | XV |
| Digital Video Camera | 4 | 1.90 | 116 | 55.24 | 36 | 17.14 | 38 | 18.10 | 11 | 5.24 | 5 | 2.38 | 3.23 | XXII |
| e-newspaper | 160 | 76.19 | 12 | 5.71 | 16 | 7.62 | 4 | 1.90 | 9 | 4.29 | 9 | 4.29 | 4.35 | XIII |
| e-booklets | 10 | 4.76 | 68 | 32.38 | 78 | 37.14 | 22 | 10.48 | 18 | 8.57 | 14 | 6.67 | 2.94 | XXIII |
| **Messenger App** | | | | | | | | | | | | | | |
| WhatsApp | 210 | 100.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 5.00 | I |
| M Kisan App or Kisan Suvidha | 20 | 9.52 | 64 | 30.48 | 43 | 20.48 | 0 | 0.00 | 25 | 11.90 | 58 | 27.62 | 2.43 | XXXVI |
| IQ App | 5 | 2.38 | 0 | 0.00 | 2 | 0.95 | 0 | 0.00 | 3 | 1.43 | 200 | 95.23 | 0.01 | LIII |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KVK Sandesh App | 32 | 15.23 | 26 | 12.38 | 2 | 0.95 | 11 | 5.24 | 25 | 11.90 | 114 | 54.28 | 1.50 | XLV |
| Video Conferencing | 1 | 0.48 | 1 | 0.48 | 59 | 28.10 | 124 | 59.05 | 20 | 9.52 | 5 | 2.38 | 2.16 | XLI |
| e-books | 1 | 0.48 | 32 | 15.24 | 117 | 55.71 | 40 | 19.05 | 7 | 3.33 | 13 | 6.19 | 2.72 | XXVII |
| e-journals | 7 | 3.33 | 29 | 13.81 | 105 | 50.00 | 55 | 26.19 | 7 | 3.33 | 7 | 3.33 | 2.78 | XXV |
| e-agricultural magazines | 10 | 4.76 | 91 | 43.33 | 61 | 29.05 | 40 | 19.05 | 7 | 3.33 | 1 | 0.48 | 3.26 | XXI |
| Agriculture Information portals | 154 | 73.33 | 37 | 17.62 | 13 | 6.19 | 5 | 2.38 | 1 | 0.48 | 0 | 0.00 | 4.61 | IX |
| **Agriculture App** | | | | | | | | | | | | | | |
| IFFCO Kisan App | 151 | 71.90 | 23 | 10.95 | 31 | 14.76 | 2 | 0.95 | 1 | 0.48 | 2 | 0.95 | 4.50 | XII |
| Agri Media Video App | 8 | 3.81 | 22 | 10.48 | 86 | 40.95 | 15 | 7.14 | 9 | 4.29 | 70 | 33.33 | 2.02 | XLIII |
| Kisan Yojana | 14 | 6.67 | 35 | 16.67 | 103 | 49.05 | 2 | 0.95 | 6 | 2.86 | 50 | 23.81 | 2.52 | XXXII |
| Farmer Bee- RML Farmers | 0 | 0.00 | 14 | 6.67 | 19 | 9.05 | 21 | 10.00 | 2 | 0.95 | 154 | 73.33 | 0.75 | XLVII |
| Farmer's Portal | 186 | 88.57 | 8 | 3.81 | 6 | 2.86 | 2 | 0.95 | 0 | 0.00 | 8 | 3.81 | 4.69 | VII |
| E-Nam | 53 | 25.24 | 25 | 11.90 | 68 | 32.38 | 2 | 0.95 | 1 | 0.48 | 61 | 29.05 | 2.73 | XXVI |
| KVK Mobile App | 177 | 84.29 | 15 | 7.14 | 12 | 5.71 | 0 | 0.00 | 0 | 0.00 | 6 | 2.86 | 4.67 | VIII |
| Agro Advisory and Weather Forecast | 194 | 92.38 | 1 | 0.48 | 2 | 0.95 | 0 | 0.00 | 0 | 0.00 | 13 | 6.19 | 4.67 | VIII |
| Crop Contingency Plan | 10 | 4.76 | 6 | 2.86 | 108 | 51.43 | 52 | 24.76 | 1 | 0.48 | 33 | 15.71 | 2.40 | XXXVII |
| RML Farmer –Krishi Mitra | 4 | 1.90 | 12 | 5.71 | 8 | 3.81 | 39 | 18.57 | 2 | 0.95 | 145 | 69.04 | 0.81 | XLVI |
| Pusa Krishi | 68 | 32.38 | 21 | 10.00 | 112 | 53.33 | 2 | 0.95 | 1 | 0.48 | 6 | 2.86 | 3.64 | XVI |
| Kheti- Badi | 42 | 20.00 | 21 | 10.00 | 130 | 61.90 | 2 | 0.95 | 2 | 0.95 | 13 | 6.19 | 3.29 | XX |
| Krishi Gyan | 55 | 26.19 | 22 | 10.48 | 122 | 58.10 | 3 | 1.43 | 1 | 0.48 | 7 | 3.33 | 3.50 | XVIII |
| Crop Insurance | 17 | 8.10 | 12 | 5.71 | 98 | 46.67 | 51 | 24.29 | 1 | 0.48 | 31 | 14.76 | 2.52 | XXXII |
| Agri Market | 17 | 8.10 | 11 | 5.24 | 89 | 42.38 | 59 | 28.10 | 1 | 0.48 | 33 | 15.71 | 2.45 | XXXIV |
| App to gather crop information | 8 | 3.80 | 10 | 4.76 | 76 | 36.19 | 71 | 33.81 | 1 | 0.48 | 44 | 20.95 | 2.14 | XLII |
| Smart Farm | 16 | 7.62 | 11 | 5.24 | 82 | 39.05 | 64 | 30.48 | 0 | 0.00 | 37 | 17.62 | 2.37 | XXXVIII |
| Fasal Salah | 18 | 8.57 | 5 | 2.38 | 111 | 52.85 | 20 | 9.52 | 0 | 0.00 | 56 | 26.67 | 2.30 | XXXIX |
| Agriculture and Farming App | 0 | 0.00 | 1 | 0.48 | 19 | 9.05 | 19 | 9.05 | 0 | 0.00 | 171 | 81.43 | 0.47 | XLVIII |
| Agro connect | 0 | 0.00 | 0 | 0.00 | 7 | 3.33 | 14 | 6.67 | 0 | 0.00 | 189 | 90.00 | 0.23 | XLIX |
| Farm Key | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 7 | 3.33 | 0 | 0.00 | 203 | 96.67 | 0.07 | LII |
| Agro Medix Agriculture App | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 7 | 3.33 | 0 | 0.00 | 203 | 96.67 | 0.07 | LII |
| Mahadhan App | 0 | 0.00 | 0 | 0.00 | 7 | 3.33 | 7 | 3.33 | 0 | 0.00 | 196 | 93.33 | 0.17 | LI |
| My Agri Guru | 0 | 0.00 | 6 | 2.86 | 7 | 3.33 | 0 | 0.00 | 0 | 0.00 | 197 | 93.81 | 0.21 | L |
| Uzhawan | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 210 | 100.00 | 0.00 | LIV |
| You-Tube | 195 | 92.86 | 9 | 4.29 | 5 | 2.38 | 1 | 0.48 | 0 | 0.00 | 0 | 0.00 | 4.90 | III |

