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# A Discussion Forum for Farmers in Regional Language (Punjabi) implemented using Punjabi Unicodes

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**Abstract**: In spite of successful research being carried out on new and improved agricultural practices in Punjab Agriculture University, the majority of farmers of Indian farming community is not getting upper-bound yield due to several reasons. One of the reasons is that expert/scientific advice regarding crop cultivation is not reaching farming community in a timely manner. It is true that India possesses valuable agricultural knowledge and expert advice but still a wide information gap exists between the research level and practice. So, Indian farmers need timely access to the research knowledge and expert advice in order to make themselves more competitive and to increase their crop productivity. Most of the expert advice requires a personal meeting and that is not feasible for the farmers to go to experts for each of their queries. Even if expert help is available online, that is available in English language. This online support turns out to be impractical for usage as most of the Indian agriculturists either can't communicate in English or they hesitate to do so. The discussion forum developed makes use of the internet technology to allow the registered members to access the agricultural information online as well as interact with the expert consultants and with the other members of the community using their regional language, that is, Punjabi.

**Keywords:** Discussion, Forum, Punjabi, farmers, Unicode, ASP.Net, HTML, SQL

## I. INTRODUCTION

Online Discussion Forum (ODF) is an e-learning platform that allows members to post messages to the discussion threads, interact and receive feedback from other members and experts, and foster deeper understanding towards the subject under study. In an ODF there is no loss of data as the members' written messages are stored in the virtual space, and can be retrieved and reviewed anytime. The use of online instructional tools can remove some of the communication impediments associated with the face-to-face lectures providing a forum to address issues through argumentative and collaborative discourse. Discussion forums (DF) were first introduced in the mid 1980s as a form of asynchronous electronic communication. Discussion forums are broadly used nowadays to connect people (globally) with the same interests in one virtual space. A forum is hierarchical or tree-like in structure: a forum can contain a number of sub forums, each of which may have several topics. Within a forum's topic, each new discussion started is called a thread, and can be replied to by as many people as wish to.

**Punjabi language:** Despite the dominance of Indian engineers and scientists in the IT world, Indians have been using computers and internet in English language. Unless we support our own languages on the technology environments, it is impossible to use IT or internet to uplift and improve the socio-economic environment of our country. India is a country where barely 65 % of our population is literate, of which only an elite minority (~5%) can read, write, and speak the English language. This shuts out most of the Indian population from the worldwide web and its huge potential. Therefore it is essential to have an interface that uses not only the local language but also speech, to cater to the needs of the semi-literate and illiterate sections of the population. There is a need for language based content and technology and we have to address it. The society at large can benefit from the Information Technology effectively if people can communicate with computers in their own languages. Punjabi language is world's 12th most widely spoken language. Punjabi Language is used in both parts of Punjab, in India and also in Pakistan and can be represented by using two scripts: Shahmukhi script and gurmukhi script. *Shahmukhi* derives its character set from Persian/Arabic scripts. It is a right to left script and the shape assumed by a character in a word is context sensitive and is used for Punjabi in *Pakistan*. In Unicode, Arabic and its associative languages like Punjabi, Urdu etc. have been allocated 1,200

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code points (0600h – 06FFh, FB50h – FEFFh) and most Shahmukhi characters are already in Unicode, but a few characters are missing. *Gurmukhi* deries its character set from Landa script. It is a left to right script and unlike Shahmukhi its characters do not assume different shapes and also do not have small and capital forms.. In Unicode, *Gurmukhi* sub-range is from U+0A00 to U+0A7F. This provides 128 code points for Gurmukhi characters of which only 77 are currently used (Unicode 4.0.1).

