Assessing Usability of e-governance Websites for Indian Farmers

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ABSTRACT: E-governance has been instrumental in delivering various services to the citizens for their ease of use. Many websites have also been developed for this. Website should be so developed that it is usable. In fact, the website accessibility and usability plays an important part in the success and failure of an e-governance project. A website is said to be well created if it iseasily usable and accessible.IT and e-governance has changed the way the agriculture is being done. Today better opportunities and knowledge exists for the farmers. In this paper I have discussed in detail about the features of two websites which the Government of India have developed for helping farmers. Further I have given comparisons and mentioned problems which the farmers are facing as they are unable to access the given information properly. At the last are listed few of the possible future measures which can be considered for improving upon these websites so that farmers at large are benefitted.

KEYWORDS: e-governance; usability; accessibility; NeGP; NIC; AGMARKNET

I. INTRODUCTION

Government since the beginning has been disseminating information to the concerned citizens through different medium. But it was only with the advent of the ICT that it became easy to impart the information to the larger mass. E-governance is the use of ICT in government. Initially the e-governance meant computerizing the data in the Government. With the passage of time the e-governance slowly evolved from simple computerization of the records to offering better facilities to the citizens of India. For proper spreading of the information many websites and services have been started by the government. Now the information can be gathered 24X7. This paper has 8 sections. Section II lists some of the related work on the usability and accessibility of the websites. Section III explains e-governance. Section IVexplains about usability concept in context of websites. Section V describes in detail about the websites usability and accessibility with reference to two websites launched by the government of India for farmers. Section VI gives the result in terms of the comparison, advantages and disadvantages of these websites. Section VII lists the future guidelines which can be implied to these websites for still better services. Lastly Section VIII gives the conclusion.

II. RELATED WORK

This section reviews the previous work done on the usability and the accessibility of e-governance projects. In [1] authors have given a comparative analysis of the Karnataka and Haryana portals on the basis of certain metrics. Different metrics taken into account by them are security, broken links, accessibility,feedback, etc.They concluded that based on the various metrics Karnataka web portal is superior as compared to that of Haryana.

In [2] authors have tried to identify the reasons behind accessibility problem from the end-user's (disabled users)perspective. This paper presents the existing situation of the information delivery by the websites. Authors concludes that for websites to be more accessible in India effort needs to be made towards problems like shortage of participation of the end users, shortage of testing and monitoring, poor standardization, etc. The authors of [3]in their study examined the e-governance websites of UK. They concluded that as far as the content accessibility is concerned the websites are rated high.The experiment conducted by them shows that the websites of UK are more accessible as compared to their usability. They also emphasized that usability and accessibility are interrelated but different concepts with respect to a website.In [4] the authorslist the problems faced by the differently abled persons. The authors conducted an experiment in which the mKrishi was used to pass the informationto the disabled people. With the help of their family and some special training these disabled persons were able to contribute in the farming. To attain the

desired result the authors have laid importance on the service design aspects and the delivery mechanism which will be of great help and convenience for differently abled farmers.

III. E-GOVERNANCE

The use of ICT in government is known as e-governance. In today's world, e-governance has gained a lot of importance.
According to the World Bank:
"E-Government refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/ or cost reductions."

The first e-governance initiative was taken way back in 1972 in Chile. E-governance has paved the way for governance which is easy to use and is easily accessible. In fact e-governance is advantageous since it makes the governance paperless, transparent, accountable, smart, simple and effective. Different stakeholders involved in the use of e-governance are citizens, government, business, employees of government etc. [5]

IV. NEED FOR USABILITY

Usability can be defined in different ways as follows:
IEEE Std.610.12-1990 defines usability as:
"The ease with which a user can learn to operate, prepare inputs for, and interpret outputs of a system or component." [6]
The international standard, ISO 9241-11, 1998 provides guidance on usability and defines it as:
"The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use." [7]
Usability as defined by ISO/IEC 9126-1, 2000:
"The capability of the software product to be understood learned, used and attractive to the user, when used under specified conditions." [8]

For achieving the desired goals, how well can a user understand and then use the product is known as usability. It depends on the experience of the user in using a product or system [9, 10]. Usability plays a key role in accessing e-governance sites. Usability helps all users irrespective of their gender and age to access the website. Usability helps in evaluating a site on the basis of its ease of use, user expectation and ability to complete a job by the user, learnability, execution time, etc. In India, the government has launched many websites for the convenience of its citizens. If it is difficult for a user to understand and use the site then that website altogether losses its purpose of creation, as it is not usable and accessible by the user[11].