## 3. RESEARCH METHODOLOGY

The Ex-post facto research design was adopted for present study. The ex-post facto research design is defined as systematic and empirical enquiry in which, the scientists have direct control of influencing independent variable because their manifestations have already occurred or because they are inherently not manipulable. The study was conducted in Rajasthan state of India. Rajasthan, a vast state comprises of thirty three districts and all were selected for the study. There are 44 Krishi Vigyan Kendra in Rajasthan state also (33 districts) has variety of thus geographical characteristics and all KVK engaged in various extension activities and all were considered for this study. The population of study included all Senior Scientists and Head and Subject Matter Specialists of Krishi Vigyan Kendra of all State Agricultural Universities (SAU'S) Non Government Organization (NGO'S) and Indian Council of Agricultural Research (ICAR) of the state. All the staff members including of SMS, Associate professor and Senior scientists and head. The total sample comprised of 210 Krishi Vigyan Kendra Scientists. The main focus of the present study is to find out the current state of usage behaviour of KVK scientists regarding selected information communication technology tools.

## 4. RESULTS AND DISCUSSION

According to the objective of the present study reveals that the frequency of utilization of ICT tools by scientists for the farmers the tool which is utilized maximum by the KVK scientist is Smart phone and Internet with (x=5.00) and Rank-I overall. The website which is utilized maximum by the KVK scientist is www.kvk.icar.gov.in and www.atarijodhpur.in with (x=4.89) and Rank-IV and V respectively. The Message App tool which is utilized maximum by the KVK scientist is WhatsApp with (x= 5.00) and Rank-I in all the tools. The Agricultural App which is utilized maximum by the KVK scientist is YouTube with (x=4.40) and Rank-III in all the tools.

## 5. CONCLUSION

Thus it can be concluded that almost every day KVK scientists are using Smart Phone, Computer, You-Tube, agriculture official website www.kvk.icar.gov.in, www.atarijodhpur.in to update their technical knowledge. ICT tools like My Agri Guru, Mahadhan App, Agro Medics Agriculture App, and Farm Key App often did not used. The maximum use of ICT tools by the scientist was WhatsApp and Smart Phones so that agriculture related information could be obtained from time to time.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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