## II. INFORMATION SYSTEMS IN AGRICULTURE

Barala (2006) found that only 3% of farmers in his study area had visited the Rural Knowledge Centers. The study, conducted in Nainital district of Uttarakhand, India, revealed that time lag, high cost, low technological literacy and infrastructural problems were the major impediments to the use of these centers by farmers. Thind (2008) defined unicode as the accepted international standard that includes support for all major scripts of the World and is adopted by all current major computer operating systems. This is a 16-bit standard that allows use of more than 65,000 characters in one font. Sahota (2009) conducted a study on usage of mobile phones for accessing agricultural information under the IFFCO-Airtel Kisan Card initiative and found that proactive usage of the service by the farmers was very low. None of the farmers had made a voice call or sent an SMS to the service providers to seek additional agricultural information. It was found that most of the farmers who had purchased the mobile phone as a part of the initiative were using it for social networking. Singhal et al.(2004) studied the development of the local language IT solutions and its pros and cons. India's average literacy level is about 52 percent. Less than 5 percent of people can either read or write English. Over 95 percent population is normally deprived of the benefits of English-based Information Technology. Ratnam et al.(2006) describes eSagu ("Sagu" means cultivation in Telugu language), an innovative asynchronous communications model of IT-based personalized agricultural extension system used in Andhra Pradesh, India. It is a blend of technology and old-fashioned face-to-face verbal communication in the language used by the clients who may be not highly literate. Sharma(2011) properties of Punjabi language, difficulties encountered in font conversion of Punjabi language. Non-standardization of fonts and some inherent characteristics of Indian scripts make it difficult to use them in automation of systems. This is true for all the Indic scripts because of no direct support of the character sets of Indic scripts in ASCII. Though Unicode solves most of the problems but conversion of existing data from ASCII based font to Unicode is a major challenge in itself. Kang and Brar (2010) reported that although Gurmukhi script fonts were made available in the early days of computing by Dr Kulbir Singh Thind in 1985, script required that specific fonts to loaded on the machine. Without a standard for how an alphabet is encoded, different machines, softwares and browsers across the world interpret the alphabet differently. The Gurmukhi Unicode range as approved by Unicode Consortium is between 0A00–0A7F, so any Unicode compliant Punjabi font character has a fixed code point in this range. With Unicode, a specific font has one and only one codebase or digital signature across all machines around the world. Such an agreement across the fonts makes it easy for browsers to display correct characters, using the correct range defined for most languages.

## . IV. MATERIALS AND METHODOLOGY

Based on the requirements and the detailed analysis of the proposed system, the new system must be designed. The result of the analysis stage is turned into a design - a detailed description of what is needed to solve original problem. Input, output, databases, forms are drawn up in detail. In the design stage, the programming language and the hardware and software platform in which the new system will run are also decided. The application has been developed by using the technologies Visual Studio 2010, ASP.Net 3.5 with c# as the language of the implementation. Database has been designed using SQL Server2008. ADO.Net has been used for retrieving the data from the database into the front end forms and vice versa. For implementing the application in Punjabi language, Punjabi Unicode has been used. Unicode has been implemented in a dynamic link library. There are two discussion modules in the developed system- one can be used for asking any queries from the experts and the other module is provided for farmers' communication. In the former module, a farmer can submit a query regarding his/her problem and the submitted query can be answered only by the administrator. The administrator here is the concerned expert specialist in a particular subject. The latter discussion module can be used by the farmers for communicating among themselves for buying, selling, renting of agricultural products.

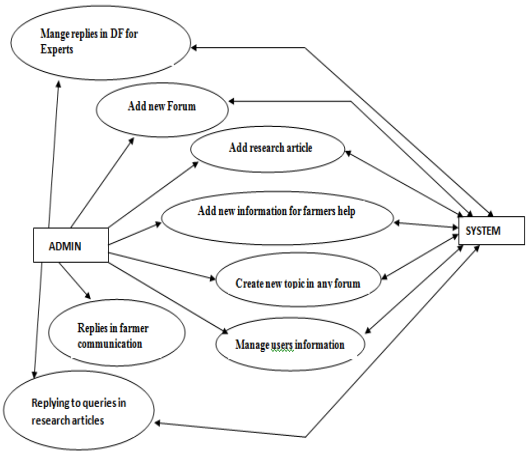


Fig.1: DFD of Administrator.