V. NIC / NEGP

In 1976, the Government of India approved NIC (National Informatics Centre). NIC is the information service provider for the government of India. Its main objective is to build the e-governance applications and promote the digital opportunities. The network strength behind all the Government bodies be it Central, state or district is NIC [12]. For the convenience of its stakeholders NIC has built many applications or projects. NIC provides information about the various projects, products and services rendered by the government etc. With the help of NIC, the Government of India has launched several websites for the ease and convenience of the citizens. Also, NIC has started many other services like SMS service, e-payment, e-tendering, etc.[13].
NeGP was launched by the Government of India in May 2006 with a special vision:
"Make all Government services accessible to the common man in his locality, through common service delivery outlets, and ensure efficiency, transparency, and reliability of such services at affordable costs to realize the basic needs of the common man"

It was on May 18, 2006 that the Government approved the NeGP. Initially NeGP started with 27 Mission Mode Projects and 8 components which were later on increased to 31 MMPs in 2011 [14]. NIC helps in realizing the vision and goal of NeGP. Both NeGP and NIC are instrumental in reaching out and delivering services to the common man.

VI. WEBSITES AND THEIR USABILITY

The Government of India has made a major move to help the farmers and for this many initiatives have been taken by it. Here we will discuss about two of the websites started by the government for the farmers.

1.   AGMARKNET: Agricultural Marketing Information Network

Fig. 1: Home page of the AGMARKNET website

The Union Ministry of Agriculture launched AGMARKNET in March 2000. This portal is helpful for farmers, industry, consumers, traders etc. It provides the required information at one place to be easily accessible to all the stakeholders. It shows the price of a particular commodity and also the arrival of a particular commodity in a particular state and district on a given specified date. Thus the farmers can gather knowledge about a particular commodity which otherwise is difficult for them to do. The website also gives detail about mandi profile, market profile, commodity profile, research studies etc. [15, 16, 17].

The website can be reached at [18]. The home page is shown in Fig1. This website at present supports two languages English and Hindi. Once the Hindi language is selected the content changes to Hindi as shown in Fig. 2.The problem in the website is that when the language is chosen as Hindi some of the contentsare still displayed in English like date, name of the product, states, etc. This has been shown in Fig.6 in the result section.

Initially this site had a different look. The old site for this portal is available at http://agmarknet.nic.in/index_old.html. Efforts have been made to give a new look to the website but still it is not fully usable from the perspectives of farmers.

Fig 2: Website in Hindi language

2. Farmers' Portal of India by Department of Agriculture and Cooperation

This is a "One stop shop for farmers". This portal gives almost all the information a farmer may need like information about the seeds, crops, pesticides, etc. The farmers can also gather information about the insurance policies. Farmer friendly handbook is also available for the farmers of all states in their respective languages. It guides them about the soil conservation, agriculture insurance, agriculture marketing and various other e-schemes. The website also gives a detailed information about the different varieties of the different seeds and gives the names, addresses, phone no, license id, etc. of different dealers who deal with such crops in a particular state, district or block[19]. Fig.3 shows the homepage of the portal.

Fig. 3: Home page of Farmer's Portal in English

The Beta version of the website as of now is available in Hindi and English but it is being developed to display the contents in about 14 languages. Fig. 4 lists the various languages which will soon be available for users. Once the contents are displayed in the language a farmer can understand.

Thiswebsite also has same problems as exists in AGMARKNET. Fig.7 shows that all the contents of the website are not changed to Hindi when the language option Hindi is chosen.

The website is well designed in terms of the contents and information it conveys to the farmers, but still due to certain constraints the farmers are unable to properly use it.

Fig. 4: Various languages available on the site

VII. RESULT

An in-depth study of the two websites shows that there are many benefits of these websites which can be reaped in by the farmers to increase both the growth of their produce and earnings. The result of the study can be listed in terms ofadvantages and disadvantages and comparisons of both the websites.

Advantages:

1. Quick access of information – Information in both the websites is easily, readily and quickly available at one place and at any time.
2. Better farming prospects – Information for better farming facilities are given on the websites which is beneficial for the farmers. Some of the information available are prevailing crop prices, soil conservation techniques, etc.
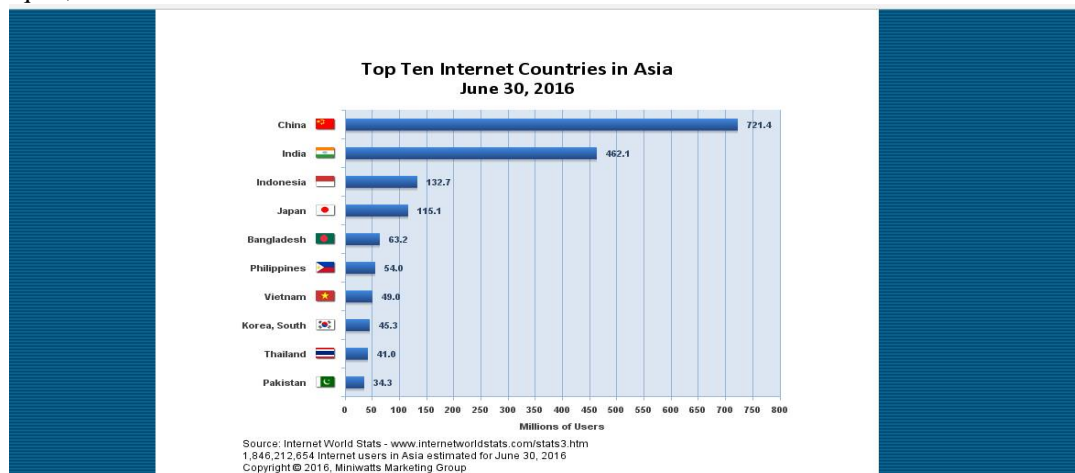