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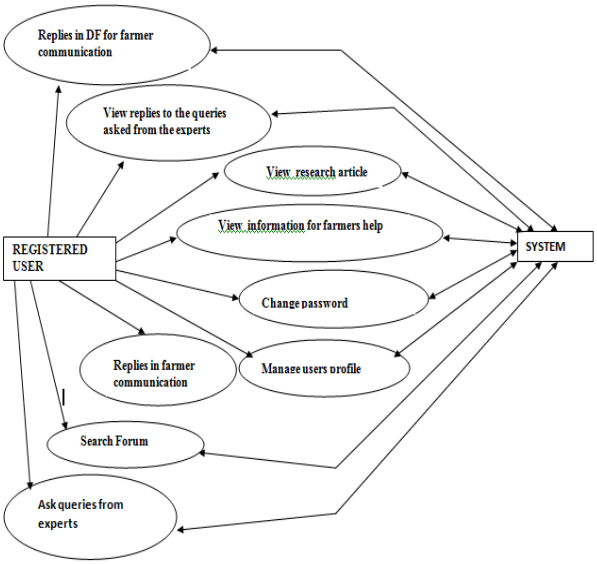


Fig.2: DFD of User.

Another module of the developed system consists of latest agriculture related updates, news, up comings of the university, latest articles from the agriculture journals, magazines etc. The registered farmers can navigate through this information regularly to keep themselves updated with the knowledge of their interest. Another module of the discussion forum include information about kisan melas, KVKs, agriculture related books, contact numbers and addresses of the agricultural experts and consultants specialist in different disciplines.

## V.RESULTS AND DISCUSSION

The proposed discussion model has been developed in an effective and efficient way. System analysis of the discussion forum model involves comparing shortcomings of the existing physical expert advisory system and its practical usage to the advantages of the online advisory system in regional language which does not require a physical meeting. Information requirements of the farmers were collected and attempt has been made to meet them completely. Most important feature of the project is that it is implemented in regional language of Punjab, thereby, overcoming the limitation of a lingual barrier in online information sharing system. So, it is web based application that could be accessed by anyone and will provide an online meeting place to the farmers and experts where they can share their interests and views using their regional language.

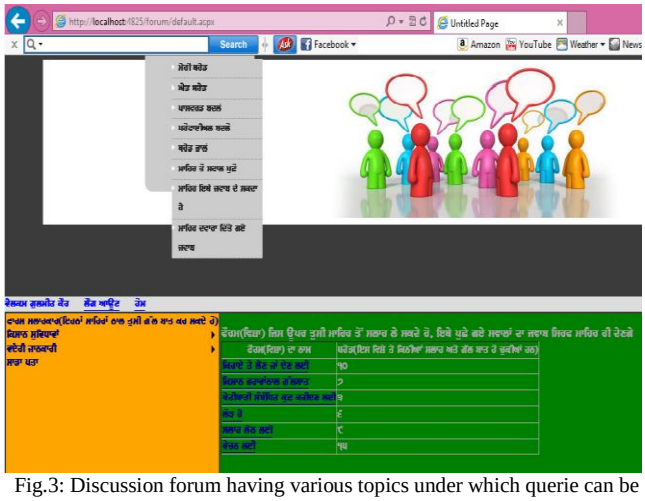

Fig.3: Discussion forum having various topics under which querie can be submitted

Fig.4: Posting a reply to the selected thread

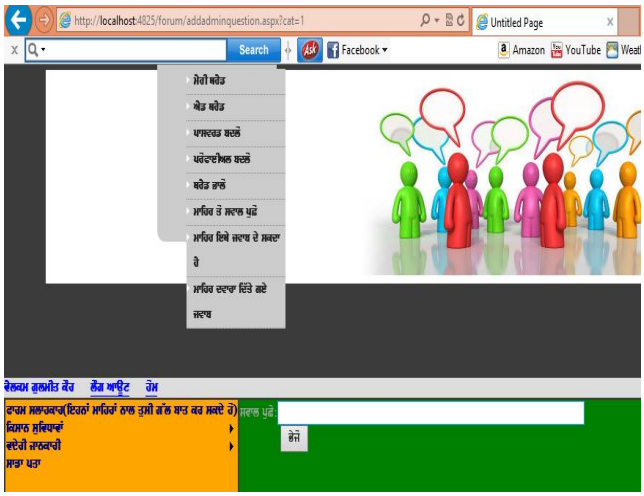

Fig.5: Submitting a query to the expert

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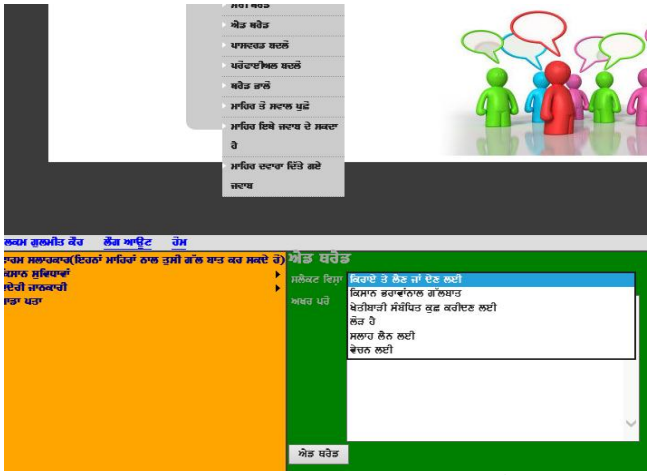

Fig.6: Creating a new topic under the selected forum

The developed system ensures connectivity, is user friendly as it can be operated with average intelligence and provides accurate and timely information to the farming community.

## VI.CONCLUSION

The new method of carrying out discussions will overcome the lingual barriers of existing online system and would provide an effective channelization of expert advice to the Punjab's farmers in their regional language itself. This advisory system will be helpful to the users (farmers) as they could query for experts' advice and discuss about the concerned issue with each other as and when required and they won't need to personally visit the agricultural research institutions to get the updated information regarding the new technologies. So this software will save them
a lot of time and this timely information, in turn, will ensure profitable performance of the farmers. The most useful feature of this project is that it will be designed and developed to support a regional language (Punjabi) user interface to provide expert knowledge to non experts. The use of internet technology has greatly enhanced the benefits of such systems. However the development of web-based expert systems poses new challenges and emphasis on more research to be carried out.

## REFERENCES

[1] Henri, F. (1992). Computer conferencing and content analysis. In A. R. Kaye (Ed.), Collaborative learning through computer conferencing (pp. 117-136). Berlin: Springer.
[2] Karacapilidis, N. and Papadias, D. (2001). Computer supported argumentation and collaborative decision making: The HERMES system. Information Systems, 26(4), 259-277
[3] Dube, L., Bourhis, L., and Jacob, R. (2006). Towards a typology of virtual communities of practice. Interdisciplinary Journal of Information, Knowledge and Management, 1, 69-93. Retrieved from http://ijikm.org/Volume1/IJIKMv1p069-093Dube.pdf
[4] Lehal, G.S. (2009). A Survey of the State of the Art in Punjabi Language Processing, Journal of Language In India, Volume9,No.10, pp.9-23
[5] Kang, A.S., and Brar, A.S. (2010). Extending Gurmukhi Script into the Twenty-first Century and Beyond proceedings of SIKHOLARS: Sikh Graduate Student Conference, Stanford University Campus, CA.
[6] Barala, P. (2006). A Study of Rural Knowledge Centers in Nainital District of Uttaranchal, Unpublished M.Sc. Thesis, Department of Agricultural Communication, GBPUAT, Pantnagar.
[7] Sahota, C.(2009). Use of Mobile Phones in Agricultural Extension: A Study in Uttarakhand, Unpublished M.Sc. Thesis, Department of Agricultural Communication, GBPUAT, Pantnagar.
[8] Ratnam, B.V., Reddy, K. P., and Reddy, G. S. (2006). An IT based personalized agricultural extension system prototype – analysis of 51 Farmers' case studies. International J of Edu and Devel using Information and Communication Technology (IJEDICT), 2006 **2**, pp. 79-94.
[9] Thind, K.(2008). Unicode Gurmukhi Fonts and Information. Retrieved from : http://www.gurbanifiles.org/unicode/
[10] Sharma, D. V. (2011). An Analysis of Difficulties in Punjabi Language Automation due to Non-standardization of Fonts An International Journal of Engineering Sciences ISSN: 2229-6913 Issue Sept 2011, Vol. 4.
[11] Singhal, M.( 2004) .Developing Information Technology Solutions in Indian Languages: Pros and Cons. At 1st International CALIBER: Mapping Technology on Libraries and People, Ahmadabad, India.
[12] Unicode Consortium: http://www.unicode.org

## BIOGRAPHIES

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