Fig. 5: Top ten Internet using countries in Asia

3. Reduction in Digital divide - With the penetration of the Internet and all the facilities provided by the Government there has been a significant reduction in the digital divide. Fig. 5 shows that India is second in Asia in terms of usage of Internet in the country [20].That signifies that more and more people are using Internet and thus benefitting with its use.
4. Screen reader access – This is a good facility provided in the websites. The text size of the websites can be increased, decreased or kept at the normal size as per the user requirement.
5. Feedback – Feedback plays an important part in the success of any site. Through proper feedback shortcomings and problems can be removed. AGMARKNET supports this facility but farmers' portal does not and so is a major limitation of this site.

Drawbacks:
1. Difficult for farmers to access the website due to lack of proper infrastructure like computers, laptops and internet connections in the villages.
2. At some place although the facility is available still the farmers are ignorant of how to use a mouse or a keyboard and also find it too cumbersome to use these devices.
3. Fig.6 and Fig. 7 shows that in case of both the sites when the contents are changed to Hindi still some of the information is displayed in English itself which is unreadable and also not beneficial for the farmers who cannot read or write English.
4. Information not available in the native language of the farmers and thus even though information is there it is useless from the point of view of the farmers.
5. Disabled persons are unable to access the websites.

Fig. 6 : Some of the contents still appearing in English contents in English

Fig.7:Language when changed to Hindi still shows some

VIII.   FUTURE DIRECTIONS

   To remove or limit the drawbacks certain measures can be taken to improve upon these websites. In this paper I have listed few of the suggestions as under:

1. More local language options- The websites on the Internet uses English as a medium of communication. But majority of the farmers know only their native language and so accessing information from these websites is not possible for them. Keeping this in mind Government of India has added more language options like Hindi, Bengali, Kannada, etc. But still the options are limited. More language options should be added on the website so that the content of the website is displayed in the language easily understandable by the farmers.
2. Kiosk facility – Many of the rural areas lack the required infrastructure needed for accessing information using Internet. For this kiosks can be set up along with an operator who can operate these kiosks. Any farmer who needs any type of information can come over to these common points where kiosks are installed and can gather the required information. It is beneficial for illiterate farmers also. This facility is available at some places but it caters to only some particular specified information. Further kiosks available in rural areas are very less in numbers. So, a drive should be taken to have more such kiosks at villages so that there is easy access to these facilities.
3. Multimodal HCI – Multimodal HCI is using multiple modalities to interact with a computer. Traditional way of interacting includes using keyboard, mouse, joystick, etc. But it is cumbersome from the point of view of a novice user or an old person. A person should be able to communicate with the computer in the same way as humans communicate with each other using gestures, speech, vision and facial expressions etc. For a farmer interacting using speech will be very easy, natural and convenient. So, efforts can be made for such natural interaction which will benefit the farmers.
4. Disabled Persons - There should be a way so that the disabled persons can also access the information. "Accessibility allows individuals with disabilities—regardless of the type of disability they have—to use ICTs, such

as websites, in a manner that is equal to the use enjoyed by others" (Jaeger 2008: 24)[21]. As an example for blinds systems based on speech as input should be considered. For deaf and dump gesture based input should be used.

5. Mobile apps - Although, the infrastructure required for accessing these websites has not reached the villages but mobile has almost reached in remote villages also. Facilities can be provided so that the farmers or villagers can access them on mobile phones. In an age where the world is moving towards self-driving cars, in India farmers are still struggling to get the basic information. In fact an IIT Delhi alumnus has developed an app called PocketSMS. Using this app the visually and hearing-impaired can read and send messages. The technology converts the text into Morse code vibrations. [22]

IX. CONCLUSION AND FUTURE WORK

E-governance along with IT has brought about revolution. Government has taken a large number of initiatives for the benefits of the farmers but still lot more efforts need to be made so that the facilities provided by them reach the farmers in the remote areas also. Web usability andaccessibility plays a key role in the success of any e-governance project. In this paper I have discussed the problems which the farmers are facing and have also listed some future directions which can be taken to facilitate the farmers in accessing the information available for them. If these suggestions are incorporated in proper manner then the e-governance help for farmers will be fruitful, productive and beneficial.

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BIOGRAPHY

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